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**Article**

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## Take-over announcements and insider trading activity on the Johannesburg Stock Exchange

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The objective of this study was to carry out an investigation into the abnormal return behaviour of a sample of 50 acquired companies on the Johannesburg Stock Exchange during the period 1976–1985. Insiders appear to take market positions on prospective take-overs approximately 40 trading days before the announcement, and there appears to be uncontrolled abuse of insider trading rules in the 15 days immediately prior to the take-over announcement date. Legally defined insiders were not responsible for the abuse of inside information relating to the proposed take-overs. It would seem that substantial insider trading is carried out through third parties in order to escape detection of the authorities. The JSE appears to be inefficient in reacting to the public announcement of a planned take-over, and Section 233 of the Companies Act which regulates insider trading in South Africa is clearly ineffective. Various deficiencies and loopholes in the existing legislation are identified and recommendations for amendments are suggested.

Die doel van hierdie studie was om die abnormale opbrengspatroon van 'n steekproef van 50 verskillende maatskappye op die Johannesburgse Effektebeurs gedurende die tydperk 1976–1985 te ondersoek. Dit lyk asof ingeligte persone binne die maatskappy markposisie inneem ten opsigte van moontlike oornames, ongeveer 40 handelsdae voor die aankondiging. Dit lyk asof daar onbeheersde misbruik van die handelsreëls vir ingeligtes mag voorkom gedurende die 15 dae wat aankondigingsdatum van oorname voorafgaan. Wetlikgedefinieerde ingeligtes was nie verantwoordelik vir die misbruik van vertroulike inligting wat betref die voorgestelde oornames nie. Dit blyk dat aansienlike handel deur ingeligtes plaasvind deur middel van derde partye ten einde probleme met die owerhede te vermy. Voorts blyk dit dat die Johannesburgse Effektebeurs oneffektief is in sy reaksie op openbare aankondigings van beplande oornames. Artikel 233 van die Wet op Maatskappye waarvolgens handel deur ingeligtes in Suid-Afrika gereuleer word, is ondoeltreffend. Verskeie gebreke en skuiwergate in die bestaande wetgewing word geïdentifiseer en aanbevelings vir wetswysigings word gemaak.

### Introduction

In recent years there has been a spate of take-overs of companies listed on the Johannesburg Stock Exchange (JSE). The wave of acquisitions and mergers provided ample opportunity for those involved in the negotiations to deal in the shares of the prospective acquired company prior to the public announcement of this information. Section 233 of the Companies Act of 1973, as amended, prohibits the exploitation of inside information by company directors, officers and other persons, usually referred to as insiders. Research into insider trading of company officials has been relatively neglected in South Africa. However, research in more developed countries such as the United States of America and the United Kingdom suggests that insider trading is common in these countries despite strict legal sanctions against such activity. Laderman (1985) has shown that 72% of all take-overs on the New York and American Stock Exchanges were preceded by substantial price rises in the shares concerned. Rundfelt (1986) found that a similar pattern of insider trading activity also existed for take-overs on the London Stock Exchange.

The objective of this investigation is to determine whether insider trading relating to unannounced take-over information has provided abnormal returns. The answer to this question has major implications for market efficiency: under the semi-strong form of the efficient market hypothesis (EMH), all public information is fully reflected in security prices. Under the strong form of the EMH, security prices reflect all

relevant information, regardless of what information is publicly available, with the implication that no abnormal profits can be made through the use of inside information (Fama, 1970). This study seeks empirical evidence for the nature and scope of insider trading relating to take-overs in developed countries and South Africa. Furthermore, this study will also evaluate the effectiveness of the insider trading regulations of the Companies Act in South Africa.

### Empirical research on insider trading

Previous research on insider trading of company officials has focused on the profitability of insider trading. Certain researchers have examined months of intensive trading activity and have concluded that insiders can predict share price movements up to six months subsequent to the initial trading by insiders. Rogoff (1964), for example, examines 45 companies in which, within a single month, three or more insiders buy the company's shares and no insiders sell the shares. It was found that the returns to the insiders of these companies in the following six months were on average 9,5% higher than the return for the stock market as a whole. Lorie & Niederhoffer (1968) investigated share performance following the month in which there were at least two more buyers than sellers, or at least two more sellers than buyers among the insiders of a company. It was found that a security experiencing an intensive buying month is more likely to advance than to decline relative to the market in the six months subsequent to the event. Conversely, a security experiencing an intensive selling

month is more likely to decline than advance relative to the market in the six months subsequent to the event.

Jaffe (1974) established that a trading strategy based on intensive trading by registered insiders was able to outperform the market. It was found that registered insiders do in fact possess special (non-public) information and were able to earn residual return of approximately 5% in the eight months following an intensive trading event. Jaffe (1974: 428) concluded that the occurrence of profitable insider transactions implies that 'trading on inside information is widespread' and that 'insiders do violate security regulations'. Finnerty (1976) expanded upon Jaffe's study by examining the entire population of registered insider transactions during the period 1969–1972. The results obtained were in agreement with those of Jaffe: registered insiders were able to outperform the market when both buying and selling transactions were involved. These results tend to refute the strong form of the EMH.

The empirical evidence presented above refers to insider trading on unannounced public information in general. The purpose of this investigation is to gather information on insider trading related to unannounced take-over information. While it is impossible to monitor directly all trading motivated by the possession of insider trading relating to take-overs, the effects of such trading activities can be detected through share price movements and volume of shares traded in the period immediately prior to the public announcement of a proposed take-over. Evaluation of the distribution of gains arising from take-overs has generated considerable controversy among financial researchers. These studies have been mainly concerned with determining whether capital markets are efficient with respect to take-over announcements.

