LINKING MARKETING TO SHAREHOLDER VALUE IN LISTED AND NON-LISTED MARKETS

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Submitted in fulfilment of the requirements of the degree of Doctor of Philosophy of Griffith University. I hereby certify that, this work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

______________________________

Victoria Louise Hodgson
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ABSTRACT

In this thesis it is recognised that marketing has a dual role to satisfy both customer and shareholder objectives. The issue of shareholder value creation of marketing is an important and immediate agenda for marketing executives, management and academics. To date, marketers have not been able to adequately quantify and measure shareholder value creation through marketing assets and marketing expenditure. This has led to a dilution of marketing power and influence in the boardroom with management tending to treat marketing as discretionary expenditure and not as an asset. Academics have responded with conceptual models that relate marketing assets back to shareholder value, generally through cash flow or sales models.

The creation of shareholder value through marketing assets and expenditure is then conceptualised and tested empirically. The conceptual model builds on the theory of agency and incomplete markets setting to illustrate the flow effects through marketing assets to shareholder value. The conceptual model also demonstrates that marketing expenditure can have stock and/or flow impacts on shareholder value. Flow effects are indirect effects that are mediated through sales, cash flows, and earnings and can be either temporary or longer term. It is concluded that in listed markets stock prices are the general surrogate for shareholder value, and risk adjusted earnings are the appropriate surrogate in non-listed markets.

The thesis then empirically illustrates and tests the relationships between marketing communications expenditure on two data sets representing firms in listed and non-listed settings. The empirical results reveal that marketing expenditure does play an important role in the creation of shareholder value and that stock and flow effects are both present. Knowledge of the various empirical impacts from marketing across firm size, industry and listed and non-listed market settings observed in this thesis should prove highly valuable for marketers and managers. Finally, a conceptual understanding by marketers of the financial metrics that are required to be influenced in order to increase shareholder equity will provide greater clout in negotiations with management and boards of directors.
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CHAPTER ONE - OVERVIEW OF THE THESIS

1.0 INTRODUCTION

This thesis is concerned with measuring the impact of marketing communication (MC) on the financial performance of the firm. The study of the effectiveness of MC is of critical importance to marketing management, but the manner in which effectiveness is assessed can vary widely. Indeed the research on the financial outputs from MC in the marketing literature is vague with a lack of precise measurement metrics specific. Consequently, this thesis has two major objectives. First, to provide a conceptual framework for the determination of the primary objective of MC, and to theoretically link MC to financial performance measures and, second, to empirically test the potential measures of financial effectiveness using appropriate statistical technology. It is argued that risk adjusted accounting earnings be used in non-listed markets and stock prices used in listed markets.

This chapter proceeds as follows. First, a background to the state of play of measuring marketing performance is discussed and the response from marketing is outlined. The importance of marketers to concentrate research into the marketing/finance/accounting interface is then presented and the contributions of this thesis are detailed. Finally, an overview of the thesis is provided and a summary of this chapter is outlined.
1.1 BACKGROUND

Current practice in marketing is to approach MC effectiveness from the viewpoint of the consumer. That is, the assumed goal of MC is to affect consumer perceptions, attitudes and behaviour. This means that effective MC efforts are directed at changing perceptions or encouraging some form of behavioural response. The focus has been on measuring such things as recognition and recall, emotional reactions, physiological arousal, persuasion, perceptions of quality, purchase intentions, reported behaviour and behavioural response. Another arm to this approach is to assess MC in their various forms in terms of the ability to enhance brand equity. Equity is often defined from the consumer’s perspective in terms of brand awareness\(^1\) and brand image,\(^2\) and brand concept management is directed at functionally satisfying consumption related problems. That is, communicating specific benefits of products that will satisfy consumer’s wants and needs.

Loosely termed, this research can be labelled as attitudinal/behavioural and can be described as the dominant objective of MC in commerce and the focus of research by marketing academics. It is also worth noting that attitudinal/behavioural research is necessary if we are to understand how consumers think, why they act in certain ways, and can also provide insights into behavioural intention. However, it is also known that what people say they are going to do, and what they actually do, can differ widely. Indeed, correlations between effect or awareness (attitude) and behaviour have been reported at low levels, ranging between 0 and 0.3 (see for example Vakratsas and Ambler 1999).

