

THE IMPACT ON SHARE PRICES OF REPORTING
FINANCIAL TARGETS AND CONSTRAINTS

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In fulfilment of the requirements
for the degree of
DOCTOR OF PHILOSOPHY
IN ACCOUNTING

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This thesis examines the impact on share prices of voluntary reporting of financial targets and constraints, particularly the target rate of return, target dividend payout ratio and target debt ratio.

Hypotheses developed about the potential share price impact of this reporting are that there will be

- a positive impact on share prices through a reduction in estimation risk
- an increase in the dispersion of share price changes owing to a revision of expectations
- a positive impact on share prices owing to a signalling effect.

The hypotheses are tested by examining share price behaviour accompanying the voluntary reporting of financial targets and constraints over the period 1974 to 1982 by thirty four companies listed on the Johannesburg Stock Exchange.

This is an event study, in which the event is defined as the first occasion on which a company reports the specified financial targets and constraints. To test for a positive impact on share prices, weekly excess returns are calculated using the market model. To test for an increase in the dispersion of share price changes, weekly variability ratios are calculated which provide a measure of returns in the event week relative to the average variability of returns in the estimation period. The controls applied in this study to demonstrate the link between the event and the share price impact are the market model, diversification of calendar dates and two control groups.

The results of the study reveal a positive impact on share prices when companies first report financial targets and constraints. This is consistent with all three hypotheses. As this form of voluntary reporting has not previously been tested in this way, the results should be of interest to financial managers and to those concerned with the regulation of financial reporting in South Africa.

I express my deep appreciation for the time, guidance and support given to me by the following three people. Professor John Affleck-Graves (Department of Finance, University of Notre Dame, Indiana), supervisor for the duration of this task, gave prompt, comprehensive feedback and continual encouragement through the difficulties of communicating by mail and fax. Dr Derek Botha (Department of Accounting, University of Cape Town), co-supervisor, who provided similar support. Professor Jerry Bowman, Department of Accounting and Finance, University of Auckland, who read and provided constructive criticism on many of the earlier drafts.

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AAR	Average of abnormal residuals
AARD	Average of paired differences between abnormal residuals
AMAR	Average of market adjusted returns
AMARD	Average of paired differences between market returns
APB	Accounting Practices Board (South Africa)
AVR	Average of variability ratios
AVRD	Average of paired differences between variability ratios
CAAR	Cumulative average of abnormal residuals
CAMAR	Cumulative average of market adjusted returns
CAARD	Cumulative average of paired differences between abnormal residuals
CAMARD	Cumulative average of differences between market adjusted returns
CRSP	Center for Security Prices at the University of Chicago
DAAR	Difference between averages of abnormal residuals
DAMAR	Difference between averages of market adjusted returns
FASB	Financial Accounting Standards Board (USA)
FIFO	First-in-first-out
JSE	Johannesburg Stock Exchange
LIFO	Last-in-first-out
SEC	Securities and Exchange Commission (USA)

Abstract

Acknowledgements

Abbreviations

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1.0 OBJECTIVE

The objective of this thesis is to examine the impact of voluntary reporting on share prices, with particular reference to the reporting of financial targets and constraints in South Africa. The results of the study should make a specific contribution to the existing knowledge of the impact of voluntary reporting on share prices.

The hypothesised information content of financial targets and constraints set by management is tested by examining the share price behaviour accompanying the voluntary reporting of financial targets and constraints over the period 1974 to 1982 by thirty four companies listed on the Johannesburg Stock Exchange (JSE).

This study focuses on three key variables. They are the target rate of return, the target debt ratio and the target dividend payout ratio. Any company reporting information relating to these three variables does so voluntarily as this disclosure is not mandatory either directly in terms of the Companies Act, 68 of 1973 (hereinafter referred to as "the Companies Act"), or in terms of Statements of Generally Accepted Accounting Practice issued by the Accounting Practices Board (APB).

The title of the thesis refers to "financial targets and constraints". The three variables are stated as targets and are properly described as such, but the related financial strategies are frequently formulated in such a way that the target debt ratio and/or the target dividend payout ratio is clearly regarded as a constraint on the company's actions. The word "constraints" is included in the title to accommodate this notion. However, there are frequent references in the text to "targets" alone. This is done in the interests of ease of expression and there is no intention to limit the scope.

2.0 MOTIVATION

The motivation for this study lies in its potential contribution to knowledge. As regards the specific subject matter, this study is not a replication of any previous study, although the research method is well used. The motivation should also be viewed in the broader context of voluntary reporting and of information content studies in general. As the financial targets under study fall within Stern's (1980, p7-8) recommendations,¹ it is appropriate to

¹In addition to being a consultant on financial policy and a visiting professor at several universities in the United States at the time, Professor Joel Stern had knowledge of local conditions through his role as consultant to a number of South African companies and as sometime Visiting Professor to the Graduate School of Business, University of Cape Town.

review his observations and recommendations briefly before considering the motivation further.

Stern (1980, p7) argues as follows:

The share price is the current value that the market as a whole places on a company's expected performance. Management frequently hold the opinion that the shares of the companies which they manage do not sell at a fair value. This is frequently because management possesses more information than do investors. Moreover, management often provides shareholders with low quality information. Share prices reflect all relevant publicly available information and investors pay a discount for uncertainty, never a premium. Ceteris paribus, less and lower quality information leads to lower share prices. Investors require information on the corporate objectives and financial policies that describe where the company is going and how it hopes to get there. This information is encapsulated in the six factors which are inputs to the free cash flow model. As management is in a position to provide this information, the managements of many companies have taken to providing additional information in their annual reports. The six factors identified by Stern (1980, p8) are:

- * Net operating profit after tax.
- * The amount of new investment.

- * The expected rate of return on investment.²
- * The length of time in years for which high-returning projects are expected to exceed the blended cost of capital.³
- * The expected dividend payout ratio.⁴
- * The target debt ratio.

Stern (1980, p8) maintains that research findings over the previous twenty years prove to his satisfaction that the six principal factors above account for 90% of a company's market value, and that other factors are primarily a function of these six. He also asserts that reporting information related to the factors listed above results in superior risk-adjusted performance and greater market value, but he provides no direct empirical evidence in support of this assertion.

To define the scope of the study, it was necessary first to identify those companies which voluntarily report

²"Target rate of return" is used in preference to "expected rate of return" as it is consistent with the notion of management's planned actions. The two terms have the same meaning in this context. It also achieves consistent terminology for the three variables under study. The target rate of return should, however, be distinguished from the minimum rate required by the shareholders, which is represented by the weighted average cost of capital (referred to by Stern (1980) as the "blended cost of capital").

³"Weighted average cost of capital" is the more usually used equivalent term for "blended cost of capital" (see also footnote 2).

⁴"Target dividend payout ratio" is used in preference to "expected dividend payout ratio" as it is consistent with the notion of management's planned actions. The two terms have the same meaning in this context. It also achieves consistent terminology for the three variables under study.

information relating to the six principal factors. It was also decided initially to include in the study an examination of statement of corporate objectives or philosophy which provide a backdrop to the factors listed by Stern (1980). The disclosure of capital commitments is mandatory,⁵ and the mandatory disclosure of details relating to net operating profit ensures that it can be readily approximated.⁶ Capital commitments and net operating profit were thus excluded from the study at this stage. A survey of the annual reports of non-mining South African companies revealed that⁷

- * only two companies reported any information on projected capital expenditure beyond that required by the Companies Act.⁸
- * none of the companies reported the time period over which high-returning projects were expected to exceed the cost of capital.
- * very few companies included statements of corporate objectives or philosophy in their annual reports.

⁵ In terms of Schedule 4 of the Companies Act, a company is required to disclose the amount of its capital commitments and to distinguish between those that have been contracted for and those authorised by its board of directors but not yet contracted for.

⁶ Net operating profit after tax is before finance costs, extraordinary items and non-cash bookkeeping entries but after taxation. The reporting of these items is currently required by the Companies Act and by Statements of Generally Accepted Accounting Practice issued by the APB, so that it is a relatively easy matter to approximate net operating profit.

⁷ The annual reports were surveyed in 1983 in the library of the Graduate School of Business, University of Cape Town. See also chapter 4, section 5.0.

⁸ See footnote 5 above.

As the disclosure of capital commitments is mandatory, and as the discretionary disclosure relating to projected capital expenditure extends to no more than two companies, this variable was excluded from the study. Of necessity, the time horizon for high-returning projects was also excluded. Where statements of corporate objectives were made, these were considered to be couched in such vague terms that they were unlikely to provide valuable inputs to investors' decision models. The study therefore focuses on the target rate of return, the target debt ratio and the target dividend payout ratio. Having identified those companies which include information on financial targets and constraints in their annual reports, it was decided to develop formal hypotheses as to why superior performance should be expected and to test these hypotheses.

The motivation for the study can now be expressed as follows:

First, as Stern's seminars, consultancy and lectures are well known in South Africa, and as there appears to be no direct empirical evidence supporting his recommendations, a study aimed at testing whether there is indeed a beneficial effect on the share prices of companies reporting the specified financial targets would be of considerable academic and practical interest.

Second, whether to report financial targets is itself potentially an important element of financial strategy. As management's decision on this is likely to be based on benefit/cost considerations, the potential impact on the share price of reporting these variables is a key issue. The results of this study should accordingly be of considerable interest to executives who are concerned with the formulation of financial and reporting strategy.

Third, the reporting of financial targets and constraints falls within the domain of voluntary reporting. Given the substantial volume of information which is currently reported voluntarily, the research work done on voluntary reporting is comparatively limited, although the level of interest in this research area appears to have grown considerably over the last five years. These studies include the full range of research methods; surveys, laboratory studies, interviews and market studies. The areas covered by these studies are discretionary disclosure in general, the voluntary release of forecasts, segmental reporting, replacement or current cost reporting, and social reporting.⁹ This thesis contributes a market study on an aspect not yet examined.

⁹Several analytical papers which build voluntary reporting (or discretionary disclosure) models are cited in chapter 3, as are a number of papers on the voluntary release of forecasts. Many of the studies on voluntary reporting in general are survey-based, a number of which are cited in chapter 2. Prodhon (1986) and Standish and Ung (1982) are examples of studies on segmental and replacement cost reporting respectively.

Fourth, although this thesis does not address the issues from the viewpoint of accounting regulators, the results should nevertheless be of interest to that audience. Where the regulation of accounting disclosure is concerned, the incentives to report voluntarily and the response of the market to voluntarily reported information should be useful inputs to their deliberations.

Finally, the relationship between (accounting) information and share prices is the subject of a large number of studies internationally.¹⁰ The first capital market study of this nature in South Africa was completed relatively recently, by Knight (1981). While considerable evidence relating to stock exchanges in other countries was available at that time, Knight (1981) suggests strong justification for similar work, including replications, to be carried out in South Africa. In particular, he argues that the institutional environment and local conditions in South Africa are not identical to those pertaining to studies done in other countries, and Knight and Affleck-Graves (1986, p79) make the point again several years later. Although the study by Knight (1981) has been followed by a number of information impact studies in South Africa,¹¹ the volume of

¹⁰ Not all of these studies are restricted to accounting information, although the majority are. The financial information in the current study is not strictly accounting information in the sense of being a direct output of the accounting process.

¹¹ Many of the studies done in South Africa are cited in this thesis, principally in chapter 2.

work is low relative to that in the USA, for example. It is submitted that the inventory of work done in this country is such that the addition of a further capital market study is a potential contribution to knowledge in the general area of information impact studies as well as in the specific sense mentioned above. Precisely because of the different institutional framework and conditions, this work may also be of interest to researchers working in other environments.¹²

3.0 ORGANISATION AND PRESENTATION

3.1 Organisation

Chapter 1 introduces and sets out the objective, motivation and organisation of the thesis. As the impact of reporting financial objectives and constraints on share prices must be evaluated in context, a framework for the study is provided in chapter 2. First, a purpose objective is suggested for the firm, followed by the considerations applicable to formulating financial strategies. As market efficiency has a bearing on the interpretation of share price behaviour, this is reviewed with particular reference to the JSE. Voluntary reporting is then placed in context. Finally,

¹² Dimson (1988, p13) notes the opportunities for international comparisons given the different institutional settings, differing tax systems and variations in the extent of information production and dissemination across countries (albeit in reference to research on stock market regularities).

available research methods are reviewed and the selection of a capital market research methodology is justified.

Formal hypotheses are developed in chapter 3, based on an examination of the theories relating to estimation risk, rational expectations and signalling. The research methodology is specified and its supporting rationale presented in chapter 4. The results are reported in chapter 5. The research conclusion and its implications are reviewed in chapter 6.

3.2 Presentation

To promote readability, each chapter is preceded by a contents page and succeeded by a list of references pertinent to that chapter. The bibliography appears at the end of the thesis. The Harvard system of referencing is used. In chapters 2 and 3, tables and figures appear in the body of the text. Owing to the size of the tables and figures in chapters 4 and 5, they are placed at the end of those chapters.

Abbreviations have also been used with readability and economy of presentation in mind. Before an abbreviation is used in this thesis, it is given in brackets after the term to which it relates. A list of abbreviations appears on page iv.

3.3 Terminology

Given the diversity of sources from which this thesis draws and the complexity of some of the issues, it is not surprising that a variety of terms are encountered which may refer to similar or even identical concepts or ideas. Researchers tend to develop their own sets of language or terminology to assist in their model building or analyses which need not coincide with those of others working in the same area. Some of these terms or words may imply subtle differences of meaning while others are merely alternatives.

An attempt has been made to standardise the terminology in this thesis; for example, "return interval" (see chapter 4) has been selected from several similar terms used to describe the time period between observations for return calculation. When drawing from a particular source, the original term is retained in deference to the author's choice; for example, "traders" (Verrecchia, 1983) is retained in chapter 3, section 4.3 in preference to standardising to "investors". Where considered necessary, footnotes refer to the usage.

There are other instances of variations in usage, such as the use of both "firm" and "company"; as used in this thesis, the former usually has a more abstract or conceptual connotation while the latter is used in referring, for example, specifically to the companies included in the

study. Similarly, "investor" is used in the more general sense while "shareholder" applies to the current owner of shares in a company. It is hoped that other instances of variations in language usage lend variety without detracting from clarity.

Finally, the masculine gender has been used throughout in the interests of economy of presentation and readability; there is no intention to imply exclusivity.

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1.0 INTRODUCTION

This chapter provides the framework for the thesis by outlining the background to and the issues driving the study. The financial targets and constraints under study are strategic variables. Consequently, the company's statement of financial targets and constraints should be a product of the strategy formulation process. These targets and constraints also derive from financial variables which lie at the heart of the financial management process; namely, the rate of return on resources invested and the way in which the firm is financed.

The firm's purpose objective (section 2.0) provides the focus for both strategy formulation and financial management. The two fundamental decisions in financial management are the investment decision and the financing decision.¹ With the development of corporate strategy as an orientation in the management literature, a strategic perspective on these financial management decisions has developed. These two financial management decisions and their potential contributions to the purpose objective are considered in section 3.0.

¹ In most standard corporate finance texts, these two fundamental decisions provide the framework for their coverage of the finance discipline. See for example, Brealey and Myers (1988) and Copeland and Weston (1988).

Investors require information to place a value on the shares of a company. The relationship between share prices and information is therefore central, and the degree of efficiency of the market as an information processor is relevant. After a consideration of market efficiency (section 4.0), the role of voluntary reporting is examined in context (section 5.0). In section 6.0, possible research methods are reviewed and the selection of a research methodology for this study is motivated.

2.0 THE PURPOSE OBJECTIVE

A firm's purpose objective is aptly described by Argenti (1975, p39) as the reason for its having been formed at the outset, or its "raison d'etre".² The firm would thus not exist without its purpose objective, which takes precedence over all other goals or objectives. One way of expressing the purpose objective would be "the maximisation of the present value of future cash flows to the firm". A firm's purpose objective emerges from a consensus of management, and so need not be stated in precisely the above terms. However, it would have to represent the firm's "raison d'etre" and be incapable of being superseded by any other

²Argenti's (1975) reasoning applies to all organisations, not only those that are profit-oriented. However, as this thesis is concerned with profit-oriented organisations, all references in this section are to the firm.

suggested purpose objective. A deficiency of the objective stated above is that it provides no yardstick against which performance can be compared. Argenti (1975) rectifies this by recommending that the purpose objective be supported by specific, quantified targets (for example, a target rate of return of 20% or a profit target of R5 million).

For a profit-oriented organisation, the above-stated purpose objective stands up to the test; no matter what the conditions, the objective must ultimately be concerned with the maximisation of the wealth of its shareholders. There are, however, other stakeholders in the firm; the management, employees, lenders, suppliers, customers, government and the public at large, to whom a responsibility is generally acknowledged.

Argenti (1975) suggests that the claims of stakeholders other than shareholders be recognised explicitly by drawing up an ethos statement. This is a written statement in which these stakeholders are clearly identified and specific objectives are formulated and stated for each category.³ One view is that these objectives are concurrent with the purpose objective. This is consistent with the concept of

³ While the ethos statement should be in written form to be effective, it need not be made public.

satisficing in which case appropriate wording would replace "maximisation" in the purpose objective. Another view is that the ethos statement is effectively a constraint on the strategies available to management for adoption in pursuit of the purpose objective. In terms of this latter view, "maximisation" is retained in the purpose objective, but the constraints imposed by the demands of the other stakeholders are clearly recognised in the ethos statement. This view maintains the pre-eminence of the purpose objective.

The purpose objective stated above may also be challenged on the grounds that it is people who have objectives, not organisations. In terms of this view, the dominant coalition will determine the agenda irrespective of the stated organisational purpose (see for example, Cyert and March, 1963). For instance, management may be more concerned with boosting its ego through size, prestige or growth objectives rather than through maximising shareholder wealth. There are limits to behaviour of this nature, imposed by efficient markets and contracting arrangements.⁴

In a questionnaire survey of senior executives in South African companies listed on the JSE, Bosch and du Plessis (1982) find strong support for the view that wealth

⁴ See for example, Watts and Zimmerman (1986). Aspects of this issue are considered in chapter 3, section 4.0.

maximisation is the primary goal of the firm.⁵ Responses included support for both maximisation subject to constraints and satisficing in dealing with multiple goals. It should be noted that while a questionnaire of this nature may reveal the views of the senior executives concerned, their expressed opinions need not coincide with the goals actually pursued.⁶ However, McConnell and Muscarella (1985) provide an example of an empirical study which supports the wealth maximisation objective. In a USA capital market study of announcements of capital expenditure plans, they conclude that their results are consistent with the market value maximisation hypothesis and inconsistent with the size maximisation hypothesis.

Having acknowledged the multiplicity of objectives and the need to think either in terms of maximisation subject to constraints or in terms of satisficing, most corporate finance texts continue to refer to management's primary objective as wealth maximisation, which finds expression in the share price.⁷ This arises out of the belief (or assumption) that the shareholders ultimately represent the

⁵ "Primary goal" is the equivalent of "purpose objective" in the context of this section.

⁶ A brief review of the use of questionnaire surveys as a research method appears in section 6.2 of this chapter.

⁷ This applies in most corporate finance texts. See, for example, Copeland and Weston (1988) who, after reviewing the literature on corporate objectives continue with the assumption that managers always make decisions that maximise the value of the firm.

dominant coalition. The preferred view in this study, which is consistent with the finance texts, is that the purpose objective is wealth maximisation subject to the constraints imposed by the ethos statement. However, the satisficing view does not compromise the arguments presented in this thesis. While recognising that the dominant coalition determines the objective, reference is made to "the firm's objective" or "the objective of the firm" in this thesis for ease of exposition.

3.0 FINANCIAL STRATEGIES⁸

3.1 Two fundamental decisions

The task of the financial manager is to formulate and combine financial strategies in such a way that the purpose objective is achieved. The decisions involved in formulating these strategies are the investment decision and the financing decision. The investment decision is concerned with maximising the present value of future cash flows to the firm. Having deployed the assets of the firm to achieve this, the financial manager is concerned with whether the value of the firm can be enhanced by the way in which the assets are financed. The two constituents of the

⁸The outline and general line of argument followed in this section draws on Brealey and Myers (1988), chapters 2, 16, 17 and 18.

financing decision are the dividend decision and the capital structure decision.

The potential impact on share price of investment and financing strategies is considered in sections 3.2 to 3.4 below. For ease of exposition, the dividend and capital structure decisions are considered separately in sections 3.3 and 3.4 respectively. Strictly informational or reporting aspects are largely deferred to chapter 3, where their influence is examined in the context of the framework developed in this chapter with a view to the development of formal hypotheses.

3.2 Investment decision

In pursuit of the purpose objective, the financial manager will invest so as to maximise the net present value of the investment, that is, he will continue to invest until the difference between the present values of the expected cash inflows and outflows is equal to zero.⁹, ¹⁰ In perfect markets, the net present value of assets is zero. The

⁹ An example of empirical results consistent with this behaviour is the positive share impact on the announcement of unexpected capital expenditure plans found by McConnell and Muscarella (1985).

¹⁰ Stated in terms of rates of return, the financial manager will invest up to the point at which the marginal return on the investment is equal to the rate of return on equivalent investments in the capital market.

extent to which available opportunities for investments with positive net present value potential may be exploited by the firm depends on the efficiency of markets for real assets, on the nature of its business and on the quality of its strategic management. Under examination in this thesis is whether the reporting of the target rate of return provides investors with additional information with which to evaluate the efficacy of the firm's investment activities.¹¹

3.3 Dividend decision

Assuming that the assets of the business have been deployed with the purpose objective in mind and that the firm is financed entirely by equity, the financial manager formulates dividend policy by deciding on the split of cash flows from earnings between their retention and the payment of cash dividends (with the payout ratio ranging from 100% earnings to 0% earnings). Any shortfall is funded by the issue of shares. His concern is to arrange this in such a way that the share price is maximised.

Modigliani and Miller (1961) argue that dividend policy is irrelevant in a perfect capital market. Any dividend

¹¹ It is acknowledged that the relatively small number of companies reporting the target rate of return and the nature of the data do not allow a link to be established between the target rate of return and an observed share price impact; such impact can be evaluated only by reference to all three targets. This is also referred to in chapter 6, section 5.0.

payment reduces the value of the firm and any attempt to restore the lost value requires the issue of shares equivalent in value to the dividend paid. The question is whether the irrelevance argument holds when taxes, transaction costs and other market imperfections are present. Brealey and Myers (1988) review the three possible positions on dividend policy (namely, high payout, low payout and irrelevance) in a well-functioning market.¹²

Some proponents of high dividend payout policies argue that dividends are safer than capital gains. However, dividends received by shareholders are distributions of the risky cash flows received by the firm. Thus it cannot be argued that cash flows to the shareholder are any safer than cash flows from realising shares in his portfolio. (Brealey and Myers, 1988, p367).

Transaction costs bias against a high payout policy as the payment of dividends and subsequent compensatory share issues are likely to attract higher transaction costs than those incurred by the shareholder in adjusting his portfolio.

¹² The term "well-functioning market" is used frequently by Brealey and Myers (1988), although they do not define it formally. It appears that new money can be raised and securities can be traded at fair prices in a well-functioning market although it is not a perfect market. Thus, although imperfections such as taxes and transaction costs are present, a well-functioning market does not suffer from extreme imperfections. While this does not appear to imply anything other than an efficient market (see section 4.0), the term is retained while referring to their work.

The effect of taxes on the dividend decision depends on the the legislation ruling at the time. Brealey and Myers (1988, p372) cite ten studies which examine shareholders' required rate of return under USA tax conditions during which time the capital gains tax rate was lower than the individual tax rate on dividends. They point out that the results of all these studies suggest that high-yielding stocks (shares) have lower prices and offer higher returns than do others, so providing support for the argument in favour of a low dividend payout policy.¹³

Following a change in the USA tax law which now equates the dividend tax rate and the capital gains tax rate, the advantage from this tax differential falls away and Brealey and Myers (1988) shift their support to a dividend policy based on the irrelevance position.¹⁴ This position does not deny that there are clienteles for both high and low dividend payout ratios, but it is argued that if the demand for these policies has been met, no financial manager will be able to improve the firm's market price by altering its dividend policy. This can be done only if there is

¹³ Brealey and Myers (1988, p372) do note that the results of these studies are not identical. They also recognise the difficulty of measuring dividend yield and of linking it to the higher return. The evidence is therefore not regarded as conclusive, but as strongly indicative.

¹⁴ At the time of writing, the change in tax law has been too recent for the results of empirical tests to reflect its impact. It remains to be seen whether shareholders in low-payout firms apply pressure for higher payouts.

unsatisfied demand for a particular policy. As the influence of market imperfections on dividend policy may vary from market to market, it is appropriate to consider the South African institutional and fiscal framework.

The South African context

For the purpose of considering the effect of South African tax legislation on the dividend question, investors can be categorised broadly as institutional, corporate and individual investors. The dividend income of corporate and institutional investors is exempt from tax. A maximum of 66.67% of an individual's dividend income is subject to tax according to a progressive tax rate system.¹⁵ There is no capital gains tax. However, if the Secretary for Inland Revenue regards the taxpayer as a dealer rather than an investor, share transactions may be taxed in the same way as ordinary revenue transactions.¹⁶

¹⁵ Initially, no tax is payable on an individual's dividend income as the allowance is 100% of dividends, but the percentage allowance decreases as taxable income increases, to reach a maximum of 66.67% of dividend income (that is, the allowance falls to 33.33%) at a relatively low taxable income bracket.

¹⁶ Taxpayers are required to report trading in shares and other assets in their annual tax returns. Based on an examination of these returns, the tax authorities may decide to classify the taxpayer as a dealer by reference to criteria such as the taxpayer's intention and the frequency of the transactions. Should a taxpayer be classified as a dealer, all revenues and expenses related to those transactions are taxed at the normal corporate or personal rate, as applicable.

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In the South African context, there is a clientele for a high dividend payout policy. This would include:

- * Individuals who do not wish to invest through intermediaries, who prefer a reasonably steady dividend flow without the need for portfolio adjustment and who are prepared to incur the accompanying transaction costs and tax charge in order to achieve this.
- * Corporate investors wishing to maintain sufficiently large holdings in other (associated) companies to allow them to exercise significant influence would prefer not to reduce their investments, their dividends would not attract tax and they would need only to meet the transaction costs attracted by a high dividend payout policy. Similar reasoning would apply to corporate investors which wish to maintain control and have exhausted other means of transferring funds from their subsidiaries.¹⁷
- * Institutional shareholders which are able to alter their holdings but may wish to maintain a mix between dividends (which are not subject to tax) and capital gains to achieve a steady inflow without disrupting the market. Another consideration is to avoid being classified as a dealer for tax purposes.

¹⁷ Of course, holding companies are able to determine the dividend policies of subsidiary companies and corporate investors in associate companies may have significant influence over the dividend policies of those companies.

* Foreign investors who may prefer dividends to capital gains owing to the foreign exchange regulations. Dividends are remitted to foreign investors at the standard exchange rate (the Commercial Rand) whereas capital is remitted at a discounted rate (the Financial Rand) which can have a substantial impact depending on the ruling discount.¹⁸

There is also a clientele for a low dividend payout policy. This policy minimises transaction costs and offers tax advantages to investors in high taxable income brackets.¹⁹ With few exceptions, individual investors are likely to earn relatively high taxable incomes, providing a potentially large clientele and consequently a high demand for companies offering low dividend payout policies.

Conclusion

Brealey and Myers (1988, p376) conclude that the available theories and evidence on dividend policy do not allow firm conclusions to be drawn. The clientele effect suggests

¹⁸ This suggestion is made by Uliana, Correia, Wormald and Flynn (1987, p489).

¹⁹ Logically, the imposition of taxes and transaction costs would appear to support a zero payout dividend policy by South African companies, but they do not ordinarily appear to follow this practice.

that a financial manager cannot enhance the share price by altering the firm's dividend policy unless there is unsatisfied demand for the new policy. This is supported in South Africa by Botha, Bosch and van Zyl (1987) who find that dividend policy (as indicated by the dividend payout ratio) has no effect on changes in shareholder wealth.²⁰ Sealy and Knight (1987) identify a market-wide negative dividend preference on the JSE and they suggest the existence of unsatisfied investor clienteles, particularly in view of the shortage of scrip and the observed tendency to pay out a relatively high proportion of earnings as dividends.²¹ This is puzzling, given the strong incentives for a low dividend payout policy in South Africa. Although the clientele effect explains the existence of a range of payout policies, the specific payout ratios selected by listed companies are not explained. The effect of dividend policy per se on share price thus remains a puzzle. The informational effects of the policy and/or reporting the target dividend payout ratio are examined in chapter 3.

²⁰ This finding is based on a regression analysis using fifteen years' data relating to 33 firms listed on the JSE.

²¹ The data apply to the eight years spanning 1973 to 1980. It should be noted that the level of significance of the positive association between dividend yield and security returns is not uniformly very high (Sealy and Knight, 1987).

3.4 Capital structure decision

The financial manager attempts to find a particular combination of debt and equity that maximises the overall market value of the firm. According to Modigliani and Miller (1958), in a perfect market, a firm's market value is independent of its capital structure. Thus the financial manager cannot enhance the value of the firm by borrowing. Provided that investors are able to borrow or lend on their own account at the same risk-free rate as the firm, a levered (or geared) firm offers no advantage to investors. They would thus have no reason to invest in a levered rather than an unlevered firm or to pay a premium to do so. Under these conditions, an investor whose portfolio comprises only firms which are fully financed by equity can convert it into a levered portfolio by borrowing an appropriate portion of debt. The mix is determined by the investor's risk preference.

If companies have limited liability, corporate debt is not risk-free. The proposition still holds, as individuals could conceivably achieve limited liability by arrangement with the lender, that is, without buying shares in a levered firm. The absence of these arrangements as a common phenomenon suggests that it is simpler to invest in the shares of a levered company. While investors do buy shares in levered companies, they would not pay a premium for them

unless they were in short supply. However, these shares are widely available. The conclusion remains that if a company levers, its shareholders are no better off than they were before, as they could have levered their portfolios for themselves. The first Modigliani and Miller (1958) proposition is violated when the firm can imaginatively design its capital structure in such a way that it is able to offer some financial service that meets the needs of such a clientele.

The second Modigliani and Miller (1958) proposition is that the expected rate of return on the common stock (ordinary shares) of a levered firm increases in proportion to the debt-equity ratio (as expressed in market values). The rate of this increase depends on the spread between the expected rate of return on a portfolio of all the firm's securities and the expected return on debt. Any increase in expected return is exactly offset by an increase in risk and therefore in investors' required rate of return. Investors require higher returns on levered equity for this reason; the required rate of return simply rises to match the increased risk.

According to the traditional argument on debt policy, by minimising the weighted average cost of capital, the financial manager is able to maximise the value of the

firm.²² As the weighted average cost of capital calculation ignores the increase in the required rate of return which is demanded by equity holders as the debt-equity ratio increases, this argument suggests that value can be created simply by borrowing. To create value by borrowing, financial managers would have to find not only a clientele, but an unsatisfied clientele. This cannot be done simply by levering the firm as there are currently plenty of shares available in levered firms.

Following the above line of reasoning, the conclusion is that capital structure does not matter in a well-functioning capital market. Consequently, financial managers would not concern themselves with it and debt ratios would vary randomly from firm to firm and from industry to industry. Yet financial managers are concerned about debt policy and differences in debt ratios are not random. If the traditional argument is rejected, there must be some other explanation for what is observed a world of taxes and other market imperfections.

The table below is based on the capital structure check-list developed by Brealey and Myers (1988, p434-435) with reference to taxes, risk, asset type and financial slack.

²²Zakon (1971), Fruhan (1979) and Bierman (1980) provide reasonably prominent examples of recommended financial strategies which are apparently based on the traditional argument.

TABLE 2.1 LEVERAGE IN FOUR DIMENSIONS

DIMENSION	LEVEL	
Ability to take advantage of interest tax shield	Low	High
Business risk	High	Low
Ratio of tangible assets to total assets	High	Low
Need for financial slack	High	Low
The financial manager is likely to seek the following leverage levels in response to the levels stipulated for each of the above dimensions:		
DEBT-EQUITY RATIO	LOW	HIGH

Table 2.1 shows the four dimensions of the capital structure decision (that is, deciding on the target debt-equity ratio) and their expected influence on the leverage levels (as expressed by the debt-equity ratio) sought by the financial manager. For example, the financial manager of a firm with a relatively high need for financial slack would be inclined to keep the debt-equity ratio relatively low. The levels shown above are the extreme ends of the spectrum; there is a range of intermediate levels for each of the four dimensions and an infinite number of permutations. Given the complex interaction of these variables, the table can provide only an indication of the influence of the four dimensions on the debt-equity decision; it is not an instant guide to the

optimal debt level.²³ There is thus no straightforward way of testing whether a firm's capital structure is optimal.

One pointer to a company's optimal capital structure is the average capital structure for the applicable industry. On the assumption that the industry capital structure is the optimal structure, any movement towards that structure would presumably have a favourable effect on the share price, while a movement away from it would have an adverse effect.²⁴ It should be noted, however, that where the number of firms in an industry is relatively small, the average capital structure for an industry sector is unlikely to give a good indication of the optimal structure.²⁵

There are other facets to the debt option, such as the balance between short-term and long-term debt and the mix of varying financial instruments of varying degrees of sophistication. These capital structure refinements are of interest in this study, but they are not considered further as they do not raise issues which are fundamentally different from those examined in this section.

²³ "Optimal" is used here to indicate the best way of responding to the four dimensions portrayed in table 2.1.

²⁴ Given rational expectations, the interaction is more complex than this (see chapter 3, section 3.0).

²⁵ Of the nineteen JSE industrial sectors, only four sectors include more than twenty companies and there are fewer than five companies in five of the sectors (see table 4.4).

Conclusion

Similar to the conclusion on dividend policy, it appears that the financial manager cannot improve the firm's share price simply by leveraging the firm; it is necessary to meet an unsatisfied clientele. Informational issues relating to the three financial strategies examined in this section are considered and investors' responses to the reporting of the related financial targets and constraints are hypothesised in chapter 3.

4.0 MARKET EFFICIENCY

For any capital market study, assumptions regarding the degree of efficiency of the market on which the securities are listed have an important bearing on the interpretation of the results. Section 4.1 comprises a brief explanation of the concept of market efficiency and its implications. While the evidence produced by studies conducted on stock exchanges elsewhere in the world may be indicative for the JSE, it is unlikely to be directly transferable to the JSE.²⁶ Research relating to the JSE is therefore reviewed briefly in section 4.2.

²⁶ As has been noted (chapter 1, section 2.0), the institutional framework and other characteristics unique to South Africa may give rise to different findings for the JSE.

4.1 The concept and its implications

An efficient market is one in which prices always fully reflect available information. Three forms of market efficiency (the weak, semistrong and strong forms) have been identified (Fama, 1970). For each of these forms, efficiency is judged according to a specified information set. The levels of efficiency and the associated information set at each of these levels are shown in table 2.2 below.

TABLE 2.2 FORMS OF MARKET EFFICIENCY

Form	Information set
Weak	All historical share prices
Semistrong	All publicly available information
Strong	All available information

Foster (1986, p300-301) provides a more operational definition of informational efficiency and mentions two of its key implications. In terms of this definition, a capital market is efficient with respect to an information item if the prices of capital market securities fully impound the return implications of that item. One implication is that an investor cannot use a specific information item placed in the public domain to earn nonzero returns consistently. Another implication is that when a new information item is added to the information set used by the market, its revaluation implications for returns are

instantaneously and unbiasedly impounded into the current market price.

Fama (1970, p416) concludes that the evidence in support of the efficient markets model is extensive, and that contradictory evidence is sparse. This conclusion is based on a comprehensive review of the work carried out to test the efficiency of stock markets in these three forms up to that time. Foster (1986, p396) points out that Fama's (1970) conclusion no longer holds as the results of a considerable body of subsequent studies are inconsistent with the efficient markets model. While acknowledging the evidence of anomalies, Foster (1986, p399) confirms the continuing importance of this model, for two reasons. First, alternatives to it are not sufficiently well articulated. Second, there are several possible explanations for the anomalous evidence which do not rely on market inefficiency.

A representative collection of studies on stock market anomalies and related surveys and commentaries is contained in two books; one edited by Dimson (1988) and the other by Guimarães, Kingsman and Taylor (1988). The range of anomalies represented include:

- * Price/earnings effect. A negative relation between price earnings ratios and abnormal returns. It appears that the price earnings ratio or an underlying

and more fundamental variable for which the price earnings ratio is proxy is capable of explaining a considerable portion of the variation in cross-sectional security returns.

- * January effect. Higher returns are earned in January than in any other month.
- * Weekend effect. Average share returns tend to be higher on Fridays and negative on Mondays. It is not clear whether this effect owes its origin to the weekend nontrading period or to active Monday trading, but it has been observed on stock exchanges in the USA and elsewhere.
- * Size effect. An inverse relation between the returns on ordinary shares and market capitalisation; ceteris paribus, the smaller the size of the firm, the larger the share's expected return. The size effect has also been shown to be more pronounced in January and on Fridays.

After reviewing evidence of the weekend effect, Levi (1988, p50) observes that before the apparent regularities can be considered a challenge to market efficiency, more consistency in the evidence is required than is currently shown, whereafter rational explanations should be sought for this phenomenon (for examples, the size of settlement lags, shares going ex-dividend and the inactivity of capital over

weekends). Only in the absence of these rational explanations should market efficiency be placed in doubt.

Based on his review of anomalies, Keim (1988, p35) advocates caution when interpreting the magnitudes of the anomalies reported as inadequate adjustments for relevant costs and risks may be overstating the effect of these anomalies.

Ikenberry and Lakonishok (1988, p108) conclude that, notwithstanding the strength of the evidence of seasonal anomalies, it does not completely nullify the theorems of market efficiency.

Ball's (1988, p52) conclusion on market efficiency in the light of evidence of anomalies is that it shows where it would most be expected, that is, where research methodologies are most sensitive to limitations of the existing knowledge of asset pricing. He expects that many, though not all, of these anomalies will be resolved in favour of efficiency. These views support Foster's (1986, p399) confirmation of the continuing relevance of the efficient markets model which is cited above.

4.2 South African evidence

The evidence relating to market efficiency, principally on the New York Stock Exchange, stimulated a debate in South Africa regarding the efficiency of the JSE. The following

is a brief review of results derived from tests for market efficiency using JSE data.

Efficiency in the weak form

Affleck-Graves and Money (1975) conclude that the results of their serial correlation tests are consistent with weak-form efficiency for 80% of the market. The extent of the dependence they do find is too small to earn abnormal returns through the analysis of past price patterns.