Mandelker (1974) has shown that acquired companies earned significant positive abnormal gains in the period immediately preceding the announcement date. Halpern (1973) found that the proportion of positive residuals increased from 50% two months before the announcement date, to 58% one month prior, to 62% in the month of the announcement. Mandelker (1974:314) concluded that the good news associated with take-overs had leaked out from insiders involved in the negotiations. Dodd (1980) and Asquith (1983) have provided evidence of the stock market reaction to the announcement and subsequent acceptance or rejection of the take-over proposals. These studies have shown that there is a positive market reaction to the approval and completion of a take-over bid and a negative reaction to a cancelled proposal. In the case of a cancelled take-over bid the earlier positive reaction to the initial announcement is not eliminated by the market pricing mechanism.

An investigation by Keown & Pinkerton (1981) have shown that impending take-over announcements are poorly held secrets (NYSE and AMEX), and trading on this non-public information is widespread. In particular, it was shown that abuse of insider information occurred at a significant level up to 12 trading days prior to the first public announcement of the proposed take-over.

The investigators also indicated that take-over announcements pose two unique and difficult problems to the regulatory authorities. First, they generally involve significant price-affecting information and secondly, their planning includes a wide circle of people who possess material inside information. It was shown that the chance of an information leak increases geometrically each time another person is involved in the deal. Klein (1978) suggested that a long list of people are involved in a proposed take-over transaction so that there is no certainty that sensitive information will not leak. It appears that the chances of inside information leakage increase as the announcement date draws near, and insider trading is in fact quite common.

In South Africa, there have been relatively few studies in the areas of insider trading and the effect of take-over activity on the share price of the acquired company. Affleck-Graves, Flach & Jacobson (1986) have examined the effect of take-over announcement on the share returns of 25 pairs of acquired and acquiring companies listed on the JSE during the period November 1977 – January 1984. Their results indicate that shareholders of the acquired companies earn significant positive abnormal returns in the ten weeks prior to the take-over announcement. Affleck-Graves, *et al.* (1986:12) also have shown that information regarding the take-over was available in the market for approximately 13 weeks prior to its public announcement.

The Affleck-Graves, *et al.*, 1986 study obtained overall returns to acquired and acquiring companies involved in take-overs. Their use of weekly trading data obscured much of the information concerning abnormal returns which occur just before the take-over announcement date. For instance, all significant abnormal returns that occur prior to the announcement date but during the same week as the announcement date would go unnoticed. Therefore, the use of daily returns becomes very important to the accurate measurement of any abnormal price movements that might occur prior to the take-over announcement date.

### **The insider trading controversy**

The controversy surrounding insider trading was highlighted recently when the Securities and Exchange Commission (SEC) in the United States successfully prosecuted the largest insider trading case to date. Srodes (1986) has reviewed the SEC insider trading case against Dennis Levine, who was the managing director in the acquisitions and mergers department of Drexel Burnham Lambert, a very large investment banking company. The SEC alleged that Dennis Levine amassed more than 12 million dollars over a period of five years by trading on inside information relating to over 50 take-over transactions. As a result of the successful prosecution by the SEC, Levine was required to pay a penalty of 11,5 million dollars and has been barred from the securities business for the rest of his life.

Public sentiment against insider trading has been especially strong in the United States. The argument

against insider trading is based on the need to protect the average investor from being victimized by those who have important non-public information. Defenders of insider trading laws take the position that those with inside information about listed companies should not profit personally from that information at the expense of the general investing public. According to this view, insider trading is synonymous with stealing. It is further argued that non-insiders would be reluctant to invest in the stock market without adequate insider trading rules because they would view the market as rigged against them. With fewer investors, the market would become less liquid, and thus less able to meet the expanding capital demands of the free enterprise system. Seligman (1983) has presented empirical evidence that contradicts this view. It was shown that in more advanced countries individual investors are showing greater interest in security investments despite the substantial increase in insider trading in these countries.

A further argument against insider trading is that such behaviour is unethical. For example, if company officials enter into employment contracts which stipulate that they refrain from insider trading, to trade on inside information is a breach of contract and thus a violation of trust placed on them by the company. A further example of unethical behaviour is that insider trading is a breach of the fiduciary responsibility of company officials to the company and its shareholders. Company officials are entrusted with the stewardship of a pool of assets with the objective of maximizing shareholder wealth. If officials profit by trading on non-public information (such as an impending take-over) derived from their roles as stewards, they wrongfully appropriate some of the wealth they are charged with maximizing for shareholders. Shareholders who sell to insiders do not obtain the best possible price when insiders violate their fiduciary responsibility to provide existing shareholders with all information necessary to value their shares. Furthermore, this breach of fiduciary responsibility harms not only the shareholders who sell to insiders, but all shareholders who sell to others at a price below what the market will pay in the light of the positive news relating to the prospective take-over. The regulation of insider trading in South Africa and more advanced countries is based on the argument that such unethical behaviour has important economic consequences and therefore should be subject to control by regulatory authorities.

The notion that insider trading might actually be a good thing and should be encouraged has been enthusiastically supported by a growing number of economists. Studies such as those of Stigler (1964) and Benston (1973) have shown that share prices reflect information before it is formally released and that insider trading is difficult to enforce. Therefore, as a practical matter, efforts to stop insider trading are almost certainly doomed to fail. Manne (1966) is the most widely quoted critic of insider trading regulations. Manne's argument consists of two major elements. The first is based on the notion that tolerance of insider trading can serve as an effective device for stimulating

entrepreneurial activity in large bureaucracy-laden companies and thus avert the allegedly inevitable decline of 'mature' capitalist economies. The second element asserts that insider trading is the means by which prices come to reflect all information, thereby increasing market efficiency.