\(^1\) Including brand recognition and brand recall, whereby recall is seen as a deeper level of recognition.
\(^2\) Brand image is conceptualised in terms of type, favourability, strength and uniqueness.
Moreover, in the corporate boardroom the approach to measuring MC effectiveness will more likely be different. Given the observed low correlation between attitude and behaviour, management might ask how MC directly affects business operations. This means that marketing communications must do something more than just influence awareness or enhance consumer attitudes. Further, a number of external observers have also offered major criticisms of a singular attitudinal/behavioural approach of MC and the measurement of effectiveness.

The raising of anomalies and criticisms of the dominant “normal” paradigm (see Kuhn, 1970) has given voice to the development of competing schools of thought in marketing. One such school of thought, the marketing/finance paradigm, has arisen because of the perception that the discipline and practice of marketing has a distinct lack of "clout" in the business world and in public policy deliberations. A major reason for this is that most research has focused on variables of interest to endogenous marketing practitioners (eg. awareness, attitude, sales turnover) rather than metrics that matter to those outside marketing (eg. stock prices, profitability). These criticisms have even spread to the popular press, viz:

“Ask most agency executives today for a precise explanation on the contribution of campaigns they’re involved with and typically they will be rather vague or superficial. Certainly a strong causal link to the financial value on their client’s business will likely be missing. Most likely only short-term effects based on awareness and an immediate response in sales will
be mentioned. For too long agencies have talked about espousing creativity but failed to justify advertising as an investment. It’s the reason that advertising has fallen down the corporate agenda from where it was 20 years ago.” (Moss, Australian Financial Review, 12th February, 2002).

In this regard, marketing and advertising practitioners are seen as largely to blame for the lack of attention devoted to the contribution of MC to shareholder and corporate values. Hence, corporate boards are increasingly asking marketing departments to justify their expenditures in terms of financial performance.

An empirical survey by Styles (2002) on the value of marketing within an organisation found that marketers are more concerned with short-term measures of performance and confirms the concerns raised in the above discussion. Customer-based measures such as satisfaction, brand awareness and brand equity only reach one in five boards. The study also revealed that marketers believed that marketing contributed to shareholder value 44% of the time and 22% thought that the CEO felt the same.

1.2 RESPONSE
Marketing researchers and practitioners have been aware of these criticisms for some time but the focus of evaluation is still at the awareness and sales level. They have mainly responded to the demand for both a financial performance measure and a surrogate for consumers ‘movement to action’ by measuring the impact on total sales, or derivatives from the sales figure. Along these lines Shimp (2000, p.469), drawing on the arguments of Lodish (1986), states that an ideal
measurement system would evaluate MC effectiveness in terms of the sales volume generated, which is, according to the logic of vaguely-right-versus-precisely-wrong objective setting, the only bona fide objective. Shimp (2000) further argues that any measure of MC effectiveness becomes less valuable the further removed it is from the potential for generating sales volume. The research and the literature reinforces this approach and the literature review in chapter three shows that most of the financial performance assessment of MC is still related to sales outcomes.

Another approach has been put forward by Day and Fahey (1988), who stated the true test of MC effectiveness, is its impact on shareholder value. Others have similarly argued that investments in customer and partner relationships create market-based assets, which in turn, enhance shareholder value by maximising cash flows (Srivastava, Shervani, and Fahey 1998). Suffice to say, that much of the scholarly work in this emerging area has been conceptual in nature and the semantic (empirical) links between marketing activities and shareholder value are not widely researched. Further, it is also important that marketing is recognised by accountants as a significant contributor to shareholder value and contains valuable information that investors need in order to accurately value firm assets. It is the responsibility of both marketers and accountants to provide the frameworks for measurement and assessment.