Hadassin (1976) claims that his serial correlation test results are not consistent with the random walk hypothesis and that his runs test results strongly support the nonrandom behaviour of share price changes. His conclusion is that the JSE is not an efficient market. However, while he suggests that chartists and superior fundamental analysts should be able to make greater returns than those on the market, he is unable to make a firm statement on this issue. It is therefore possible that the degree of dependence is insufficient to allow superior returns.

While Gilbertson and Roux (1977) find dependence in their serial correlation and runs test results, they conclude that it is insufficient to reject weak-form efficiency. They also test trading rules against a buy and hold strategy, as

does Bennet (1978). In both cases, the results are offered in support of market efficiency. Based on the results of runs tests of ten highly traded and ten thinly traded shares, Strebel (1977) challenges any suggestion that the market is efficient. It should be noted that Strebel's tests are based on a small number of shares.

Taking the evidence derived from these JSE studies as a whole, it is concluded that the JSE is efficient in the weak form.²⁷

Efficiency in the semistrong form

Knight and Affleck-Graves (1983) conclude that while the results indicate inefficiency of the JSE, they also imply that efficiency is improving. This is based on a study of companies changing to LIFO²⁸. A change to LIFO has a negative impact on earnings, but a positive impact on cash

²⁷ This conclusion is in agreement with that reached by Knight (1981, p63), who examined some of the contentious technical issues relating to the tests themselves. This depth of analysis has not been repeated here as the detail is not central to the thesis. Knight (1981) also cites additional unpublished studies which were not available for this study, but those results do not appear to offer further clarification of the issues involved.

²⁸ LIFO is the acronym for last-in-first-out, an inventory accounting method whereby the cost of goods consumed is evaluated at the most recent prices and the inventory on hand is evaluated at the oldest acquisition prices.

flow owing to tax savings.²⁹ The expected response to the positive cash flow impact in an efficient market is positive abnormal returns.

The results show negative abnormal returns in response to the negative impact on earnings. Further, whereas the response would be expected to be impounded immediately in an efficient market, the negative response is impounded only over a period of several weeks. The authors do note, however, that the information content of announcements by the later changers to LIFO is impounded more quickly, and the negative effect is less pronounced, than is the information content of announcements by the earlier changers. They suggest a "learning effect" on the part of the market, which implies that the efficiency of the market is improving.

In a later LIFO study, Knight, Affleck-Graves and Hamman (1985) introduce a further control group for comparison with the Knight and Affleck-Graves (1983) change group, in an attempt to separate the earnings and the cash flow effects.

²⁹ Provided prices are rising, the application of this method has a negative effect on reported earnings relative to any method which evaluates usage at older prices, in particular, first-in-first-out (FIFO). At the time of the study, LIFO was permissible as a basis of inventory valuation for tax reporting purposes provided that it was also used for financial reporting. The adoption of LIFO consequently affected reported earnings negatively, but at the same time it effected tax savings, with a positive impact on cash flow. The tax legislation has subsequently been changed so that LIFO is no longer recognised for tax purposes.

This group comprises holding companies which are able both to claim the cash flow benefits when their subsidiaries change to LIFO and to continue to report consolidated results based on FIFO.

In contrast to the pronounced downward drift in the results of the original change group, the control group shows very little reaction to the announced change in policy. Having separated the cash flow and the earnings effects, it appears that the market is responding to the negative earnings impact. The authors offer three possible explanations:

- * The market is inefficient. Given the cash flow benefit, it nevertheless responds in the direction of the opposite earnings result which has no cash flow consequences.
- * The market is efficient, but the downward reaction is caused by some other factor owing to self-selection bias.
- * The market is efficient, but accounting changes provide information to the market on management's expectations which had hitherto not been available. In the case of the LIFO change, this would require that a motive other than cash saving be ascribed to management with a negative effect greater than the cash saving achieved.

Knight et al. (1985) are unwilling to conclude unilaterally that the JSE is inefficient in the semistrong form. They

regard inefficiency as only one of the three possible explanations above, and they suggest that further research on the long-term effects of LIFO is required to resolve the questions raised by the results. In a later paper on this issue, Knight and Affleck-Graves (1988) firmly reject inefficiency of the market as a possible explanation in a world of rational expectations. They prefer to attribute the negative response to an as yet unexplained signalling effect implicit in the accounting change (see the third possible explanation above).³⁰

Knight and Affleck-Graves (1985) report fairly rapid market response to the earnings information provided by preliminary reports. This is consistent with the JSE being an efficient market in the semistrong form.

Ooms, Archer and Smit (1987) conclude that the results of their study on the information content of dividends do not invalidate the efficient market hypothesis as traders on dividend information are not able to generate significant returns which are consistently different from market returns.

³⁰ Rational expectations and signalling are considered in chapter 3.

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In a study on takeover announcements and insider trading, Bhana (1987) finds that most of the market reaction (87.2% of the positive cumulative average abnormal residuals) occurs prior to (53.6%) and on (33.6%) the announcement date. Bhana (1987, p207) concludes semistrong inefficiency of the JSE on the grounds that the market reaction (the remaining 15.8% of the total) to the public announcement of a planned takeover continues for a period of five trading days after the announcement.

In evaluating Bhana's (1987) results, their sensitivity to the accurate specification of the event date should be noted (see Brown and Warner, 1980 and 1985). The fifteen days' pre-announcement (largely significant) abnormal returns suggest that leakages place the information in the public domain some considerable time before the public announcement. It could thus be argued that most of the reaction to this publicly available information occurred rapidly. The observation of abnormal returns from insider trading indicates inefficiency in the strong form and does not reflect on semistrong efficiency.

Bhana (1989, p127) finds evidence of short-term overreaction to unfavourable company-specific news. He suggests market inefficiency in this regard which may enable astute investors to outperform the market.

While inefficiency may be suggested on the grounds of the results of the South African LIFO studies reported in this section, the results are by no means conclusive and the issue requires further research. The interpretation of the LIFO results is problematic, as has been found in USA studies.³¹ The evidence against semistrong efficiency presented by Bhana (1987 and 1989) does not appear to be conclusive. The results in the Knight and Affleck-Graves (1985) and Ooms et al. (1987) studies are consistent with semistrong efficiency. Taken as a whole, the studies reviewed in this section are fairly consistent with efficiency in the semistrong form.

Efficiency in the strong form

Tests of efficiency in the strong form generally involve the performance of portfolios under professional management, such as the mutual funds. On the assumption that these managers have access to inside information, a result which shows that the fund does not perform better than the market is consistent with efficiency in the strong form, and vice versa. If the assumption of access to inside information

³¹ It should be noted that contradictory LIFO results are the research experience in the United States. Knight, Affleck-Graves and Hamman (1985, p45) cite Sunder (1973) and Murray (1983) who find positive reactions while Abdel-Khalik and McKeown (1978) and Ricks (1982) find negative reactions.

is incorrect, superior performance indicates inefficiency in the semistrong form and inferior performance indicates only consistency with the semistrong form.

Du Plessis (1974) conducted a study of this nature but as the mutual fund movement was in its infancy at the time, the study comprises only two funds. Gilbertson and Roux (1977) find that mutual funds' performance was not superior to that of the market. Strebel (1977) again questions the validity of the research method, based primarily on statistical issues relating to thinly traded shares.

Owing to the questions on research method, the ambiguity of the results (that is, access to inside information must be assumed before efficiency in the strong form can be concluded) and the paucity of research, no conclusion can be stated regarding efficiency of the JSE in the strong form.

Conclusion

The results of the research conducted on the JSE are fairly consistent with a market which is efficient in the semistrong form. While it may be argued that the evidence is not sufficiently strong to conclude that the JSE has been proved an efficient market in the semistrong form, consistency with semistrong efficiency is sufficient to

provide a basis for the evaluation of the empirical results in this study.³²

5.0 VOLUNTARY REPORTING

5.1 Voluntary reporting in context

To arrive at a share valuation or to construct a portfolio, an investor requires information on the key variables relating to the share(s) concerned. New information affects that valuation, and through the actions of investors in aggregate (the market), it affects the share price. The impact of information release may similarly be economy-wide, industry-wide or firm-specific. The timing and extent of the impact depends on the share market's degree of efficiency. Information sources range from the general (newspapers, radio, television, financial journals) to the

³² Citing Knight and Affleck-Graves (1983 and 1985) and Strebel (1977 and 1978), Seneque (1987, p35) concludes that the degree of informational efficiency on the Johannesburg Stock Exchange is at best very weak and that as the capital asset pricing model requires a high degree of informational efficiency, tests undertaken using JSE data must be highly suspect. The problematic interpretation of the LIFO study (Knight and Affleck-Graves, 1983) and the small sample size used by Strebel (1977) have been noted above. According to evidence reviewed in this section, prices appear to react fairly quickly (although not instantaneously) to information. While the qualified nature of the evidence suggests less than perfect informational efficiency, it is not clear that this is sufficient to conclude "very weak" informational efficiency. Whether this less than perfect efficiency is explained by genuine inefficiency, the way in which the market is structured (being a broker only market, no one is compelled to trade as in a specialist or dealer market), thin trading or model misspecification is difficult to determine. Notwithstanding the imperfections, the market model methodology used in this study remains appropriate as it removes common market factors from the return series. Indeed, it is hoped that this study will contribute to the literature on the efficiency of the JSE.

specific (trade or industry sources, the firm itself). The fewer the competing sources of information and/or the more firm-specific the information (for example, a firm's financial targets and constraints), the greater the demand for financial information from the firm.

It is now well established that the objective of financial reporting is to provide information useful for making economic decisions.³³ Financial information is demanded by the stakeholders in the firm; namely the investors, employees, customers, lenders and suppliers, government agencies and others. This thesis focuses on investors' information needs for buy, hold and sell decisions, with specific reference to the specified financial targets. In this context, a release or a report has information content if it is shown to have an impact on the firm's share price.³⁴ Foster (1986, p2) portrays investors in three roles; those employing fundamental analysis, those employing technical analysis (both groups in search of mispriced

³³ This is essentially the way in which the objective is stated by the Study Group on the objectives of financial statements (American Institute of Certified Public Accountants, 1973). A similarly worded objective appears in the FASB Conceptual Framework Series. Research efforts in other countries (for example, The Australian Accounting Research Foundation, The Institute of Chartered Accountants in England and Wales) also produced user-oriented objectives. While this objective may appear obvious, its significance lies in the unequivocal adoption of the usefulness criterion in financial reporting by professional bodies in several countries.

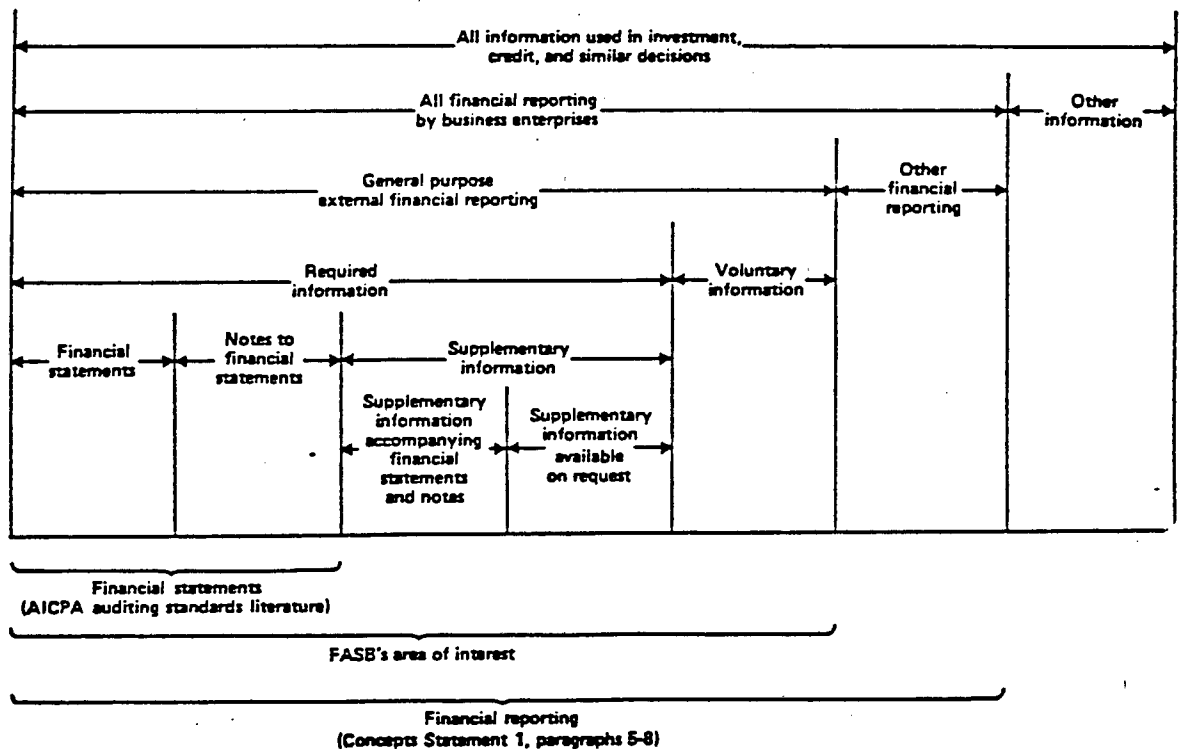
³⁴ This could also be used as the criterion for establishing whether information is useful. In this study, usefulness is encapsulated in information content; the adjective "useful" in "useful information" is considered redundant given the criterion for information content.

securities) and portfolio investors who accept that there are no mispriced securities but seek the best fit between their risk profiles and those of available investments. While the technical analyst has no need of financial statement information, investors in the other two roles do.

Because the public interest is affected by financial reporting, reporting requirements have been laid down in most Western countries under the authority of statute and/or the promulgations of professional bodies.³⁵ Information provided voluntarily by the firm thus forms only part of the wide range of information available from various sources. Voluntary reporting is placed in context in the representation below (figure 2.1). Management's motivation to report voluntarily is considered in the next section and is developed further in chapter 3, section 4.0.

³⁵ The ability of these professional bodies to ensure compliance, varies from country to country, dependent to a large degree on the linkage between statute and professional pronouncement. In South Africa, there is considerable regulation by the Companies Act, which is closely linked with Statements of Generally Accepted Accounting Practice issued by the APB.

FIGURE 2.1 THE INFORMATION SPECTRUM (FASB, 1980)



5.2 Motivation for voluntary reporting

The provision of information to investors for their decision-making patently benefits them while it also facilitates the functioning of the capital market concerned. However, this provides no direct incentive to a firm's management to report voluntarily. Management is unlikely to report information voluntarily unless the estimated benefits to be derived from the voluntary reporting are expected to exceed the costs of producing it.

The potential benefit lies in the positive impact on the share price which is expected to occur on the voluntary provision of this information. Choi (1973) suggests a conceptual framework relating disclosure improvement to cost of capital which he claims supports the existence of a direct relationship between firm value and corporate disclosure. The voluntary reporting is said to reduce the uncertainty surrounding users' estimates of key variables.³⁶

Many companies have established investor relations departments in recognition of the need to keep investors properly informed (see, for example, Chugh, 1984). The annual report and the communication of financial strategies usually fall within the brief of investor relations. Significantly, the mission of these departments is frequently expressed in terms of their potential impact on share price.

The attendant costs, both direct and indirect, must also be considered. Foster (1986, p35) lists these costs as collection and processing costs, litigation costs, political costs, competitive disadvantage costs and constraints on managerial behaviour. While the direct costs may be considerable in some instances, they need not be in others.

³⁶ This issue is pursued further in chapter 3 with specific reference to financial targets and constraints.

For instance, a company wishing to report replacement costs may incur considerable expense in obtaining the necessary estimates. On the other hand, assuming that a company is undertaking some form of strategic planning, management should already have established target ratios for the dividend payout, the debt ratio and the rate of return, so that little, if any, direct cost is incurred in reporting financial targets.

Many companies tend to restrict disclosure to the statutory minimum.³⁷ These companies frequently cite competitive disadvantage costs to support this policy. Some managements also see a benefit in nondisclosure in terms of reducing shareholders' ability to exercise control. While competitive disadvantage costs may be a justification for the limitation of disclosure, reliance on this as an excuse to limit disclosure is well recognised.³⁸ Stern (1980) draws a careful distinction between a company's proprietary information which competitors may use to their advantage and that information which would benefit investors without benefiting competitors. Foster (1986, p38) points out that arguments against disclosure based on competitive

³⁷ Remgro (Rembrandt Group Ltd) is a well-known South African example of companies that still embrace this philosophy.

³⁸ For example, Anderson (1961, p6) draws attention to this and points out that competitors have many sources of information other than the reporting company's annual report.

CHAPTER TWO: FRAMEWORK FOR THE STUDY

disadvantage would be difficult to sustain in many instances, given the "rich network of information sources" that firms typically have relating to their competitors in the industry. He (1986, p39) does suggest that the nondisclosure of information such as that relating to planned research and development, new products and advertising budgets could well be supported using the competitive disadvantage argument. In Verrechia's (1983) model, the decision to disclose is considerably affected by the disclosure threshold constituted by disclosure-related costs. This model is considered in the section on signalling since Verrechia presents it in that context (see chapter 3, section 4.3).

Citing studies of funds statements, management earnings forecasts and line-of-business disclosures, Foster (1986, p44) observes that firm size appears to be the variable most consistently reported as significant in explaining differences in their reporting policies. While he points out that it is not clear what the firm size variable represents, he suggests that firm size could proxy for attempts by larger firms to reduce political costs, for larger firms having lower competitive disadvantage costs associated with their disclosures or for larger firms having lower information production costs.

THE STUDY

South Africa

The Companies Act requires that statements of every company fairly state the financial position of the company in accordance with the generally accepted accounting practice.

The Fourth Schedule to the Act requires that the generally accepted accounting practice must be disclosed in order to determine the financial position of the company.

Although the force of the "generally accepted accounting practice" has not been defined, it is widely accepted that the practice is that of the Statements of Generally Accepted Accounting Practice issued by the APB. Voluntary disclosure is required in South Africa as that country has adopted neither directly by the Companies Act nor indirectly by one or more of the provisions of the Act.

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the subject of a number of studies. Firth and Meth (1985) surveyed the generally accepted accounting practice in South Africa and prepared a list of 49 items.

³⁹ Examples of these studies, which collectively cover Europe, the United States, the United Kingdom, Australia, New Zealand and South Africa are those reported by: Benjamin and Stanga (1977), Buzby (1974), Chandra (1974), Chandra and Greenball (1977), Choi (1973b), Firer (1985) and Firer and Meth (1985), Firth (1978, 1979a, 1979b, 1980), Gourley and Seneque (1984a and 1984b), McNally, Hock and Hasseldene (1982), Singh and Desai (1971).

the disclosure of which is discretionary, by reference to previous studies and to voluntary disclosure in South African annual reports available at the time. Members of the Investment Analysts Society in South Africa (as surrogates for investors) were asked to rank these items according to their perceived importance on a scale of 1 to 5, ranging from the least to the most important. This provides a disclosure index against which the information disclosed by companies can be rated.⁴⁰

The first fifteen items on the disclosure index (that is, the fifteen most highly ranked amongst the 49 discretionary items selected) are listed in table 2.3 below.

⁴⁰ Firer (1985) compares his results with those derived by Firth (1978, 1979a, 1979b, 1980) in studies conducted in the United Kingdom and establishes that there is little correlation between them, for which several possible explanations are advanced. The lack of correlation between these studies is not an issue in this thesis.

TABLE 2.3 VOLUNTARY DISCLOSURE (FIRER, 1985): TOP 15 ITEMS

<u>I</u>	<u>A</u>	<u>ITEM</u>
1	2	Discussion of the firm's results for the past year with reasons for changes
2	4	Discussion of the major factors which will influence next year's results
3	18	Statement of future dividends/dividend policies
4	21	Forecast of next year's profit or earnings per share
5	14	Capital expenditure - narrative and quantitative data on expenditure in past year and planned expenditure
5	46	Statement of transactions in foreign currency
7	10	Information on mergers and acquisitions
8	9	Statement of the firm's objectives
8	36	Share of market in major product/service areas
8	1	Description of major products/services
11	40	Statement of rate of return required by the firm on its projects ⁴¹
12	20	Breakdown of earnings by major product lines, customer classes and geographic locations
13	35	Extent of dependence on major customers
14	46	Cash projections one to five years
15	6	Information on major industry trends

* I = Disclosure index ranking; A = Actual disclosure ranking

Of the three financial targets under study in this thesis, the disclosure of dividend policies is ranked third, the required rate of return is ranked eleventh and the target debt ratio does not appear in the list of 49 items. Capital expenditure information and the statement of the firm's objectives,⁴² both of which were initially to be included in the current study, are ranked fifth and eighth

⁴¹ As the reference is to "required rate of return" on projects, this is possibly a reference to the weighted average cost of capital rather than to the target rate of return (see chapter 1, section 2.0) for the difference between these terms. If this is so, its inclusion and ranking is nevertheless indicative of the demand for and supply of information in that category.

⁴² The capital expenditure details envisaged here are assumed to be over and above those required in terms of the Companies Act to which reference was made in chapter 1, section 2.0.

respectively.⁴³ All of these four items are thus ranked in the top eleven items, which represent the top 23% of the disclosure index. Consistent with the general lack of correlation between desired and actual disclosure (see below), the actual disclosure of dividend policy and capital expenditure data is low relative to the index while that of the required rate of return is very low relative to the index. The disclosure index ranking of corporate objectives and its actual disclosure ranking are almost equal.⁴⁴

Firer (1985, p22) reports little positive correlation between the desired and actual disclosure of individual items, which is consistent with the findings of Buzby (1974), Firth (1979a) and McNally (1982). These results are also consistent with Firth's (1978) finding that preparer groups (auditors and finance directors) and user groups (financial analysts and bank loan officers) have different perceptions regarding disclosure priorities. These results emphasise the gap between what analysts are requesting and what preparers will provide. The gap may be explained by disclosure-related costs (see section 5.2 above

⁴³The reasons for selecting the target rate of return, target dividend payout ratio and target debt ratio for inclusion in this study are given in chapter 1, section 2.0.

⁴⁴The meaningfulness of the statements of corporate objectives may, however, be questionable. The decision to exclude this aspect from the current study is reported in chapter 1, section 2.0.

and Firer, 1985, p23). A further possible explanation is ignorance of or indifference to users' needs (Firer, 1985, p23).

Firer (1985, p32) concludes that the overall level of disclosure revealed by his study is low, with only marginal improvement over the period 1979-1983. The improvement noted tended to be in the items which were already widely reported. These results do not reflect the improved reporting which has apparently been encouraged by two financial reporting competitions which have steadily raised their standards over the years.⁴⁵ It is possible that the major improvements are restricted to those few companies seeking to report meaningfully.⁴⁶

5.4 Conclusion

Information which is important for share valuation or portfolio construction and which is not readily available from other sources is likely to be in high demand from

⁴⁵ One of these has been run for more than twenty years by the Financial Mail, a leading financial journal in South Africa, in association with the Bureau of Financial Analysis at the University of Pretoria. A more recent competition is jointly sponsored by the the South African Institute of Chartered Accountants and the Business Times. The grading systems for both competitions include a wide range of items which may be reported voluntarily.

⁴⁶ It is interesting that, of the twenty one outstanding corporate communicators listed by Stern (1980, p7), ten are South African companies. These are companies that include the kind of information noted in chapter 1, section 2.0.

firms; in particular, the more firm-specific the information, the investors will demand it from firms. Management's decision to report voluntarily is based on the benefit/cost criterion. The potential benefit lies in the positive impact on the share price which is expected to occur on the voluntary provision of this information. The attendant costs comprise both direct and indirect disclosure-related costs. These costs may differ according to the item and the industry in which the firm operates. The role of disclosure-related costs are considered further in chapter 3, section 4.3.

While the Firer and Meth (1985) survey ranks relatively highly information relating to two of the financial targets under study in this thesis, there are some highly ranked items which either do not appear to be as pertinent to the share price or of which at least some indication could be obtained from other sources. The target debt ratio does not feature at all. The ranking of the actual disclosure of these items is very low relative to the disclosure index ranking. The survey method suffers from several disadvantages which may explain some of these inconsistencies. In the next section, four possible research methods are reviewed, including the survey method, with a view to motivating the most appropriate research methodology for this thesis.

6.0 RESEARCH METHODOLOGY

There are several possible approaches to a study of this nature, more than one of which may offer interesting insights into the variables under study and the related reporting decisions. The following is a brief review of the broad possibilities.

6.1 Laboratory studies

Pankoff and Virgil (1970) highlight the difference between a laboratory study and a capital market study.⁴⁷ In a laboratory study, expectations data in the form of predictive probability distributions are obtained directly from individual subjects. In a capital market study, these are inferred by relating market price changes to accounting data. The major advantage claimed for the laboratory study is that the researcher is able to control the conditions under which the research is conducted. It is, however, difficult to simulate both market conditions and the richness of the information set. It is also difficult to recruit subjects who are likely to approximate the actors in the capital market adequately, particularly as their

⁴⁷ Pankoff and Virgil (1970) outline an approach to a laboratory study on the usefulness of financial information and incorporate a consideration of its advantages and disadvantages. A recent example of a laboratory study concerned with voluntary reporting is that by Chow, Haddad and Hirst (1989) (see chapter 3, section 4.3).

backgrounds and experience may be quite dissimilar to those whom they are regarded as representing.

For the results of these studies to be useful, the researcher should have confidence that the conditions under which they were generated approximate the market and how it operates. As the impact on the share price is of central concern in this thesis, the disadvantages of this approach are considered to outweigh the advantages.

6.2 Surveys

Using the survey method, a list of items which should be reported voluntarily is drawn up. This list is sent to a representative group of users who are asked to rank the items in terms of importance as inputs to their decisions. The list is weighted to form a disclosure index. A sample of annual reports is examined and the disclosure therein is graded and compared with the disclosure index. Inferences are made and conclusions are drawn from the index, actual disclosure levels and the comparison between them.⁴⁸

The results of these surveys may give some indication of the information sought by users such as investment analysts.

⁴⁸ Examples of survey-based studies using this or a similar approach are cited in section 5.3.

There is, however, no reason to believe that the impact of pieces of information on the advice given by analysts is consistent with the analysts' ranking of these items in a questionnaire survey. Where the survey instrument requires responses to lists or questions, the items brought to the attention of the analyst have been pre-selected and are presented in a particular form. This reinforces the possibility of a difference between the response and the importance likely to be placed on the item in an action situation.

A further disadvantage is the generally low response to surveys of this nature, giving rise to the possibility of nonresponse bias, that is, the possibility that the views held by those who do not respond differ materially from those who do. Oppenheim (1966) suggests possible remedies.⁴⁹ Finally, there is no indication of the impact on the share price. Notwithstanding the noted limitations, a survey may have provided insights to complement the capital market study. However, as there is no reason to expect that a survey conducted for the purposes of this thesis would produce materially different results from those

⁴⁹ One remedy suggested by Oppenheim (1966) is to aggregate the responses of late respondents and to compare the results with those derived from responses of earlier respondents. There is, however, no guarantee that the late respondents are a reliable surrogate for nonrespondents, and consequently the researcher cannot be sure that the results approximate those which would have been derived from the nonrespondents. Another approach would be to interview the nonrespondents, which is time-consuming and may be costly.

of Firer and Meth (1985), the review of that survey is considered sufficient (see section 5.3).

6.3 Interviews

The advantage of interviews over questionnaire surveys is that the interviewer is able to intervene to obtain clarification or elaboration. This advantage may, however, interfere with the uniformity of conditions across respondents. The structuring of the questions may "lead" respondents in the same way as questionnaire surveys, although this may be overcome by the use of unstructured interviews as in content analysis studies.⁵⁰ Again, this approach establishes no direct link with the market price, which is a central element in this study.

Notwithstanding the disadvantages, interviews could be used as a secondary research method to provide useful insights into the motivation for the voluntary reporting under study. It was therefore the intention to interview senior executives of all the companies reporting the specified financial targets and of a sample of nonreporting companies, in an attempt to establish why the managements of the former companies had decided to report the targets, and why those of the latter group had not reported them.

⁵⁰ A current example of the use of unstructured interviews in a financial reporting study is that by Gibbons, Richardson and Waterhouse (1990).

A set of nine pilot interviews with senior executives of reporting companies was conducted. While interesting insights were gained as to the reasons behind the reporting of these variables, this is "soft" information. Given the time and cost involved, these pilot interviews led to the conclusion that it would not be feasible to conduct a full set of interviews with the potential to make a substantive contribution to this study.

6.4 Capital market studies

In a share market study, the market is the laboratory. The consequences of actions taken by investors are examined in their real setting in the context of information available at the time and with direct reference to the share price. Neither the market conditions nor the richness of the information set need be simulated. As the researcher is working with share prices, there is potential to link the reporting to the share price under these conditions. It therefore appears to be the most suitable research method for this study. Given this real setting, however, there are many influences affecting the share price other than the variables under study. It is necessary to control for outside factors and for self-selection bias. Careful attention must therefore be paid to these requirements in selecting the research methodology. No further detail is provided in this section as the research methodology is examined and developed in chapter 4.

7.0 SUMMARY

Of the various stakeholders in the firm who demand information, this thesis is concerned with the investor group. The investor requires information about the firm to facilitate his decisions to buy, hold or sell securities of the firm. This information feeds into the investor's share valuation or portfolio model. The information which is in the highest demand is that which has the potential to reduce uncertainty and which is not available from alternative sources. Management has the ability to provide this kind of information through voluntary reporting.

The purpose objective of the firm can be expressed in terms of the maximisation of shareholders' wealth. The investment decision provides the basis for the generation of cash flows to the business. The financial manager evaluates investment opportunities in terms of their ability to produce positive net present value after taking into account the concomitant risks. Furthermore, he seeks to balance investment, dividend and capital structure decisions in such a way that shareholders' wealth, as expressed by the share price, is enhanced. While net present value may be generated by astute investing, the evidence suggests that the potential for creating net present value through the financing decision is limited in well-functioning markets as there must be an unsatisfied clientele for the package

offered. There is not ordinarily an unsatisfied clientele for standard dividend and capital structure policies.

Apart from the direct impact of financial strategies on the share price, the release of relevant information may have an impact on the share price. The question is whether it is in management's interests to report information relating to these financial strategies, in particular, the target rate of return, the target dividend payout ratio and the target debt-equity ratio. A capital market study is best suited for the examination of this question.

The results of a capital market study should be evaluated in the context of the efficiency of the market concerned. While the results of studies using JSE data are not unequivocal, it is reasonable to conclude that the JSE is efficient in the semistrong form. This approximates informational efficiency as defined by Foster (1986, p300). Voluntary reporting and the related informational issues are examined further in chapter 3, with a view to developing formal hypotheses.

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1.0 INTRODUCTION

To apply the free cash flow model, investors have to estimate the financial targets under study, namely the target rate of return, the target debt ratio and the target dividend payout ratio. They make these estimates based on information the market has about the state of the economy, the industry, the firm's past investment, financing and dividend decisions and the like. The estimates impounded into security prices are thus based on the perceptions of investors in aggregate.

Significant events, whether they be in the form of actions or announcements, may alter investors' perceptions, the estimates they have made and thus the firm's share price. The potential effect on the share price is dependent on the nature of the response to the information content of the event. In this study, the event is the first occasion on which management reports the financial targets and constraints.

Stern (1980) holds that uncertainty leads to a share being traded at a discount. He maintains that management is able to dispel a major part of this uncertainty by reporting information in its possession and thereby to improve the share price. The financial targets under study are included in the information specified by Stern.

Estimation risk (section 2.0), rational expectations (section 3.0) and signalling (section 4.0) will be examined with a view to assessing the potential theoretical support for this view. A critical issue in addressing each of these theories is the credibility of management. To facilitate the discussion, the credibility of management is assumed at this stage and its consideration is deferred until each of these possible explanations has been examined.

2.0 ESTIMATION RISK

2.1 Estimation risk

The parameters of the probability distributions of returns relating to available securities are not usually known. In order to construct an investment portfolio in an uncertain world, the investor must therefore estimate the parameters of the available securities using available data. Klein and Bawa (1976 and 1977) point out that the estimation problem relating to parameter uncertainty introduces estimation risk which has an effect on optimal portfolio choice. Where the estimated parameters are treated as true parameters, estimation risk is ignored.

In a two-asset world, where the mean of only one of the assets is known, Klein and Bawa (1976) show that the impact of estimation risk is reduced by reducing the proportion of

the portfolio invested in the security with the unknown mean. They also show that as the degree of sample information decreases the optimal choice for risk-averse investors involves investing more in the riskless asset.

They suggest that, in the context of the capital asset pricing model, the effect is for risk-averse investors to behave as if they exhibited additional risk aversion by investing more in riskless assets and less in the "market" portfolio of risky assets. Consistent with this suggestion, Klein and Bawa (1977) also suggest that, after taking into account estimation risk, risk-averse investors would be expected to invest relatively more in those securities about which they have the most information. In the two papers, they develop a set of theorems under certain conditions which are consistent with these suggestions (Klein and Bawa, 1976 and 1977).

Investors estimate future cash flows based on assumed rates of return (and therefore assumed target rates of return), an assumed debt-equity ratio (and an assumed target debt-equity ratio) and an assumed dividend payout ratio (and an assumed target dividend payout ratio). The estimation risk theory implies that investors price a share at a discount in recognition of the uncertainty surrounding their estimates.

Members of management have more information relating to the three variables than do investors. Reporting the three financial targets should thus reduce the level of estimation risk. It follows that those holding or selling shares will ask more for them and those buying shares will be prepared to pay more for them, *ceteris paribus*. In an efficient market, share prices will instantly reflect this and therefore, *ceteris paribus*, share prices will rise the moment the information is released.

Alternatively, in terms of Klein and Bawa (1976), the reduction in estimation risk will cause investors to place greater weight on those shares in their portfolios than they did previously, thus driving the prices of these shares up. The information release will have the same effect on risk estimation in each of the separate cases of target rate of return, target debt-equity ratio and target dividend payout ratio. The hypothesis developed in accordance with estimation risk theory is stated below.

2.2 Hypothesis

On the first occasion on which a company reports the specified financial targets, there will be an increase in its share price.

3.0 RATIONAL EXPECTATIONS

3.1 Rational expectations

Investors form expectations about future events.¹ While each investor may have his own expectations, it is the expectations of investors in aggregate (the market) that are impounded into the share price. These expectations are developed from both firm-specific and environmental information available to the market. Significant events may alter the perceptions of investors and so alter the value of the firm. However, as Miller (1981, p301) puts it, what matters is not so much what actually happens as the difference between what actually happens and what was expected to happen.

As the financial targets are important inputs to the free cash flow model,² investors will develop expectations as to what the targets are likely to be. Based on the information available to them, they will also estimate an optimal rate of return, an optimal debt-equity ratio and an optimal dividend payout ratio for the firms in which they are interested.

¹ Rational expectations are informed predictions of future events, which are neither perfect nor all the same (Muth, 1961).

² See chapter 1, section 2.0

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If, once reported, a firm's targets are identical to expectations, the report is confirmatory only and it will have no impact on the share price. Possible share price impacts where one of the reported targets differs from expectations are illustrated below by reference to each of the three targets under study.

If the reported target debt-equity ratio differs from that on which expectations are based, the share price effect is dependent on whether the reported target is closer to or further away from the perceived optimal debt-equity ratio than the expected ratio. For example, if the reported target debt-equity ratio is higher (lower) than expected, there is a positive (negative) effect on the share price if the reported target is closer to (further from) the perceived optimum than was the expected ratio.

If the reported target dividend payout ratio is higher (lower) than that on which expectations are based, this may signify a reduction (increase) in the funds available for reinvestment, relative to what was expected. The impact of this information would depend on investors' views on the firm's cost of capital. Where the cost of capital is higher than the return on marginal investment, a higher payout would be welcomed as investors could earn higher returns on the funds than could the management. Conversely, if the cost of capital is lower than the return on marginal

investment, a higher payout would not be welcomed as the management would be passing up wealth-creating investment opportunities. Similar reasoning applies to a target payout ratio which is lower than that on which expectations are based.

The above effects may be confounded to some extent by a clientele effect. If the reported target rate of return differs from that on which expectations are based, this may indicate that the firm will become more (less) risky and/or that it is going to earn a higher (lower) rate of return. Given that the firm's existing clientele has chosen it on the basis of its expected return and risk, such a change may imply a change in clientele.

If there is equilibrium before the targets are reported, the reporting and consequent change in clientele would cause increased trading volume, but would affect neither the share price nor the dispersion of share price changes. However, if the change in clientele is costly (for example, through transaction costs) and leads investors to suspect that management may later force another change in clientele, a negative impact on the share price may be observed. For the purpose of this thesis it is assumed that the trading costs are not sufficiently large to affect the mean share price. If a mismatch between a firm and its clientele is revealed by reporting the financial targets, and the match

is improved by this reporting, the share price could either increase or decrease.

3.2 Summary

As neither the expectations nor the optima referred to in this section can be specified, there is no way of predicting either the magnitude or the direction of the impact on a firm's share price even if it reports only one of the three targets. It can be said, however, that where the reported targets cause revised expectations, shares will change hands causing an increase in trading volume.³

Thus, from a rational expectations viewpoint, if a firm reports targets for one or more of the three variables, there is likely to be an increase in trading volume, but it is not possible to specify unequivocally the expected effect on the share price. Individual share prices will change, with some moving upwards and some downwards. Thus, while the effect on the mean cannot be predicted, the considerable movement in share prices will increase the dispersion of share price changes around the mean. This leads to the following hypothesis.

³ This situation should be clearly distinguished from the possible impacts in terms of the other two theories in this chapter, namely the estimation risk and signalling theories, both of which lead to a positive effect on the share price.

3.3 Hypothesis

On the first occasion on which companies report the specified financial targets, there will be considerable movement in the individual share prices of these companies. This will manifest itself in a greater dispersion of share price changes, but there may be no effect on the mean of the share prices of the reporting companies.

4.0 SIGNALLING

In this section, the criteria for signalling are first identified, followed by a consideration of signalling extensions, Verrechia's (1983) discretionary disclosure model and the veracity of signals. The reporting of financial targets, a potential signalling mechanism, is then examined in the context of this coverage. Finally, the section is summarised and the hypothesis stated.

4.1 Signalling criteria

The signalling role arises where one of the contracting parties has more information than the other (that is, information asymmetry) and there is an incentive for the former to communicate some or all of this information to the latter. In the field of accounting and finance, signalling generally arises where the management of a firm has more

information than do investors or potential investors. Information asymmetry exists in a market which is efficient in the weak or semistrong form but not in one which is efficient in the strong form.