Manne begins the first part of his argument by analyzing the famous assertion by Schumpeter (1942) that capitalism would fail to survive because large companies would eventually become completely bureaucratized and management-oriented. Schumpeter further argued that innovation would then become routine, destroying the capitalist entrepreneur as a class and eventually capitalism itself. Empirical evidence of recent large company innovations in the major industrialized countries reveals that Schumpeter's prediction was wrong. For all their organization and bureaucratization large companies (IBM, General Electric, General Motors, Philips, etc.) seem dynamic, innovative and as entrepreneurial today as they have ever been. A closer examination of Schumpeter's arguments may explain his error.

Schumpeter (1942) stated that any form of compensation for company executives other than salaries and bonuses are either illegal or semi-illegal. However, he argued that salary and bonuses were appropriate forms of compensation only for the pure management function. Entrepreneurs would require some more unconventional, though less certain, form of compensation. Since Schumpeter believed that this could not be made available to them in large companies, he assumed that they would disappear from the corporate scene.

Manne (1966) argues that Schumpeter's major problem was his failure to see the possibility of using insider trading as a form of compensation for entrepreneurs in large companies. Manne sees more conventional forms of compensation — salary, bonuses and share options — as inappropriate for fostering innovation. Allowing trades on insider information provides the large company with the most effective way of rewarding the entrepreneurial efforts of its employees. Insider trading allows an individual working for a large company to play the entrepreneurial role. Individuals can, in effect, sell their own ideas without having large amounts of capital available. Manne argues that the increase in share price resulting from an employee's innovation is not a perfect measure of its value to the company, but it will leave little room for argument about an individual's worth.

The second major element of Manne's argument asserts that when insiders trade on non-public information, they thereby make the market more efficient — an efficient market being one in which prices immediately adjust to changes in the underlying information. Manne argues that when insider trading is prevalent, prices are more likely to reflect reality, meaning that uninformed outsiders can assume that the prices they are getting reflect 'fair' value. Seligman (1986) has developed the argument that supports

Manne's viewpoint on insider trading improving market efficiency. It is stated that if company officials with material inside information never traded, then outsiders would always be running the risk of being adversely affected by the large price adjustments after the announcement is made.

Manne (1966) believes that in general the securities markets are extremely efficient: prices do adjust to new developments, partly because so much insider trading is taking place. This view is supported by Demsetz (1969) who claims that insider trading improves the functioning of the stock market because information as a public good, will be underproduced unless those who acquire it profit through insider trading. Manne argues that rather than regulating insider trading, the companies concerned should establish their own procedures for monitoring the flow of information. Given this freedom, many companies would prohibit insiders from trading on their information. But many other companies would regard insider trading profits as a legitimate form of compensation. Manne has also argued that companies allowing the use of insider information would command premiums in the stock market. The premiums would reflect the lower risk associated with the more efficient pricing of the securities.

Manne's arguments in favour of allowing insider trading are intuitively appealing and they have received considerable support in academic circles. However, there are certain weaknesses in his assertions. His argument regarding trading profits by company insiders as representing an essential means of promoting entrepreneurial activity within today's large and bureaucratic companies is oversimplified. The idea here seems to be that the inside information that allows for trading profits, is somehow the product of company insider's creativity and innovation. This argument is unconvincing. Is the first company insider to learn about an impending take-over offer or even a major breakthrough in the production process likely to be the cause of the accompanying price increase in the company's securities?

Manne's second argument that insider trading promotes market efficiency and therefore should be encouraged, is of doubtful validity. The proprietary information on which insider trading is based will generally become public quickly even without insider trading. On the contrary, the disclosure requirements promulgated by the various regulatory bodies are intended to produce just such timely dissemination of important information. It is therefore suggested that insider trading can be mitigated by the speed and accuracy with which new information is released to the public. Effective control over insider trading is more likely to be attained by requiring company officials to disclose price sensitive information immediately to shareholders and the public.

### **The regulation of insider trading in South Africa**

Prior to the promulgation of the Companies Act of 1973, there was no control over insider trading of a listed

company's shares in South Africa. The directors and certain 'officers' possessing non-public information benefitted by undertaking share transactions on the strength of such information. This was particularly the case regarding information related to unannounced take-over negotiations. Since the share market usually regards prospective take-overs as favourable to acquired companies, the rational expectations of the target company's shareholders result in these shareholders earning substantial premiums above the pre-acquisition price (Grossman & Hart, 1981: 268). The directors and officers involved in take-over negotiations possess non-public information and may benefit substantially by dealing in the shares of the target company.

Section 233 of the Companies Act of 1973, as amended, has made insider trading an offence. Any share transactions in contravention of this section constitutes a criminal offence. Section 233 regulates insider trading as follows: 'Every director, past director, officer or person who has any information concerning a transaction or proposed transaction of the company or the affairs of the company which, if it becomes publicly known, may be expected materially to affect the price of the shares or debentures of the company and who deals in any way to his advantage, directly or indirectly, in such shares or debentures while such information has not been publicly announced on a stock exchange or in a newspaper or through the medium of the radio or television, shall be guilty of an offence.'

As a practical measure to implement the insider trading regulation, Section 232 of the Act has to be complied with, thus requiring the directors, past directors, officers and certain persons to provide a written notice regarding a material change in their shareholding in the company concerned. Furthermore, in terms of Section 230, every public company is obliged to keep a special register of the material interests of directors and others in the shares and debentures of the company and enter therein within seven days any written notice referred to in Section 232. In addition, Section 224 of the Act prohibits directors and certain officers from purchasing the share options of the company or any associated company. The intention of these regulations is to prevent directors and certain key employees who possess insider information from speculating in the company's shares.