Thus the first objective of this thesis is to establish a theoretical framework which will enable marketers to appropriately assess the financial impact of MC on shareholder value. This is undertaken in chapter five and empirically tested using
risk adjusted excess earnings in chapter six and stock prices in chapters seven and eight.

Another point to note is that marketing is defined widely in the literature. As outlined by Webster (1992) there are four different aspects of marketing practice: (1) transactional marketing involves managing the marketing mix to attract and satisfy customers; (2) database marketing uses technology to target and retain customers; (3) interaction marketing involves developing interpersonal relationships between buyers and sellers; and (4) network marketing develops interfirm relationships for mutual benefit. This thesis specially focuses on the relationship between MC (which comes under transactional marketing) and shareholder value.

1.3 IMPORTANCE OF THE RESEARCH

Briefly, the importance of this research is such that will provide support for marketing and provide a framework for the valuation of marketing expenditure as an investment. Marketing has to date predominately measured its performance in relation to metrics that are not considered important in the boardroom. By so doing marketing has undervalued its contribution. The research undertaken in this thesis will aid in bringing marketing back to the boardroom; by improving planning and coordination within the firm and by providing a conceptual and empirical basis for valuing the contribution of marketing. Further by providing a clear line of motivation to marketing managers it will aid in reducing agency costs within the firm, and will provide an important financial function of doing business through linking marketing to financial metrics and ultimately shareholder value. Finally, at
the academic level the research reinforces the need for cross-disciplinary research, especially the development of methods to more appropriately value marketing activity and its relation with shareholder value creation.

Examining the financial impact of MC is also important because MC is a large cost to many firms and if it is not treated as an investment in marketing assets it is likely to be written off as an expense by accountants. In the USA, MC is equivalent to 1% of total annual sales (Chan, Lakonishok, and Sougiannis 2001) and it is found, in this thesis, that MC is often equivalent in expenditure to the annual earnings of a firm.

1.4 SPECIFIC CONTRIBUTIONS OF THIS THESIS

The research in this thesis extends the current body of knowledge in marketing and finance and attempts to bridge the disciplines. The thesis not only considers how marketing influences consumer behaviour but also how it can simultaneously influence investor behaviour. Through understanding how marketing can drive financial outcomes and ultimately influence investors’ behaviour the role of marketing as a key financial element of the firm is explored. A conceptual model is developed that continues on the work of Srivastava, Shervani and Fahey (1998), Guilding and Pike (1994), Doyle (2000) and Styles (2002) and the first specific contribution operationalises the financial meaning of shareholder value in traded and non-traded equity markets.

In addition, Srivastava, Shervani and Fahey (1999) contend that marketing expenditure adds value when it creates marketing assets that generate future cash
flows with a positive net present value. Thus, marketing assets are the effective linkage between marketing activities and value creation (Doyle 2000). This thesis contends that a marketing asset is only present when the investment in marketing is realised as a financial asset for the firm. Thus, the second specific contribution of this thesis is to theoretically link the definition of marketing assets to risk adjusted earnings and stock prices and not to recognise marketing assets until this link has been empirically established. This means that MC expenditure should be treated as a strategic financial investment and the role of MC is to, ultimately, enhance shareholder value.

This thesis also takes a step further than previous studies that concentrate on the sales and cash flow metrics as financial measures of the contribution of marketing expenditure to shareholder value. As well as sales and cash flows, the (flow) measures of shareholder value increments include earnings and risk adjusted earnings. The stock value measures also include book value of assets, stock prices related to a theoretical schema that shows how one financially values marketing intangible assets. This is a major contribution because it takes a flexible and dynamic approach to the valuation of MC expenditure which is then applied to listed and non-listed markets. To the knowledge of the writer, the presentation of this overall conceptual model has not previously been undertaken in the marketing literature.

To summarise to date. The main objective of this thesis is to provide a conceptual model that relates MC expenditure to financial outcomes, which extends the recent conceptual research that concentrates predominantly on cash flows. Specific
contributions include the extension to traded and non-traded markets, the definition of marketing assets and arguing for a flexible and dynamic approach to shareholder equity valuation. This chapter now continues by outlining how each chapter relates back to primary objective of the thesis.