Leland and Pyle (1977) point to potential rewards to management for the exaggeration of positive qualities and argue that the costliness or impossibility of verification by investors prevents direct information transfer. Rather, the information transfer takes place through the observation of actions, which, as Leland and Pyle (1977, p371) put it, "speak louder than words". The observer is then required to interpret the signal conveyed by the action.

There are many examples of information transfer by signalling through the actions of the party with the information advantage, such as signalling by workers to employers through the acquisition of education (Spence, 1973), by the owner of a firm to providers of capital through demonstrated willingness to invest in his/her own projects (Leland and Pyle, 1977) and by management to investors through altering the capital structure (Ross, 1977).

Copeland and Weston (1988, p502) refer to the choice by management of real financial variables such as financial leverage or dividend policy to send unambiguous signals to

investors regarding the future performance of the firm. These signals cannot be mimicked by unsuccessful firms because such firms do not have sufficient cash flow to meet the attendant commitments such as the debt servicing costs or the dividend payout and because managers have incentives to tell the truth. There is no equilibrium without management incentives to signal truthfully.⁴

Another signalling condition is that the information ultimately sought by the outsider is not directly observable. In Spence (1973), the employer cannot observe the individual's productive capacity at the time of hiring. The individual possesses many personal characteristics which are observable; some are fixed and others are alterable. Those observable characteristics which are subject to manipulation at the discretion of the individual are potential signals which may convey information relating to the unobservable characteristic. For example, the acquisition of education (an observable, alterable characteristic) is a signal relating to personal productive capacity (an unobservable characteristic).

Signalling will not be undertaken unless the benefits to be derived from signalling exceed the signalling costs.

⁴The veracity of signals is considered in section 4.4; signals are assumed to be truthful in sections 4.1 through 4.3.

Applying the benefit/cost criterion can result in unintentional signalling, as illustrated in Spence's (1973) job market example. He argues that an individual need not think of himself as signalling, but will incur the costs of education (the signalling costs) provided that there is likely to be an adequate return in terms of the offered wage schedule.

Three recently reported studies (Healy and Palepu, 1988 and 1990; Asquith, Healy and Palepu, 1989) are pertinent. These relate to dividend initiations, share issues and share splits. In each case, the announcement of the action to be taken by management is found to have information content as evidenced by the average share price reaction.

The dividend initiations result in an average market adjusted increase in share price, and the firms in question subsequently realise earnings increases. The share splits have a similar effect on share price, and these firms subsequently sustain the earnings growth experienced prior to the splits. The share issues cause an average negative risk-adjusted return, and this is associated with subsequently increased equity betas and increased earnings volatility. The authors maintain that pre-existing management forecasts can be inferred from the post announcement earnings patterns and that investors interpret

each of the three actions as a signal whereby management communicates this superior information.

According to the signalling criteria reviewed above, management signals superior information in its possession at its discretion and when it has the incentive to do so. It is suggested that these criteria are met in the dividend initiations and in the share splits studies, but not in the share issues study. In that study, the issue of equity by management does not appear to constitute a signal. The authors acknowledge that management is likely to issue equity only once it has exhausted retained earnings and external debt (see Myers and Majluf, 1984). The issue is thus a financing decision made in a manner consistent with the pecking order theory developed by Myers (1984). While management possesses superior information regarding the riskiness of future earnings, it would not choose to signal this information. Management thus has neither the discretion nor the intent to signal. Even if unintentional signalling were argued, management would not have used the equity issue as a signalling device unless the expected benefits were estimated to exceed the signalling costs. It appears most unlikely that the benefits would exceed the costs in this situation. It is submitted that the use of the term "signal" in this instance goes beyond the meaning intended in signalling theory.

4.2 Signalling extensions

The ambit of signalling has been extended beyond the financial policy actions cited above. Patell (1976, p274) observes that the act of voluntarily committing the firm to a prediction of earnings per share may convey information separate from the numerical value predicted. He finds that the announcement of the prediction is accompanied by an immediate upward price revision, on average, which is relatively insensitive to the relation between the predicted value and other available forecasts. In other words, it appears that management is signalling through the act of releasing the forecast, as distinct from the earnings estimate in the forecast. It also appears that the signal has a positive share price impact.

In an analytical paper, Trueman (1986) seeks to explain why managers voluntarily release earnings forecasts. He argues that managers should be indifferent to the release of forecasts as the actual earnings will be reported after the end of the period, so that the sole effect of releasing the forecast is to bring the information release forward. However, if the manager's objective is to maximise the value of the firm and he is in control of the production decision, he may be motivated to issue an earnings forecast as soon as he acquires new, pertinent information (subject to disclosure costs). His motivation would be to signal his

ability to anticipate future changes in the firm's economic environment and to adjust the firm's production plan accordingly.

In terms of Trueman's (1986) analysis, managers would be prepared to release forecasts whether they are higher or lower than expected earnings. As good news forecasts and bad news forecasts are equally likely to be released in Trueman's model, the average price change at the time of forecast release will depend entirely on the information conveyed with the signal relating to managers' abilities to anticipate changes and adjust plans. Although the market value of a firm will fall if the earnings forecast conveys bad news, its market value when the actual earnings are reported will be higher than it would have been if the bad news had not been disclosed before the earnings announcement.

The empirical prediction arising from the above is that the average share price change at the time of the forecast release should be positive. The prediction is consistent with the empirical results reported by Patell (1976), Penman (1980) and Waymire (1984). Trueman's (1986) analysis offers an alternative to Penman's (1980) suggestion that the positive share price change observed in his study is due to managers' bias toward reporting good news. On the other hand, Trueman's explanation is also consistent with Patell's

(1976) suggestion that the act of releasing the forecast (as distinct from the content) has information content. The act of releasing the forecast is thus a signalling device for management.⁵

Signalling through actions has developed because direct information transfer lacks credibility. There are, however, several studies in which direct disclosure is the signalling device. Hughes (1986) is concerned with the communication of inside information by direct disclosure, which is used by investors to infer firm value. Gonedes (1978) considers situations where management signals through the disclosure of extraordinary items. In a study by Verrechia (1983), the information disclosed is a signal which reveals the true liquidating value of the risky asset. Verrechia's paper will be considered further in the next section with a view to suggesting when management is likely to disclose.

4.3 Decision to disclose

As in the case of pure action signalling, management will

⁵ In a study on forecast credibility, Pownall and Waymire (1989) test the Trueman (1986) model and are unable to detect the positive impact which he hypothesises. Although Lev and Perman (1990) acknowledge this attempt, they nevertheless suggest Trueman's (1986) description of voluntary disclosure as a worthwhile avenue of investigation. Trueman's (1986) hypothesis thus remains an open empirical question.

incur the signalling costs if the associated benefits exceed those costs. Verrechia (1983) suggests that a manager's decision on whether to disclose or not depends on how traders interpret the absence of that disclosure, while traders' conjecture about the content of the withheld information depends upon the manager's motivation for withholding it.⁶ Given that traders know that the manager has the information, the manager may either disclose or withhold information, which is a signal about the true liquidating value of the asset he manages. If the manager reports what he observes, the firm's asset value will be reduced by the disclosure-related cost.

Verrechia extends the disclosure-related cost beyond the administrative costs of preparing, printing and disseminating information to include the cost associated with disclosing information which may be proprietary in nature and therefore potentially damaging.⁷ The proprietary costs may be determined by such factors as the level of competition, the political sensitivity of the company's business or the strength of the labour movement. He subsequently refers to disclosure-related cost as

⁶ The term "traders" is that used by Verrechia (1983); while this is regarded as the equivalent of "investors" for the purposes of this thesis; the original term is used to preserve the integrity of his model.

⁷ This is consistent with the reference to disclosure-related costs in chapter 2, section 5.2.

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proprietary cost. If it is assumed that the benefits to be derived from reporting are constant across firms and that administrative costs are low and non-differentiated, the proprietary costs drive the disclosure decision.

While a proprietary cost may be associated with the release of information unfavourable to the firm, Verrechia points out that this may be equally true of favourable information where the stakeholder or a competitor may be able to use the information in a way which is harmful to the firm's prospects. Proprietary cost introduces ambiguity; when a manager withholds information, traders are unsure whether the information is bad news, or good news which is not sufficiently favourable to justify the proprietary cost.

Proprietary costs thus provide a basis for explaining management's exercise of discretion in the decision to disclose. In the absence of any proprietary cost, or as proprietary cost approaches zero, a manager follows a policy of full disclosure. He does this in the knowledge that if he does not disclose, traders will interpret the absence of disclosure as bad news. As the proprietary costs increase, the manager is able to exercise discretion as traders will react less negatively in recognition of the costs associated with the disclosure. The level of the proprietary cost thus determines a disclosure threshold up to which

management has discretion. Thereafter, management must disclose.

Chow, Haddad and Hirst (1989) use an experimental laboratory study to test some of the elements of disclosure models. When disclosure cost was zero, all managers withheld bad and very bad news. Although the investors price-protected themselves when the manager withheld news, it was clear ex post that the penalty imposed was too small to induce the disclosure of bad news. When disclosure cost was positive, all managers disclosed very good news, only four out of ten disclosed good news and there were lower penalties for nondisclosure than in the previous scenario. The behaviour under zero disclosure cost is not as expected. However, when there are disclosure costs, the disclosure threshold and the exercise of management discretion conform with Verrechia's model.

Although this section contains references to mechanisms supporting the veracity of these signals, such veracity has largely been assumed. This aspect is considered in section 4.4.

4.4 Veracity of signals

Investors will act on a signal if it is perceived to be

true.⁸ Underlying Verrechia's (1983) model of discretionary disclosure are assumptions that the manager's objective is to maximise shareholders' wealth and that management cannot misrepresent. The issues of motivation and credibility are thus avoided. In Trueman's (1986) model, motivation is assured by the assumption that the manager's remuneration is linked to the end-of period value of the firm. Trueman avoids the credibility issue by assuming that ex post verification prevents false disclosures. Gonedes (1978) does not consider signalling veracity directly either.

The basic premise is that a financial signal is credible communication of inside information because the signal is costly and the marginal cost of false signalling exceeds the marginal benefit. A number of studies do, however, identify protections against false signals. It should be noted that some of these protections are situation-specific and cannot automatically be assumed to apply in a given situation. The arguments presented in several of these studies are reviewed below.

⁸ Truth or honesty in signalling should be distinguished from signalling reliability. A signal may be truthful yet unreliable relative to the unobservable attributes of interest.

Settling up in the managerial labour market

Fama (1980) argues that the previous associations of a manager with success and failure provide information about his talents in the managerial labour market. Management's future remuneration, in the form of rental rates for human capital signalled by the managerial labour market, is likely to depend on the success or failure of the firm. In conformity with portfolio theory, the individual investor diversifies his interests. While this diversification ensures that he has no strong interest in the management of a particular firm, he does have a strong interest in the efficient pricing of the firm's securities by the capital market. The signals about the values of the firm's securities are thus likely to be important inputs to the managerial labour market in revaluing the firm's management.

Pressures on managers to perform are provided by the fact that the firm is always in the market for new managers, there is internal monitoring of managers by managers and the realisation that the managerial labour market uses firm performance to determine managerial remuneration. A manager is thus likely to suffer adverse consequences for

providing false information to the market in an attempt to influence security pricing.⁹

Requisite cash flows

When managements signal by taking observable financial action such as the issue of debt securities to the market (Ross, 1977) or the payment of dividends (Bhattacharya, 1979), the company must have the cash flow to meet the obligations involved. As unsuccessful firms do not have the cash flow to sustain the debt servicing costs or the dividend payments, they cannot mimic signals of this nature because they do not have the cash flow to sustain the debt servicing costs or the dividend payments. Based on this reasoning, investors ascribe credibility to the signals.

Prohibitions against insider trading

The managers of successful firms also have incentives to

⁹The timing of the consequences will be determined by the circumstances. It is possible that the manager can escape the consequences in the short term, but it is less likely over the medium to long term. It has been suggested that an older manager near the end of his managerial career may be able to avoid the consequences as there is no future career to be affected by the settling up.

tell the truth as prohibitions against insider trading may prevent them from profiting from issuing false signals (Copeland and Weston, 1988, p502).

The SEC Act

Hughes (1986) builds a model which approximates the situation prevailing at an initial public offering. By means of contingent contracts a third party (the issuing bank) warrants statements made. Hughes suggests that direct disclosure about a firm's value on the occasion of an initial public offering is credible to investors because the issuer is penalised if the ex post costlessly observable cash flow indicates that the disclosure was fraudulent. In this situation, investors can claim damages for the issuing firm's fraudulent or misleading statements or the omission of material information, under certain conditions, in terms of the SEC Act.

Conclusion

In the preceding paragraphs, the arguments in supporting truthful signalling are:

- * The marginal cost of false signalling exceeds the marginal benefit.

- * Ex post settling up in the managerial labour market.
- * Management cannot act where the firm does not have the cash flow to support the action.
- * There are prohibitions against insider trading.
- * There may be a damages claim in terms of the SEC Act

4.5 Signalling through financial targets

In this section, the preceding consideration of signalling is related specifically to the reporting of financial targets in the South African context. First, it is established that the reporting of financial targets meets the signalling criteria. Thereafter, signalling through the act of reporting and through the content is considered. This is followed by the decision to report and the veracity of these signals.

Signalling criteria

Where management has formulated financial targets, a potential signalling situation arises. By virtue of having formulated the targets, management has information which investors do not have. This information asymmetry is likely to apply to a greater or lesser extent to all listed companies. It appears reasonable to assume that the managements of most, if not all, listed companies make

financial decisions with these targets in mind. The extent to which they are explicitly formulated as corporate targets is likely to vary. In some companies the financial targets may be used as informal, unwritten guidelines, while in others, they may be formally agreed and documented. It also appears reasonable to assume that those companies most likely to report their financial targets would fall into the latter category.

Underlying the financial targets which form the focus of this study are the dividend, capital structure and investment decisions in terms of which management takes action. As pointed out above, these actions are primary signalling devices which will be construed as signals where the relevant criteria are met. There are, however, two other potential information flows relating to these three decisions. A formal announcement always precedes a dividend payout and the issue of debt or equity. A formal announcement also frequently precedes a decision to invest. Reporting the target variables adds a third point of information release which may affect the share price. The three potential information flows are indicated in chronological order in table 3.1 below.

TABLE 3.1 THREE POTENTIAL INFORMATION FLOWS

<u>Report target variables</u>	<u>Announcement</u>	<u>Management action</u>
Dividend payout ratio	Dividend payout	Pay dividend
Debt-equity ratio	Debt or equity issue	Issue debt or equity
Rate of return	Investment	Invest

In the absence of earlier announcements by management, the actions shown above are the sort of actions referred to by Leland and Pyle (1977, p371) through which management signals. Where there is a preceding announcement, the force of the signal may be transferred to the announcement date.¹⁰ By effectively making policy statements through reporting the target variables, management may be able to provide broad signals at a still earlier point in time.

Signalling through the act of reporting

As noted in section 4.1, Patell (1976) raises the possibility that voluntary forecasts carry a message separate and distinct from the numbers being reported, while Trueman (1986) builds a disclosure model based on signalling

¹⁰ This is illustrated, for example, by the three studies cited in section 4.1 above, namely, Healy and Palepu (1988 and 1990) and Asquith, Healy and Palepu (1989).

through the act of voluntarily releasing forecasts. The act of reporting financial targets could signal that management has an enlightened attitude to external stakeholders in that it is prepared to provide key information voluntarily. On the assumption that management is able to report only on the basis of targets rooted in strategic plans, the reporting could signal a company which undertakes strategic planning. This could, in turn, imply other things such as a well managed company and/or a sophisticated management. This is similar to Trueman's (1986) assertion that the act of releasing the forecast tells investors something about the manager's ability.

Signalling through the content

A full statement of financial targets as defined in this study comprises the target rate of return, the target dividend payout ratio and the target debt-equity ratio. Patell (1976, p274) notes that, apart from the upward price revision that accompanies the act of forecast release, there are longer range cumulative effects which appear to be consistent with the relation between the predicted value of the earnings number and other estimates of market expectations. A similar distinction applies to Trueman's (1986) model. In neither study is the information content of the management forecast denied, but it is the act and not

the content which provides the signal. By contrast, in Verrechia (1983), Hughes (1986) and Gonedes (1978), the signal is provided entirely through the information disclosed¹¹.

The content of the statement of financial targets may thus also carry one or more signals, but the force of the signal(s) is strengthened by the direct link with the management actions listed in table 3.1 above, namely the payment of dividends, the issue of securities or the making of an investment. Management is able in this way to signal information pertinent to the share price by providing insights into its intended actions and into its view on future prospects.

The statement of financial targets also provides a framework which may serve to assist investors with their ex post interpretations of these intended actions. This is particularly important where management takes an action which is not intended as a signal, especially if the relevant variable temporarily moves outside the policy framework as a result of that action. If this action were interpreted as a signal, it could have an inappropriate effect on the share price. Management should be able to

¹¹ This applies insofar as Gonedes (1978) is concerned with extraordinary items.

avoid misinterpretations of this nature by publishing a statement of financial targets.

As indicated above, while (signalling through) the voluntary reporting of financial targets involves an element of direct disclosure, there is a strong and direct link with the related management actions. This is therefore essentially a hybrid form of signalling; there is a strong similarity with action signalling while there is also an element of direct disclosure signalling.

Decision to signal through financial targets

Verrechia's (1983) model provides a good basis for analysing the signalling aspect of this study. As investing, financing and the payment of dividends are central to the financial management of any company, investors in a company would know that the management has information on the applicable targets and constraints. The disclosure threshold (level of disclosure-related costs) is central to any attempt to explain the decision to report or to withhold the information.

In terms of this model, the nonreporting companies do not report because they have not formally set financial targets and constraints, or the information is bad news which would

adversely affect the share price, or the information is good news, but the disclosure-related costs are estimated to exceed the beneficial effect on the share price. If it is assumed that most companies have formulated at least some view on the policy variables, a high disclosure threshold provides a potential explanation where relatively few companies report their financial targets. If the disclosure threshold is assumed to be low, the share prices of the nonreporting companies would be adversely affected.

Veracity of these signals

The question is whether the arguments in section 4.4 above can be said to apply specifically to the reporting of financial targets in the South African environment. The first issue is whether these protections operate in relation to the reporting of financial targets. The second is whether these protections are operable in the South African environment.

To assess a manager's performance, conformity of the firm's performance with the stated targets must be verified *ex post*.¹² Although the performance may take some time to

¹² It should be noted that a difference between the outcomes and the stated targets is not necessarily evidence of false signalling.

feed back, adherence to the leverage and dividend targets is observable by calculating the relevant ratios ex post on the same basis on which the targets were stated. The rate of return is not as easy to monitor. The actual returns in any one period result from a number of investment decisions which may have been taken in several different prior periods owing to the time lags between decision and implementation, and between implementation and fruition. This makes it more difficult to establish a direct connection between the target and subsequent performance.

The circumstances surrounding the reporting of the financial targets are not comparable with the initial public offering described by Hughes (1986) and no sanctions similar to those imposed by the SEC legislation apply in South Africa. Further, the financial targets are reported in a section of the annual report which falls outside the ambit of the financial reporting and attestation sections of the Companies Act.¹³

Although the provisions in the Companies Act (s229-s233 and s224) relating to insider trading and its regulation have

¹³ In terms of s286 of the Companies Act, the directors are required to present annual financial statements comprising balance sheet and related notes, income statement and related notes, directors' report and auditors' report. In terms of s300 and s301, the auditor is required to audit and report on these statements. Financial targets generally appear in the chairman's statement or similar, which is not covered by these sections.

been in place for fifteen years, they appear to have been inadequate as there has been no prosecution over that period (Botha, 1989). However, it is important to note that the absence of a prosecution does not necessarily prove that the provisions have been completely ineffectual. It is thus argued that even though insider trading may be less stringently monitored on the JSE than it is in the United States, the legal provisions nevertheless act as some form of deterrent.

With the exception of the SEC legislation, all of the protections against false signalling apply in this study. It is therefore concluded that the veracity of the signals conveyed by the voluntary reporting of financial targets and constraints is reasonably assured.

4.6 Summary

Where there is asymmetric information between management and investors about the value of the firm, management will signal provided that the benefits exceed the signalling costs. The attribute of ultimate interest to the investor is unobservable. Management is able to signal through alterable, observable attributes at its discretion and it communicates by signalling because investors may regard direct information transfer as suspect and difficult or costly to verify. Where the signal is effective, investors

respond to its information content and the benefit shows itself in an improved share price.

Early examples of corporate signalling involved actions exclusively related to real financial variables, with consequential cash flow obligations to be met by the signalling firm. Subsequently, the range of signalling devices has been extended to include other actions (such as forecast releases) and direct disclosure, neither of which categories necessarily have direct cash flow implications.

The initial reporting of financial targets may be regarded as a hybrid between action signalling and direct disclosure signalling. The statement of targets links directly with the relevant actions, the act of reporting is a signal, and the reported content conveys a signal.

When management signals, the expected effect on the share price is positive. The term "signal" has, however, also been used in the literature to describe an action or a statement by management which has resulted in a decrease in the share price. The explanation for management taking action which results in a decrease in the share price probably lies elsewhere. The use of the term "signal" may accurately reflect the investor's interpretation in that the observable action provides information relating to the unobservable characteristic. In this situation, as management essentially has no discretion in the matter, does

not choose to communicate through this action and the benefit/cost trade-off does not appear to be favourable, the management action in question is not regarded in this study as a signalling action. Where a manager makes a statement aimed at reducing the security price, the primary cause may again lie elsewhere¹⁴. Signals generally involve or are linked to action, while negative announcements are not. Verrechia (1983) shows that discretionary reporting precludes negative signals in most cases. A case against the notion of negative signalling has been made. However, even if negative signals were admitted, it is most likely that, in the mix of positive and negative signals, the positive signals would predominate.

The initial reporting of financial targets meets the signalling criteria examined in this chapter. This provides strong support for a positive effect on the share price when the financial targets are reported. Accordingly, a positive impact on the share price is hypothesised below.

¹⁴ A management statement aimed at reducing the share price may be in response to a stock exchange enquiry, or it may accompany a management action unrelated to signalling. It is also possible that the statement has been made to preserve a signalling reputation.

4.7 Hypothesis

When a company signals by reporting the specified financial targets, there will be an increase in its share price.

5.0 CREDIBILITY

Although the statement of financial targets is contained in the annual report, it is provided voluntarily and is not subject to the statutory protections promoting the verifiability or reliability of reported information.¹⁵ In terms of the three hypotheses, the reporting of financial targets is expected to affect the share prices of the reporting companies. However, the information content of the disclosure is likely to be discounted if its credibility is perceived to be low, so reducing or nullifying the share price effect.

The credibility issue potentially affects the share price impact under any or all of the three hypotheses. It therefore requires attention notwithstanding the strong arguments supporting the veracity of signals which were brought in sections 4.4 and 4.5. Further, the support for

¹⁵ See the subsection entitled "veracity of these signals" in section 4.5.

the veracity of signals, while strong, is based on analytical studies.

Pownall and Waymire (1989), observe that previous findings to the effect that voluntary management forecasts have information content (see for example; Patell, 1976; Penman, 1980; Waymire, 1984) suggest that traders regard them as at least partially credible. Using voluntarily released forecasts, Pownall and Waymire (1989) test their credibility by comparing the share price impact with that of the fully audited mandatory earnings announcements with documented stock price effects. They conclude that the overall results do not indicate that management forecasts are discounted relative to earnings announcements.

Two points should be acknowledged. First, the study applies to management forecasts. Although the forecasts are not audited, it is reasonable to assume that management's knowledge that a fully audited, mandated release providing a basis for comparison shortly after the end of the period would influence their reporting. It is also reasonable to assume that investors would take this probable influence into account when assessing the credibility of a forecast. As mentioned in section 4.5 above, while the monitoring of reported targets is feasible, it is not as direct. Second, the differences between the USA and the South African environments should be noted.

However, an important difference currently prevailing does not apply when considering the Pownall and Waymire (1989) results as the tests were done over a period when there were no USA regulations covering management forecasts. With due regard to the differences, the results of these empirical studies, and in particular, the Pownall and Waymire (1989) study, reinforce the share price impact predicted in the three hypotheses.

6.0 CONCLUSION

Three theories have been examined in this chapter with a view to predicting and explaining the possible effect on share prices of reporting the financial targets and constraints specified in this study.

In terms of estimation risk theory and signalling theory, it is hypothesised that there will be an increase in the share price of the reporting company on the first occasion on which the specified targets are reported. In terms of rational expectations theory, it is hypothesised that on the first occasion on which the targets are reported, there will be considerable movement in the individual share prices of the reporting companies. This will manifest itself in a greater level of dispersion of share price changes, but there may be no effect on the mean of the share prices of the reporting companies.

The three theories are not mutually exclusive and all may apply simultaneously to a greater or lesser extent. It will not be possible to establish which of the three theories is dominant. The voluntary reporting of financial targets and constraints should affect either the mean of share price or the dispersion of share price changes or both. The null hypotheses can therefore be state as:

- * The voluntary reporting of financial targets has no effect on the mean share price.
- * The voluntary reporting of financial targets has no effect on the variance of share price.

The rejection of either of these null hypotheses will imply that the reporting of financial targets affects share prices. The rejection of the first null hypothesis will furthermore imply that the effect on share prices is positive. The research methodology for testing these hypotheses is developed in chapter 4.

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1.0 INTRODUCTION

This study focuses on three key variables, all of which relate to central elements of financial strategy. They are the target rate of return, the target debt ratio and the target dividend payout ratio. Disclosure of these variables is not mandatory either directly in terms of the Companies Act or in terms of Generally Accepted Accounting Practice. Companies reporting financial targets and constraints thus do so voluntarily.

In developing a reporting strategy, financial managers need to establish whether users, and in particular, investors, use this information and to what extent. Four possible methods for researching this area were examined in chapter 2 (namely laboratory experiments, questionnaires, interviews and market studies). It has been noted that a disadvantage common to these methods is the necessity to assume a linkage between the information gathered and the action taken in the market place. Nonetheless, of the four methods, only the share market study provides the potential to link the information provided with the investment decision taken, through its impact on the share price. Hence the decision to use a market study in this thesis.¹

¹ Although interviews with senior executives of reporting and a sample of nonreporting companies potentially offered valuable insights to the market study, it was decided not to pursue this after
(Footnote Continued)

The hypotheses developed in chapter 3 are all expressed in terms of potential share price impact. Clearly, with the multiplicity of influences which may affect the share price of a company at any one time, considerable attention to the research methodology is required to ensure the researcher's confidence that an impact on the share price is caused by the voluntary reporting under study.

The research methodology is summarised in section 2.0. Supporting explanations and references are generally deferred to sections 3.0, 4.0, 6.0 and 7.0 in which each of the major elements of the research methodology is examined and justified. The data are described in section 5.0.

2.0 RESEARCH METHODOLOGY

The research takes the form of an event study of the information content type (Bowman, 1983). The event is the first occasion on which information relating to one or more of the three financial targets becomes publicly available.

The focus is on the mean effect of the information on the returns of securities. To eliminate market-wide effects, excess returns are calculated. As the sign of the excess

(Footnote Continued)

conducting a set of nine pilot interviews. This decision and the supporting reasons are reported in chapter 2, section 6.3.

returns is central to the hypotheses based on estimation risk and signalling, a directional test is required. A nondirectional test is appropriate for the hypothesis based on rational expectations as the central issue is the extent of the variation of returns irrespective of the sign.² To test this hypothesis, the variability ratio is calculated. This provides a ratio of the variability in the event week relative to the average variability in the estimation period.

Actual returns are calculated from weekly observations of share prices and of the index during the test period and from four-weekly observations during the estimation period. The logarithms of the price relatives are used rather than traditional returns. Sixty four-weekly returns are calculated in the estimation period and fifty one weekly returns in the test period.

The market model and a simplified version of the market model are used as return-generating models. The alpha (α) and beta (β) parameters for each company have been estimated using ordinary least squares regression. The relatively short interval during the test period provides greater precision in examining the effect of the information event.

²As has been noted above (chapter 3, section 6.0), a significant positive impact in the directional test will also support this hypothesis.

The longer interval during the estimation period diminishes the potential for bias in the estimated parameters of the market model which may result from nonsynchronous trading.

Two further control procedures are used to counter confounding effects. One control is the performance of the experimental group in a period comparable to the test period (the internal control group). The other control is the performance of a group of companies matched by industry and by annual report release date (the external control group).

3.0 EVENT DATE

The event is the first occasion on which information relating to one or more of the financial targets becomes publicly available. As the vehicle for the dissemination of this information is the annual report, the event date is estimated by reference to the date on which the information in the relevant annual report becomes publicly available. Accurate identification of the event date is pivotal if the information effect is to be assessed reliably. As this allows a smaller "window" to be used than would otherwise be the case, there are fewer factors unrelated to the event which are capable of affecting the excess returns. This greatly increases the power of the statistical tests (Brown and Warner, 1980 and 1985). Reference to a few selected research papers which use event studies brings out the

increasing attention paid to determining the event date accurately.

In a relatively early event study, Sunder (1973, p13) uses the last day of the fiscal year, an apparently arbitrary choice,³ as a broad approximation of the event date. Brown (1980, p42) uses the release date of the preliminary earnings report. While this date is also an arbitrary choice, it is likely to be a closer approximation of the event date than is the financial year-end. Stevenson (1987, p308) goes to great lengths to establish the precise dates on which the information was released in his LIFO study. In two studies on the JSE, Knight and Affleck-Graves (1983, 1986) similarly take care to establish precise dates. The identification of the event date in the current study is considered below.

The date on which the annual report is approved by the directors and the date of the auditors' report both appear in the annual report. These dates generally coincide, but where they do not, the auditors' report is the later. The date of the auditors' report was initially selected as the event date. It was later rejected as the printing and distribution process could cause a significant delay between

³ This apparently arbitrary approximation was to a large extent forced by a lack of sources for more accurate dates for most of the accounting changes in Sunder's sample (1973, p13).

this date and the date on which the information becomes available to investors.

Another possibility is to request from the officers of each company the date on which the annual report was mailed in the relevant year. These dates were personally requested of the officers of a sample of companies during visits to those companies. It appears, however, that an approximation was frequently given based on what was thought to be the usual mailing date rather than by reference to accurate records. This approach is therefore not considered satisfactory.

All listed companies are required to send a specified number of copies of their annual reports to the JSE as soon as they are available. On a visit to the JSE, it was established that a record is kept of the date on which the annual report was received at the JSE. This is considered to be the best available estimate of the date of the release of the information under study and of the date on which it became generally available. This date is defined as the event date.⁴

⁴Notwithstanding the care taken to identify the best available estimate, some doubt may remain regarding the accuracy of the event date. The identification should nevertheless be sufficiently accurate for the purposes of this study as weekly return data are used in the test period.

The public availability of the information before the release date through leakage is an obvious potential problem in information event studies. Although not all the managements of the companies concerned were questioned, those members of management who were interviewed were emphatic that this information was not released before the annual report release date.⁵ Reliance is placed on these assurances as there is no means of controlling for leakages in this study.

4.0 MARKET MODEL AND ITS USE

In terms of the hypotheses developed in chapter 3, the reporting of financial targets is expected to affect share prices. An observed effect on the share prices of one or more companies is not sufficient evidence to support these hypotheses as the effect could have been caused by a multiplicity of influences. The well-known market model provides both the return-generating model and an important control in this study. The model and its use in calculating abnormal residuals, market adjusted returns and variability ratios are described in this section. The need for controls, their use in this study and the role of the market model in that context are examined in section 7.0.

⁵ This question was put during the pilot interviews mentioned in chapter 2, section 6.3.

4.1 Market model

The market model provides a starting point for distinguishing between the impacts which may be traced to the information event of interest and other share price impacts. This model is stated as follows:

$$\bar{r}_{it} = \alpha_i + \beta_i \bar{r}_{mt} + \bar{e}_{it},$$

and

$$E(\bar{e}_{it}) = 0,$$

$$\text{Var}(\bar{e}_{it}) = \sigma^2,$$

$$\text{Cov}(\bar{e}_{it}, \bar{e}_{it-s}) = 0 \text{ for all } s \neq 0,$$

where:

\bar{r}_{it} = return on security i in period t,

\bar{r}_{mt} = return on the market in period t,

\bar{e}_{it} = residual return on security i in period t,

α_i, β_i = intercept and slope respectively for security i.

α_i and β_i are estimated using ordinary least squares regression; these estimates will be referred to as a_i and b_i .

The return on any share is made up of that resulting from fluctuations in the share price and, from time to time, a dividend. The return on a share is thus given by:

$$r_{it} = (P_{it} - P_{it-1} + D_{it}) / P_{it-1},$$

and the return on the market is given by:

$$r_{mt} = (P_{mt} - P_{mt-1}) / P_{mt-1},$$

where P = price and D = dividend, and the subscripts have

the same role as in the market model equation above.

The "market" as reflected in the above equations is not defined; a surrogate for the market is required to calculate market returns and to estimate regression parameters. The importance of an acceptable surrogate for the market is well recognised (see Roll, 1977). In this context, it should be noted that there are in effect two markets incorporated in the JSE; the mining market and the industrial market (see Gilbertson and Goldberg, 1981). As the study concerns the industrial sector, the appropriate surrogate for the market is the industrial index rather than the overall index.⁶

Affleck-Graves, Money and Carter (1981) point out that returns calculated in terms of the formulae given above are non-additive across return intervals but that this is overcome by calculating the logarithms of the price relatives :

$$r_{it} = \log_e P_{it} - \log_e P_{it-1} = \log_e P_{it} / P_{it-1},$$

where \log_e = the natural logarithm and the other terms have the same role as previously.

⁶ As the index is a capital index, it does not include dividends. A gross index including dividends was not available and the resources required to construct a gross index specifically for this study would not be justified. The potential effect of excluding dividends from the denominator is to bias returns and beta upwards, but as there is no reason to expect material bias, the results should not be affected.

Affleck-Graves et al. (1981) conclude that, with weekly returns, the traditional return is almost equal to the logarithm of the price relative, but that the latter should nevertheless be used on the grounds of its theoretical superiority. They further suggest that with increased intervals, for example where monthly data are used, the potential problem is greater. The logarithms of the price relatives have accordingly been used in this study.

4.2 Abnormal residuals

The abnormal residual (\bar{u}_{it})⁷ of the return for any share i in period t is the excess return given by:

$$\bar{u}_{it} = \bar{r}_{it} - ((1/4)a_i + b_i\bar{r}_{mt}).$$

The expected returns in the test period are calculated by inserting the α and β estimates (that is, a_i and b_i) for each company in the market model equation.⁸ The expected returns are then deducted from the actual returns to arrive at the abnormal residuals (\bar{u}_{it}). The abnormal residuals are summed and divided by the number of companies to arrive at the average of the abnormal residuals in each of the

⁷ Note that \bar{u}_{it} is distinguished from \bar{e}_{it} (see section 4.1 above). \bar{e}_{it} is a residual after fitting a regression line using the ordinary least squares procedure in the estimation period. \bar{u}_{it} is the residual remaining after deducting the return expected in the test period (which is calculated by applying the parameters estimated in the estimation period) from the actual return (see Patell, 1976).

⁸ As α is estimated using four-weekly returns in this study, a_i is divided by 4 where the market model equation is used to calculate the weekly expected returns in the test period.

weeks in the test period. This weekly average is a test statistic in the directional tests and it forms the basis for the test statistic in the nondirectional test.

4.3 Market adjusted returns

The weekly average of the market adjusted returns is the other test statistic in the directional tests. Market adjusted returns are excess returns calculated using a simplified, one factor market model which adjusts for the market but not for systematic risk. In terms of this model, the expected return for any security is assumed to be equal to the expected return on the market. Effectively, the value of α is assumed to be zero and that of β is assumed to be one. Based on the results of a simulated event study, Brown and Warner (1980) conclude that market adjusted returns are as likely to detect abnormal performance correctly as is the market model.⁹ The market adjusted return of any share i in period t is given by:

$$\bar{u}_{it} = \bar{r}_{it} - \bar{r}_{mt}$$

The aggregation and averaging procedures are identical to those for abnormal residuals. The reasons for expressing the results in terms of market adjusted returns are related

⁹ Brown and Warner (1980) reach this conclusion based on the results of simulated event study using monthly data relating to 250 randomly selected samples of 50 securities each.

to the availability of internal control group data (see section 7.5).

4.4 Variability ratios

A nondirectional test is required for the second of the three hypotheses developed in chapter 3.¹⁰ The weekly average variability ratio is the test statistic for the nondirectional test used in this study. The variability ratio is a measure of the variability of the returns in the event week (as an approximation of the event date) relative to the average variability of returns in the estimation period. The research method followed is that developed by Lobo and Mahmoud (1989, p119-120), in which they designate the variability ratio by W_{iR} . They use this approach to investigate the stock return variability at the time of annual earnings announcements relative to the amount of prior information available about a firm. In this thesis, the variability ratio measures the ratio of the event-week variance to the estimation period variance of unexpected returns for security i . It is a measure of the new information conveyed to the market by reporting the

¹⁰ This hypothesis is restated here for convenience: On the first occasion on which companies report the specified financial targets, there will be considerable movement in the individual share prices of those companies. This will manifest itself in a higher level of dispersion of share price changes, but there may be no effect on the mean of the share prices of the reporting companies.

specified financial targets, relative to the average information available during the estimation period.

In Lobo and Mahmoud (1989), a two-day cumulative announcement period is involved and daily return intervals are used throughout. With a one-week event period and weekly returns, there is no cumulation of return variances in this study. Accordingly, the expressions have been presented in simplified form below. Further, the expression for the $c_{i,tt}$ term has been modified as noted below, in recognition of the return interval being four-weekly in the estimation period while it is weekly in the test period.¹¹

Lobo and Mahmoud (1989) show that the terms V_{it} and W_{iR} below have expected values equal to zero and variances equal to one. A value of W_{iR} greater than zero (the expected value) implies that the voluntary reporting conveys more than the average amount of information available and vice versa. In the computation of W_{iR} , the event-week period variance is standardised by the estimation-period variance. This avoids problems that may arise from differences in variability across firms. In view of the standardisation

¹¹ The selection of return intervals is justified in section 6.0.

procedure, it is important to emphasise the distinction between estimation-period and test-period statistics.¹²

The calculation of the unexpected security returns (or abnormal residuals), u_{it} , in the event week (week 0) is described in sections 4.1 and 4.2 above. The u_{it} are assumed to be normally distributed with:

$$\begin{aligned} E(u_{it}) &= 0, \\ \text{Var}(u_{it}) &= (1/4)\sigma_i^2 c_{i,tt} \text{ for } i = 1, \dots, N, \\ \text{Cov}(u_{it}, r_{mt}) &= 0, \end{aligned}$$

where:

N = number of firms in the group,

σ_i^2 = variance of $u_{i\tau}$,

1/4 is used to adjust from four-weekly to weekly variance,

$$c_{i,tt} = \{1 + 1/T_i + (r_{mt} - \bar{r}_m^*)^2 / (T_i - 1) s_m^2\},$$

where:

$$\bar{r}_m^* = (1/4)\bar{r}_m,$$

\bar{r}_m = the mean return (4-weekly) in the estimation period,

$$s_m^2 = (1/4)\hat{\sigma}_m^2,$$

$$\hat{\sigma}_m^2 = \frac{T_i}{\tau \sum_{\tau=1}^i} (r_{m\tau} - \bar{r}_m)^2 / (T_i - 1),$$

T = number of four-week periods in the estimation period for firm i .