While insider trading is now a criminal offence, Section 233 of the Act is very narrow in scope and has several serious limitations. As a result of the deficiencies in the Act, enforcement is virtually impossible, and to date there have been no prosecutions in South Africa (Kilalea, 1985: 495). It would seem that there are practical problems in prosecuting and obtaining convictions. The JSE is required to play a key role in the enforcement of insider trading regulations. The JSE is required to monitor all trading on the exchange and to ask for dealing returns from member brokers when any unusual trading activity suggests that insider trading may have taken place. If the JSE investigation reveals any suspicion of insider trading it is required to pass the returns to the Registrar of Companies who is responsible

for analyzing the evidence gathered by the JSE. The Registrar of Companies has the authority to pass the evidence to the Attorney General if he believes that prosecution is warranted. It has been suggested (Wilson, 1984: 97) that to date the JSE has not made any serious attempts to investigate situations where the circumstances strongly suggested that insider trading was taking place on a large scale. Unless the JSE is more aggressive in pursuing insider trading offenders it is unlikely that Section 233 will serve as a deterrent.

Section 233 has several limitations which make it difficult to prosecute offenders. The most serious omission from Section 233 is the absence of any mention of the recipient of a tip (the tippee) who acquires non-public information from a legally defined insider and then trades in shares on the basis of such information. Legal opinion is that it is not wrong, in terms of South African legislation, for a tippee to benefit from insider trading provided that he is not an agent of the tipster. Therefore, it is not illegal when a director or officer of a company passes insider information to an outsider (friend or relative) provided he does not benefit from their dealings. Furthermore, it seems that it is not wrong for various people involved in take-over situations (lawyers, merchant banks, accountants, secretaries and financial printers) to deal in shares on the basis of privileged information.

The exclusion of tippees from the provisions of insider trading regulations is a serious deficiency of South African legislation. In more advanced countries such as the United States and the United Kingdom both the tipster and the tippee are regulated in their respective legislations concerning insider trading. For instance, in the United States the legal principle is that any person (including companies) dealing in securities before information is available to the public falls within the ambit of insider trading legislation. In South Africa the insider trading regulations can be legally circumvented by the simple expedient of the tipster passing price-sensitive information to a tippee who trades on his own behalf.

The second deficiency of Section 233 is that it does not preclude the directors and officers of an acquiring company from dealing in the shares of the target company. The provisions of the Act only preclude them from dealing in their own company's shares in situations where they have inside information. The legal argument here is that directors and officers of the acquiring company do not have a fiduciary or a contractual obligation to the shareholders of the target company and therefore do not fall within the ambit of Section 233. Shareholders of the target company are usually offered a large premium on the pre-acquisition market price of their shares (Brozen, 1982: 40). Therefore, insiders within the acquiring company are in a position to make substantial gains by trading in these shares prior to the public announcement of the deal.

The third deficiency of Section 233 is that directors and officers of the acquired company may deal in their own company's shares before the take-over deal is publicly announced. Legal opinion suggests that the

target company is a passive entity whose shares are merely purchased by the acquiring company (active entity). Therefore, the provisions of the Act do not apply to the target company; only the company that is making the acquisition falls within the provisions of the Act. The passive entity argument is of doubtful validity and also conflicts with the principle of equity. The intention of Section 233 is that no person should benefit from insider information. In the case of take-overs there are two sides to the transaction. It could hardly be the intention of the legislation that a person may benefit at the expense of one group of shareholders and not the other. It is therefore submitted that Section 233 should be extended so that insiders in both the acquiring and the target companies fall within the scope of the Act.

A further deficiency of Section 233 is that there is no stipulation in the Act that a reasonable period be allowed for the publicly announced information to reach the public (digestion period). Therefore, once the information is publicly announced (on a stock exchange or in a newspaper or through the medium of radio and television) as specified in Section 233, the prohibition on insider trading is removed. Those shareholders who are slow in reacting to the public announcement (shareholders in country areas where the news travels slowly) could find themselves at a disadvantage when dealing with insiders. It is recommended that a reasonable period should be provided for outsiders to assimilate and respond to newly released information. For instance, in the United States a digestive period of 48 hours has been laid down before insiders may legally trade on publicly announced information.

The preceding discussion on Section 233 of the Companies Act has shown that legislation to combat insider trading in South Africa is ineffective. It can be argued that inadequacies in the legislation may have encouraged insiders to proceed with these illegal transactions. The empirical evidence of this investigation shows that legally defined insiders are not actively involved in take-over transactions prior to its public announcement (as revealed by disclosure in special register in terms of Section 230). Nevertheless, these insiders could be hiding behind nominees whose links with the former are difficult, if not impossible, to detect. If South Africa is to have effective legislation to curb insider trading then the various deficiencies and loopholes discussed in this section will have to be given urgent consideration with the objective of amending the existing legislation. The Standing Advisory Committee on Company Law should devote immediate attention to rectify these limitations and loopholes when amendments to the existing Companies Act are considered.

#### **Insider trading and share suspensions on the JSE**

The JSE has made provisions for the suspension of shares to discourage large scale speculation by insiders and speculators in take-over transactions. The Johannesburg Stock Exchange (1973: 12) has recommended that during take-over negotiations, a

temporary suspension should be undertaken to avoid undue speculation in the shares involved. The JSE recognized that a rigid rule for the suspension of shares renders the market inefficient. Therefore, in August 1977, the JSE advocated a more flexible approach to take-overs namely: 'Suspensions should be requested only when negotiations have reached a point where the prospect of agreement is imminent. However, as soon as negotiations commence, the company or companies concerned must monitor the market price activity of their shares and must make immediate application for suspension if it appears that a leakage of information has occurred'.