1.5 A CHAPTER OVERVIEW RELATED TO OBJECTIVES

Chapter two provides a background to the marketing-finance-accounting paradigm. Transactional marketing is first defined (with a focus on MC) together with relational marketing. The chapter continues by contextually discussing the economics of marketing information and the customer connections with regard to products, service delivery and the accounting and finance components. This chapter concludes with a discussion of external frameworks that emphasise the shareholder value approach. The purpose of this chapter is to provide a background to the thesis and to provide a base to the subsequent theoretical model in chapter five.

Chapter three contains a summary of the literature on empirical research that assesses the impact of marketing (mainly advertising and promotions) on various financial metrics. This chapter reveals that most of the research evaluates the impact on short-term sales, and that there is limited research that addresses the impact on cash flows, earnings, risk adjusted earnings and stock prices.

One part of the objective of the thesis is to apply appropriate techniques to the MC valuation issue. To this end, chapter four outlines the various statistical models, with a concentration on time-series techniques that have been utilised in the
marketing literature. This chapter serves two purposes. To provide a current state of play overview of the techniques in this area and to argue that time-series modelling is an important modelling tool in marketing research. Second, to provide a fuller explanation for some of the techniques applied in the later empirical chapters (six, seven, and eight).

Chapter five contains the conceptual model for utilising financial metrics to assess the contribution of marketing in markets with traded and non-traded equity. The chapter also provides a background overview of the objective functions of important internal and external coalitions, makes a theoretical and empirical assessment of the various financial stock and flow variables, and then provides a hierarchical guide to the use of these variables to assess marketing expenditure. This chapter then provides the framework to empirically test the impact of MC expenditure in both traded and non-traded market settings in the following three chapters.

The objective of chapter six is to use a case study data set from the Australian credit union industry to test the effectiveness of MC expenditure in increasing risk adjusted earnings in a non-listed market setting. This chapter also provides a unique contribution to the literature because credit unions already have very strong relationship expenditure aimed at creating strong customer assets. In this context MC expenditure represents additional tiered marketing to credit unions and hence represents a MC expenditure option. The chapter concludes that MC expenditure has a positive correlation with abnormal earnings for large credit unions and this impact is only short-term in nature. However, no relationship between MC and
abnormal earnings for small firms is found. It is concluded that MC is an intangible asset that requires renewing in order to increase or maintain earnings for large credit unions and that small credit unions may be undertaking unnecessary MC expenditure.

The objective of chapter seven is to analyse the direct (stock) impact of MC expenditure on share price using a data set from listed US corporations. Confirmation of a direct link provides evidence MC expenditure has the qualities of an intangible financial asset. It is determined that the strength of the relationship varies according to firm size and industry affiliation. Linear and non-linear cross-sectional statistical techniques are utilised in this chapter.

The objective of chapter eight is to examine if the financial measures of MC expenditure are dynamic and whether there are indirect and direct flow implications that run from MC to sales, to cash flows, to earnings and then to stock prices. The chapter analyses the relative importance of these flows by utilising path analysis techniques and by segregating the data into firm size and industry groupings. It is found that the importance of the financial metric varies according to firm size and industry. It is argued that this is related to the asset structure of the industry and the importance of liquidity and financial leverage. It is further concluded that specific firm attributes and industry structure will drive the relative importance of the financial measures of MC.