¹² The subscript τ refers to the estimation period whereas the subscript t refers to the test period. For example, $u_{i\tau}$ refers to the residuals in the estimation period while u_{it} refers to the prediction residuals (unexpected returns).

The $c_{i,tt}$ term reflects the increase in variance owing to prediction outside the estimation period. It is a function of the sample size used in the estimation process, the variance of $r_{m\tau}$, and the distance between r_{mt} and \bar{r}_m (the mean of the r_m values used to compute a_i and b_i).

V_{it} measures the standardised unexpected return for security i in the event week and W_{iR} measures the ratio of the event-week variance to the estimation-period variance:

$$V_{it} = \{(T_i - 4)/(T_i - 2)\}^{1/2} \cdot u_{it} / \{(1/4)s_i^2 c_{i,tt}\}^{1/2},$$

$$W_{iR} = (V_{it}^2 - 1) / \{2(T_i + R - 4)/(T_i - 6)\}^{1/2},$$

where:

s_i^2 = an estimate of σ^2 , the standard error of market model residuals,

$$= 1/(T_i - 2) \sum_{\tau=1}^{T_i} \{r_{i\tau} - (a_i + b_i r_{m\tau})\}^2,$$

1/4 of s_i^2 is taken to adjust from four-weekly to weekly standard error,

R = the number of periods in the event period over which return variances are cumulated. As the event window in this study is one period only, $R = 1$.

The aggregation and averaging procedures are identical to those for the abnormal residuals (see section 4.2).

5.0 DATA

The experimental group comprises thirty four reporting companies (table 4.1). Any company which reports one or more of the financial targets is classified as a reporting company. Thirty six such companies (two of which were excluded from the study)¹³ were identified in 1983 by examining the most recent annual reports of all the non-mining companies listed on the JSE.¹⁴ The shares of all of these companies are listed in the JSE industrial sector. The year of the event for each company was established by tracing its annual reports retrospectively to the year in which the information was first reported.

The financial targets and constraints reported by the companies are summarised in table 4.2. Twenty of the thirty four companies reported all of the variables, five reported two, and nine companies reported one of the three variables. The distribution of the event dates over time is given in table 4.3. From 1974 to 1976, one company per annum adopted the practice of reporting one or more of the

¹³The two companies excluded from the study are Amrel and Yorkcor. Amrel reported the variables in its first annual report after listing date. As the information had been available from the outset, it is not possible to establish the impact of the disclosure in this case. Yorkcor shares traded in only 178 weeks out of a total period of 292 weeks. There are consequently insufficient data to execute the research method reliably.

¹⁴The reports were housed in the library of the Graduate School of Business of the University of Cape Town.

CHAPTER FOUR: RESEARCH METHODOLOGY

variables under study and there were three or more new reporting companies each year over the period 1977 to 1982.¹⁵ As shown in table 4.4, the thirty four shares are well distributed over the various sectors within the JSE industrial sector. There is thus a reasonable spread of companies across industry sectors and across time. This means that clustering is unlikely to be problematic in this study.

Twenty five nonreporting companies (table 4.5) were selected to form the external control group. By design, the spread of companies across sectors and across time is similar to that of the experimental group. The external control group is smaller than the experimental group because it was not possible to find suitable partners for all the reporting companies. The use of control groups and the selection of control groups for this study are the subject of section 7.0 below.

Most of the share price data were obtained from the University of Cape Town and from the JSE. Three of the reporting companies were delisted subsequent to the period of the study.¹⁶ As a company's share prices are deleted from the JSE data bank when it is delisted, the missing

¹⁵ The two rejected companies, Amrel and Yorkcor, first reported in 1977 and 1980 respectively.

¹⁶ The three delisted companies are Calan, Scotts Shoes and Dunswart.

share price data were obtained by reference to the finance section of the Sunday Times. Dividend information was obtained from the Johannesburg Stock Exchange Monthly Bulletin (1971-1975).

The event week and its equivalent are labelled week 0 in the reported results. The total of 292 weekly share price observations captured for each company comprises 146 observations before week 0, the week 0 observation and 145 observations thereafter. From these observations, 51 returns are calculated for the test period, which is centred on week 0. There are 240 observations in the estimation period; 120 before and 120 after the test period. This provides 30 four-weekly returns before and 30 four-weekly returns after the test period. Market returns are similarly calculated from 292 corresponding observations of the JSE Actuaries Index (industrial sector).

6.0 RETURN INTERVAL¹⁷

In information event studies, returns are generally calculated for two purposes. One is to facilitate the examination of the information effect as expressed in the form of abnormal residuals or a similar measure. The other

¹⁷ The return interval is the time interval allowed between observations when calculating returns. It is also referred to as the differencing interval or the unit of duration.

is to enable the parameters of the market model to be estimated. Before the returns can be calculated, it is necessary to select the time interval between observations. In practice, this usually involves a choice as to monthly, weekly or daily intervals between price observations.

As noted by Foster (1986, p346) and by Morse (1984), earlier studies investigating the association between information events and security returns used monthly returns. With the availability of the CRSP (Center for Security Prices at the University of Chicago) daily return file, most subsequent studies of note in the USA have used daily return data. Most of the studies of this nature on the JSE, and some on other stock exchanges, have used weekly return data.¹⁸ Until recently, JSE share price data were not readily available from comprehensive and easily accessible data banks (see section 5.0 above), and this has applied in particular to daily data. In addition, given the relatively low volume on the JSE,¹⁹ there is more likely to be nonsynchronous trading in daily data than in weekly or monthly data.²⁰ As the issues bearing on the choice of

¹⁸ Examples are studies by: Patell (1976) on the New York Stock Exchange; Hawawini, Michel and Viallet (1983) on the Paris Stock Exchange; Emanuel (1984) on the New Zealand Stock Exchange.

¹⁹ See for example, Affleck-Graves et al. (1981) and Bradfield (1989).

²⁰ The meaning and impact of nonsynchronous trading is covered in section 6.2 below.

return interval vary according to the purpose, these are considered separately in sections 6.1 and 6.2 below.

6.1 Test period

In an econometric analysis of the use of daily versus monthly return data in event studies, Morse (1984) asserts that the most powerful estimate of mean abnormal returns is generated by the return series that minimises the bias and maximises the efficiency of this estimate. While the impact of weekly return data is not directly included in the analysis, he points out (1984, p605) that it is easily extended to weekly return data. Where he concludes superiority of daily return data over monthly return data, it appears reasonable to infer that weekly return data are similarly superior to monthly return data and vice versa. In the analysis, Morse (1984) distinguishes between issues relating to the characteristics of the information event and those relating to the return-generating model.

The characteristics of the information event include the existence of confounding information events, uncertainty about the magnitude of the effect of the information event on security returns and uncertainty about the date of the information release. Morse (1984) finds that daily return data are clearly superior to monthly return data in relation the first two characteristics. As regards release date uncertainty, the issue is less clear-cut and he suggests a

decision rule which prefers monthly return data with some exceptions. Again, it can be inferred that weekly return data rate favourably in relation to this characteristic. While care has been taken to identify the event date accurately in this thesis, it probably remains an imprecise estimate of the event date. By working with the event week rather than the event day, there is a greater probability of capturing the event.

The conclusion is that shorter return intervals are superior with reference to the information event, but where there is release date uncertainty, a longer return interval may be appropriate. Weekly return intervals thus offer the advantage of being shorter than monthly return intervals while providing the wider "window" where there is event date uncertainty. These considerations and data availability are the primary reasons for choosing weekly return intervals in the test period for this study.

6.2 Parameter estimation

Ceteris paribus, greater estimation efficiency is achieved by increasing the number of observations. Given the return interval, this can be done by increasing the time period from which the observations are obtained. As this time period is increased, so the observations become more remote from the event, increasing the likelihood that firms have changed structurally. With monthly data, 60 to 84

observations are a common choice (Foster, 1986, p348), spanning a period of from five to seven years. An alternative is to shorten the return interval; for example, one year provides about 250 daily observations. However, measurement problems are increased by shortening the return interval which may give rise to the intervalling effect.

The phenomenon driving the intervalling effect is described variously as nonsynchronous trading (Scholes and Williams, 1977), infrequent trading (Dimson, 1977), thin trading (Affleck-Graves et al., 1981) and trading friction (Cohen et al., 1983b). The main concern of these authors is with the estimation of the market model parameters. While the estimated beta coefficient should theoretically not vary with the length of the interval, it has been shown to do so in several studies.²¹ The following outline of nonsynchronous trading and its consequences is drawn essentially from Scholes and Williams (1977).

As long as the assumptions underlying the market model are met, the coefficients of the model should not vary when the return interval is changed. While securities are trading continuously, true returns could be calculated for any security and for the market from prices noted at any stipulated points appropriate to the selected unit of

²¹ See for example, Scholes and Williams (1977), Dimson (1977), Cohen et al. (1983a and 1983b).

duration. In practice, the market is not continuously observable. Securities trade at discrete time intervals and prices are recorded only when these trades take place. Under these circumstances, the dates on which a security is traded will not necessarily coincide with the dates demarcating the selected time intervals. This applies equally to the index. This problem of nonsynchronous return intervals is clearly more likely to occur where trading is infrequent.

The differences between the measured returns and the true returns represent differences between the observed market model and the true model. Where measured returns are not synchronised, the econometric problem of errors in variables is introduced. Market model coefficients estimated using ordinary least squares are consequently biased and inconsistent. In particular, the beta coefficients of shares trading more frequently than average are overestimated while those trading less frequently than average are underestimated.

The problem of nonsynchronous trading has little impact on recorded returns for most ordinary shares (common stocks) where monthly return data are used. With monthly return data, the Scholes-Williams (1977) procedure is likely to be required only where trading is extremely infrequent, such as

in the case of a stock exchange seat.²² This suggests that monthly data may be more appropriate for the estimation phase of this study.

The use of monthly rather than weekly data is supported by Affleck-Graves, Money and Carter (1981) in a paper which provides guidelines for the estimation of beta coefficients in the market model where JSE data are used. In particular, they examine the effect of "false zeros" on the beta estimate.²³ A "false zero" arises when a zero return on a share is recorded although the share did not trade during that period. The period is included in the series by assuming a closing price equal to the latest recorded price of the previous period. Using least squares regression, the inclusion of "false zeros" artificially decreases the beta coefficient as the line fitted is flatter than it would have been if they had been omitted.

Affleck-Graves et al. (1981) conclude that the exclusion of zero returns using weekly data is unlikely to result in a statistically significant difference in the beta coefficient and that there is thus no need to exclude the "false

²² Cohen et al. (1983a and 1983b) also suggest that a better estimate is obtained by lengthening the interval. Beaver, Christie and Griffin (1980, p141) use monthly return data for parameter estimation (while using daily data for the test period) to avoid problems raised by the nonsynchronous nature of daily return data.

²³ These guidelines are based on the results of tests on 2,520 different beta coefficient estimates using seven years of weekly data for each of fifteen shares listed on the JSE.

zeros".²⁴ They suggest, however, that any potential impact of "false zeros" on the beta estimate is reduced where observations are taken over longer time intervals as fewer zero returns, and in particular, fewer nontrades are likely. This implies a preference for monthly return data over weekly return data where the data includes "false zeros".

It is concluded that monthly data are more appropriate for the estimation phase of this study. Accordingly, 60 four-weekly returns were calculated for each share and 60 corresponding returns for the market by selecting every fourth weekly share price observation (and the corresponding observation on the index) in the estimation period.

6.3 Conclusion

It is clear from the above that there are conflicting requirements for the return interval. In particular, the considerations for examining the test period and those for parameter estimation differ. For the test period, the conclusion is in favour of a shorter return interval with the qualified exception where there is event date

²⁴The data used by Affleck-Graves et al. (1981) do not allow a distinction between false and genuine zeros. The authors first exclude and then include all zero returns, estimate the betas in each case and test for significant differences between them. This test would thus potentially overstate the impact of "false zeros". The result on which their conclusion is based should thus be relatively robust, even though some of the fifteen shares in the relatively small sample may be regarded as amongst those relatively more frequently traded on the JSE.

uncertainty; thus the most appropriate choice is weekly return data.

Owing to thin trading on the JSE and the possibility of concomitant nonsynchronous return intervals, the intervalling effect may cause the parameter estimates based on this data to be biased and inconsistent. This is most likely when shorter return intervals are used but is likely to have little or no impact where monthly returns data are used. The data used for this study include "false zeros" which cannot be distinguished from genuine zeros in the data. Where monthly returns are used, the inclusion of "false zeros" has been shown to have no effect on beta estimation. It is therefore appropriate to use four-weekly returns for parameter estimation in this study.

7.0 CONTROLS

7.1 Need for controls

This study seeks to establish whether the reporting of financial targets and constraints has an effect on share prices. It is thus necessary to show not only that there is an effect on share prices, but also to demonstrate, as far as possible, that the event caused the effect. Campbell and Stanley (1963, p5) identify eight different classes of extraneous variables which may jeopardise the internal validity of the research design. If these factors

are not controlled in the research methodology, they may produce effects which are confounded with the effects of the event.

Three of the eight factors identified by Campbell and Stanley (1963) are relevant to the current study, namely history, maturation and selection:

- * The history problem refers to extraneous events which occur at the time of the event and which can confound the assessment of the effect of the event.
- * The maturation problem occurs when extraneous phenomena influence the dependent variable as a function of time.
- * Self-selection bias occurs when subjects who volunteer for the experiment are predisposed to the treatment in a manner which differs systematically from the population of interest. In laboratory experiments, individuals are randomly assigned to groups. In contrast, random assignment of firms is not usually possible in capital market studies (Foster, 1980, p43).

7.2 Controlling for confounding events

The calculation of abnormal residuals by applying the market

model, or the calculation of market adjusted returns (Brown and Warner, 1980),²⁵ is an important control as it has the effect of removing economy-wide factors which affect the market as a whole. The market model procedure also captures the differential impact of these factors on individual companies owing to differences in systematic risk.

The severity of the impact of the history problem on an event study depends on whether it is a study of a single event or of a type of event. With a single event, observations have been exposed to a common set of "exogenous, contemporaneous influences" with a high potential to confound the information effect (Bowman, 1983, p563).²⁶ Not all of these influences are eliminated by applying the market model.

This study is concerned with a type of event. The event type is the voluntary reporting of specified pieces of information. Event time and calendar time are not contemporaneous as the annual report release dates concerned are well spread over the period 1974 to 1982, as shown in

²⁵ See sections 4.1 through 4.3 above.

²⁶ Foster (1980, p54) raises the importance of addressing the confounding events problem in capital market studies and notes its potential severity in accounting policy decision studies as event time and real (calendar) time are coincident in most studies of this nature.

table 4.3.²⁷ Reliance on diversification of dates assumes that the net effect of other events is minimal. Foster (1980, p55) cites Ball and Brown (1968), Beaver (1968) and Foster (1977) as prominent examples of studies in which this approach is adopted. Even where event time and calendar time are not contemporaneous, clustering of dates may present a problem. While Brown and Warner (1980 and 1985) and Dyckman, Philbrick and Stephan (1984) offer evidence that clustering by dates has limited impact on the results, extreme clustering may have a marked effect. However, it can be seen from table 4.3, which shows the event dates by month, that the clustering in this study is so small that it is of no concern.²⁸

As firm-specific confounding events adhere to event time, they are not dissipated by diversified calendar dates. In an event study of dividends, the earnings announcement is potentially a firm-specific confounding event as dividend announcements are frequently made at the same time and/or in the same document as earnings announcements.²⁹ Earnings and dividend announcements are similarly potentially

²⁷ Table 4.3 shows that from 1974 to 1976, one company per annum adopted the practice of reporting one or more of the variables under study. From 1977 to 1982, the number of newly reporting companies per annum (with frequencies in brackets) were three (1), five (3), six (1) and seven (1).

²⁸ Table 4.3 shows that, over the period 1974 to 1982, the number of newly reporting companies in any one month of any year (with the frequencies in brackets) was one (18), three (2), two (3) and four (1).

²⁹ Bowman (1983, p564) provides this example.

confounding events in a study of reporting financial targets in the annual report. They are not confounding events in this study as they are made in the preliminary report, which is released several weeks before the annual report. However, as Knight and Affleck-Graves (1986) show that the annual reports of companies listed on the JSE have information content, other pieces of information contained in the annual report may have a confounding effect on the results.

Knight and Affleck-Graves (1986) test for the information content of the preliminary report, the interim report and the annual report respectively. They use the share price data of 95 industrial shares quoted on the JSE over a 405 week period spanning the years 1973 to 1980. Using Beaver's (1968) absolute residual analysis, the results for this test show abnormal absolute residuals at 78.4%, 45.0% and 38.8% above the normal price variation on the release date of the preliminary, interim and annual report respectively.³⁰ Their conclusion is that the annual report has information content, albeit at a considerably lower level than that of either of the other two reports.

³⁰ Knight and Affleck-Graves (1986) also tested by calculating the abnormal performance index (Ball and Brown, 1968). These results suggest that the annual report does not provide any information incremental to that already provided by the interim and preliminary reports. Knight and Affleck-Graves (1986, p76) suggest that the inconsistency between the two sets of results may be explained by the misspecification of the Ball and Brown (1968) earnings expectations model at annual report release date.

In view of this finding, a positive and significant average variability ratio in the event week in the current study is not sufficient to confirm the information content of financial targets as other pieces of information in the annual report could have a confounding effect on the results. It is therefore necessary to show that the information content for the thirty four reporting companies as indicated by the average variability ratio is greater than that which would ordinarily be expected on the annual report release date. This is aimed at separating the information content of the financial targets from that of other items in the annual report.

The Knight and Affleck-Graves (1986) finding has no implications for the directional tests. The squared residuals methodology they use (drawn from Beaver, 1986) provides a nondirectional test which shows increases or decreases in variability irrespective of whether the share price impact is positive or negative (as does the Lobo and Mahmoud (1989) methodology in the current study). There is also no reason to expect a **positive** impact on the share price on the release of the annual report. A positive impact on the share prices of the reporting companies should therefore be sufficient support for the hypotheses based on estimation risk and signalling. However, as the use of control groups does mitigate the problems of self-selection bias, they are also used for the directional tests. The inclusion of this control also allows the results of the

directional tests to be used for the hypothesis based on rational expectations.

Campbell and Stanley (1963) advocate the use of strong controls to eliminate rival hypotheses and it has become practice to use control groups in capital market studies where required. The efficacy of control groups in capital market studies is considered in the next section.

7.3 Efficacy of control groups

As Foster (1980) observes, 'the ideal would be to have two groups which are identical in every respect with the exception of the impact being tested and those differences which are controlled by the model. As the firms are not randomly assigned, they self-select the group to which they belong. This leads to the possibility of self-selection bias; that is, any difference observed between the two groups' results may be a reflection of differences between the groups rather than differences in the disclosure being examined.

Harrison, Tomassini and Dietrich (1983) conclude that the control group choice can make a difference to empirical conclusions in an actual setting relating to accounting changes. They reach this conclusion after testing their data with four different control groups ranging from the

market model as sole control to increasingly complex control groups matched on beta, industry and earnings measures.

Murray (1983, p129) cites studies by Abdel-Khalik and McKeown (1978), Brown (1980) and Ricks (1982). Control groups are used in all of these studies to examine the impact on security prices of firms' changing their inventory accounting policies to LIFO and they reach conflicting conclusions. One aspect of the research designs on which the studies differ is the matching variables for the selection of the control groups. In a further study on LIFO changes, Murray (1983) employs all the matching variables from the three studies cited above (namely industry, systematic risk, unexpected change in earnings per share and fiscal year end) as well as size. This provides thirty two different combinations for control group construction. He finds that, by altering the control group construction, the relative performance of the change and nonchange groups is altered. He suggests that while certain self-selection biases may be controlled by any one control group, this does not necessarily prevent the persistence of others.

This review suggests that the use of control groups will not guarantee unequivocal results. The difference between the results of two groups may reflect differences between the groups rather than in the disclosure being examined. It also appears that a variation in the matching criteria can

be sufficient to cause different conclusions to be reached although the same experimental group data and the same tests are used. It should be noted that the use of control groups nevertheless continues to be an accepted and expected practice in market studies.³¹ Notwithstanding its limitations, the control group design appears to be the most appropriate available to mitigate self-selection bias and to control for the confounding effect of other information accompanying the financial targets in the annual report. Two control groups are used in this study; the external control group (section 7.4) and the internal control group (section 7.5).

7.4 External control group

The external control group (table 4.5) has been constructed using industry sector as the matching variable.³² In respect of each reporting company:

- * All the names of nonreporting companies in the same JSE sector were noted.
- * The description of business for each of the nonreporting companies was located in the Stock

³¹ Examples of studies using control groups are Abdel-Khalik and Mckeown (1978), Ricks (1982), Knight and Affleck-Graves (1983) and most recently, Ruland et al. (1990) and Lev and Penman (1990).

³² Industry sector is considered the most appropriate matching variable for this study. Industry sector is a commonly used matching variable. See for example, Abdel-Khalik and Mckeown (1978), Ricks (1982), Knight and Affleck-Graves (1983), and most recently, Ruland et al. (1990) and Lev and Penman (1990).

Exchange Handbook (Johannesburg Stock Exchange, 1983) and compared with the business description of the reporting company. The most suitable candidate was then matched with the reporting company.

- * Where there were two or more suitable candidates, the company with the stated rand cost of total assets nearest to that of the reporting company was selected.
- * Where this process revealed no suitable partner, the company was not matched.³³

As certain industry sectors comprise very few companies (see table 4.4), it is difficult to match every reporting company with a control partner. There are consequently twenty five companies in the external control compared with thirty four in the experimental group. This is considered preferable to equating group membership sizes at the expense of including poorly matched companies.³⁴

It could be argued that any difference in the magnitude of the results revealed in this study in the event week is

³³ There is one exception to this. There was no suitable partner for SA Breweries in the Beverages and Hotels sector, but in view of the considerable diversification of this company, it is considered acceptable to match it with a company in the Industrial Holding sector (Barlow Rand).

³⁴ It is acknowledged that the matches achieved may not be perfect, but as a control is necessary, the aim is to build the most appropriate control with what is available. While limited to a lesser extent, both Lev and Perman (1990) and Ruland et al. (1990) find it necessary to compromise in matching. In the Lev and Perman (1990) study, 35% of the group is matched on two-digit industry classification and in the Ruland et al. (1990) study, 16 of the 146 firms on two- and three-digit industry classification.

explained by differences in the two groups rather than by the reporting or nonreporting of financial targets. Foster (1980) suggests that the characteristics relating to self-selection be considered and that, as an internal validity check, a firm profile analysis of the experimental and control groups be made to establish the statistical significance of the differences in these characteristics.

The firm profile analysis of the experimental and control groups in this study is shown in table 4.7. The selected financial variables include total assets and market capitalisation (as size measures), the debt ratio, return on assets, dividend payout ratio and several related variables. This analysis reveals that there is no significant difference between the selected financial variables for the two groups, with the exception of the debt ratio. There is thus no significant difference between the two groups on the basis of firm size (whether measured in terms of total assets or market capitalisation) or on the basis of variables relating to the three targets with the exception of the debt ratio. The absolute difference between the average debt ratios is not very large given the limited scope for matching in small industry groupings. Differences in leverage should be controlled to some extent by the market model. Also, it should be noted that this difference relates to only one of the three targets. Notwithstanding the imperfect matching, the firm profile analysis shows limited potential for self-selection bias.

For each company in the external control group, the annual report release date closest in time to the event date for its partner in the experimental group has been identified from the JSE records. The test period equivalent comprises the fifty one weeks centred on the annual report release date. The results in this period are compared with those calculated for the experimental group in the test period.³⁵

7.5 Internal control group

The internal control group is formed by matching the companies in the experimental group with themselves. This control is effected by comparing the abnormal performance of the experimental group during the test period with its abnormal performance during comparable periods centred on the equivalent of the event date in contiguous years (the test period equivalent).³⁶ This provides an almost perfect match which overcomes most, if not all, of the difficulties encountered in matching with other companies. Consequently, the effect of self-selection bias is essentially eliminated.

³⁵The results are expressed in terms of the averages of the abnormal residuals (see section 4.2), the averages of the market adjusted returns (see section 7.5) and the averages of the variability ratios (see section 4.3). The tests for significance are described in chapter 5, section 2.3.

³⁶The annual report release dates in the preceding and succeeding years were obtained from the JSE records.

A comparison of the performance of the experimental group with that of the internal control group in either the preceding or the following test period equivalent should provide a strong control. However, an even stronger control is provided by averaging the excess returns in the two periods. This reduces the impact of any changes in the control group companies that may have taken place over time, so mitigating the maturation problem.

Approximately 56 weekly observations for each company in each of the periods before and after the 292 weekly observations already gathered are required for estimation of the market model parameters for the internal control group. The unavailability of this additional data precludes this re-estimation. Another option is to use the parameters calculated for the experimental group. This entails the loss of a degree of independence as some of the data points used in calculating the abnormal residuals under examination will also have been used in estimating the parameters concerned. It does, however, allow comparisons across groups to be made on a reasonably consistent basis and it provides the basis for the calculation of average variability ratios.

A further option is to calculate market adjusted returns (see section 4.3 above) using a simplified version of the market model which Brown and Warner (1980) conclude to be as effective as the market model. As $\alpha=0$ and $\beta=1$ in this

model, the estimation error in the parameters is avoided. A disadvantage is that market adjusted returns do not control for differences in systematic risk. Both available options are therefore exercised. For comparability and completeness, the abnormal performance of all three groups is measured in terms of averages of abnormal residuals, averages of market adjusted returns and average variability ratios. The significance tests applied to the results are described in Chapter 5.

8.0 SUMMARY

In this study, the event date is defined as the first occasion on which a company releases an annual report containing a statement of one or more of the specified financial targets.

Two directional tests and a nondirectional test are used to test the hypotheses developed in chapter 3. Abnormal performance is measured in terms averages of abnormal residuals, averages of market adjusted returns and average variability ratios. The market model parameters are estimated using four-weekly returns calculated from data in the estimation periods. This largely avoids the problems arising from nonsynchronous trading. Actual and expected returns are calculated during the test and equivalent periods using weekly return intervals.

The calculation of excess returns (abnormal residuals or market adjusted returns), and diversification of release dates control for most confounding events. The control group design mitigates self-selection bias and provides the best available means of controlling for the firm-specific effects of information accompanying the financial targets and constraints in the annual report. The traditional external control group is formed with industry sector as matching variable. Owing to matching difficulties, it comprises only twenty five companies, which may reduce its effectiveness as a control. A firm profile analysis of the experimental and external control groups shows little potential self-selection bias. The companies in the internal control group are almost perfectly matched, essentially eliminating the potential limitations of a control group comparison. This creates a powerful control.

The results generated by applying the research methods described in this chapter are reported in chapter 5 after providing a framework for their analysis by re-stating the hypotheses, stating the expected results and describing the significance tests to be used.

9.0 TABLES

The tables listed below appear on pages 158 to 163:

<u>Table</u>	<u>Title</u>
4.1	Reporting companies (experimental group)
4.2	Financial targets and constraints reported
4.3	Distribution of event dates by month and year
4.4	Number of reporting companies and total number of companies by industry sector
4.5	Nonreporting companies (external control group)
4.6	Matched experimental and control group companies
4.7	Firm profile analysis

TABLE 4.1 REPORTING COMPANIES (EXPERIMENTAL GROUP)

<u>COMPANY</u>	<u>α³⁷</u>	<u>β</u>
1 Abercom	-0.0161	1.1780
2 AECI	-0.0030	1.1740
3 Altech	0.0290	0.0903
4 Anglo-Alpha	0.0117	1.1723
5 Blue Circle	0.0044	1.1625
6 Boumat	0.0041	1.0619
7 Bromain Holdings	-0.0090	1.3533
8 Calan	-0.0055	1.3654
9 Chemhol	0.0219	0.1471
10 Dunswart	-0.0025	0.8359
11 Edgars	-0.0037	0.8340
12 Fedfood	-0.0099	1.3623
13 Fedvolk	-0.0108	1.2531
14 HLH	0.0108	1.0447
15 Kanhym	-0.0092	0.8136
16 Kohler	0.0002	0.7184
17 Malbak	0.0053	0.8731
18 Metalbox	0.0035	0.9431
19 Nampak	-0.0037	0.9461
20 OK Bazaars	-0.0007	1.2315
21 Plate Glass	0.0131	0.8150
22 Powertech	-0.0193	1.3426
23 Premier Group	0.0002	0.8771
24 Protea	-0.0025	1.2267
25 Quinton Hazell Superite	0.0092	1.1651
26 Romatex	0.0009	1.2399
27 Saficon	-0.0016	0.9804
28 Scotts Shoes	0.0191	1.2749
29 Seardel	0.0196	1.3764
30 Sentrachem	-0.0212	1.0049
31 SA Breweries	0.0041	1.0322
32 Sappi	0.0092	1.0606
33 Toncoro	0.0150	0.6736
34 Tongaat	-0.0136	0.9960
Mean α and β values for all firms	0.0014	1.0184
Mean α and β values for matched firms	0.0032	0.9677
Number of firms with $\beta > 1$		20
Number of matched firms with $\beta > 1$		13

³⁷ As α is estimated using four-weekly returns in this study, the estimate is divided by 4 where the market model equation is used to calculate the weekly expected returns in the test period.

TABLE 4.2 FINANCIAL TARGETS AND CONSTRAINTS REPORTED

VARIABLES	COMPANIES	DIV ^a	D/E ^b	RET ^c
All	20	20	20	20
Two only	5	4	5	1
One only	9	5	3	1
	34	29	28	22

- ^a Target dividend payout ratio
^b Target debt-equity ratio
^c Target rate of return

TABLE 4.3 DISTRIBUTION OF EVENT DATES BY MONTH AND YEAR

YEAR	MONTHS												TOTAL
	J	F	M	A	M	J	J	A	S	O	N	D	
1974						1							1
1975							1						1
1976								1					1
1977						3			1	1			5
1978					1			1	1				3
1979			2			4							6
1980		1		1			2		1				5
1981		1			1	3			1		1		7
1982			2	1		1			1				5
TOTAL	0	2	4	2	2	12	3	2	5	1	1	0	34

TABLE 4.4 NUMBER OF REPORTING AND TOTAL NUMBER OF COMPANIES BY INDUSTRY SECTOR

<u>SECTOR</u>	<u>REP.</u>	<u>TOTAL</u>
Industrial Holding	8	54
Beverages and Hotels	1	8
Building and Construction	3	17
Chemicals and Oil	3	14
Clothing, Footwear and Textiles	2	27
Electronics	2	13
Engineering	1	36
Fishing	0	4
Food	3	11
Furniture and Household	0	14
Motor	2	18
Paper and Packaging	4	14
Pharmaceutical and Medical	0	4
Printing and Publishing	0	6
Steel and Allied	1	3
Retailers and Wholesalers	3	29
Sugar	1	3
Tobacco and Match	0	6
Transportation	0	4
TOTAL	<u>34</u>	<u>285</u>

TABLE 4.5 NONREPORTING COMPANIES (EXTERNAL CONTROL GROUP)

<u>COMPANY</u>	<u>α</u> ³⁸	<u>β</u>
1 Amic	-0.0081	1.2934
2 Barlows	0.0071	1.0925
3 Bonuskor	-0.0058	1.4830
4 Carlcor	0.0216	0.5868
5 Consol	0.0283	0.3299
6 Darling & Hodgson	0.0106	0.8090
7 Fedblaikie	0.0083	0.7173
8 Foschini	0.0129	0.7213
9 Imperial cold Storage	-0.0044	0.9652
10 Irvin & Johnson	0.0014	0.9827
11 McCarthy	-0.0028	1.8158
12 Messina	-0.0122	1.5459
13 Murray & Roberts	0.0018	1.2002
14 Natal Cons. Industrial Inv.	-0.0053	0.8540
15 Ovenstone Investments	-0.0157	1.1668
16 Plascon-Evans	0.0076	1.0257
17 Pretoria Portland Cement	0.0087	0.7571
18 Reunert	0.0157	0.3003
19 Rex Trueform	0.0170	0.1681
20 Sasol	0.0037	0.8261
21 Spitz Footwear Holdings	0.0138	0.8160
22 Tiger Oats	0.0000	1.2149
23 Triomf Fertilizer	-0.0122	0.4049
24 Union Steel Corporation	0.0133	1.2086
25 Vereeniging Refractories	0.0106	0.5306
Mean α and β values	0.0050	0.9265
Number of firms with $\beta > 1$		10

³⁸ As α is estimated using four-weekly returns in this study, the estimate is divided by 4 where the market model equation is used to calculate the weekly expected returns in the equivalent period.

TABLE 4.6 MATCHED EXPERIMENTAL AND CONTROL GROUP COMPANIES

<u>EXPERIMENTAL GROUP</u>	<u>CONTROL GROUP</u>
2 AECI	20 Sasol
3 Altech	18 Reunert
4 Anglo-Alpha	17 Pretoria Portland Cement
6 Boumat	7 Fedblaikie
8 Calan	6 Darling and Hodgson
9 Chemhol	16 Plascon Evans
10 Dunswart	24 Union Steel
11 Edgars	8 Foschini
12 Fedfood	10 Irvin and Johnson
13 Fedvolk	1 Amic
14 HLH	3 Bonuskor
15 Kanhym	9 Imperial Cold Storage
16 Kohler	4 Carlcor
17 Malbak	12 Messina
19 Nampak	5 Consol
21 Plate Glass	13 Murray & Roberts
23 Premier Group	22 Tiger Oats
24 Protea	15 Ovenstone Investments
26 Romatex	14 Natal Cons. Ind. Inv.
27 Saficon	11 McCarthy
28 Scotts Shoes	21 Spitz Footwear
29 Seardel	19 Rex Trueform
30 Sentrachem	23 Triomf
31 SA Breweries	2 Barlows
33 Toncoro	25 Vereeniging Refractories

TABLE 4.7 FIRM PROFILE ANALYSIS

FINANCIAL VARIABLE	EXPERIMENTAL ^a	EXT. CONTROL ^a	COMPARISON ^b	
	MEAN	MEAN	P-VALUES	
			t-test	Wilcox
Total assets (rands)	224,686	206,661	0.7945	0.5046
No. of ordinary shares	34,187	32,960	0.9421	0.6181
Share price (Rands)	5.96	7.42	0.7024	0.7357
Market capitalisation (rands)	138,676	125,969	0.8616	0.8720
Debt ratio (%) ^c	57.7	48.9	0.0128	0.0277
Return on assets (%)	16.1	16.7	0.7031	0.7582
Growth in profit attributable to ordinary shareholders (%) ^d	34.2	20.8	0.1981	0.4253
Dividend growth (%) ^d	18.4	16.3	0.7436	0.7642
Dividend payout ratio (%) ^d	42.4	36.0	0.4248	0.0911

^a The experimental and external control groups comprise 34 and 25 firms respectively.

^b The comparison is made using two-sample significance tests which is regarded as appropriate in this case (see chapter 5, section 2.3).
 The p-values relating to a comparison of the subgroup of 25 matched reporting firms with the external control group in terms of both the two-sample and paired difference tests agree with the above (that is, only the debt ratio differs significantly).

^c Debt ratio = total debt/total assets

^d Five-year average.

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1.0 INTRODUCTION

The examination of estimation risk, rational expectations and signalling theories led to the development of three hypotheses for the expected share price reaction on the event date (that is, the first occasion on which financial targets are reported). The research methodology described in chapter 4 is designed to isolate and measure those effects which can be linked to the information event. The results so generated are reported in this chapter.

The expected results and their interpretation are considered in section 2.0. The results generated in respect of the experimental group, internal control group and external control group are presented and compared in sections 3.0 through 7.0. They are summarised and evaluated in section 8.0.

To provide a close focus on the weeks immediately surrounding week 0, the results for week -10 to week +10 are presented in tables at the end of this chapter. Plots of the weekly results for the full 51-week period are provided in figures 5.1 through 5.15 (see appendix 5.1). The period from week -10 through +10 is demarcated by vertical lines in these figures to allow cross-referencing to the tables.

- * The voluntary reporting of financial targets should have no effect on the mean share price.
- * The voluntary reporting of financial targets should have no effect on the dispersion of share price changes.

2.2 Expected results

The three stated hypotheses are not mutually exclusive as the three underlying arguments all support a reaction in share prices. A positive result in any one of the measures (namely AAR, AMAR or AVR) indicates share price reaction. However, further interpretation of a positive AAR or AMAR differs from that of a positive AVR.² In the directional tests, a positive AAR or AMAR indicates a positive impact on share prices in aggregate. In the nondirectional test, a positive AVR indicates a higher level of variability than the average variability level in the estimation period irrespective of direction.³

²This follows from the research method in each instance (see chapter 4, section 4.0).

³The variability ratio has an expected value of zero and a variance of one. If the variability ratio for any firm exceeds zero, the information content exceeds that conveyed on average during the estimation period and vice versa. In this study, the weekly averages of the variability ratios are calculated to indicate the effect of the voluntary reporting on the average variability of returns in each week in the test (or equivalent) period relative to the average variability in the estimation period.

As there is no reason to expect a positive impact on share prices when the annual report is released, a positive and significant AAR and/or AMAR for the experimental group indicates a positive impact on share prices in aggregate and suggests that it is caused by the reporting of financial targets. Positive differences between the experimental and control group results strengthen the linkage between reporting and share price impact as this control mitigates the problem of self-selection bias.