The negotiations preceding a take-over cause problems relating to market efficiency. If the shares of the parties involved are not suspended or no announcement is made to the shareholders then the market is made inefficient because all shareholders are not in possession of all information relating to their investment. If all shareholders are kept in ignorance of the prospective take-over, then there is no possibility of distorting the market. However, there is always the possibility of certain traders possessing insider information relating to the take-over. Such information may not necessarily be obtained from an 'inside source': leakage could be gathered from market sources. Acquiring companies generally obtain a shareholding in the target company to facilitate the take-over. This may arouse suspicion on the stock market, resulting in speculation in the share concerned. The relatively 'thin' trading on the JSE is very likely to arouse such suspicion. In South Africa the problem is magnified because of the limitations and loopholes in the insider trading regulations which encourages insiders to trade on non-public information, thereby making the market inefficient.

On the other hand if share suspension during the negotiation stages is made compulsory, the market is made inefficient because buyers and sellers of the securities concerned will be 'locked out' of the market. The longer the period of suspension the greater the market inefficiency, and the greater the hardship to those wishing to deal in the securities concerned. The current suspension requirements on the JSE are not adequate to deal with the problem. Firstly, the requirement that suspensions should be requested when the negotiations have reached an advanced stage is subject to the danger of information leakage and subsequent speculation in the share concerned. Furthermore, the requirement of an immediate application for suspension in the event of discovering a leakage is not likely to serve any purpose. By the time the JSE has approved such a suspension, trading by insiders and speculators will have resulted in a substantial change in the share price. A suspension at this stage will not cause a return of the share prices to the level before leakage of information relating to take-overs.

A suspension of shares of the parties to a take-over can be effective if it is done early enough. However, in such cases the market is made inefficient by preventing

investors from exercising their freedom of choice in the market place. The current position on the JSE is that suspensions invariably follow the discovery that an information leakage (inside trading) has occurred. A suspension at this stage serves no purpose. Because of its limited effectiveness, Macgregor (1979) has argued that suspensions should be the exception rather than the rule.

It is submitted that suspensions are more likely to be effective in the larger markets such as the NYSE and the LSE where the volume of transactions is large. In these markets it is less likely for the insider trading preceding a take-over to arouse the suspicion of speculators. The JSE will be better served by placing less reliance on share suspensions and a greater emphasis on more frequent and timely disclosure to shareholders. The JSE could, for instance, change its requirements so that the parties to the take-over would be required to make a cautionary announcement of their intentions as soon as negotiations have started. No suspensions need be made, and those dealing in these securities are doing so with full knowledge of all information related to the securities.

Speculators and investors dealing on the basis of the cautionary statement are now aware of the risks involved in the shares concerned and may act accordingly. If the take-over is consummated and the speculators (and insider traders) make a profit this is a reward for their risk-taking. On the other hand, if the negotiations end in deadlock or the terms are not as favourable as anticipated, there is the corresponding risk of incurring losses. The important consideration is that the market should remain efficient by making information available to all persons at the same time. Where the stock market is efficient, no person should make a substantial gain from these transactions because the security prices are expected to fully reflect the possible outcome of the negotiations immediately when a take-over announcement is made. This process of immediate disclosure of take-over negotiations gives little scope for speculators to distort the market by acting on market leakages, hunches, or insider information.

The contrary argument is that only a fraction of take-over negotiations started are finally consummated and repeated cautionary announcements will result in share prices jumping up and down. Nevertheless, a full and immediate disclosure would mitigate the possible harm done by insiders to outsiders who are not privy to the take-over information. Given the usual cautionary statement, the recommended strategy for outsiders to protect themselves against insiders is to take a long-term view on their investments. If outsiders trade for the short run, they are likely to lose because they are competing directly with insiders. But if they invest for the long-term, outsiders can effectively eliminate short-term gains by insiders. By adopting a buy-and-hold strategy, they can insulate themselves. Such a policy, by minimizing trades, reduces the ability of insiders to gain from their information by forcing them to trade among each other. Furthermore, once the recommended system of full disclosure becomes accepted practice and a few insiders



and speculators incur losses when taking positions while take-over negotiations are in process, the system could serve as a deterrent.

### Methodology of insider trading investigation

The sample for this investigation consisted of a random selection of 50 companies listed on the JSE which were subject to successful take-over bids (see Appendix A). The period of investigation ranged from January 1976 to December 1985, a period of 10 years which is sufficiently representative of the take-over scene on the JSE. The JSE monthly bulletin for December 1985 was used to identify the take-overs to be included in this investigation. To check the accuracy of the first public announcement of the take-over, the acquiring company involved was asked by letter to supply this date. Wherever possible, the accuracy of this information was verified by studying the offer documents relating to the take-overs concerned.

For each of the 50 acquired companies the daily share prices were collected for a period of 111 trading days surrounding the announcement date. This period consisted of 90 trading days before and 21 trading days on and after the announcement date. The aim of this investigation is to isolate the effects which take-over announcement and insider trading may have on shareholder returns. Therefore, it was necessary to remove from the data the effect of changes in the stock market condition. A commonly used technique is the Market Model (Bowman, 1983), which employs simple linear regression to estimate the required risk-adjusted return for the share. The abnormal returns associated with an acquired company were estimated by means of the Market Model:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \bar{e}_{jt}$$

where  $R_{jt}$  = the return on share  $j$  on day  $t$ ;  $\alpha_j$ ,  $\beta_j$  = the intercept and slope respectively of the linear relationship between the return for share  $j$  and the returns for the general market;  $R_{mt}$  = the return on the market portfolio represented by the JSE Overall Actuaries Index on day  $t$ ;  $\bar{e}_{jt}$  = disturbance term or residual.