Finally, the thesis is summarised in chapter nine along with managerial implications and recommendations for future research.
1.6 SUMMARY AND CONCLUSIONS

Marketing as a discipline has, to date, not fully applied metrics to evaluate marketing success that capture the impact of marketing on financial performance measures in the appropriate contextual setting. Marketing has focused on developing metrics that measure how consumers are affected by MC in the form of awareness, attitudes, behavioral intent and behaviour through sales. These measures are incomplete as indicators of shareholder value. The work in this thesis examines the connection between marketing assets, financial intangible assets, and stock and flow surrogates for shareholder value. By doing so the thesis will attempt to bridge the marketing and finance disciplines and bring marketing back to the corporate boardroom as a strategic player in contributing to shareholder value.
2.0 INTRODUCTION

The introductory overview chapter discussed an approach to marketing that emphasised shareholder value and financial performance. In effect an alignment of marketing efforts with corporate financial goals and creating a finance/accounting interface culture within marketing. As these new marketing assumptions and goals emerge, the question is not whether marketing activities are useful and valuable, but why has marketing played such a limited role in the process of strategy formulation (Anderson 1981, 1982, Day 1992, Webster 1992).

The first explanation is simply that marketers have not focused on the financial outputs (such as profitability and stock prices) that are valued in boardrooms. A second explanation is that the marketing community, historically, has found it difficult, if not nearly impossible, to identify, measure, and communicate to other disciplines and top management, the financial value created by marketing activities (Srivastava, Shervani and Fahey 1998). The third explanation is that marketing departments may not have traditionally invoked a market oriented financial culture.

However, before the thesis proceeds to definitively argue for a marketing/finance/accounting interface, this chapter provides a general background to the role of marketing. In effect, providing a conceptual overview of the current state of thinking in marketing and it’s emergence as a discipline with a
focus on shareholder value. The chapter will conclude by relying on the arguments advanced by Hunt and Morgan (1995) and particularly Srivastava, Shervani and Fahey (1998) conceptualised in Figure 2.2. This chapter will prove useful in positioning arguments within the overall marketing literature and hypotheses advanced in this thesis. There are various arms of marketing researchers can pursue, this thesis will focus on the link between marketing communications and shareholder value creation. The first task of this chapter is to define marketing communications (MC), followed by the economics of marketing and a discussion of the ways that the firm’s marketing effort can be organised. The interface connection between marketing and customers is then analysed. This chapter is then concluded by presenting a conceptual model that links marketing to shareholder value proposed by Srivastava, Shervani and Fahey (1998) and an overview of the marketing/finance/accounting interface represented in a flow chart.

Chapter 2 will proceed as follows: section 2.1 will present issues relating to transactional marketing and MC, 2.2 will provide a relational perspective, the economics of information will be addressed in section 2.3, structuring a firm's marketing organisation will be discussed in 2.4, the customer connection will be dealt with in section 2.5, the Srivastava, Shervani, and Fahey conceptual model for linking marketing assets to shareholder value will be examined in section 2.6 and a summary and conclusions will be presented in section 2.7.

2.1 TRANSACTIONAL MARKETING

Transaction marketing involves managing the marketing mix to attract and satisfy customers (Webster 1992). The tools in the marketing mix that a marketer can use
are price, place (distribution), product and promotion (MC). Price, place and product will not be dealt with in this thesis. The focus of the next section will be on the elements within the MC mix.

2.1.1 Marketing Communications

Marketing communication represents the collection of all elements in a brand’s marketing mix that facilitate exchanges by establishing shared meaning with the brand’s customers (Shimp 2000, p4). As well as advertising, the elements of the marketing communications mix include personal selling, sales promotion, sponsorship, pamphlets, publicity, word-of-mouth, point-of-purchase communications and the establishment of relationship perspectives through database, interaction and networking. These are briefly reviewed below and in the next section.

2.1.1.1 Advertising

Advertising can be defined as any form of non-personal communication about an organisation, product, service or idea about an identified sponsor. The non-personal component indicates that advertising involves transmission through the mass media, such as TV, radio, magazines, newspapers and billboards to a large group of individuals. Hence, the nature of advertising is that it is a mass communications tool that may be cost and brand equity effective. On the other hand, direct advertising is advertising that targets a particular business or customer and is not intended to serve a mass market. Advertising also has the ability to induce a response in consumers when differentiation is difficult to achieve
using other marketing mix variables (Rositer and Percy 1997, Belch and Belch 1998).