A positive and significant AVR for the experimental group is on its own not sufficient to conclude that the reporting of financial targets has an impact on share prices as the annual report ordinarily has information content (Knight and Affleck-Graves, 1986).⁴ Other pieces of information in the annual report are thus likely to have a confounding effect on the results. As this confounding effect is firm-specific, it is not controlled for by either the market model or by the diversification of calendar dates. It is therefore necessary to show that the positive result for the experimental group is larger than that which would ordinarily be expected on the release of the annual report. To test for this, the results are compared with those of the control groups.

⁴The Knight and Affleck-Graves (1986) findings are reported in chapter 4, section 7.2.

Several difficulties are faced in forming the external control group owing to the many factors giving rise to differences between a reporting firm (in the experimental group) and its potential partners. This is exacerbated in those industry sectors which are not well represented on the market. As the internal control group comprises the reporting firms, these problems are avoided.⁵ The internal control group is thus likely to be a more effective control on the results than is the external control group.

The results reported in this chapter can be expected to include large share price impacts in weeks other than week 0. Knight and Affleck-Graves (1986) examine the share price impact of the preliminary report, the interim report and the annual report. In each case, the results are centred on the information release date in question. The preliminary report includes an announcement of earnings and dividends for the year and it is released some weeks (say, between week -08 and week -04) before the release of the annual report. Knight and Affleck-Graves (1986) find that the preliminary report has the strongest share price impact of the three reports included in their study. Similarly, the approximate timing of the interim report release date

⁵The formation of these two groups and the supporting rationale is described in chapter 4, sections 7.4 and 7.5. Included is a consideration of the limitations of the use of control groups and the specific difficulties encountered in this study, leading to compromise matches in some instances and the failure to identify a partner at all in others.

(some weeks after the mid-year point) relative to the annual report release date suggests impacts late in the test period. Being firm-specific, these information events are not controlled for by the market model. The timing of the release of the preliminary report and of the interim report is related to, but not rigidly linked to, the annual report release date. Therefore the associated share price impacts are likely to be dissipated, but not fully controlled for, by the diversification of calendar dates. If a sufficiently large number of preliminary (or interim) report release dates were to coincide, large share price impacts could be evident. Owing to the relative weakness of the annual report effect, there is no reason to expect the results in the event week to be the largest in the test period, nor is this a criterion for confirmation of the hypotheses.

2.3 Tests of statistical significance

In selecting the appropriate tests for statistical significance, it is necessary to choose between

- * two-sample and paired-difference tests
- * parametric and nonparametric tests

Having selected the test(s), it is necessary to consider the interpretation of significance and nonsignificance in the results.

The experimental and internal control groups are both composed of the same companies, with the results centred on the event date and its equivalent respectively. There are thus two measurements for each company, providing thirty four paired measurements. The paired-difference test is clearly appropriate in this instance.

The issue is not as clear-cut in the case of the external control group. The intention was to identify thirty four nonreporting companies which could be matched with the reporting companies using industry sector and business description as the primary and total assets as the secondary matching criterion. Not all reporting companies were matched, and the matches that were achieved were not necessarily perfect. For these reasons, the results for the twenty five matched reporting companies (in the experimental group) and the twenty five nonreporting companies (external control group) respectively are not as readily seen as paired measurements in one sample as are the results for the experimental and internal control groups.

While there is a clear case for the paired-difference test where the matching is close, one of the assumptions for the two-sample test is that each observation is unrelated to every other observation. The matching in this study ensures that matched observations are related to one another, but it can be argued that matching is not

sufficiently close to support the paired-difference test. In view of this ambiguity, it seems appropriate to apply the two-sample test to the comparison of the thirty four reporting companies with the twenty five nonreporting companies, the paired-difference test to the twenty five matched companies, and to bear the above considerations in mind when interpreting the results. An advantage of the two-sample test is that, as the observations are not matched, the sample sizes need not be equal. The data relating to the nine nonmatched reporting companies can thus be retained in the two-sample test whereas the paired-difference test requires that they be discarded.

The second choice is between parametric and nonparametric tests. Parametric tests are applied as there is no reason to believe that the assumptions for parametric tests are not met. However, nonparametric tests are also applied because the relatively small sample sizes may raise questions as to whether parametric tests can be used appropriately if the data are nonnormal. The nonparametric analogues to the paired-difference and two-sample t-tests are the Wilcoxon Signed Rank Test and Wilcoxon Rank Sum Test respectively.

Where a result is statistically significant, the null hypothesis is rejected and there is clear support for the alternative hypothesis. Lack of statistical significance in a result indicates that there is insufficient evidence to

reject the null hypothesis. Given the relatively small sample sizes in this study (34 and 25), failure to reject the null hypothesis may indicate low power of the test rather than the truth of the null hypothesis. It should be noted that lack of power may be more serious in the case of experimental and external control group comparisons owing to imperfect matching which adds a further source of variation. Thus where a result lacks statistical significance, it should be interpreted with care. Secondary indications of support for the hypotheses are provided by the relative magnitude of the impact, and in the directional tests, by conformity with the hypothesised direction. In view of the ambiguity introduced by the possible low power of the test, weight will be placed on these secondary indications where the results lack statistical significance.

3.0 EXPERIMENTAL GROUP

Table 5.1 shows the results for the thirty four reporting companies (the experimental group).⁶ These results include AARs, AMARs, AVRs and related p-values for the t-test and nonparametric Wilcoxon Signed Rank Test over the 21-week period from week -10 to week +10. Plots of weekly results for the 51-week period are reflected in figures 5.1, 5.2 and

⁶ All tables appear at the end of this chapter. Figures of weekly plots and of cumulative plots appear in appendices 5.1 and 5.2 respectively.

5.11 (see appendix 5.1). Table 5.2 shows the results for the subgroup of twenty five matched reporting companies. The relative magnitude of the reported results is noted although it is not a criterion for acceptance of the hypotheses.

Week 0 (event week) results⁷

The average of abnormal residuals (AAR) in week 0 (the event week) is 2.5% and it is significantly different from zero in terms of both the t-test (p-value=0.0033) and the Wilcoxon Signed Rank Test (p-value=0.0005). It is the only AAR in the 51-week period which is significantly different from zero. It is also the largest over the 51-week period and it is considerably larger than the next largest AAR (1.4%) which occurs in both week -13 and week -04; in neither week is it statistically significant.

The pattern of the averages of market adjusted returns (AMARs) over the test period is similar, although not identical, to that of the AARs. The AMAR of 2.8% in week 0 is significantly different from zero in terms of both tests (p-values of 0.0004 and 0.0003 respectively). It is the

⁷The event week is identified in chapter 4, section 3.0.

largest in the 51-week period, considerably larger than the AMARs of 1.9% and 1.3% in weeks -04 and -02 respectively.⁸

The average of the variability ratios (AVR) for the experimental group is 0.69 in week 0, but it is not statistically significant. Care should be taken in interpreting this result owing to the possible low power of the significance test (see section 2.3 above). Although it is not significantly different from zero, the AVR is one of the five largest means in the 21-week period. Being in excess of the expected value of zero, this AVR indicates that the variability in the event week is higher than the average variability in the estimation period.

Both the AAR and the AMAR in the event week are positive, statistically significant and respectively the largest in the test period. These results provide strong support for the view that information has been released in the annual report on the event date. Although not statistically significant, the AVR supports this view. The results are therefore consistent with Knight and Affleck-Graves (1986). The AAR and AMAR results further indicate that the

⁸ These AMARs are both statistically significant in terms of the t-test but not in terms of the Wilcoxon Signed Rank Test. The AMAR in week -15 is the only other statistically significant result, measured in terms of the Wilcoxon Signed Rank Test.

information in the annual report has a positive and significant effect on share prices.

Impacts in other weeks

Other information releases may explain the more noticeable impacts in other weeks. These include: AARs of 1.4% in weeks -13 and -04 and an AAR of 1.1% in week +24; AMARs in weeks -04 (1.9%), -02 (1.3%) and +24 (1.1%); AVRs in weeks -16 (2.81),⁹ -15 (1.4), -05 (1.42), -04 (0.75) and -03 (0.74). In particular, the timing of the impacts in weeks -04 and +24 is consistent with the information effect expected on releasing the preliminary report and interim reports respectively.¹⁰

Matched reporting companies

As explained above, only twenty five of the thirty four

⁹This AVR result is affected by an outlier in the data. Outliers have not been adjusted. This presents a potential problem but as no error was found in the data (that is, they appear to be genuine observations) there is no reason to drop any of the observations. None of the results in the central twenty one weeks is affected in this way.

¹⁰The cumulative effect of the preliminary report impact is discernible in the strong upward trend in the CAARs commencing at week -14 and the cumulative effect of the interim report in weeks +24 and +25 (figure 5.1c). The AMAR results contribute to the corresponding upward trend in the CAMARs plotted in figure 5.2c. Both figures are to be found in appendix 5.2.

reporting companies could be matched satisfactorily with nonreporting companies to form the external control group.¹¹ As the results for each company in this subgroup of twenty five matched reporting companies (table 5.2) are paired with those of a company in the external control group to calculate paired differences, they are briefly reviewed below.

In the 51-week test period, the AAR of 2.95% is the largest positive result and the only result which is significantly different from zero (p-values are 0.0053 and 0.007 respectively). The positive AMAR of 2.8% in week 0 is similarly the largest and the only result in the test period which is significantly different from zero (p-values are 0.0016 and 0.001 respectively). The positive AVR of 1.53 in week 0 is the largest but two in the central 21-week period but it is not significantly different from zero.¹² The week 0 results for the matched reporting companies are thus consistent with those for the full experimental group.

4.0 INTERNAL CONTROL GROUP

Table 5.3 shows the results and the p-values for the related

¹¹ See chapter 4, section 7.4.

¹² The result in week +02 is significantly different from zero in terms of both tests, that in week +05 in terms of the t-test and that in week +08 in terms of the Wilcoxon Signed Rank Test.

t-test and Wilcoxon Signed Rank Test for the internal control group.¹³ The results are also plotted in figures 5.3, 5.4 and 5.12 (see appendix 5.1).

*Week 0 (equivalent week) results*¹⁴

The AAR and the AMAR in week 0 (the equivalent week) are relatively small (0.29%) and neither is significantly different from zero. These results indicate that the release of the annual report has no positive impact on share prices in aggregate. The AVR of -0.26 in week 0 is not significantly different from zero. This indicates that the variability in the equivalent week may be lower than the average variability in the estimation period and that there is no share price effect associated with the release of the annual report.

Impacts in other weeks

In week -04, the AAR (2.57%), AMAR (2.6%) and AVR (1.56) are all positive and are respectively considerably larger than any other result in the test period using each of these

¹³The formation of the internal control group is described in chapter 4, section 7.5.

¹⁴This is the equivalent of the event week; its identification in the case of the internal control group is described in chapter 4, section 7.5.

measures, but none is statistically significant. These results are consistent with the expected information effect of releasing the preliminary report.

5.0 EXTERNAL CONTROL GROUP

Table 5.4 shows the results and the related p-values for the t-test and Wilcoxon Signed Rank Test for the external control group.¹⁵ These results are plotted in figures 5.7, 5.8 and 5.13 (appendix 5.1).

*Week 0 (equivalent week) results*¹⁶

Neither the AAR of 0.55% nor the AMAR of 0.65% in week 0 (the equivalent week) is amongst the larger AARs or AMARs respectively and neither is significantly different from zero.¹⁷ The AVR of 0.05 in week 0 is also not significantly different from zero. While it is the

¹⁵ The external control group comprises an appropriate group of companies which serves as the second control on the results of the experimental group. The supporting rationale and the basis of selection are contained in chapter 4, section 7.4.

¹⁶ In forming the external control group, the annual report release date of each company closest to the event date for its matching partner in the experimental group is identified. The week in which this date falls is week 0, also referred to as the equivalent week. This is fully described in chapter 4, section 7.4.

¹⁷ The results are very similar; The AAR in week 0 is 0.55% while the three largest AARs occur in weeks -08 (1.95%), -05 (1.7%) and +01 (1.3%). Of these, only the AAR in week -05 is significantly different from zero in terms of both tests. Similarly, the AMAR in week 0 is 0.65% while the three largest AMARs occur in weeks -08 (1.7%), -05(1.9%) and +01(1.3%). Of these, only the AMAR in week -05 is significantly different from zero.

smallest positive AVR in the 21-week period, eleven of the AVRs in this period are negative. All these results are very similar to the results for the internal control group; they indicate that the release of the annual report has no impact on share prices.

Impacts in other weeks

Both the AAR (1.7%) and AMAR (1.9%) in week -05 are positive and statistically significant, reflecting an information impact. Although not significantly different from zero, there are similar results in week -08; an AAR of 1.9% and an AMAR of 1.7%. The the AVRs in weeks -11 (2.6)¹⁸ and -02 (0.86) are the largest and the largest but one in the period respectively, and the latter is statistically significant. Again, the results some weeks before week 0 may indicate the information effect of releasing the preliminary report.

6.0 COMPARISON BETWEEN EXPERIMENTAL AND INTERNAL CONTROL GROUPS

The results reported in this section highlight the differential impact after controlling for self-selection bias and for the potential (firm-specific) confounding effect of other pieces of information in the annual report.

¹⁸The AVR in week -11 is affected by an outlier. See footnote 9.

This is done by comparing the experimental group results with those for the internal control group. Specifically, the difference is taken between the result in each week for each company in the experimental group and the paired result in the internal control group, and the weekly averages of these differences are computed. The results in each week are tested for statistical significance using the paired-difference t-test and Wilcoxon Signed Rank Test. The rationale for using paired-difference significance tests is given in section 2.3 above. The results and the related p-values for the central 21-week period are given in table 5.5. They are also plotted in figures 5.5, 5.6 and 5.14 (see appendix 5.1).

Week 0 (event week) results

The AARD of 2.2% in week 0 represents a statistically significant, positive difference between the results of the two groups in that week with p-values of 0.017 and 0.0397 respectively. It is the largest but one AARD (that in week +24 is 2.4%) in the 51-week period.¹⁹ These results are consistent with those reported in sections 3.1 and 4.1; the AAR for the experimental group is large (2.51%) and statistically significant as compared with that for the

¹⁹The only other positive and statistically significant AARD in the period is 1.53% in week -13. That in week +10 is statistically significant in terms of the t-test.

internal control group which is small (0.21%) and is not statistically significant.

The AMARD of 2.5% in week 0 also represents a statistically significant, positive difference between the results of the two groups in that week with p-values of 0.0057 and 0.007 respectively. It is also the largest difference in the 51-week period. These results are consistent with those reported in sections 3.2 and 4.2 above; the AMAR for the experimental group is large (2.7%) and statistically significant as compared with that for the internal control group which is small (0.3%) and is not statistically significant.

These results provide strong support for the contention that the reporting of financial targets has a positive impact on the share prices of the reporting companies.

The AVRDR of 0.95 in week 0 is a positive, statistically significant, difference between the results of the two groups in terms of the t-test (p-value=0.0309) but not in terms of the Wilcoxon Signed Rank Test (p-value=0.1421). It is the fifth largest AVRDR in the 21-week period. Although the result is statistically significant only in terms of the t-test, no statements can be made about the null hypothesis in view of the possible low power of the tests (see section 2.3 above). Further, as the AVRDR is

positive and relatively large, it provides some support for the view that there is greater information content in the annual reports released by reporting firms than is ordinarily the case.

Impacts in other weeks

Consistent with the results reported in sections 3.1 and 4.1 above, the AARDs and AMARDs in weeks -05 and -04 are negative while relatively large AVRDS of 1.2% and 0.8% occur in weeks -05 and -04 respectively. These results may suggest not only that there is greater information content in the preliminary reports released by the internal control group companies than in those issued by the companies in the experimental group but that this information has a greater positive impact on the share prices of the former group than on those of the latter. However, care should be taken in interpreting these results as none of them is significant and the weeks are not centred on the preliminary report release date. The largest AVR (3.1) occurs in week -16; this has been influenced by an outlier in the data.²⁰ The largest, and statistically significant, AARD of 2.4% occurs in week +24. Fairly large AMARDs of 1.06% and 1.2% occur

²⁰ This is the influence of the outlier in week -16 of the experimental group results reported in section 3.0. Outliers have not been adjusted. This presents a potential problem but as no error was found in the data (that is, they appear to be genuine observations) there is no reason to drop any of the observations. None of the results in the central twenty one weeks is affected in this way.

in week +20 and week +25 but these are not statistically significant. The AVR in week +24 ranks third in size and it is statistically significant. These effects may be owing to the release of the interim reports for the following year.

7.0 COMPARISON BETWEEN EXPERIMENTAL AND EXTERNAL CONTROL GROUPS

As in section 6.0 above, the results (AARDs, AMARDs and AVRdS) reported in this section highlight the differential impact after controlling for self-selection bias and the potential firm-specific confounding effect of other pieces of information in the annual report. In this case, the control is provided by the external control group. The paired-differences procedure is as described above (see section 6.0) except that the differences are between the results for each of the matched reporting companies and those of its partner in the external control group. The results and the related p-values are given in table 5.6. The results for the full 51-week period are also plotted in figures 5.9, 5.10 and 5.15 (see appendix 5.1). In addition, the weekly means of the two groups (AARs, AMARs and AVRs) are compared and they are tested for significance using the two-sample t-test and the Wilcoxon Rank Sum Test. The differences between means (DAARs, DAMARs and DAVRs) and the related p-values are reported in table 5.7. The use of

both approaches to this comparison is justified in section 2.3 above.

Week 0 (event week) results

The AARD of 2.4% in week 0 (table 5.6) is the largest positive difference over the 51-week period; the DAAR of 1.96% (table 5.7) is also relatively large. Both the paired differences and the comparison of means indicate that the difference between the two groups in week 0 is not statistically significant. The AMARD of 2.1% in week 0 (table 5.6) is the largest positive difference in the 51-week period and the DAMAR of 2.11% is also relatively large. Only the two-sample t-test indicates a significant difference between the two groups, and this is marginal ($p\text{-value}=0.0426$).

The AVR of 1.47 in week 0 (table 5.6) ranks seventh in size in the 51-week period but it is not significantly different from zero. The AVRs in week 0 for the experimental group (0.69) is considerably greater than the expected value of zero relative to most of the other results in the central period, while the AVR in week 0 for the external control group (0.05) is very small and the AVR for the internal control group is negative (-0.26). This suggests that there is greater variability in the event week than there is on average in the estimation period, but neither two-sample

test (table 5.7) indicates a significant difference between the two groups.

Given the lack of statistical significance, no strong statements can be made about the null hypothesis owing to possible low power of the tests. As the comparison in this section involves the external control group, the imperfect matching is an additional source of variation, potentially affecting the power of the test more seriously (see section 2.3 above). It should be noted that all these event week results are in the hypothesised direction (positive) and are relatively large (in particular, the AARD and AMARD are respectively the largest in the test period). Although these results are not as strong as those reported in the previous section, they do support those results. First, they indicate greater variability in share price movements than ordinarily applies. Second, the results of the directional tests indicate a differential positive share impact on the release of the annual report.

Impacts in other weeks

The AARDs in weeks -04 (1.96%) and -01 (2.01%) are respectively the largest but two and largest but one in the test period (table 5.6); The DAARs in those weeks are the largest and the largest but one in the period. The two-sample test (table 5.7) shows a significant difference

between the means of the two groups in week -04 according to the t-test (p -value=0.01) but not according to the Wilcoxon Rank Sum Test. There are relatively large AMARDs in weeks -04 (1.7%), -01 (1.8%) and +24(1.7%). The DAMAR of 3.2% in week -04 is statistically significant (two-sample p -values of 0.008 and 0.0262 respectively) and the largest in the period. The AVRDS in weeks -06, -05 and -04 are also relatively large but none is statistically significant; the DAVR results are consistent with these. The difference between the two groups in week -04 suggests that the release of preliminary reports by reporting firms has a greater share price impact than does the release of preliminary reports by nonreporting firms. The impact in week +24 may similarly correspond with the approximate timing of the interim reports for the following year.

8.0 EVALUATION AND CONCLUSION

Two groups of companies were selected for the study. These provide data for the experimental, internal control and external control groups. The impact on share prices of the information released in the annual reports of the reporting companies (the experimental group) was examined by calculating and plotting

* AARs, AMARS and AVRS for the experimental, internal control and external control groups

- * AARDs, AMARDs and AVRDS representing the averages of the paired differences between the results of individual companies in the experimental group and those of individual companies in each of the control groups.

The tests and the results do not partition neatly to align directly with the stated hypotheses. A significant and positive AAR and/or AMAR in week 0 indicates that there is a positive share price reaction on average, that is, share prices have been revised upwards in response to the information released. A significant and positive AVR in week 0 indicates that there is relatively greater variability in the event week than in the estimation period, but it provides no insight into whether the mean share price has altered. Thus a significant and positive result of any of the tests indicates that there has been a significant revision of share prices. A significantly positive result from the directional tests (those involving abnormal residuals and market adjusted returns) indicates not only that share prices have been revised, but that there has been a positive impact on share prices in the aggregate.

The following points, in particular, should be borne in mind when interpreting the results.²¹ First, statistical significance is an attribute sought in the results, and such statistical significance justifies rejection of the null hypothesis. Where the results lack significance, care should be taken in interpreting them owing to the possible low power of the tests arising from the relatively small sample(s) involved, and in the case of the external control group comparisons, owing to imperfect matching which may be an additional source of variation. In these cases, weight has been placed on the magnitude and, in respect of the directional tests, on the direction of the result even where it is not significant.

Second, the imperfect matching of reporting companies with suitable partners and the failure to match in some cases, may have affected the results for the external control group and the related comparisons, as well as affecting the power of the tests of statistical significance referred to above. This contrasts with the close match achieved in forming the internal control group, which is consequently a particularly effective control. It is therefore appropriate to place relatively more weight on the internal control group results and the related comparisons.

²¹ For a more detailed coverage of these points, refer to chapter 4 and chapter 5 (section 2.3). Only brief reference is made to them here in the context of interpreting the results.

Third, the difficulties in calculating the market model parameters and the compromise made in applying the market model to the internal control group are noted. As market adjusted returns are calculated with $\alpha=0$ and $\beta=1$, the estimation error related to parameter estimation is excluded, at the expense of ignoring differences in systematic risk. It is therefore appropriate to acknowledge the deficiencies in both approaches and to read both sets of results together in arriving at a conclusion. The AAR, AMAR and AVR for the experimental group in the event week are positive.²² The AAR and the AMAR are also statistically significant and respectively the largest in the 51-week period. The AVR is both positive and one of the larger AVRs in the test period, although it is not statistically significant. Taken as a whole, these results provide clear evidence of the information content in the annual reports issued by reporting companies.

The experimental group results are a necessary condition for the support of the three hypotheses. However, they would be sufficient for the nondirectional test only if it could be argued that the information content of the annual report is ordinarily negligible on the grounds that the information

²² There is reasonable assurance that the positive AAR, AMAR and AVR results in the event week are not confounded by exogenous events. The market model and the diversified calendar dates underlying event time control for these.

is encapsulated in the earnings announcement, the dividend announcement or other sources available to the market. As the findings of Knight and Affleck-Graves (1986) suggest that a share price impact is ordinarily to be expected on the release of the annual report, it is necessary to show that the impact caused when a company first reports its financial targets is greater than that ordinarily expected. Thus, in addition to mitigating the effect of self-selection bias, a comparison with control group results must be made to control for the potential firm-specific confounding effect of other pieces of information accompanying the financial targets in the annual report.

The directional test results (expressed in AAR and AMAR) in week 0 are almost identical.²³ The AAR (and AMAR) for the experimental group in the event week is positive, relatively large and statistically significant. The AAR (and AMAR) for the internal control group in the equivalent week is positive, but it is very small and it is not statistically significant. There is a large, positive and statistically significant difference between the two results in the event week. These AAR and AMAR results across the experimental and internal control groups suggest that share prices are

²³ The only differences are differences in the magnitude of the AARs and the AMARs and the p-values for the AMAR results in week 0 tend to be lower (that is, they tend to show higher levels of significance) than the AAR results (see detailed results in sections 3.0 through 7.0 above).

affected by reporting financial targets and provide strong support for the three hypotheses.

The AAR (and AMAR) for the external control group in the equivalent week is positive but very small and it is not statistically significant. While the difference between the results for the two groups in the event week is not significant, it is positive (that is, in the hypothesised direction) and relatively large. These results support the the the strong results noted above.

Although the AVR for the experimental group in the event week is not significant, it is positive. The AVR in the equivalent week for the internal control group is negative and significantly different from zero. The difference between the two results is relatively large but it is not statistically significant. The AVR in the equivalent week for the external control group is positive, very small and not significantly different from zero. Although the difference between the two results is not statistically significant, it is positive and relatively large. These results support the view that share prices are affected by reporting financial targets.

Taken as a whole, the results are consistent with the hypothesis that expectations and share prices are revised on the first occasion on which financial targets are reported.

Further, it can be concluded from the directional test results that the reporting of financial targets has a positive impact on share prices. This is consistent with the hypotheses based on estimation risk and signalling; namely that when financial targets are reported for the first time, prices are revised upwards because estimation risk is reduced and that, concurrently or alternatively, management has signalled to investors.

In several of the figures and tables, large, and in some instances, significantly large share price impacts appear in weeks other than either the event week or its equivalent.²⁴ These impacts frequently occur about four weeks before the date of the release of the annual report or about twenty four weeks thereafter. They are probably explained by the release of the preliminary and interim reports respectively. As the test period centres by construction on the annual report release date, these impacts would be apparent only if there were a sufficiently pertinent information event and/or the coincidence of a sufficiently large number of information events. As these results are not centred on the preliminary or interim report release date, only tentative conclusions can be drawn. In particular, no firm statement can be made about the relative information effect

²⁴ The cumulative effects of these can be seen in the figures in appendix 5.2.

of preliminary reports released by firms reporting financial targets.

In chapter 6, these findings are placed in context and are linked to the motivation for the thesis.

9.0 TABLES

Listed below are the titles of the tables of results and related p-values:

<u>Table</u>	<u>Title</u>
5.1	Experimental group
5.2	Experimental group (matched)
5.3	Internal control group
5.4	External control group
5.5	Experimental and internal control groups; paired differences
5.6	Experimental and external control groups; paired differences
5.7	Experimental and external control groups; comparison of means

TABLE 5.1 RESULTS FOR EXPERIMENTAL GROUP

WEEK	AAR%	P-VALUES		AMAR%	P-VALUES		AVR	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	0.24	0.3489	0.4042	0.41	0.2435	0.1841	-0.1423	0.8552	0.9139
-9	0.51	0.2397	0.3595	0.49	0.2571	0.3933	0.3254	0.1716	0.0639
-8	0.26	0.3123	0.2816	0.34	0.2341	0.2989	-0.2743	0.9964	1.0000
-7	0.29	0.3709	0.1540	0.66	0.2384	0.3849	0.7852	0.1827	0.2174
-6	0.65	0.2254	0.3107	0.60	0.2328	0.2816	0.5498	0.1292	0.1540
-5	0.32	0.3739	0.3348	0.47	0.3219	0.3342	1.4209	0.0694	0.2174
-4	1.36	0.0577	0.1007	1.94	0.0399	0.1037	0.7562	0.1014	0.4568
-3	-0.24	0.5979	0.7516	-1.45	0.9595	0.9139	0.7376	0.0938	0.3226
-2	0.90	0.1637	0.1500	1.33	0.0488	0.0545	0.4604	0.0599	0.4900
-1	0.38	0.3109	0.3785	0.23	0.3794	0.4501	0.4883	0.0806	0.4634
0	2.51	0.0033	0.0005	2.76	0.0004	0.0003	0.6931	0.0718	0.3595
1	-0.16	0.5668	0.5893	0.05	0.4804	0.4172	1.1480	0.0481	0.2593
2	0.85	0.1913	0.1665	1.12	0.1302	0.1037	1.1635	0.0172	0.0708
3	0.67	0.2094	0.1796	-0.01	0.5040	0.5234	0.3896	0.1007	0.2989
4	-0.12	0.5709	0.5631	-0.28	0.6483	0.5763	0.0025	0.4935	0.0413
5	-0.06	0.5403	0.6279	0.15	0.3924	0.3849	-0.1697	0.7818	1.0000
6	-0.05	0.5297	0.6714	0.37	0.3289	0.4900	0.0106	0.4804	0.0782
7	-0.51	0.7055	0.6834	-1.09	0.9101	0.8114	0.4309	0.0845	0.4501
8	-1.38	0.9682	0.9712	-1.22	0.9555	0.9555	0.3833	0.1953	0.0947
9	-0.75	0.8100	0.6953	-0.48	0.7339	0.6087	0.6037	0.0788	0.2931
10	0.22	0.3632	0.3785	0.40	0.2475	0.2373	-0.1627	0.8002	1.0000

* Significant at the 5% level
 ** Significant at the 1% level

TABLE 5.2 RESULTS FOR EXPERIMENTAL GROUP (MATCHED)

WEEK	AAR%	P-VALUES		AMAR%	P-VALUES		AVR	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	0.11	0.4443	0.4636	0.23	0.3645	0.3236	-0.0689	0.6302	0.9773
-9	0.58	0.2517	0.4636	0.70	0.1753	0.3287	0.4728	0.1643	0.0878
-8	0.30	0.3081	0.2436	0.23	0.3106	0.4533	-0.2157	0.9423	0.9952
-7	1.04	0.1874	0.4430	1.10	0.1463	0.3331	0.5829	0.1775	0.2691
-6	0.80	0.2234	0.2691	0.84	0.1733	0.2605	1.7294	0.1490	0.0989
-5	0.66	0.3081	0.4740	0.76	0.2631	0.4890	1.9249	0.0291*	0.3143
-4	0.58	0.2604	0.3236	0.48	0.2808	0.3820	0.6676	0.1271	0.2039
-3	-1.24	0.9214	0.8636	-1.14	0.9186	0.8451*	0.4484	0.1142	0.4327
-2	1.55	0.0484*	0.0730	1.37	0.0449*	0.0443*	0.0421	0.4333	0.1549
-1	0.33	0.3534**	0.4740**	0.46	0.2873**	0.4021**	0.2633	0.2417	0.2115
0	2.95	0.0054**	0.0070**	2.76	0.0016**	0.0010**	1.5278	0.0606	0.4430
1	-1.32	0.8662	0.8319	-0.94	0.8290	0.8319	1.3144	0.0872**	0.3524**
2	0.96	0.2215	0.1964	0.93	0.1916	0.1549	1.6990	0.0028**	0.0090**
3	-0.02	0.5070	0.5980	-0.10	0.5534	0.5260	0.7691	0.1120	0.2273
4	0.16	0.4169	0.4327	0.12	0.4279	0.4533	0.1463	0.2956	0.2115
5	0.18	0.4029	0.4740	0.20	0.3742	0.3331	-0.0425	0.5515	0.9995
6	-0.02	0.5101	0.6080	0.01	0.4949	0.4636	0.9181	0.1292	0.1964
7	-0.80	0.8207	0.7885	-0.75	0.8396	0.7309	0.7177	0.0959	0.2353
8	-1.68	0.9596	0.9563	-1.34	0.9451	0.9380	0.9695	0.1512	0.3331
9	-1.33	0.9342	0.8576	-1.02	0.9325	0.8319	0.5561	0.1492	0.0730*
10	0.78	0.1471	0.1088	0.89	0.0616	0.0656	0.2924	0.2647	0.0280*

* Significant at the 5% level
 ** Significant at the 1% level

TABLE 5.3 RESULTS FOR INTERNAL CONTROL GROUP

WEEK	AAR%	P-VALUES		AMAR%	P-VALUES		AVR	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	0.40	0.2236	0.3849	0.36	0.2504	0.3913	-0.2852	0.9958	0.9999
-9	0.03	0.4819	0.4568	0.27	0.3397	0.3658	-0.1095	0.7310	0.9845
-8	0.73	0.0686	0.0757	0.86	0.0495*	0.0575	-0.3639	0.9927	1.0000
-7	0.70	0.2702	0.0254*	0.49	0.3369	0.0639	0.1595	0.2856	0.1421
-6	-0.35	0.6749	0.5367	-0.23	0.6232	0.5631	0.1638	0.2490	0.1933
-5	1.03	0.0970	0.1134	1.19	0.0673	0.0596	0.2213	0.1371	0.4435
-4	2.57	0.1208	0.0575	2.60	0.1177	0.0732	1.5574	0.1305	0.1421
-3	-1.84	0.8782	0.7353	-1.97	0.8962	0.7928	0.3706	0.3002	0.0042**
-2	-0.51	0.8054*	0.8501*	-0.49	0.7948*	0.8159*	-0.0844	0.6619	0.9900
-1	0.86	0.0333*	0.0445*	1.02	0.0141*	0.0233*	-0.2757	0.9951	0.9994
0	0.29	0.3227	0.3785	0.29	0.3245	0.3471	-0.2555	0.9946	0.9941*
1	0.72	0.2403**	0.0684*	0.76	0.2241**	0.0639*	0.0651	0.3773	0.0498*
2	1.40	0.0058	0.0123*	1.34	0.0084**	0.0179*	-0.3341	0.9991	1.0000
3	-0.06	0.5490	0.5433	0.14	0.4016	0.2538	-0.3661	1.0000	1.0000
4	0.37	0.2077	0.3471	0.07	0.4345	0.4369	-0.2939	0.9827	0.9997
5	-0.48	0.8186	0.8204	-0.51	0.8239	0.7353	-0.0834	0.6063	0.9999*
6	0.52	0.2661	0.1460	0.30	0.3537	0.2327	0.0568	0.4023	0.0382*
7	0.16	0.3952	0.4967	0.26	0.3230	0.4238	-0.3021	0.9992	0.9994
8	0.95	0.0762	0.1500	0.98	0.0762	0.1421	-0.3387	0.9994	1.0000
9	-0.09	0.5672	0.5697	-0.14	0.6123	0.6342	-0.3853	1.0000	1.0000
10	-1.02	0.9878	0.9944	-0.95	0.9764	0.9889	-0.4050	1.0000	1.0000

* Significant at the 5% level
 ** Significant at the 1% level

TABLE 5.4 RESULTS FOR EXTERNAL CONTROL GROUP

WEEK	AAR%	P-VALUES		AMAR%	P-VALUES		AVR	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	-0.36	0.7100	0.7647	-0.18	0.6132	0.6181	-0.2080	0.9132	0.9875
-9	0.55	0.1592	0.2273	0.71	0.1122	0.1750	-0.3297	0.9968	0.9990
-8	1.95	0.0496*	0.0810	1.70	0.0757	0.1306	0.2395	0.2569	0.0692
-7	0.24	0.4174	0.4021	0.22	0.4265	0.4636	0.5725	0.1177	0.3920
-6	0.38	0.3427	0.4327	0.51	0.3009	0.4766	-0.1396	0.7325	0.9952
-5	1.67	0.0141*	0.0212*	1.88	0.0076**	0.0070**	0.0573	0.4168	0.1088
-4	-1.39	0.9732	0.9148	-1.23	0.9697	0.9380	-0.2024	0.8568	0.9937
-3	0.28	0.4049	0.3236	0.49	0.3381	0.2894	0.2704	0.2416*	0.0810
-2	0.37	0.3844	0.3427	0.57	0.3260	0.3187	0.8622	0.0176*	0.1038
-1	-1.68	0.8936	0.8752	-1.37	0.8497	0.7481	0.4243	0.2600	0.0769
0	0.55	0.2677*	0.2273*	0.65	0.2608	0.2015	0.0514	0.3998	0.2039
1	1.34	0.0499*	0.0320*	1.34	0.0649	0.0587	0.0721	0.4017	0.0364*
2	-0.40	0.6875	0.7961	-0.75	0.8106	0.9104	-0.1868	0.8684	0.9875
3	0.82	0.1924	0.2691	0.57	0.2770	0.4021	0.1888	0.1698	0.2779
4	1.01	0.1604	0.1549	1.15	0.1328	0.1364	0.3857	0.1655	0.0810
5	0.68	0.2005	0.3820	1.02	0.0877	0.1194	-0.0633	0.6022	0.9637
6	-1.10	0.8925	0.8860	-0.98	0.8597	0.8514	-0.0587	0.6301	0.8451
7	0.28	0.3081	0.4021	0.58	0.1884	0.2436	-0.3788	0.9988	1.0000
8	-0.33	0.6836	0.7309	-0.22	0.6174	0.6871	-0.2150	0.9158	0.9910
9	-0.21	0.6497	0.8285	0.07	0.4529	0.4533	-0.1809	0.8488	0.9854
10	-1.05	0.9480	0.9058	-0.80	0.9114	0.8514	-0.2252	0.9033	0.9924

* Significant at the 5% level
 ** Significant at the 1% level

TABLE 5.5 EXPERIMENTAL AND INTERNAL CONTROL GROUPS
 PAIRED DIFFERENCES

WEEK	AARD%	P-VALUES		AMARD%	P-VALUES		AVRD	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	-0.16	0.5786	0.5234	0.05	0.4781	0.4238	0.1429	0.1719	0.2759
-9	0.48	0.2930	0.3721	0.22	0.3881	0.2703	0.4348	0.1165	0.1237
-8	-0.48	0.7172	0.5034	-0.52	0.7552	0.7408	0.0896	0.2713	0.0082**
-7	-0.41	0.6132	0.9293	0.18	0.4603	0.0782	0.6258	0.2523	0.4900
-6	1.00	0.2229	0.3046	0.84	0.2148	0.3409	0.3860	0.2021	0.2703
-5	-0.71	0.7153	0.8020	-0.72	0.7047	0.7516	1.1997	0.1080	0.3348
-4	-1.21	0.6924	0.5499	-0.66	0.6011	0.7925	0.8012	0.3018	0.2431
-3	1.59	0.2197	0.2873	0.53	0.3679*	0.2275	0.3670	0.3445	0.0834
-2	1.41	0.1147	0.0834	1.82	0.0337*	0.0555	0.5448	0.0638	0.2593*
-1	-0.48	0.6926*	0.6653*	-0.78	0.8323**	0.8159**	0.7640	0.0151*	0.0367*
0	2.21	0.0170*	0.0397*	2.46	0.0057**	0.0070**	0.9486	0.0309*	0.1421
1	-0.88	0.7375	0.7408	-0.72	0.7280	0.7353	1.0829	0.0746**	0.0782**
2	-0.55	0.6982	0.6342	-0.22	0.5758	0.5300	1.4976	0.0047*	0.0001**
3	0.74	0.2125	0.2593	-0.14	0.5624	0.6152	0.7557	0.0132*	0.0617*
4	-0.49	0.7027	0.6834	-0.35	0.6560	0.6087	0.2964	0.0531	0.0413*
5	0.43	0.2956	0.4834	0.67	0.2011	0.2816	0.0863	0.4087	0.4900
6	-0.57	0.6816	0.8799	0.07	0.4762	0.4369	0.0462	0.4460*	0.4767*
7	-0.67	0.7112	0.6279	-1.35	0.9046	0.8292	0.7331	0.0152*	0.0300*
8	-2.32	0.9924	0.9969	-2.21	0.9857	0.9938	0.7220	0.0646*	0.0555**
9	-0.67	0.7349*	0.7462	-0.34	0.6417*	0.5300*	0.9890	0.0140*	0.0086**
10	1.23	0.0330*	0.1134	1.35	0.0405*	0.0277*	0.2423	0.1126	0.1752