The estimated abnormal return is given by the expression:

$$\hat{e}_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt})$$

where  $\hat{\alpha}_j$  and  $\hat{\beta}_j$  are the ordinary least square estimate of  $\alpha_j$  and  $\beta_j$ . For each of the sample securities the daily rate of return was calculated. All share prices and indices collected were converted to returns using the following formula:

$$R_t = \frac{(P_t - P_{t-1})}{P_{t-1}}$$

where  $R_t$  = return on share or index in period  $t$ ;  $P_t$  = the closing price for security or index on day  $t$ ;  $P_{t-1}$  = the closing price for security or index on day  $t-1$ .

In order to eliminate any possible bias in the estimates of  $\alpha_j$  and  $\beta_j$ , they were estimated over the first 60 trading days, thus excluding the 30 trading days prior to the take-over announcement date. An investigation of the stability of  $\beta_j$  between the first 30 days and the last 30 days of this 60-trading-day sample suggested that the  $\beta_j$ 's could be considered stable over this period. The decision to eliminate 30 trading days immediately prior to the announcement date was influenced by the results of Halpern (1973) who demonstrated that the proportion of average residuals were highest in the 25 days preceding the announcement date.

The daily average residual may be expressed as:

$$e_t = \frac{1}{50} \sum_{j=1}^{50} \hat{e}_{jt} \quad t = -90, -89, \dots, 19$$

A total of 110 average residuals were calculated for 90 trading days prior to the take-over announcement date and 20-trading-day period on and after the announcement date. The average residuals were used as a basis for examining abnormal price movements prior to the take-over announcement date. The cumulative average residual ( $CAR_t$ ), defined as the sum of the previous daily average residuals, was calculated for each trading day of the study and may be written as:

$$CAR_t = e_t + CAR_{t-1} \quad t = -90, -89, \dots, 19.$$

If one assumes that there are no unusual share price movements prior to the take-over announcement date, one can expect that both  $e_t$  and  $CAR_t$  would fluctuate randomly about zero. However, if there is a leakage of take-over information and there is trading on inside information prior to the announcement date, this would be reflected by positive daily average residuals and corresponding build up in  $CAR_t$ .

### Empirical results

The daily average residuals ( $e_t$ ), and the cumulative average residuals ( $CAR_t$ ) for the sample of 50 acquired companies for the 1976–1985 investigation period are given in Table 1 and Figure 1. An examination of Figure 1 indicates that the  $CAR_t$  has a random pattern until approximately 34 days prior to the announcement. However, for those trading days closer to the announcement date both the  $CAR_t$  and  $e_t$  display abnormal characteristics. The  $CAR_t$  becomes positive 34 days prior to the announcement date. Similarly, the daily average residuals are mostly positive in the 40 days trading period preceding the announcement. An interesting observation is that slightly more than half the increase in  $CAR_t$  (53,6%) occurs prior to the take-over announcement date. The daily average residuals also show an interesting trend and are positive on 34 out of the 35 days prior to the take-over announcement. Furthermore, the daily residuals are significantly different from zero at a minimum significance level of 90% on 13 of the final 15 days prior to the take-over



**Table 1** Market Model statistics for sample of 50 acquired companies during 1976–1985. Period  $t = -50$  to  $t = +10$ 

Day*	Daily Average Residual, $e_t$	T Statistic	Cumulative Average Residual, $CAR_t$
-50	-0,012	0,426	-0,646
-49	-0,037	0,514	-0,683
-48	-0,018	0,446	-0,701
-47	-0,106	0,513	-0,807
-46	0,141	0,762	-0,666
-45	-0,136	0,721	-0,802
-44	-0,065	0,317	-0,867
-43	-0,076	0,445	-0,943
-42	-0,146	0,820	-1,089
-41	0,079	0,210	-1,010
-40	0,095	0,448	-0,915
-39	0,142	0,729	-0,773
-38	0,162	0,815	-0,611
-37	0,226	1,423	-0,385
-36	-0,035	0,127	-0,420
-35	0,184	0,925	-0,236
-34	0,245	1,526	0,009
-33	0,078	0,332	0,087
-32	0,096	0,617	0,183
-31	0,546	1,825 <sup>a</sup>	0,729
-30	0,135	0,624	0,864
-29	0,163	0,847	1,027
-28	0,117	0,610	1,144
-27	0,184	0,924	1,328
-26	0,042	0,401	1,370
-25	0,179	0,763	1,549
-24	0,579	1,893 <sup>a</sup>	2,128
-23	0,164	0,522	2,292
-22	0,179	0,611	2,471
-21	0,257	0,993	2,728
-20	0,420	1,798 <sup>a</sup>	3,148
-19	0,276	1,650 <sup>a</sup>	3,424
-18	0,243	1,515	3,667
-17	0,212	1,303	3,879
-16	-0,026	0,784	3,853
-15	0,444	1,724 <sup>a</sup>	4,297
-14	0,204	0,706	4,501
-13	0,328	1,668 <sup>a</sup>	4,829
-12	0,443	1,702 <sup>a</sup>	5,272
-11	0,438	1,768 <sup>a</sup>	5,710
-10	0,463	2,316 <sup>b</sup>	6,173
-9	0,520	2,489 <sup>c</sup>	6,693
-8	0,307	1,013	7,000
-7	0,520	1,916 <sup>a</sup>	7,520
-6	0,415	2,124 <sup>b</sup>	7,935
-5	0,582	2,416 <sup>c</sup>	8,517
-4	1,264	4,933 <sup>d</sup>	9,781
-3	1,145	4,175 <sup>d</sup>	10,926
-2	1,573	5,002 <sup>d</sup>	12,499
-1	2,407	5,531 <sup>d</sup>	14,906
0	9,348	8,664 <sup>d</sup>	24,254
1	1,617	3,765 <sup>d</sup>	25,871
2	1,246	3,243 <sup>d</sup>	27,117
3	0,916	2,723 <sup>c</sup>	28,033