Firms can use advertising to create brand equity, which is an intangible asset or goodwill that is created through images, differentiation and responses to the brand name. Therefore the aim is to create and foster this brand equity in order to maintain a position in the market and be easily recognisable and differentiated from the competition. Brand equity, if it represents value and quality to the consumer, can reduce search costs and the risk associated with purchasing the product. Belch and Belch (1998) suggest that advertising is the most effective way to build the long-term franchise of a brand and therefore very important to find the link between marketing communications especially advertising to shareholder value.

The level of search undertaken by the consumer will depend on a number of factors, competitors, the type of product, and the complexity of the product. Nelson (1970, 1974) describes two types of goods, search and experience goods. With search goods judgement about the product is made before purchase and with experience goods judgement is made after purchase. A limited amount of direct information is provided for experience goods, therefore advertising plays a more important role in communicating product benefits to the consumer. Information about experience goods is more indirect and is obtained from branding and information about quality. More information is required about experience goods compared with search goods this information is indirect and is indicted by brand names and quality cues.
Advertising is an expense that the seller has to initially bare with the hope the expenditure will generate sales and profits in the long-term. Nelson (1974) states that advertising is profitable not because it lowers the elasticity of demand for the advertised good, but because it increases the level of demand. By charging the seller for the cost of the advertising this creates an incentive to provide only that information which the consumer desires. They have incentives to help consumers economise on search time therefore minimising the full price of the product (Mixon 1994). It is possible that the level of competition increases advertising outlays for the competitors in the industry yet there is no re-distribution and a zero sum game results which in effect are profit reducing. That is overall primary demand remains the same. It may also be the case that advertising induces select demand resulting in a re-distribution within the industry and certain products profit at the expense of the others.

The traditional role of advertising is changing in the market due to a number of factors, mostly due to greater empowerment of consumers and rapidly changing technology. The change in technology will allow consumers to have more control and greater access to information, increasing the efficiency of information transfer from producers to consumers and further reducing costs. Resulting in greater information empowerment by consumers. Consumers are no longer passive receivers of information through advertising but they are now informationally empowered (Rust and Oliver 1994).
2.1.1.2 Promotions

Promotions are more often used as a direct external incentive in order to stimulate immediate purchase (Rositer and Percy 1997). In this way promotions are able to elicit an immediate response in consumers, which can have a short-term positive impact on sales, but may also have negative effects in the long-term. Promotions have a number of objectives. For example, they can be used to obtain trial and repurchase, increase consumption of an existing brand, target a specific market segment, and to defend the current customer base. At the brand level these objectives will depend on the market the brand is operating in and what stage in the product life cycle the brand is positioned. There are a number of different sales promotion tools that marketers have at their disposal. They include sampling, coupons, premiums, contests, sweepstakes, refunds, rebates, and price discounts (Belch and Belch 1998).

Consumer orientated sales promotions are usually grouped into franchise building (FB) or non-franchise building (NFB). FB promotions aim to contribute to the reinforcement of the brand’s image and are designed to build long-term brand preference and not just a short-term sales response. Conversely NFB promotions are used to accelerate purchase and have an immediate consumer response. Promotions emphasise price competition and do not necessarily communicate details of the unique features of the brand and, therefore, do not necessarily contribute to the building of brand equity. For this reason, there has been a growing emphasis on using promotional tools that build long-term franchise in addition to a short-term impact on sales.
Advertising and promotion are both important marketing communication tools which enable marketers to inform current and potential consumers and persuade them to purchase their products. They can also be used to achieve the same communications objectives of generating awareness, establishing and changing attitudes, and stimulating purchase intentions (Rositer and Percy 1997).

2.1.1.3 **Sponsorship and Publicity**

Another form of MC is the practice of promoting the products of a firm and its brand equity by sponsoring a specific event or activity. Examples include major athletic events, charities, causes, grants for research into social problems, and so on.

Publicity differs from the other communication tools because it is not sponsored by the company selling the product. Although like advertising, publicity describes non-personal communication to a mass audience but again the sponsoring firm does not pay for advertising time and space. Publicity takes the form of news items, broadcast time, research articles or word of mouth about the firm. They receive free print space and broadcast time because the information content is deemed ‘newsworthy’ by broadcasters. In this sense the publicity is not paid for by the firm who receives the benefits (Shimp 2000, p5).