* Significant at the 5% level
 ** Significant at the 1% level

TABLE 5.6 EXPERIMENTAL AND EXTERNAL CONTROL GROUPS
 PAIRED DIFFERENCES

WEEK	AARD%	P-VALUES		AMARD%	P-VALUES		AVRD	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	0.47	0.2982	0.4224	0.40	0.3052	0.4327	0.1391	0.2719	0.2436
-9	0.03	0.4894	0.4844	-0.01	0.5047	0.5260	0.8025	0.0466*	0.1088
-8	-1.65	0.8498	0.6951	-1.47	0.8449	0.7133	-0.4552	0.9528	0.7565
-7	0.80	0.2713	0.4224	0.89	0.2433	0.4224	0.0105	0.4947	0.3143
-6	0.42	0.3712	0.3720	0.33	0.3976	0.4021	1.8690	0.1349	0.2115
-5	-1.01	0.7646	0.7565	-1.12	0.8125	0.7961	1.8677	0.0244*	0.0587
-4	1.96	0.0617	0.1194	1.71	0.0753	0.1549	0.8700	0.0880	0.0730
-3	-1.52	0.8523	0.9613	-1.63	0.8840	0.9535	0.1780	0.3692	0.2519
-2	1.18	0.2180	0.1820	0.80	0.2850	0.2353	-0.8201	0.9377	0.8386
-1	2.01	0.1173	0.1306	1.83	0.1291	0.1486	-0.1611	0.5801	0.8036
0	2.39	0.0602	0.2519	2.11	0.0830	0.2605	1.4763	0.0578	0.1820
1	-2.65	0.9677	0.9589	-2.27	0.9590	0.9104*	1.2423	0.1134**	0.0655**
2	1.36	0.1614	0.1364	1.68	0.0805	0.0465*	1.8859	0.0013**	0.0001**
3	-0.84	0.7189	0.7133	-0.66	0.6979	0.7133	0.5803	0.1988	0.2958
4	-0.85	0.7309	0.8386	-1.03	0.7820	0.7961	-0.2395	0.7004	0.8036
5	-0.50	0.6673	0.8386	-0.82	0.7796	0.8912	0.0208	0.4807	0.3920
6	1.08	0.2042	0.2115	0.99	0.2311	0.2115	0.9768	0.1251*	0.3524*
7	-1.08	0.8783	0.8386	-1.33	0.9523	0.9380	1.0965	0.0305*	0.0280*
8	-1.36	0.8814	0.8695	-1.13	0.8660	0.8251	1.1845	0.1142	0.2193
9	-1.12	0.8813*	0.8752*	-1.09	0.9134*	0.9309*	0.7370	0.1114	0.3236
10	1.83	0.0358*	0.0341*	1.68	0.0208*	0.0280*	0.5175	0.1556	0.1750

* Significant at the 5% level
 ** Significant at the 1% level

TABLE 5.7 EXPERIMENTAL AND EXTERNAL CONTROL GROUPS
COMPARISON OF MEANS

WEEK	DAAR%	P-VALUES		DAMAR%	P-VALUES		DAVR	P-VALUES	
		t-test	Wilcox		t-test	Wilcox		t-test	Wilcox
-10	0.60	0.2539	0.2308	0.59	0.1908	0.1807	0.0657	0.3718	0.2573
-9	-0.04	0.5193	0.6234	-0.22	0.6852	0.6408	0.6551	0.0366*	0.1398
-8	-1.69	0.9083	0.7277	-1.36	0.8140	0.7017	-0.5138	0.9098	0.6801
-7	0.05	0.4850	0.2723	0.44	0.3838	0.4360	0.2127	0.4142	0.1889
-6	0.27	0.4171	0.4001	0.09	0.4773	0.3708	0.6894	0.0987	0.1266
-5	-1.35	0.8631	0.9550	-1.41	0.8884	0.9631*	1.3636	0.0850	0.0496*
-4	2.75	0.0098	0.0812	3.17	0.0080	0.0262*	0.9586	0.0623	0.0156*
-3	-0.52	0.6354	0.7897	-1.94	0.9360	0.9198	0.4672	0.2432	0.1767
-2	0.53	0.3630	0.4001	0.76	0.3130	0.2983	-0.4018	0.8011	0.6635
-1	2.06	0.0912	0.1650	1.60	0.1399	0.3091	0.0640	0.4655	0.1002
0	1.96	0.0618	0.1203	2.11	0.0426*	0.0936	0.6417	0.1048	0.3255*
1	-1.50	0.8734	0.8193	-1.29	0.6941	0.7175*	1.0759	0.0735	0.0227*
2	1.25	0.1734	0.0674	1.87	0.0643	0.0271*	1.3503	0.0095**	0.0012**
3	-0.15	0.5487	0.5214	-0.58	0.7487	0.5640	0.2008	0.2876	0.2475
4	-1.13	0.8337	0.7762	-1.43	0.8825	0.8193	-0.3832	0.8173	0.5519
5	-0.74	0.7812	0.7477	-0.87	0.8606	0.8887	-0.1064	0.6282	0.5940
6	1.05	0.1733	0.2475	1.35	0.1014	0.1889	0.0693	0.4066*	0.3942*
7	-0.79	0.7648	0.6578	-1.67	0.9321	0.8462	0.8097	0.0086*	0.0182*
8	-1.05	0.8466	0.7669	-1.00	0.8269	0.6578	0.5983	0.1032*	0.3708
9	-0.54	0.7037	0.5580	-0.55	0.6547	0.5940	0.7846	0.0447*	0.0545
10	1.27	0.0798	0.1056	1.20	0.1153	0.0873	0.0625	0.4073	0.2331

* Significant at the 5% level

** Significant at the 1% level

APPENDIX 5.1 FIGURES DEPICTING WEEKLY RESULTS

This appendix comprises the figures showing the plots of the results over the full 51-week period. The commentary on the results for the 21 central weeks is given in sections 3.0 to 7.0, with references to results in other weeks where pertinent. These figures complement the commentary and the tables by covering the full fifty one weeks and by providing a visual representation of the results.²² The figures are as follows:

<u>Figure</u>	<u>Title</u>
5.1	Experimental group: AARs
5.2	Experimental group: AMARs
5.3	Internal control group: AARs
5.4	Internal control group: AMARs
5.5	External control group: AARs
5.6	External control group: AMARs
5.7	Experimental and internal control groups; paired differences: AARDs
5.8	Experimental and internal control groups; paired differences: AMARDs
5.9	Experimental and external control groups; paired differences: AARDs
5.10	Experimental and external control groups; paired differences: AMARDs
5.11	Experimental group: AVRs
5.12	Internal control group: AVRs
5.13	External control group: AVRs
5.14	Experimental and internal control groups paired differences: AVRDs
5.15	Experimental and external control groups paired differences: AVRDs

²² As the range of AVR and AVR D results is quite different from that of the others, it is not feasible to standardise all the y-axes without sacrificing clarity. The scale on the y-axis has been standardised for figures 5.1 to 5.10 and a different standard scale has been used for the AVR and AVR D results which are reported in figures 5.11 to 5.15. The sequence of the results thus differs slightly from that in the tables.

FIGURE 5.1 EXPERIMENTAL GROUP: AARs (in percent)

Plot of AAR*WEEK. Symbol used is '*'.

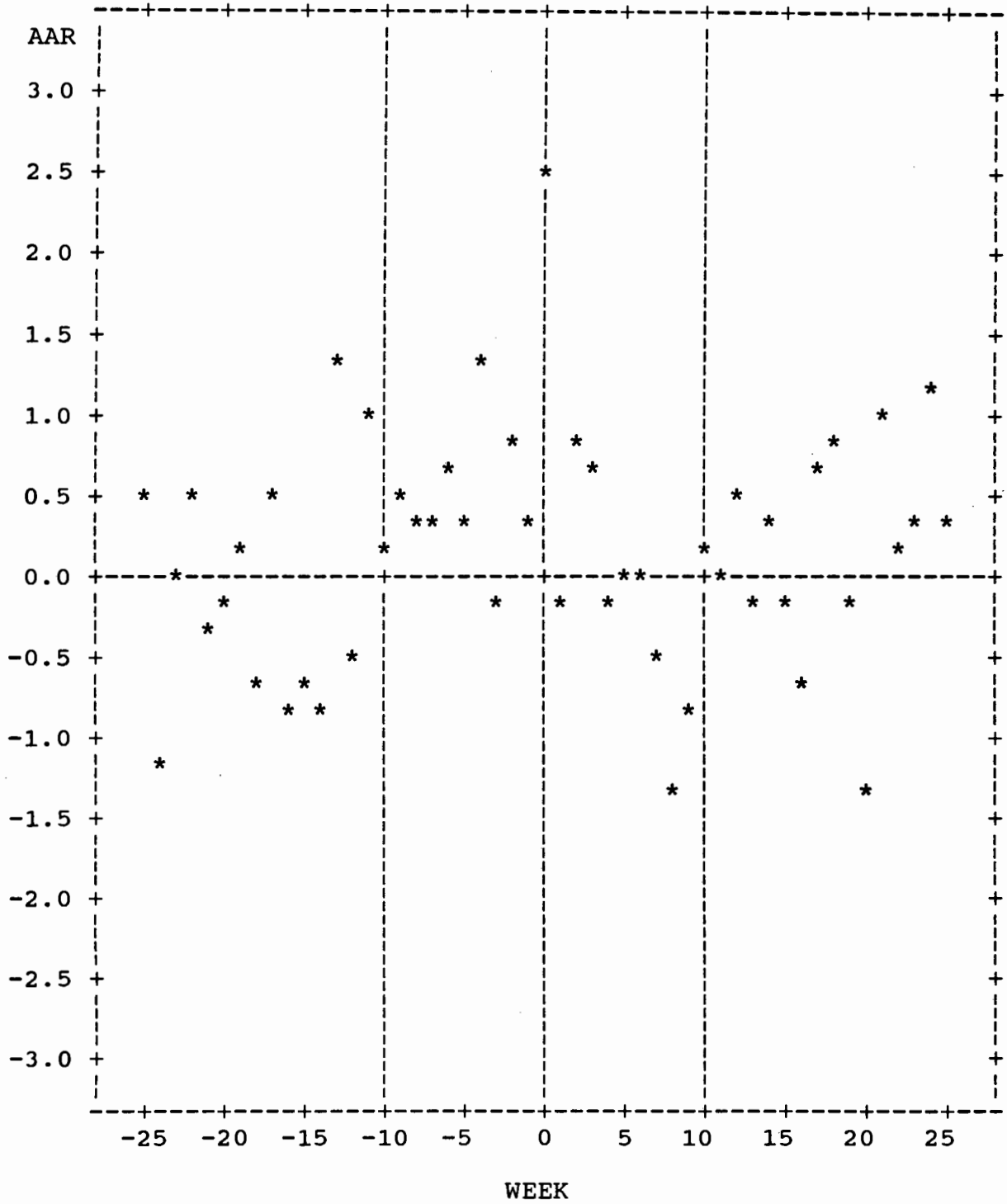


FIGURE 5.3 INTERNAL CONTROL GROUP: AARs (in percent)

Plot of AAR*WEEK. Symbol used is '*'.

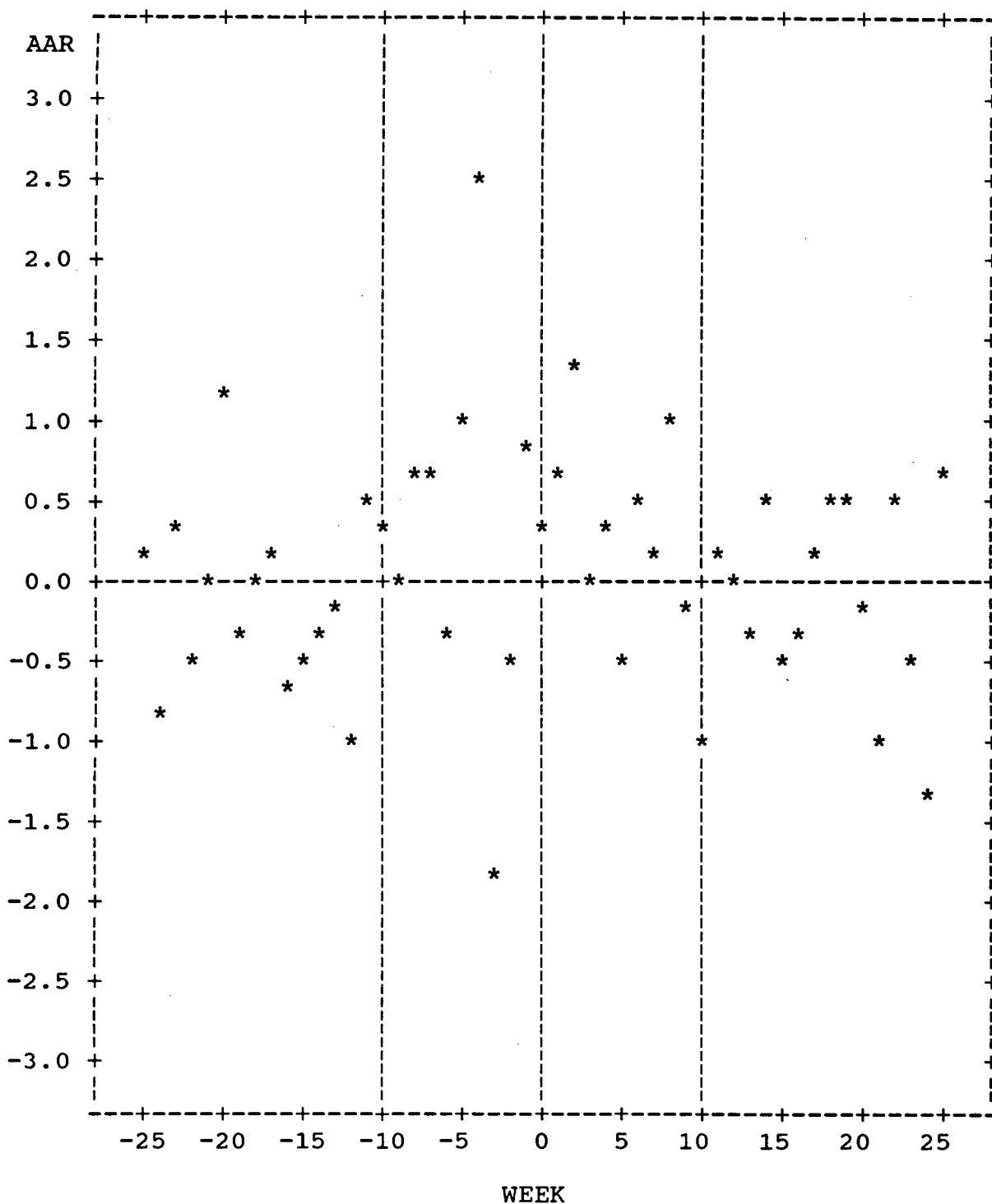


FIGURE 5.4 INTERNAL CONTROL GROUP: AMARs (in percent)

Plot of AMAR*WEEK. Symbol used is '*'.

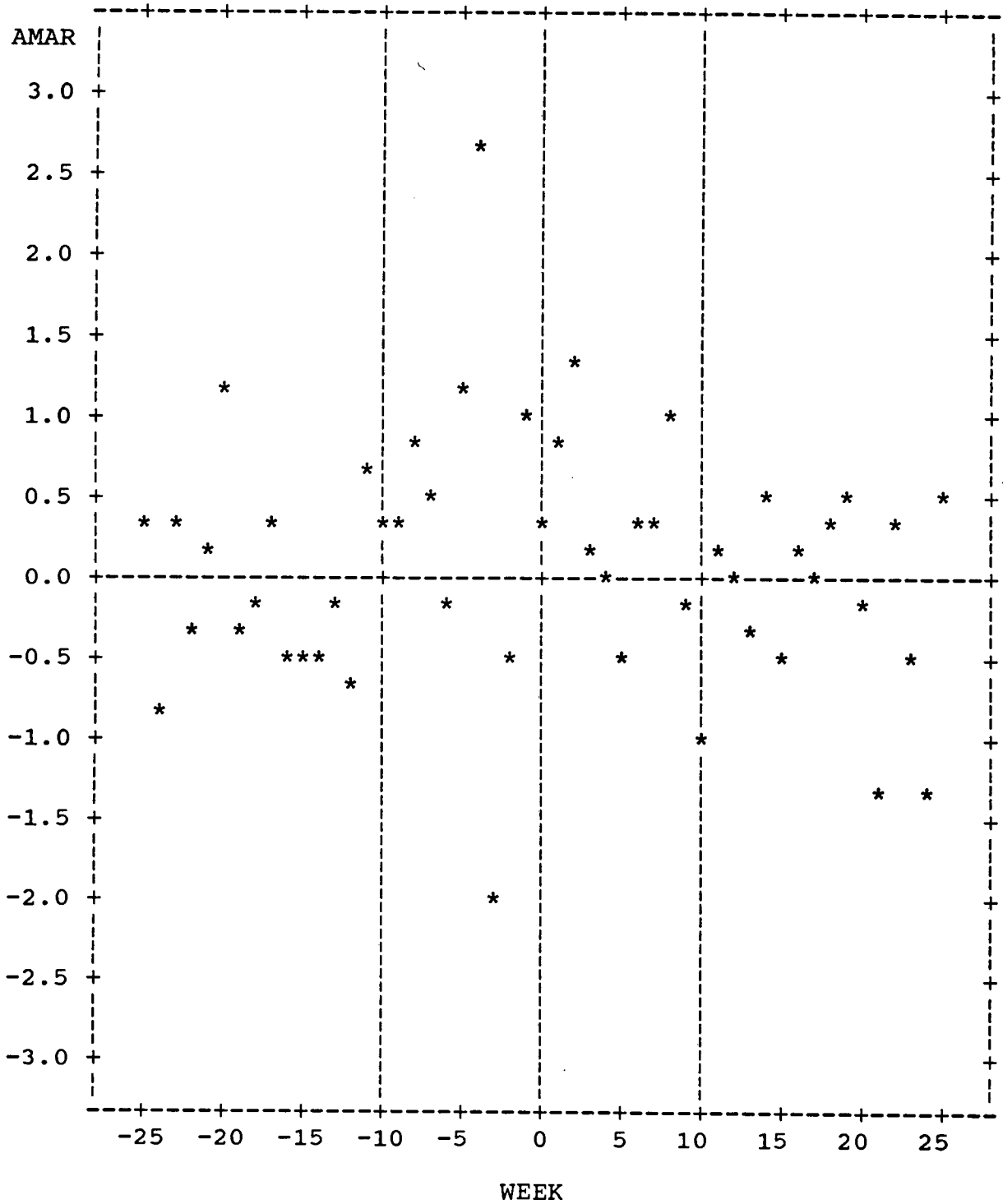


FIGURE 5.5 EXTERNAL CONTROL GROUP: AARS (in percent)

Plot of AAR*WEEK. Symbol used is '*'.

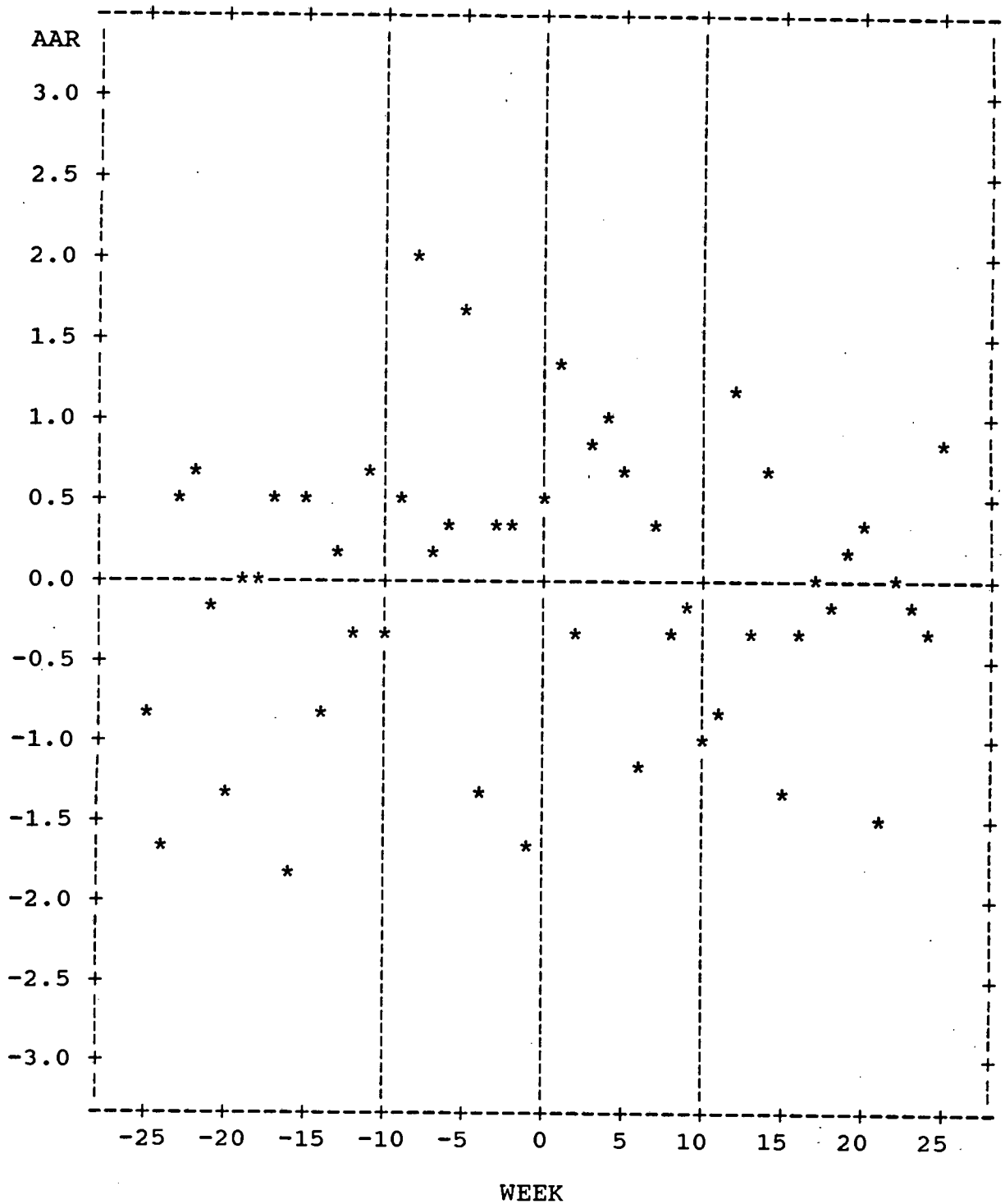


FIGURE 5.6 EXTERNAL CONTROL GROUP: AMARS (in percent)

Plot of AMAR*WEEK. Symbol used is '*'.

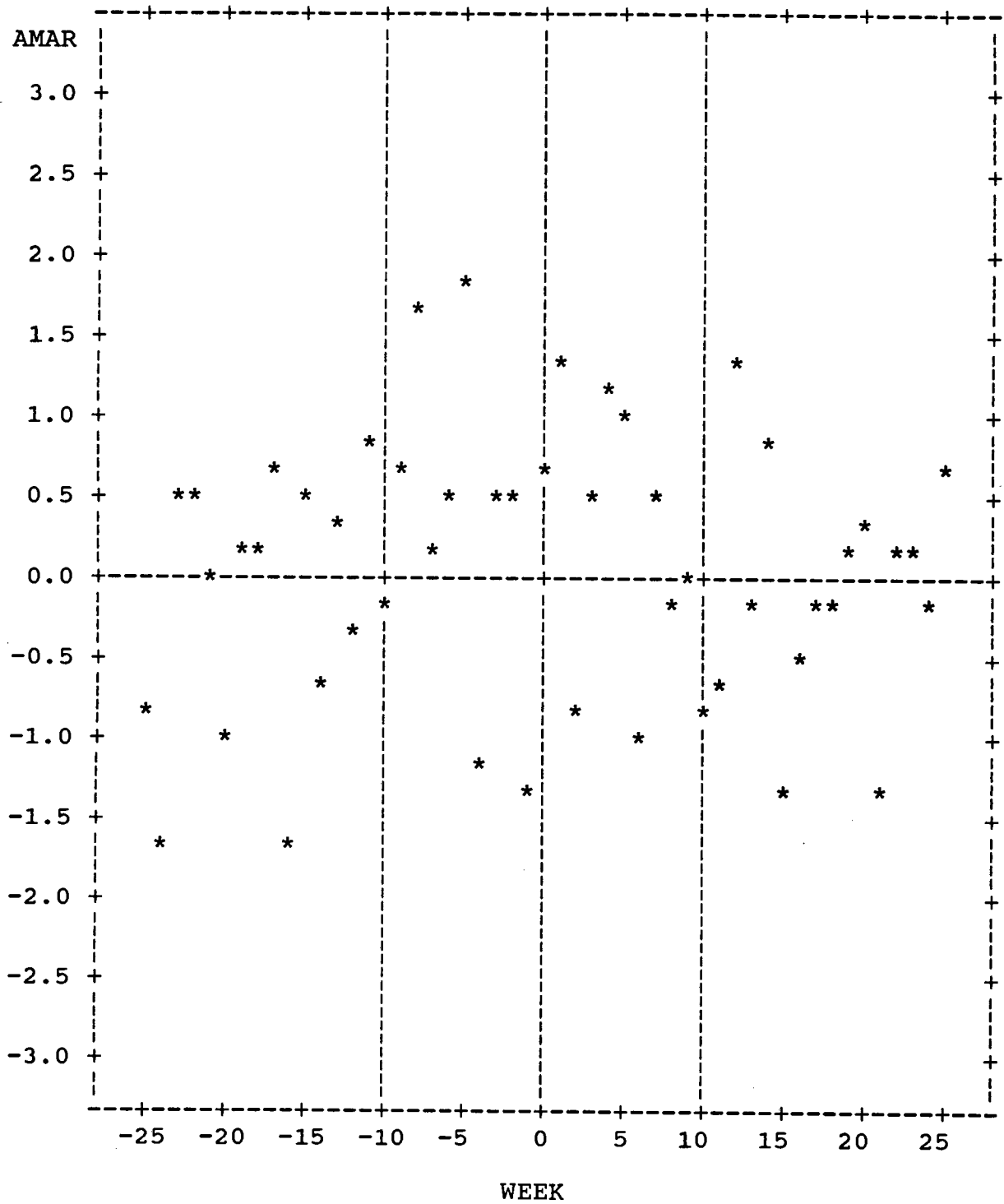


FIGURE 5.7 EXPERIMENTAL AND INTERNAL CONTROL GROUPS PAIRED DIFFERENCES: AARDs (in percent)

Plot of AARD*WEEK. Symbol used is '*'.

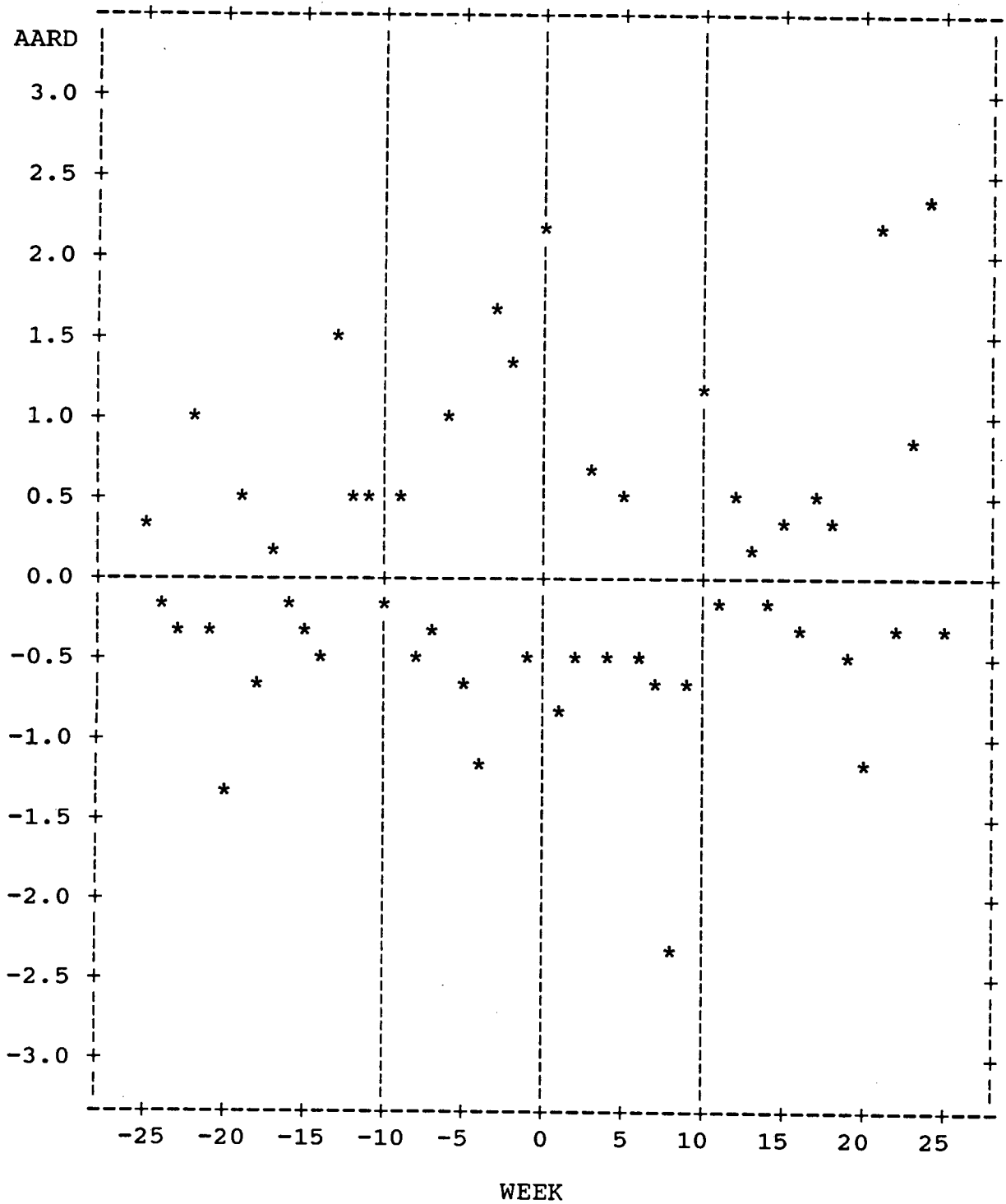


FIGURE 5.9 EXPERIMENTAL AND EXTERNAL CONTROL GROUPS PAIRED DIFFERENCES: AARDs (in percent)

Plot of AARD*WEEK. Symbol used is '*'.

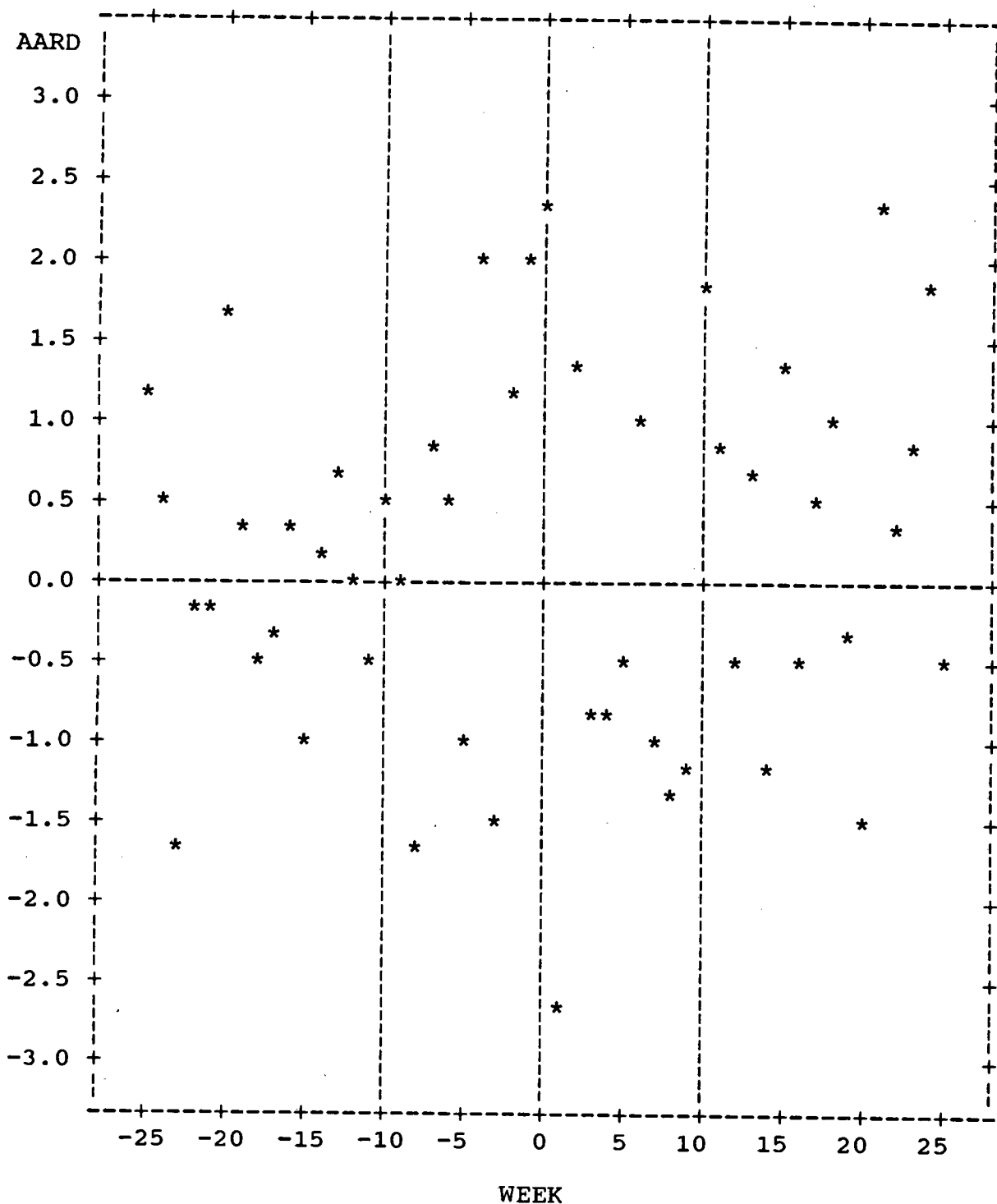


FIGURE 5.10 EXPERIMENTAL AND EXTERNAL CONTROL GROUPS PAIRED DIFFERENCES: AMARDs (in percent)

Plot of AMARD*WEEK. Symbol used is '*'.

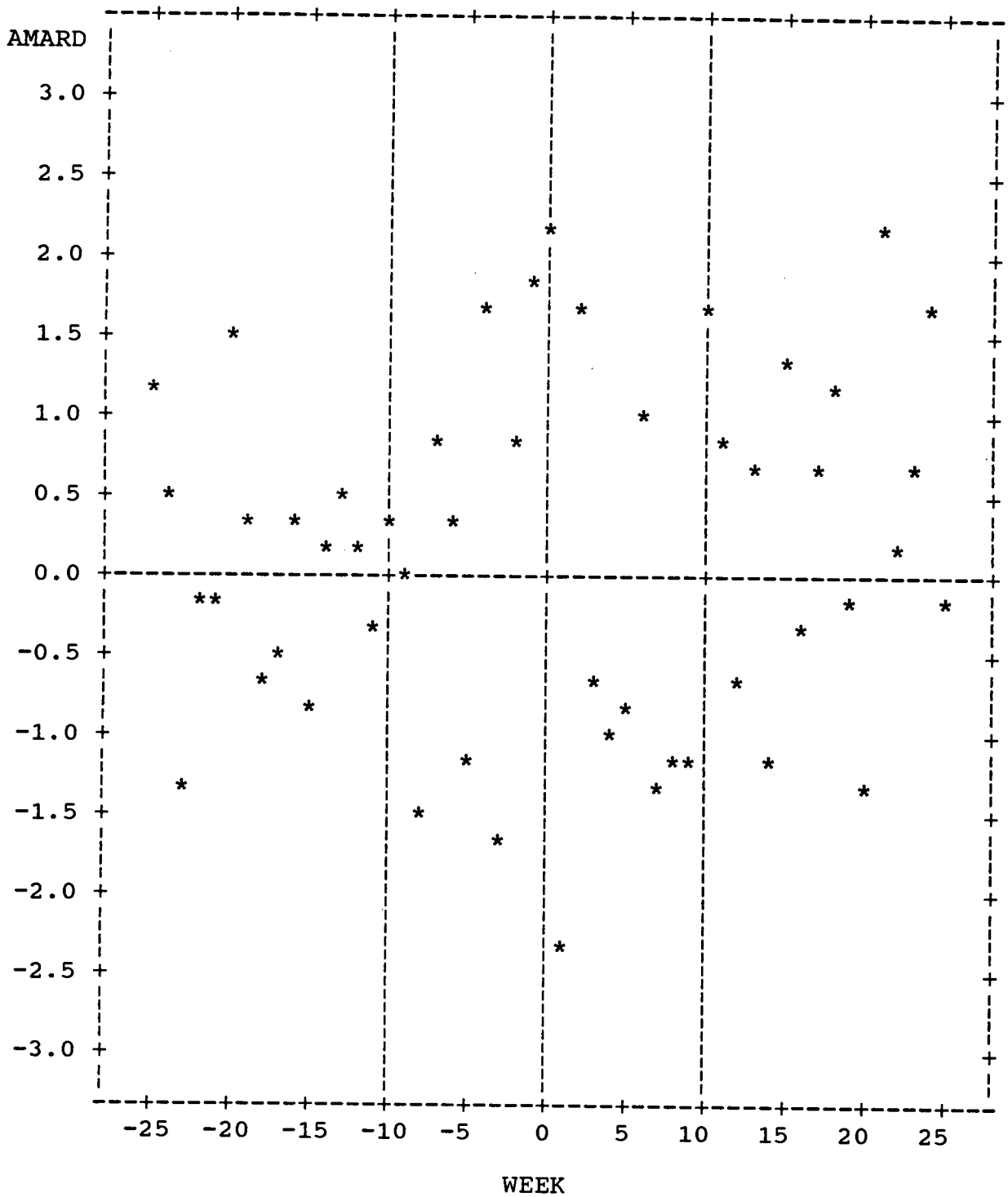


FIGURE 5.11 EXPERIMENTAL GROUP: AVRS

Plot of AVR*WEEK. Symbol used is '*'.