**Table 1 Continued**

Day*	Daily Average Residual, $e_t$	T Statistic	Cumulative Average Residual, $CAR_t$
4	0,336	1,667 <sup>a</sup>	28,369
5	0,286	1,320	28,655
6	-0,226	1,102	28,429
7	-0,237	1,212	28,192
8	-0,202	1,019	27,990
9	0,012	0,212	28,002
10	-0,170	1,245	27,832

\* If shares are suspended during any stage of the take-over negotiations these trading days are ignored for analytical purposes.

<sup>a</sup> Daily average residual is significant at the 0,90 level

<sup>b</sup> " " " " " " " 0,95 "

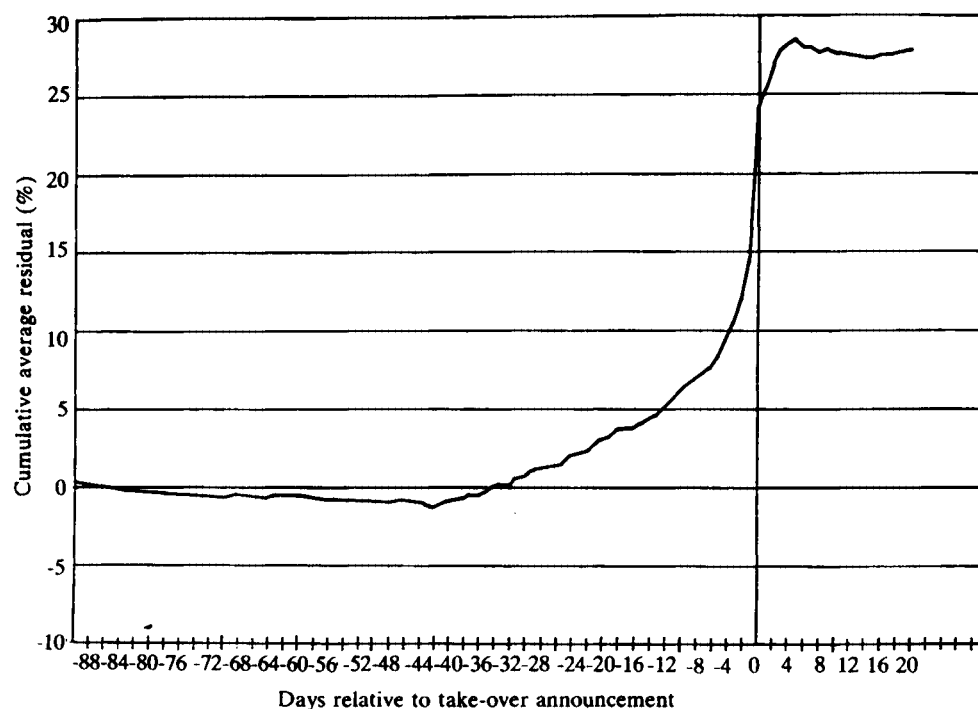
<sup>c</sup> " " " " " " " 0,98 "

<sup>d</sup> " " " " " " " 0,995 "

announcement. The daily residuals are also significantly different from zero at the 90% level of significance on the day of the announcement and the next four trading days.

These results indicate that the shareholders of the acquired companies earned fairly substantial abnormal returns around the time of the take-over announcement. The results also suggest that there is substantial trading on inside information relating to prospective take-overs. Insiders appear to take market positions on prospective take-overs approximately 40 trading days before the announcement, and there appears to be uncontrolled abuse of insider trading rules in the 15 trading days immediately prior to the take-over announcement date.

It has been observed (Laderman, 1985: 58) that insider trading related to take-overs is accompanied by a substantial increase in volume of shares traded. Therefore, a substantial increase in  $CAR_t$  immediately preceding a take-over announcement accompanied by a dramatic increase in share trading volume would lend support to the insider information leakage hypothesis. The changes in share trading volume of each of the 50 companies investigated was monitored for a duration of three months preceding the take-over announcement. The analysis indicates that the most dramatic increase in trading volume was over the three weeks immediately preceding the take-over announcement. It has been found that 84, 72, and 67% of the acquired companies displayed significant increases in trading volume one, two, and three weeks immediately prior to the take-over announcement than they had three months earlier. Of particular interest is the observation that the average increase in share trading volume was 181% higher in the last three weeks immediately preceding the take-over announcement than it was three months earlier. In the last trading week immediately prior to the take-over announcement the increase in share trading volume was 268% higher than for the period three months earlier. These results also confirm the significant increase in



**Figure 1** Cumulative average residuals for 50 acquired companies

CAR, during the 15 trading days immediately prior to the announcement date.

The pattern of increase in trading volume during the 15 trading days preceding the take-over announcement can be expected if trading was motivated by a leakage of inside information. The results of this investigation suggest that leakage of inside information occurs at a significant level during the 15 trading days prior to the first public announcement of the proposed take-over. These results confirm the popular belief that take-over negotiations are poorly held secrets and trading on this non-public information is widely abused.