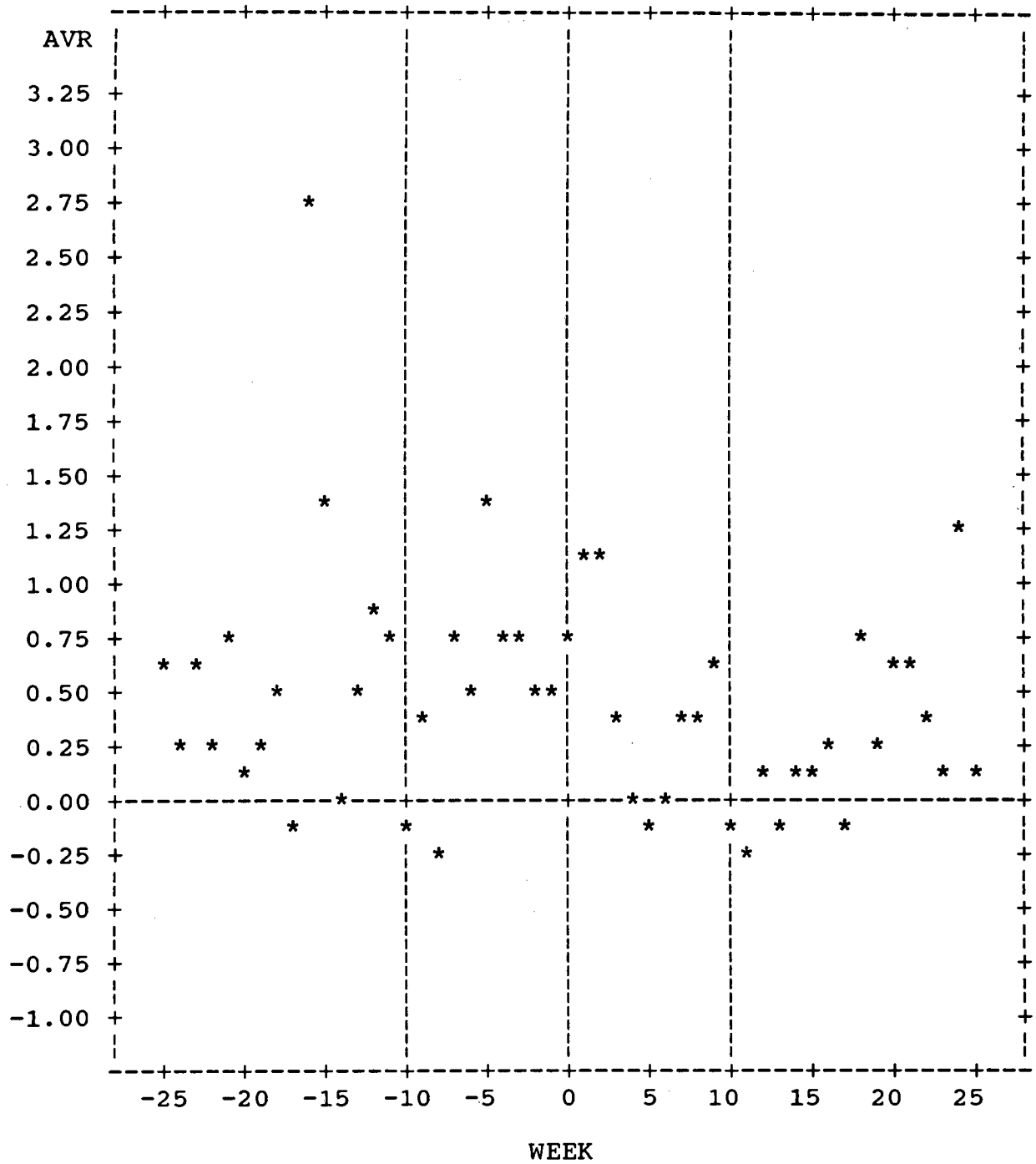


FIGURE 5.13 EXTERNAL CONTROL GROUP: AVRS

Plot of AVR*WEEK. Symbol used is '*'.

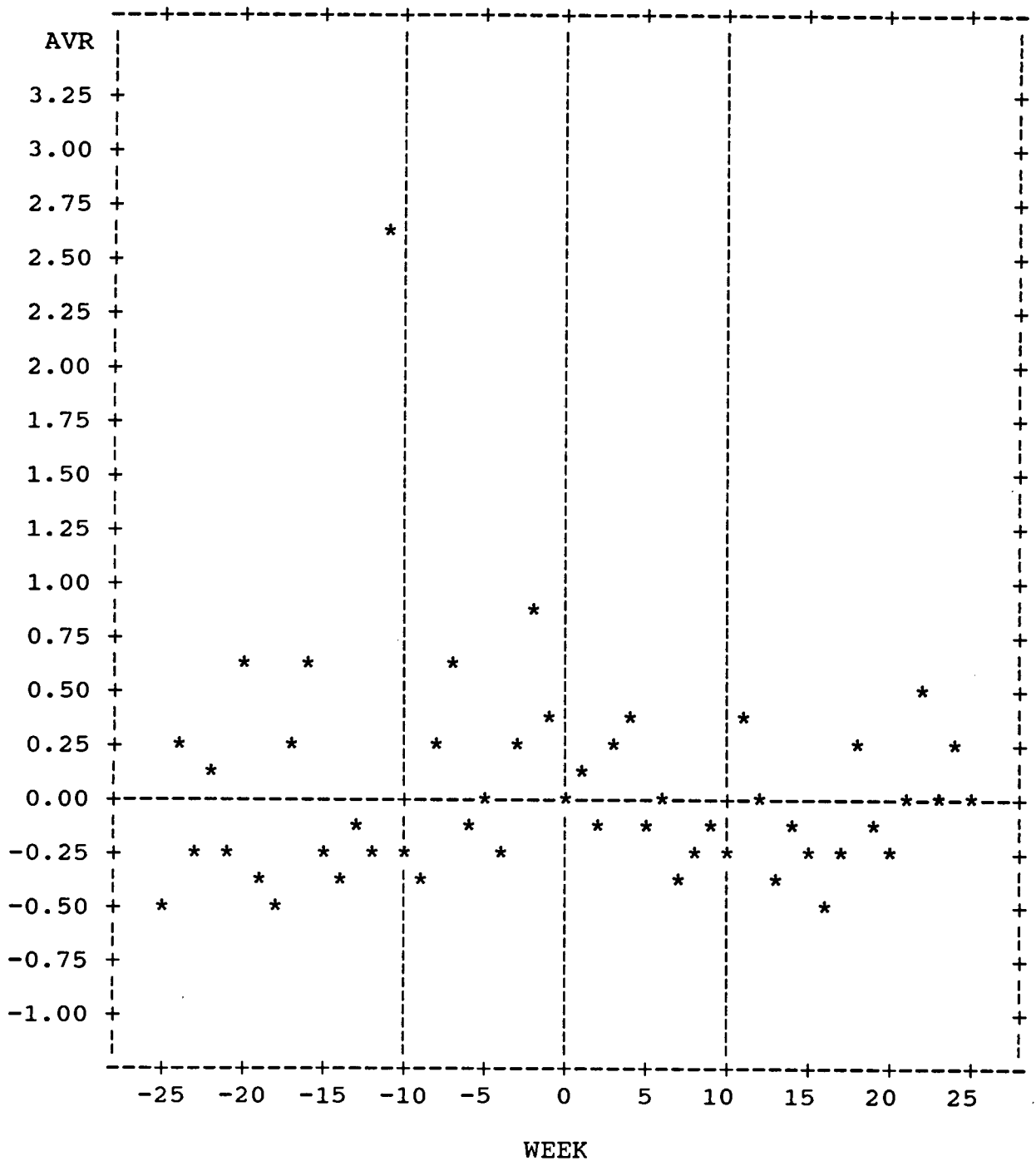


FIGURE 5.14 EXPERIMENTAL AND INTERNAL CONTROL GROUPS PAIRED DIFFERENCES: AVRDS

Plot of AVRDR*WEEK. Symbol used is '*'.

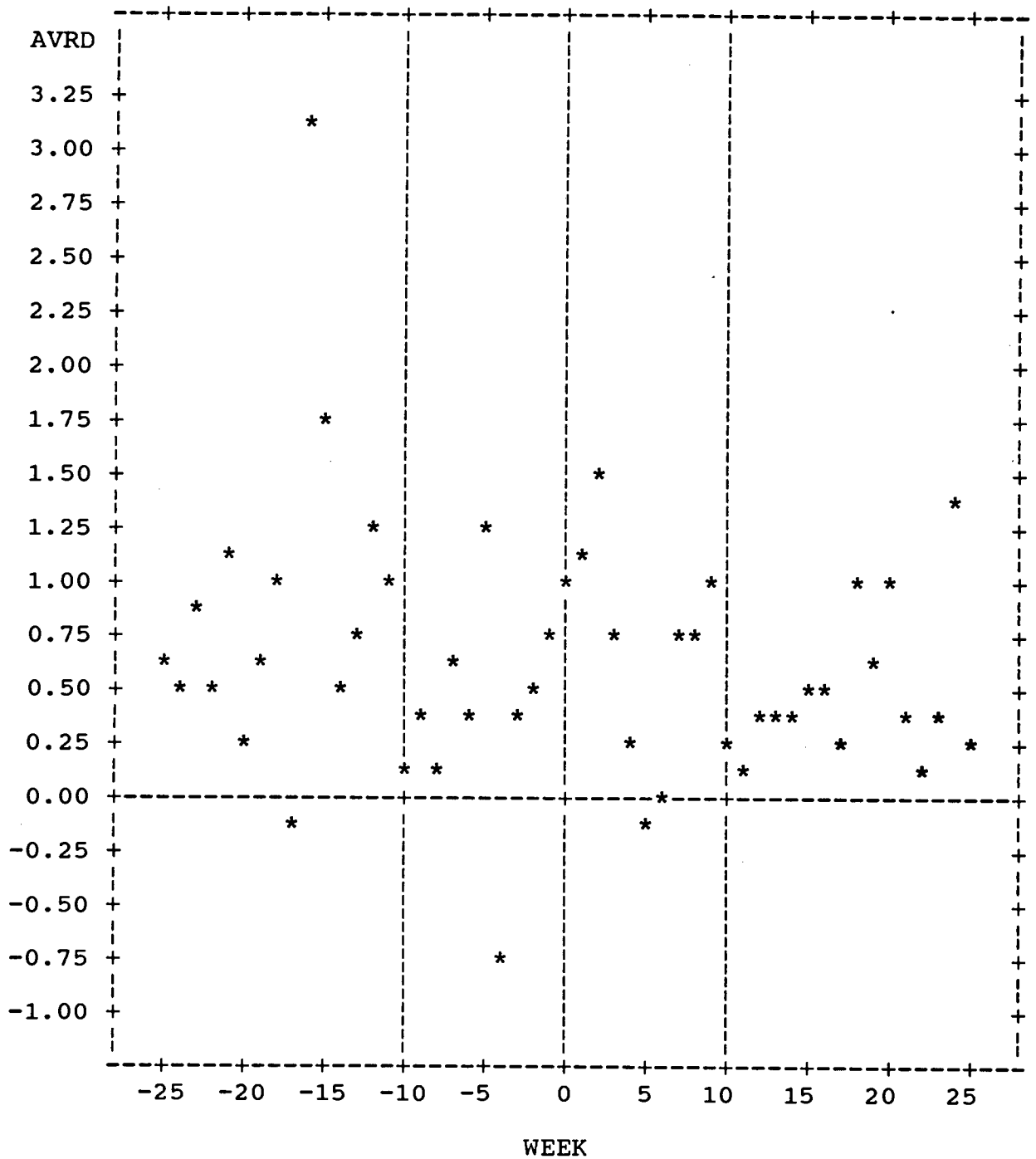
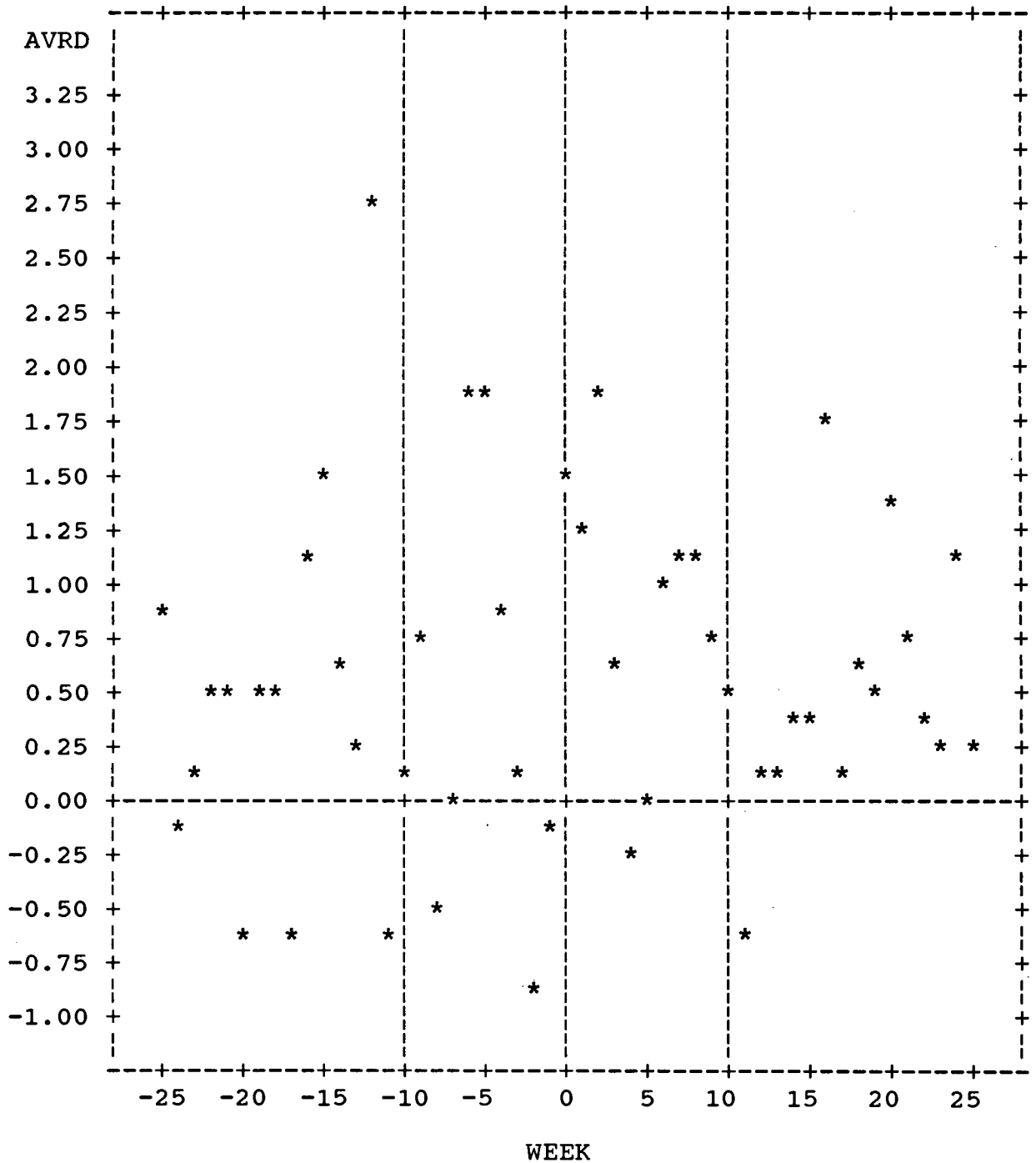


FIGURE 5.15 EXPERIMENTAL AND EXTERNAL CONTROL GROUPS PAIRED DIFFERENCES: AVRDS

Plot of AVRDS*WEEK. Symbol used is '*'.



APPENDIX 5.2 FIGURES DEPICTING CUMULATIVE RESULTS

The results reported in chapter 5 are associated with the weeks to which they relate. This allows the results to be compared directly with the impacts expected in terms of the stated hypotheses. In earlier capital market studies, it was common practice to report the cumulative results. This presentation requires that the reader extract the incremental results to establish the impact in any particular week. However, readers who are familiar with interpreting results in this form may prefer it. This presentation may also provide further insights into the results. For these reasons, the following figures depicting the cumulative results for the fifty one weeks are presented in this appendix:

<u>Figure</u>	<u>Title</u>
5.1c	Experimental group: CAARs
5.2c	Experimental group: CAMARs
5.3c	Internal control group: CAARs
5.4c	Internal control group: CAMARs
5.5c	External control group: CAARs
5.6c	External control group: CAMARs
5.7c	Experimental and internal control groups; paired differences: CAARDs
5.8c	Experimental and internal control groups; paired differences: CAMARDs
5.9c	Experimental and external control groups; paired differences: CAARDs
5.10c	Experimental and external control groups; paired differences: CAMARDs

In the absence of significant impacts in weeks other than week 0, the cumulative average of the abnormal residuals (CAAR) and the cumulative average of the market adjusted

returns (CAMAR) for the experimental group are expected to increase in the event week and to flatten out thereafter. As other impacts are expected to occur,²³ however, the CAARs and CAMARs can be expected to increase in the weeks leading up to the event week.

EXPERIMENTAL GROUP: FIGURES 5.1c-5.2c

The CAARs for the experimental group are plotted in figure 5.1c. A strong upward trend commencing at week -12 is evident. The CAAR in week 0 is 6%, moving to a peak of 7.3% in week +03 and flattening out thereafter.

Figure 5.2c shows the CAMAR plots for the experimental group in the test period. The plots are random up to week -14, rise to 7.4% in week 0 and continue to 8.8% in week +06. Thereafter, the plots flatten out and fluctuate between the bounds of 6.2% and 8.1% before rising to 10% in week +25.

INTERNAL CONTROL GROUP: FIGURES 5.3c-5.4c

The CAARs for the internal control group are shown in figure 5.3c. Although the trend is initially not dissimilar to that found in the experimental group, the plots rise to only

²³ See section 2.2 above

2.1% in week 0, but rise further thereafter to fluctuate between 3.8% and 5.5%.

There is initially some random movement in the CAMARs for the internal control group (figure 5.4c) up to week -12. The plots then rise steadily, albeit with some fluctuations, to an initial high point at 4.7% in week -04. The CAMAR in week 0 is 3.5%, after which the plots rise again to flatten out between the bounds of 4.4% and 6.7%.

EXTERNAL CONTROL GROUP: FIGURES 5.5c-5.6c

The CAARs for the external control group plotted in figure 5.5c do not show the same rising trend to week 0 as that reflected in the CAARs for the experimental group (figure 5.1c). They fluctuate in a random manner, between the bounds of -4.5% in week -12 and 2.2% in week +05, with a CAAR of -1.3% in week 0.

The CAMARs for the external control group (figure 5.6c) fluctuate initially between -0.8% and -2.9% before rising from -2.5% in week -10 to 2.5% in week -02, registering 1.5% in week 0, rising to 5% in week +05 and thereafter fluctuating between 5% and 2%.

EXPERIMENTAL AND INTERNAL CONTROL GROUPS: FIGURES 5.7c-5.8c

The cumulative averages of differences between the weekly

abnormal residuals (CAARDs) for the experimental and internal control groups are plotted in figure 5.7c. The movements in this graph appear to be random until week -05, rising to 2.5% in week -02, falling to 2.0% and then rising markedly to 4.0% in week 0. The plots then fall to a low of -0.8% in week +09, whereafter there is a rapid rise to the highest CAARD of 5.2% in week +24.

Reflected in figure 5.8c are the cumulative averages of differences between the weekly market adjusted returns (CAMARDs) for the experimental and internal control groups. The pattern of these plots is the same as that of the CAARDs described above. The movements in this graph also appear to be random until week -05, rising to 2.2% in week -02, falling to 1.4% and then rising markedly to 3.8% in week 0. The plots then fall to a low of -0.8% in week +09, whereafter there is a rapid rise to the highest CAMARD of 5.7% in week +25.

EXPERIMENTAL AND EXTERNAL CONTROL GROUPS: FIGURES 5.9c-5.10c

Plotted in figure 5.9c are the cumulative averages of the paired differences between the abnormal residuals of these two groups (CAARDs). After random movements, the plots rise from 0% in week -03 to 5.6% in week 0 and flatten out thereafter to move randomly, with the exception of a rise in week +22 to 7.0% in week +24. The pattern of the CAMARDs in

figure 5.10c is similar to that of the CAARDs, but the peaks in week 0 (4.5%) and week 24 (5.5%) are lower.

CONCLUSION

Generally, the results conform with the expected pattern. By construction, they conform with the results reported in the body of the chapter. Clearly, the points made in chapter 5 regarding the effect of the size of the samples and the selection of the external control group apply equally to the interpretation of the cumulative results.

The rising trends which are generally a feature in figures 5.1c to 5.10c reflect the impacts which can be seen in figures 5.1 to 5.10 (see appendix 5.1) in the weeks building up to week 0 and in the weeks at the end of the period. As previously suggested, these may be explained by the reaction of the market to other information (such as that contained in preliminary and interim reports) as it becomes available even though the results are not centred on those events. The trend is also consistent with the market's anticipation of information in the annual report, but this explanation is less convincing owing to the relatively weak information effect of the annual report (Knight and Affleck-Graves, 1986).

FIGURE 5.1c EXPERIMENTAL GROUP: CAARS (in percent)

Plot of CAAR*WEEK. Symbol used is '*'.

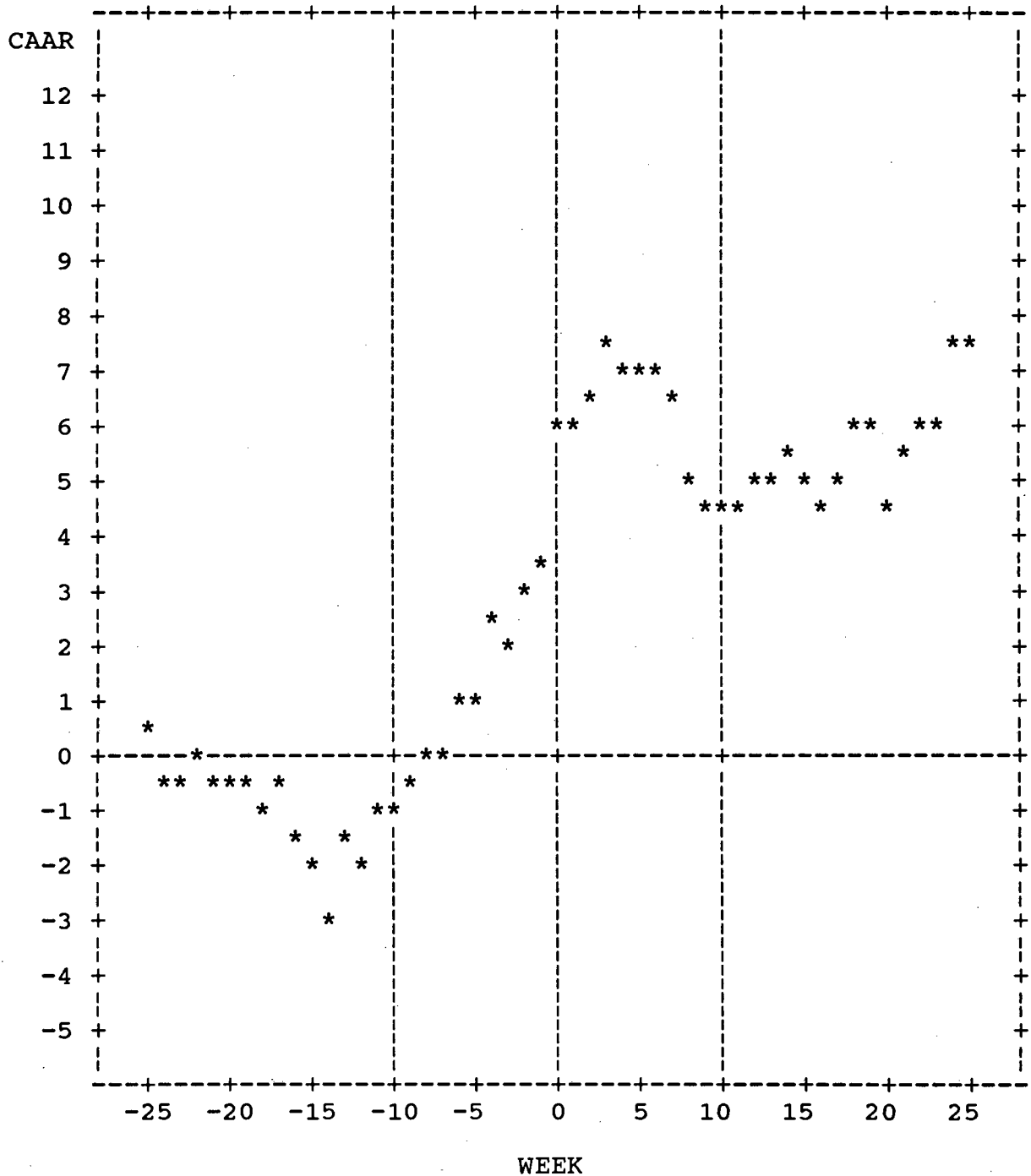


FIGURE 5.2c EXPERIMENTAL GROUP: CAMARs (in percent)

Plot of CAMAR*WEEK. Symbol used is '*'.

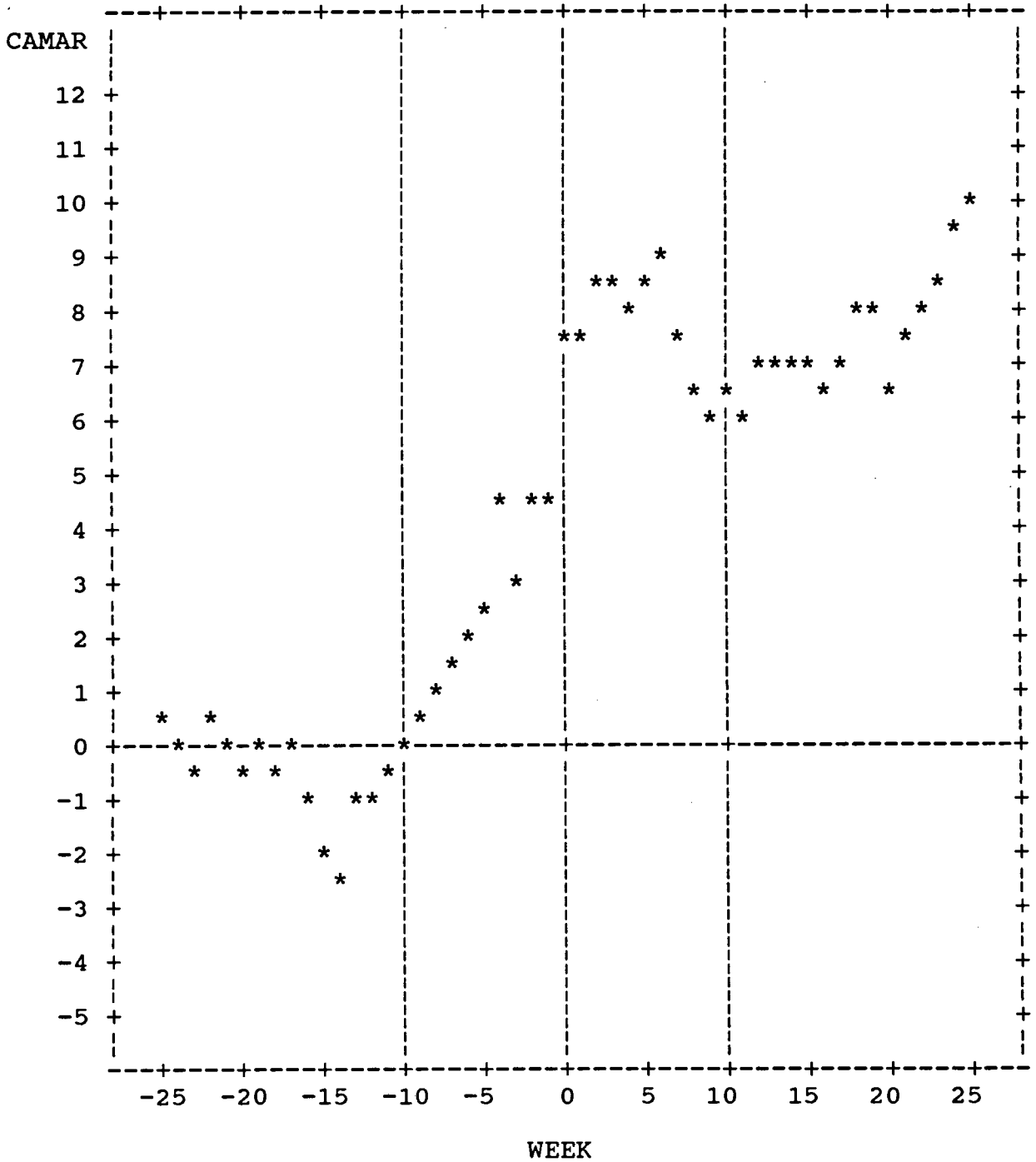


FIGURE 5.3c INTERNAL CONTROL GROUP: CAARs (in percent)

Plot of CAAR*WEEK. Symbol used is '*'.

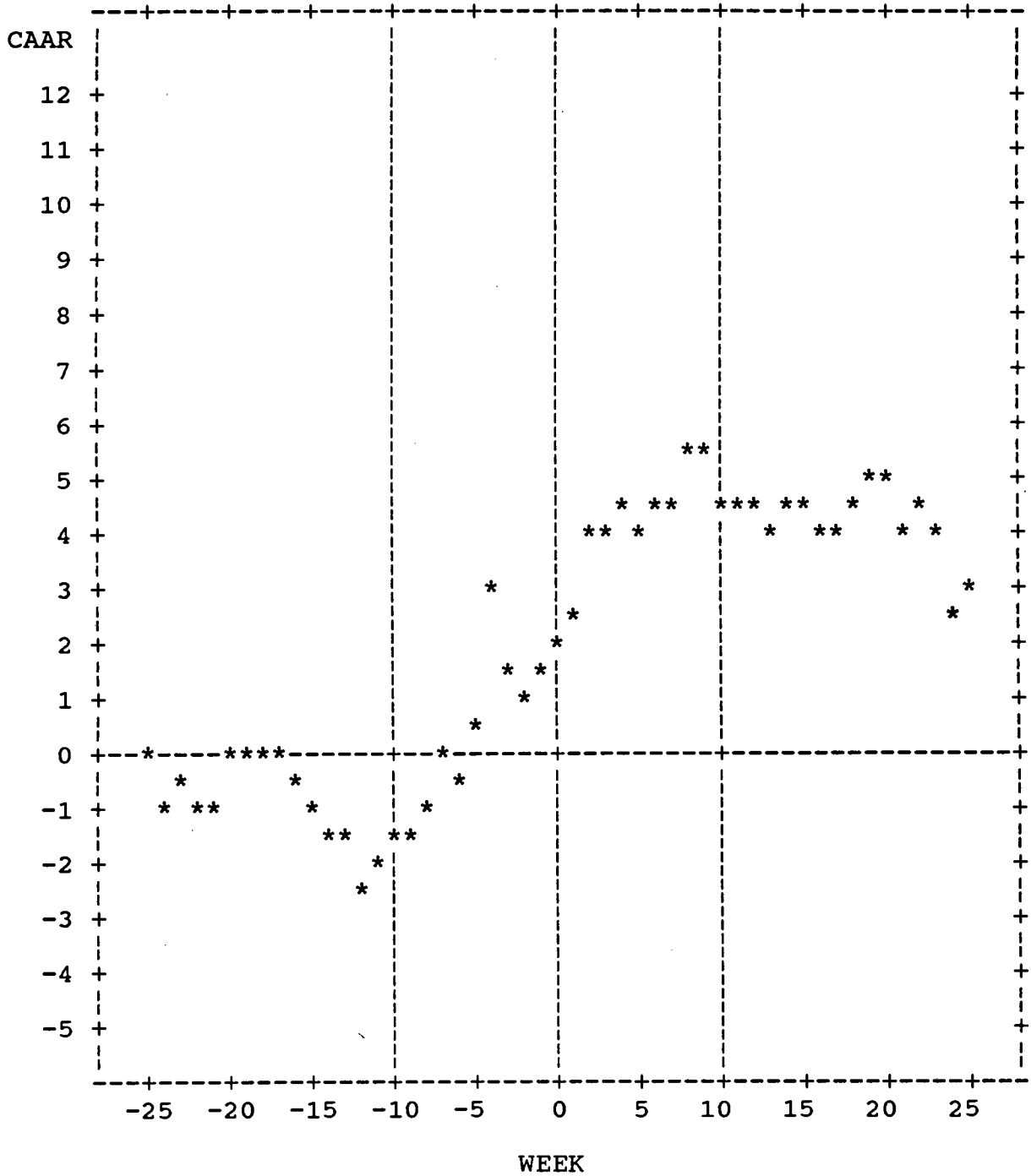


FIGURE 5.4c INTERNAL CONTROL GROUP: CAMARS (in percent)

Plot of CAMAR*WEEK. Symbol used is '*'.

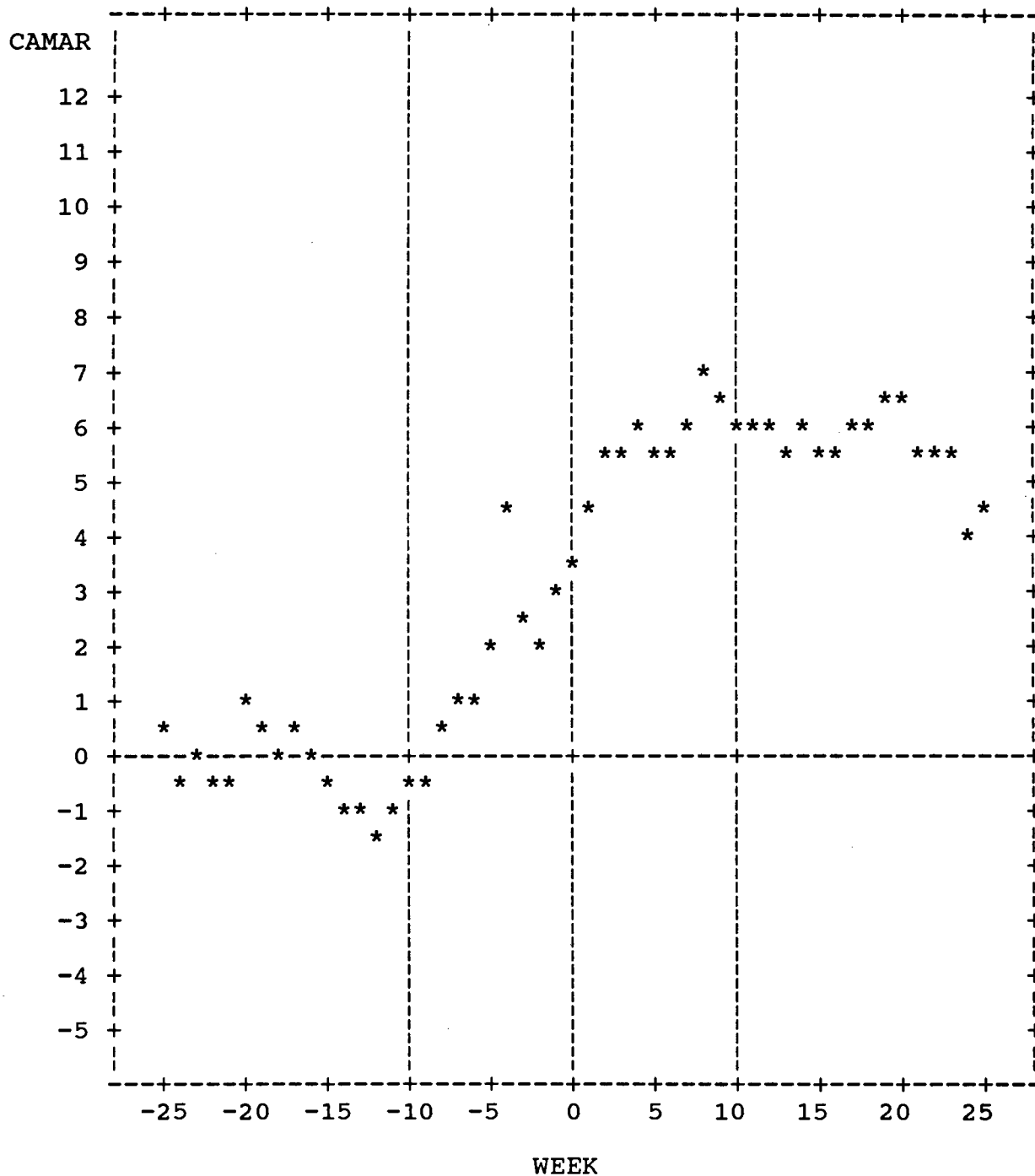


FIGURE 5.5c EXTERNAL CONTROL GROUP: CAARs (in percent)

Plot of CAAR*WEEK. Symbol used is '*'.

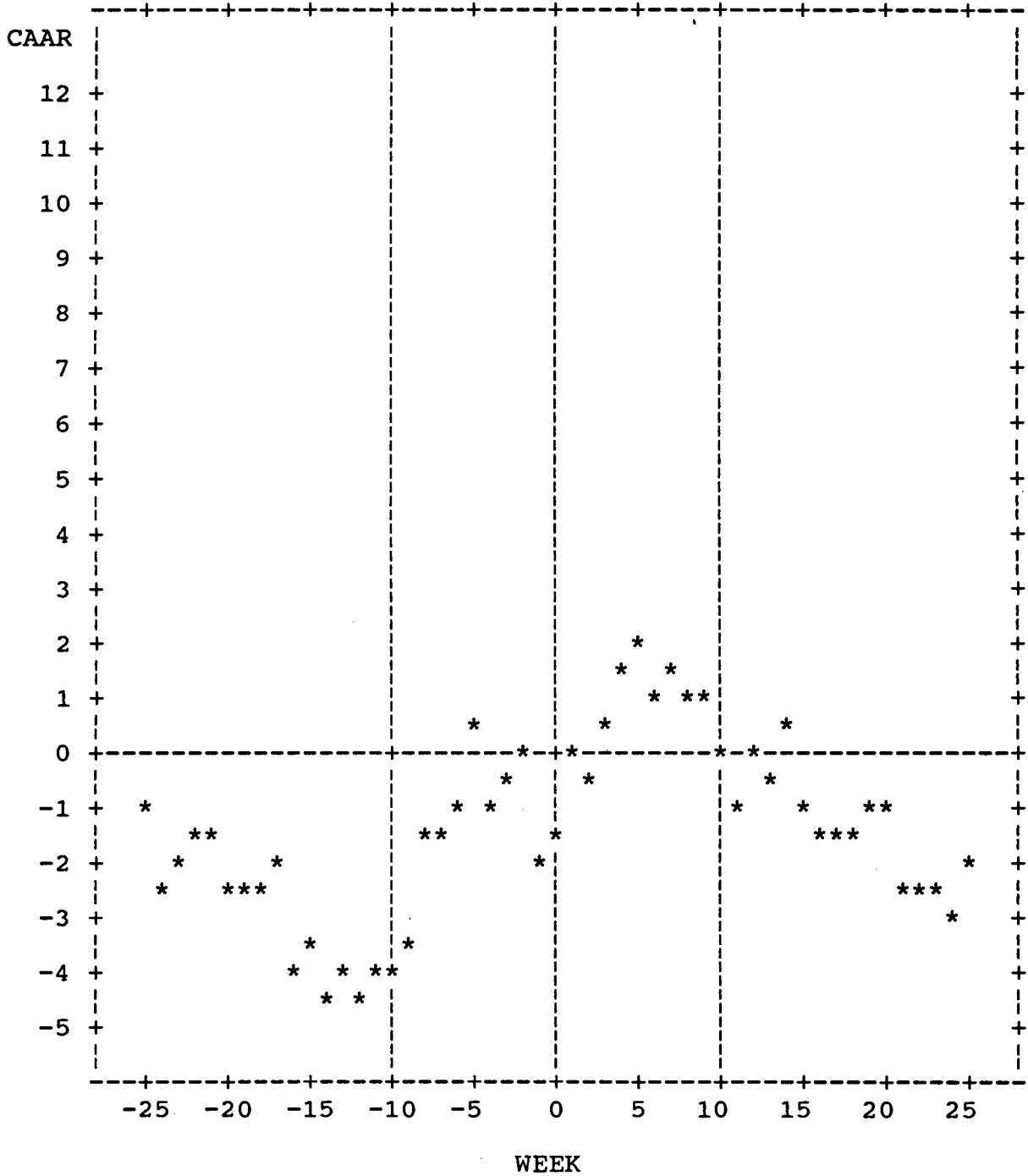


FIGURE 5.6c EXTERNAL CONTROL GROUP: CAMARS (in percent)

Plot of CAMAR*WEEK. Symbol used is '*'.

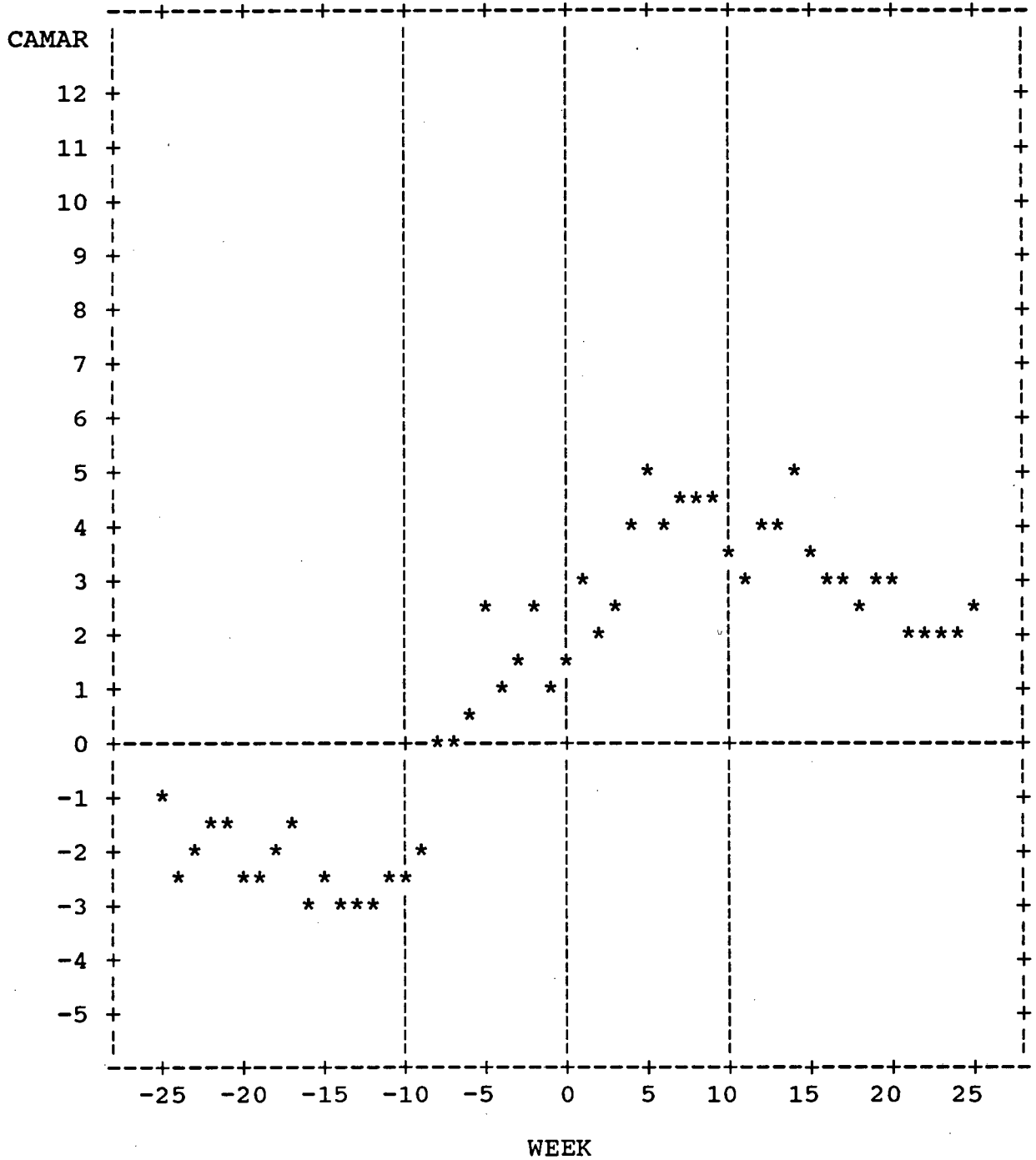


FIGURE 5.7c EXPERIMENTAL AND INTERNAL CONTROL GROUPS CUMULATIVE PAIRED DIFFERENCES: CAARDS (in percent)

Plot of CAARD*WEEK. Symbol used is '*'.

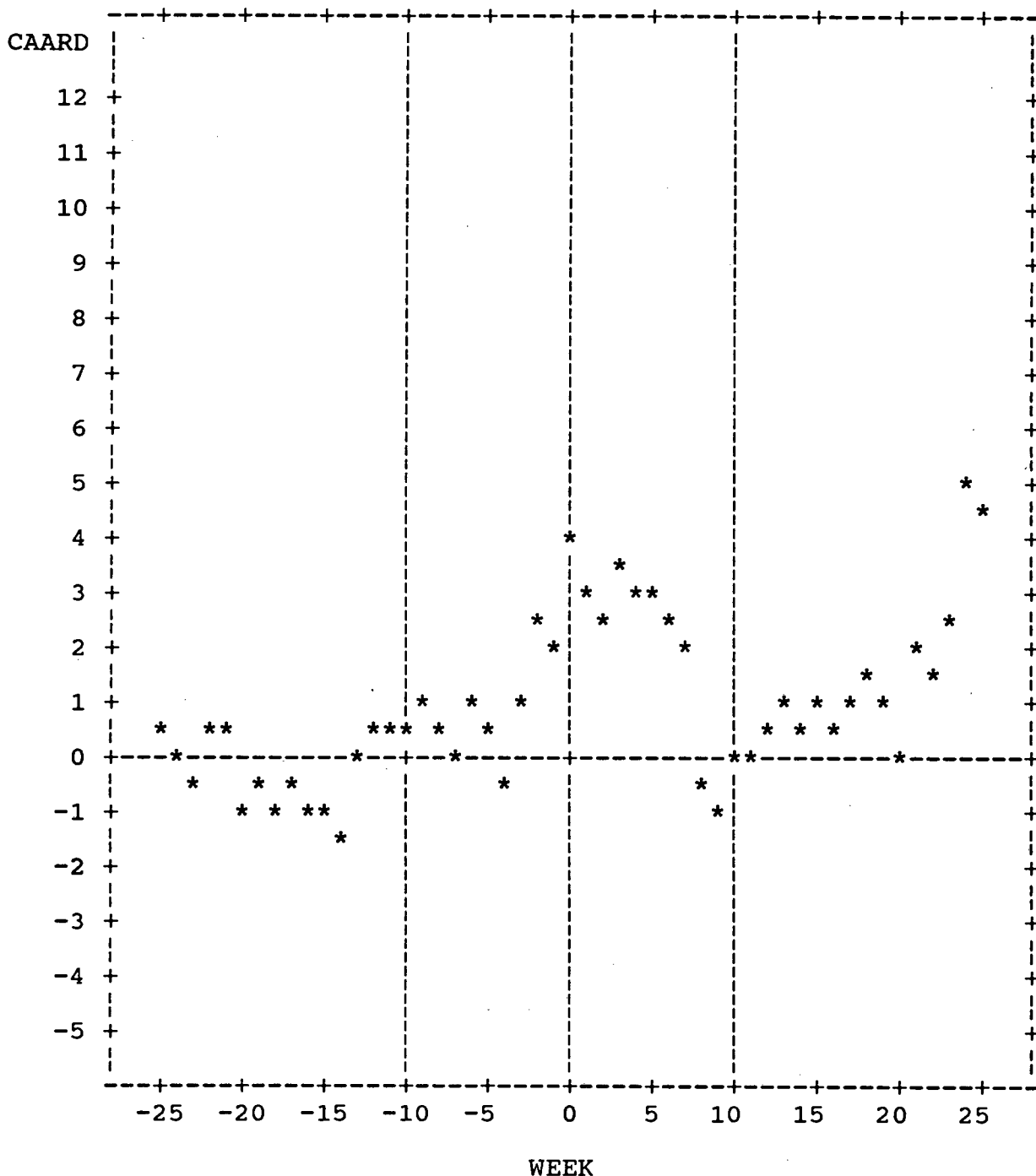


FIGURE 5.8c EXPERIMENTAL AND INTERNAL CONTROL GROUPS CUMULATIVE PAIRED DIFFERENCES: CAMARDS (in percent)

Plot of CAMARD*WEEK. Symbol used is '*'.

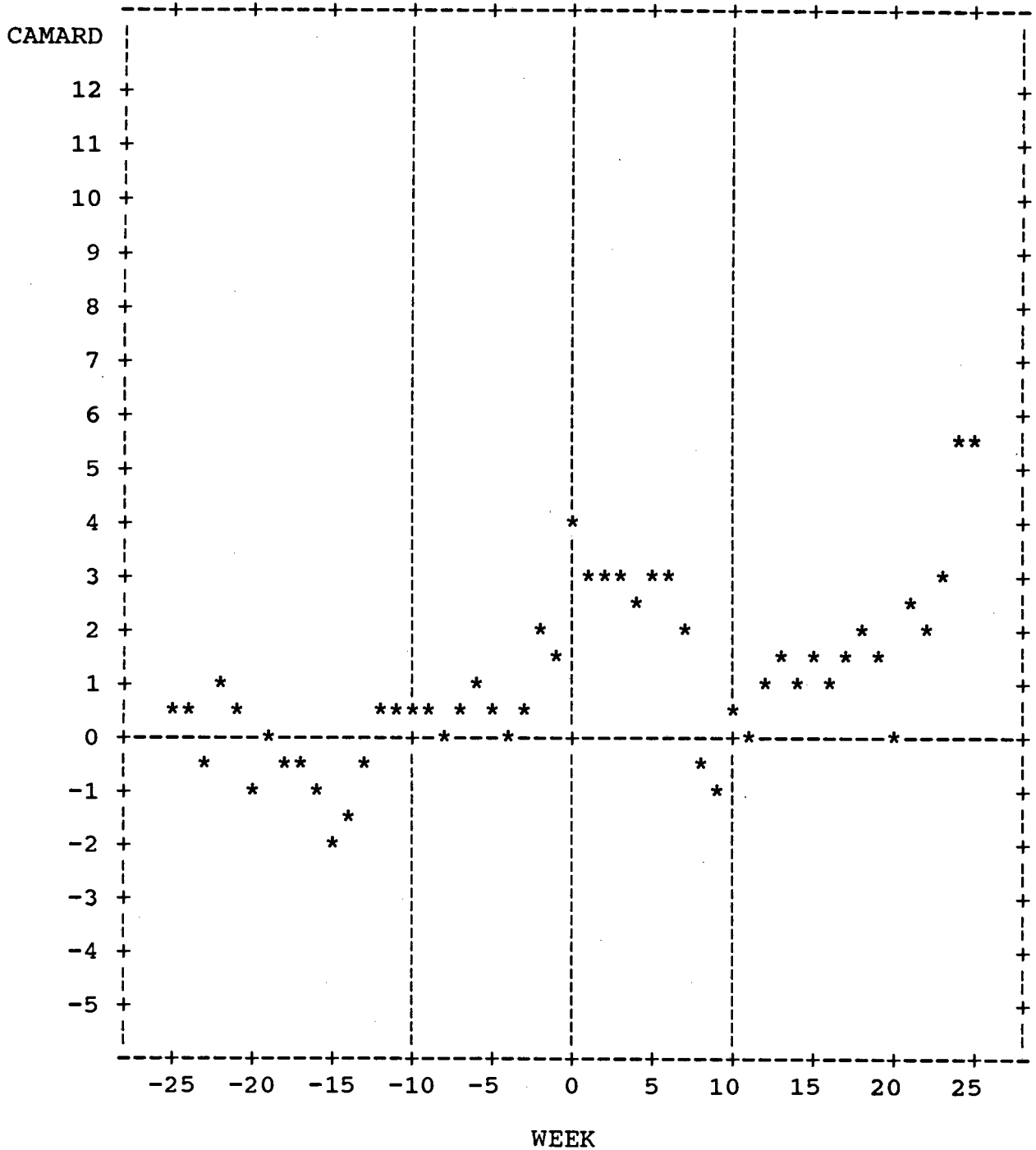


FIGURE 5.9c EXPERIMENTAL AND EXTERNAL CONTROL GROUPS
 CUMULATIVE PAIRED DIFFERENCES: CAARDS (in percent)

Plot of CAARD*WEEK. Symbol used is '*'.

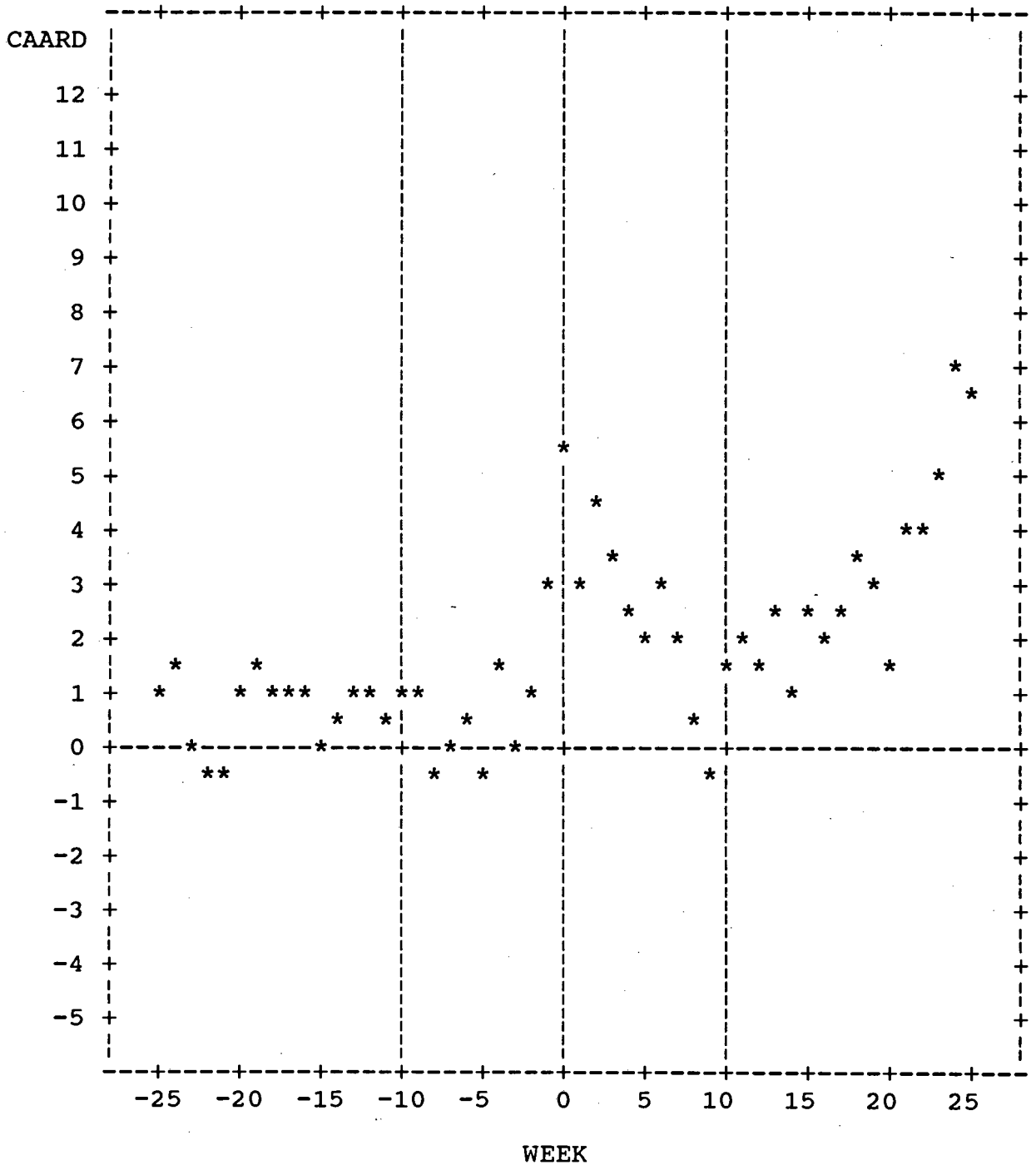
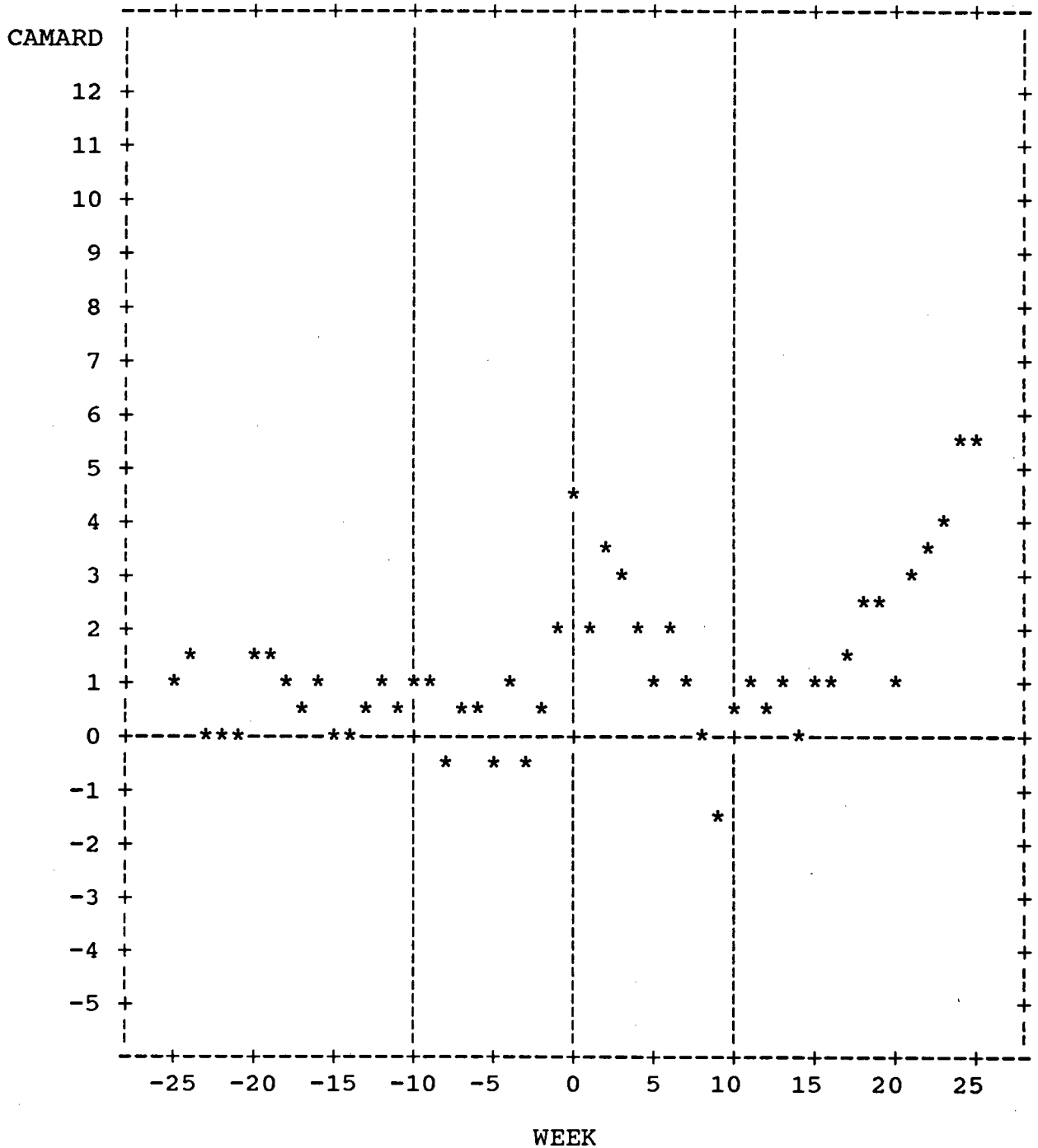


FIGURE 5.10c EXPERIMENTAL AND EXTERNAL CONTROL GROUPS CUMULATIVE PAIRED DIFFERENCES: CAMARDS (in percent)

Plot of CAMARD*WEEK. Symbol used is '*'.



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1.0 INTRODUCTION

This chapter commences with a brief review of the study, whereafter the implications of the results are considered. The limitations of the study are then identified, extensions suggested and conclusions drawn.

2.0 REVIEW

2.1 Objective

As stated in chapter 1, the objective of this thesis is to examine the impact of voluntary reporting on share prices, with particular reference to the reporting of financial targets and constraints in South Africa.

2.2 Hypotheses

The information event in this thesis is the first occasion on which an annual report is released which contains a statement of financial targets and constraints. A positive impact on the mean share price is hypothesised following an examination of estimation risk and signalling theories. Based on an examination of rational expectations theory, it is hypothesised that the dispersion of share price changes will increase but the effect on the mean share price is not predicted. An observed positive share price impact is

consistent with a reduction in the level of estimation risk, the revision of expectations and a signalling effect. The revision of expectations is also indicated by an increase in the variability of share price changes.

2.3 Methodology

The hypothesised information content of financial targets and constraints set by management is tested by examining share price behaviour accompanying the voluntary reporting of financial targets over the period 1974 to 1982 by thirty four companies listed on the JSE.

Owing to the multiplicity of influences affecting share prices, controls are introduced to provide reasonable assurance that there is a link between the reporting of financial targets and any observed share price behaviour. Abnormal residuals are calculated using the market model. This controls for events influencing the market as a whole and adjusts for differences in systematic risk across shares. The diversification of calendar dates provides a control for the influence of events which are not captured by the market model but which may affect particular groups of companies.

Two control groups are formed to control for self-selection bias and for the firm-specific confounding effect of other

information included in the annual report. The external control group is formed by matching reporting companies with nonreporting companies, but owing to the small number of companies in some sectors, matching is not always perfect and, in some instances, no suitable partner can be identified. The internal control group is formed by matching the reporting companies with themselves, whereby the results of the reporting companies in the test period are compared with the average of the results in the equivalent periods in the years before and after the test period.

There are insufficient data surrounding the two test period equivalents to estimate market model parameters for the calculation of the abnormal residuals for the internal control group. Consequently, the α and β estimated for the experimental group are used for this purpose. As some of the data are common to the estimation period and to the equivalent period, the abnormal residuals may be biased. Therefore market adjusted returns (Brown and Warner, 1980) are also computed using a simplified version of the market model with $\alpha=0$ and $\beta=1$ for all shares. This adjusts for market effects but not for systematic risk differences across shares. As it is assumed in this model that $\alpha=0$ and $\beta=1$, market adjusted returns exclude estimation error in the parameters. For comparability and completeness, the market adjusted returns are calculated for all three groups.

The methods described above are used to generate results to test for the positive information impact on share prices (a directional test). To test for any increase in the variability of share price changes, variability ratios are calculated by applying standardisation procedures to the abnormal residuals (Lobo and Mahmoud, 1989). This nondirectional test is also applied to all three groups.

2.4 Results

The effects of the release of the annual report, the reporting of financial targets and other information releases are discernible in the results. These are reviewed briefly below.

Annual report impact

Knight and Affleck-Graves (1986) conclude that annual reports convey information. Their conclusion is based on the results of a squared residual test, which are reported in the form of an index where unity indicates that the release conveys no information.¹ They report an absolute residual on the annual report release date of 1.388 (1986, p75). In the current study, the average variability ratios

¹ Given that W_i represents the variability ratio in the current study, the index in Knight and Affleck-Graves (1986) is essentially the equivalent of $(1 + W_i)$.

in week 0 for the internal and external control groups are -0.26 and 0.05 respectively, neither of which is statistically significant (see tables 5.3 and 5.4). These results indicate a level of variability similar to the average variability level in the estimation period.

Direct comparisons of the impacts on share prices in these two studies are not appropriate because the units of measurement are different. It is, however, reasonably clear that the control group used in the current study does not exhibit the information content of the annual report which is so apparent in the results reported by Knight and Affleck-Graves (1986). Self-selection bias on the part of the reporting companies provides a possible explanation for the different results, insofar as only the larger companies or some other special category of companies would tend to make these disclosures. The resultant effect of this bias, should it exist, would be that the average information content of either of the control groups in this study would be lower than that in the Knight and Affleck-Graves (1986) sample. While the differences between the two studies and the smaller size of the sample in the current study are noted, the current results are interesting in that they contradict the earlier findings. Although the results are on their own insufficient evidence to challenge those findings, they may provide grounds for examining this issue further.

The current study also indicates clearly that there is no positive information effect emanating from the release of annual reports by nonreporting companies. In week 0, the average excess returns resulting from the directional tests are very small for both control groups and none of them is statistically significant (see tables 5.3 and 5.4). This confirms the a priori view that there is no reason to expect that the release of the annual report would ordinarily have a positive impact the share price in an efficient market. It should be noted that these results are not comparable with those of Knight and Affleck-Graves (1986) as the latter were derived from a nondirectional test.

Financial targets impact

The conclusion reached in chapter 5 is that the reporting of financial targets does provide information to investors, as exhibited by its impact on share prices. Using the directional tests, the experimental and internal control group results provide strong evidence that the reporting of financial targets has a positive impact on share prices. This is supported by the experimental and external control group results. These results indicate information content and are consistent with all three hypotheses. The nondirectional test for the variability of share price changes provides somewhat weaker support for the information content and is consistent with the revision of expectations.

Taken together, the results are consistent with all three hypotheses and they provide strong support for the research conclusion.

Impacts in other weeks

Impacts in weeks other than the event week are discernible in the results of the directional tests. Particularly noticeable are those which occur four to eight weeks before the event week. Although week 0 is aligned with the annual report release date and not with the preliminary report release date, the information effect of favourable results in the preliminary report may nevertheless be sufficiently strong to explain the impact observed. The results thus provide weak evidence that reporting companies have better results in the financial year covered by the annual report than do nonreporting companies. This suggests that companies which have performed well are more likely to report financial targets than are other companies.

The favourable results may in some way motivate the reporting of financial targets (by, for example, promoting management confidence to commit itself publicly to the targets). This explanation should be distinguished from the hypothesised good news motivation for the release of forecasts. As forecasts are released before the firm's results are available, one suggestion is that firms release

forecasts to signal favourable results thus aiming to distinguish the firm from those remaining silent. Investors infer from the silence that they can expect bad news (see, for example, Lev and Penman, 1990).²

2.5 Conclusion

The results support both the hypothesised information content and the hypothesised positive impact on share prices. They also suggest that the annual report does not ordinarily convey information, in contrast to the conclusion reached by Knight and Affleck-Graves (1986). While explanations for the differing results may lie in the data or the methodology, further examination of this issue may be merited. The results also show that the annual report does not ordinarily have a positive impact on share prices. Finally, some of the impacts in weeks other than the event or its equivalent support the information effect of the release of the preliminary report and provide weak evidence that those firms reporting favourable performances are more likely to report financial targets.

² As mentioned in chapter 3, Verrechia (1983) refines this argument by pointing out the ambiguity introduced by the disclosure threshold.

3.0 IMPLICATIONS

Management

The trade-off between benefits and costs lies at the base of the disclosure decision. The results in this study indicate that the reporting of financial targets is accompanied, on average, by an enhanced share price. The implication is that management is able to improve the share price by providing this information. This could be done by providing a statement incorporating all three targets, qualitative supporting information, a statement of corporate objectives and specific information on the target composition of the debt component of the capital structure. The managements of diversified companies could include a range of target rates of return in this statement, together with the nature of the applicable investments. This information is required unless the intended mix of investments approximates the current mix of investments, as target rate(s) of return should be determined by the beta(s) of the project(s) concerned, which will vary where there is considerable diversification.³

³The reporting companies listed in the Industrial Holding Sector are likely to be diversified companies. Eight of the reporting companies are listed in the Industrial Holding sector. To these can be added companies listed in other sectors which are effectively diversified, such as the Premier Group (Food sector) and SA Breweries (Hotels and Beverages sector; some 50% of its interests are in businesses other than brewing).

Few of the reporting companies in this study provide a comprehensive statement of this nature, yet the information has a favourable impact on share prices. It seems reasonable to suggest that extensions of this reporting or improvements in its quality are likely to cause a more pronounced reduction in estimation risk, a more pronounced revision of expectations and/or a stronger signal.⁴

Two pertinent questions for management are whether the potential benefits and/or the disclosure-related costs are uniform across sectors. If the benefits were uniform across sectors, the decision would be driven by disclosure-related costs. The disclosure of proprietary information attracts proprietary costs.⁵ The target rate of return and the target dividend payout ratio have some potential to attract union attention while the target debt-equity ratio may affect the company's credit standing. These costs are unlikely to be uniform across sectors.

Once the policy of reporting the targets has been adopted and is pursued, the financial targets reported should have no effect on share prices on subsequent release dates, unless one or more of the targets have changed significantly

⁴ The feasibility of testing the impact of this additional information is considered in section 4.0 below.

⁵ Proprietary costs are defined and considered in chapter 3.

since the last reporting date.⁶ On such subsequent occasions, however, the positive impact attributable to the act of reporting (as distinct from the content) may no longer apply. Management should note that the discontinuation of reporting any of the targets may affect share prices adversely.⁷

Although this study provides weak evidence suggesting that managements tend to make their first report when performance is favourable, there is nothing to suggest that this is a prerequisite for the positive share price impact. While good results may boost confidence, there is no reason to wait for them before deciding to report the financial targets.

Regulation

Although regulatory issues have not been addressed in this study, the results may form useful input to regulators' discussions. Trueman (1986, p56) suggests, in the USA context, that understanding the motivation behind the voluntary release of earnings forecasts is important to the

⁶ Had the targets not changed, the information would be purely confirmatory and estimation risk should be unaffected, expectations would not be revised and there would be no signalling effect.

⁷ Possible reasons for this adverse effect on the share price are the resultant increase in estimation risk and/or signals which are the opposite in effect to those accompanying the act of reporting and/or favourable content (see chapter 3, sections 2.0 and 4.0).

debate over how active the (USA) Securities and Exchange Commission should be in mandating information disclosure. Similar reasoning could apply to the South African legislature, the Accounting Practices Board and the South African Institute of Chartered Accountants.

4.0 LIMITATIONS

Owing to insufficiency of data, it was not possible to estimate parameters for the calculation of expected returns for the internal control group in the test period equivalent. The parameters estimated for the expected returns were thus used as surrogates. Any distortion arising from this approximation is likely to be minimal. It should also be noted that in this study, essentially the same results are obtained whether measured in terms of abnormal residuals or in terms of market adjusted returns. In calculating variability ratios, weekly variability levels in the test period or its equivalent is standardised by the average variability level in the estimation period. Owing to the data insufficiency referred to above, the observations for each weekly return have been drawn from the same data as have 14 of the four-weekly returns used to calculate average variability in the estimation period. This may distort the average variability ratios for the internal control group.

The efficacy of the external control group may have been limited by the limited number or unavailability of suitable companies to match those in the experimental group. As noted in chapter 4, Murray (1983) illustrates that the results vary with changes in the control group design to the extent that conclusions may differ according to the matching criteria adopted. Industry sector is regarded as the most appropriate matching criterion for this study, but the question may nevertheless be raised as to whether another control group using different matching criteria (for example, size) may have served better, at least insofar as allowing the construction of a control group comprising the same number of firms as the experimental group. However, apart from the difference in the average firm size between the two groups, there appears to be no strong argument for the use of other matching criteria.

The interpretation of the results in this study has been limited to some extent by the sizes of the experimental and control groups. As all companies identified as reporting financial targets were included in the experimental group,⁸ this group of reporting companies comprises the population of reporting companies. The further limitation on the external control group size is referred to above. Thirty

⁸ With the exception of two companies, as noted in chapter 4, section 5.0 (footnote 5).

four reporting companies may appear a small group relative to the total of 285 companies in the industrial sector.⁹ However this group represents 11.9% of that total which compares with the 10% to 15% of public companies which voluntarily release forecasts in the USA (Lev and Penman, 1990, p51). In a follow-up study, the reporting group could be extended to include all those companies which initiated their reporting of financial targets after the latest initial reporting date included in this study (1982).

The share price impact is associated with all three hypotheses. It is not possible to establish whether the effects are explained equally by all of the hypotheses, to a varying extent by each of them or effectively by any one of them. The share price impact is similarly associated with all three targets. The results do not allow the influence of any one or two of the specified individual targets to be isolated. As the primary contributor to the purpose objective is the rate of return on assets, it may be suggested that the reporting of the target rate of return is likely to explain the majority of the share price reaction. There are, however, too many variables involved to be able to make a strong case for the impact attributable to any one target.

⁹ This is an estimate for the period over which initial reporting dates were identified, based on the number of companies in the industrial sector of the JSE in 1985 (see table 4.4).

5.0 EXTENSIONS

Voluntary reporting remains a contemporary topic which offers research opportunities in the South African context. The development and testing of disclosure models feature in recent studies (see, for example, Chow et al., 1989 and Gibbons et al., 1990). Issues related to the voluntary release of forecasts is the subject of studies reported recently by Lev and Penman (1990), Pownall and Waymire (1989) and Ruland et al. (1990). It may thus prove worthwhile to seek further insights by extending the study.

The number of reporting companies could be increased by adding those companies which have subsequently initiated their reporting of financial targets. This should to some extent overcome one of the limitations of this study noted in section 4.0. If there were a sufficiently large number of reporting companies, it may be possible to associate the share price impact with individual targets. Those companies which do report only one or two of the three targets initially may extend their reporting to the remaining one or two target(s) in subsequent years. If like changes and like initiations were to be aggregated across companies, they may provide an opportunity to separate out the share price effects of individual targets.

Another unknown element is the effect of conformity or nonconformity with past investment, dividend and debt policies. If the pertinent ratios achieved in the past were reported on a basis consistent with the reported targets, it may be possible to establish the differential share price impact relative to policy changes.

Numerous references to studies of the information impact of voluntarily released management forecasts have been made in this thesis as there are a number of similarities between them and financial targets. Although the issues are not identical, it should be legitimate and revealing to draw further on research studies on the voluntary release of forecasts for inferences about reporting financial targets. In particular, some indication of the motivation for reporting of financial targets in South Africa may be gained from an examination of American research into the release of management forecasts. It may also be of interest to establish how many of these companies also release forecasts, how many forecasters are not reporting, and to compare a group of nonreporting forecasting companies with reporting companies.

The study could also be extended to examine a number of issues related to reporting financial targets which are raised by research into voluntarily released forecasts. Some of these issues are:

- * Size: A larger-firm bias appears to be evident in forecasting studies (see, for example, Ruland, 1979 and Lev and Penman, 1990).¹⁰ This may suggest a similar bias in companies reporting financial targets.
- * Variability of earnings: Imhoff (1978) reports that forecast firms have significantly less variability in their time series properties of earnings more frequently than others. Ruland (1979) finds that earnings variability is lower for forecast firms. Waymire (1985) finds that forecasters have less volatile earnings processes than less frequent reporters. South African companies reporting financial targets may have similar characteristics, suggesting that companies operating in the more stable environments (including diversified companies, which are able to neutralise variability to some extent by pooling increases and decreases in earnings), are more likely to report.
- * Ownership: The greater the proportion of outside ownership, the more likely are companies to report forecasts (Ruland et al., 1990). Again, this may be an indication for companies reporting financial targets.

¹⁰ Lev and Penman (1990) suggest that this may be owing in part to a bias in favour of reporting the forecasts of larger firms.

- * Good news: Lev and Penman (1990) find a tendency to report good news forecasts. On the other hand, Ruland et al. (1990) conclude that the results of those reporting forecasts are not significantly better than those of nonreporting companies.

6.0 CONCLUSION

The results in this study provide strong evidence that reporting financial targets, namely the target rate of return, target dividend payout ratio and target debt-equity ratio, has a positive impact on share prices. This is consistent with all three hypotheses, to the effect that a positive share price reaction will accompany the reduction of estimation risk and/or the signalling associated with reporting financial targets, and that a share price reaction, in either direction, will accompany the revision of expectations associated with this reporting. This conclusion also supports Stern's (1980) contention that if managements follow his recommendations, there will be a favourable effect on the share prices of their companies. Finally, the results presented confirm the information content of annual reports issued by companies which report the specified financial targets.

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