There is a need to determine if legally defined insiders were responsible for the abnormal share price behaviour preceding the first public announcement of proposed take-overs. Section 230 of the Companies Act makes it mandatory for every company to keep a register of material interest of its directors and officers in the shares of the company. Furthermore, Section 232 of the Act makes it a duty for all directors and officers to provide particulars regarding the dealing in shares of the company within fourteen days of the transaction. Section 113 of the Act makes provision for the inspection of the register of interest of directors and officers in the shares of the company by members and other persons. Therefore, an inspection of the register of interests of the directors and officers of the acquired and acquiring companies can be used as a basis for determining if registered insiders (in the legal sense) were responsible for insider trading. The results are shown in Table 2.

A study of Table 2 reveals that registered insiders were not responsible for the substantial increase in trading volume (and the rise in share prices) during the three weeks prior to the take-over announcement. A total of 41 companies representing 82% of the acquired companies experienced no transactions (purchases or

**Table 2** Share transactions (in acquired companies) by registered insiders during the three weeks prior to take-over announcement

Type of transaction	Number of acquired companies involved	Percentage of sample
No transactions	41	82
Net purchases	7	14
Net sales	2	4
Total	50	100

sales) by registered insiders during the week prior to the announcement date. Furthermore, only 14% of the sample of acquired companies had experienced net purchases during the three weeks prior to the announcement date. Therefore, the abnormal trading activity in the shares of the acquired companies prior to the public announcement of take-overs cannot be explained by the action of legally defined insiders. It can be suggested that insiders in the broad sense rather than the narrow legal definition were dealing in shares on the basis of confidential take-over information. The absence of insider trading by legally defined insiders combined with the abnormal increase in share volumes suggests that substantial insider trading is carried out through third parties (friends, relatives, business associates etc.) in order to escape detection.

A further point of interest is the efficiency of the JSE in reacting to the public announcement of a planned take-over. Bradley, Desai & Kim (1982) have demonstrated that in an efficient market the favourable information relating to take-overs would be reflected immediately in the share price of the acquired company.

In terms of this criterion, the JSE appears to be inefficient in reacting to the public announcement of take-over proposals. As previously mentioned, 53,6% of the market reaction (represented by cumulative average residuals) occur before the announcement date. The single largest daily reaction (33,6%) occurs on announcement date. However, there is an additional market reaction amounting to approximately 15,8% in the five trading days immediately following the announcement date. This apparent lag in market reaction to the public announcement of a planned take-over could be accounted to the fact that some announcements occur after the market closes. However, these results do not support the semi-strong form EMH since the market reaction to new public information continues for a period of five trading days after the announcement.

A possible explanation for the apparent market inefficiency could be the 'leading indicator effect' — investors perceive insider trading as a signal conveying information about future events — of insider trading suggested by Givoly & Palmon (1985). They have shown that a mere occurrence of insider trading may generate abnormal returns. It is suggested that since insider trading is closely watched by many investors, it may trigger a wave of transactions in the same direction by outsiders, thereby generating abnormal returns to insiders in the period following their trades.

The pattern of price movements of many acquired companies appeared to show continuous price increases. Therefore, a runs test for the 15 trading days prior to the take-over announcement date was undertaken. The test revealed that the abnormal returns of 15 acquired companies display a non-random pattern at a 5% significance level. As the significance level was raised to 10% the number of acquired companies displaying non-random pattern rose to 28. These results refute any suggestion that price movements of acquired companies during the 15 trading days prior to the take-over announcement are due to statistical coincidence.

## Conclusion

This investigation has shown that shareholders of acquired companies earned fairly substantial abnormal returns around the time of the take-over announcement. Insiders appear to take market positions on prospective take-overs approximately 40 trading days before the public announcement. Leakage of inside information occurs at a significant level in the 15 trading days preceding the public announcement of the proposed take-over. The results suggest that registered insiders were not responsible for the abnormal trading in the target companies during the three weeks prior to the public announcement of the take-overs, substantial insider trading is carried out through third parties in order to escape detection. The JSE appears to be inefficient in reacting to the public announcement of the take-over proposals: significant market reaction occurs in the five trading days immediately following the announcement date.

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#### Appendix A Acquired companies included in the sample to investigate insider trading on the JSE

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ABC Shoe Corporation Limited	Hippo Holdings Limited
Adcock Ingram Investments Limited	HLH Limited
African Products Limited	Hulets Aluminium Limited
Amalgamated Medical Supplies Limited	Imperial Cold Storage Limited
Bakers (SA) Limited	Illovo Sugar Limited
Blaikie Johnstone Limited	Karoo Meat Exchange Limited
Brick & Clay Limited	Melodys Holdings Limited
Buffalo Timber & Hardware Limited	Oude Meester Group Limited
Busaf Industries Limited	Premier Paper Limited
Cementation Company (Africa) Limited	Propan Limited
Chloride Holdings (SA) Limited	Rennies Consolidated Limited
C.J. Fuchs Limited	Samuel Osborn Limited
Coronation Brick Free State Limited	Scotts Stores Limited
Dan Perkins Holdings Limited	Simba Quix Limited
Desiree International Limited	Sorec Limited
DRG (SA) Limited	Southern Sun Hotel Holdings Limited
Dugson Holdings Limited	Stein Brothers Limited
Dunswart Iron & Steel Works Limited	Stewarts & Lloyds (SA) Limited
Edgars Consoliated Investments Limited	Television & Electrical Holdings Ltd
Egoli Consolidated Mines Limited	Trust Bank Limited
Federale Kunsmis Limited	Truworhs Limited
Gallo (Africa) Limited	Twins Pharmaceuticals Limited
Goodhope Concrete Pipes Limited	Unisec Group Limited
Hart Limited	Wispeco Holdings Limited
Hebox Textiles Limited	Xactics Limited

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