2.1.1.4 **Point-of-Purchase**

Finally, point-of-purchase communications include posters, displays, pamphlets, verbal communications, signs and other materials designed to influence consumers to purchase more, to brand the article, or to purchase ancillary products at the time of the firm enacting the sale.
A common perspective of the above approaches is that they are mainly discrete, focussed on the product or brand and seen by management as customer attractors focussed on the mass market. Further, they are carried out by functional marketers in order to induce transactions usually on impulse.

2.2 A RELATIONAL PERSPECTIVE

Relational marketing is the extension of the buyer-seller transaction approach and emphasises the retention of customers and the management of relationships by the specialised marketer, as well as across the functional levels of the firm up to the chief executive officer. It is defined by Morgan and Hunt as:

“…all marketing activities directed toward establishing, developing and maintaining successful relational exchanges.” (Morgan and Hunt 1995, p.34)

That is managing the total buyer-seller interface. Coviello et al. (2002) characterise the relational perspective as composed of three different aspects of marketing practice: (1) database marketing; (2) interaction marketing, and (3) network marketing. Moreover, transactional marketing is further integrated with relational marketing to make four elements of the marketing communications mix. The aspects of relational marketing are now briefly described. ³

2.2.1 Database Marketing

Database marketing is carried out by specialist marketers, such as service managers or loyalty managers, and is targeted at market segments or individuals

³ This section relies on Coviello, Brodie, Danaher and Johnston (2002).
rather than the mass market per se. The purpose is to utilise technology based tools to target and retain customers by disseminating information, satisfying the customer and thus increasing loyalty and decreasing customer risk. Whilst it is personalised, by the nature of the method, it is somewhat distant and still has a comparably large market penetration orientation. The focus of management is on emphasising the communication of information (as well as inducing an economic transaction) through technological capabilities.

2.2.2 Interaction Marketing
Interaction marketing is focused on establishing and developing co-operative relationships with other individuals for mutual benefit. The marketing approach is very much face-to-face and personal. Personal selling plays an important role here. Values such as trust and co-operation are emphasised. Thus, the marketing focus is to build up continuous and longer-term relationships between individuals. The purpose is to enhance customer loyalty and to build up customers as marketing assets both short-term and long-term.

2.2.3 Network Marketing
Network marketing is aimed at connecting relationships between firms in a network. This involves the co-ordination and the interaction amongst buyers and sellers and other parties across multiple firms for mutual benefit resource exchange and marketing access. A typical example of a horizontal approach is the ‘one world’ or ‘star alliance’ airline networks which allow airlines to have connecting relationships and loyalty schemes in order to enhance customer loyalty and service. Other alliances would include vertical chain alliances whereby products
are processed and serviced via a formalised network arrangement between co-operating firms. Hence, customer service and loyalty perspectives are enhanced. These network marketing business alliances are usually managed at the senior or CEO level and are aimed at generating continuous and longer term assets.

Whilst, this thesis applies a wide definition of marketing communications that captures all the above mentioned elements in order to measure, as far as possible, the total impact of MC it is not always possible to test all these elements. In practice only a proportion of MC may be collected, measured and tested. Hence, in undertaking the empirical analysis this limitation is acknowledged and the precise elements of the MC mix are made explicit. The next section of the thesis outlines the economics of marketing information.

2.3 THE ECONOMICS OF MARKETING INFORMATION

Information is a valuable signal to consumers and search is the means by which information is obtained. Sellers of products communicate marketing information to buyers in various forms (including all the above elements). Corporations use these tools to communicate details about their products to consumers, and consumers need information so they can make decisions about which product will meet their needs. These information tools can also be used in a number of other ways; as a competitive tool, to introduce new products, to indicate new benefits of existing products and to signal changes in price or quality. Potentially, both producers and consumers can benefit from information transfer if it reduces search costs and the cost of allocating resources between buyers and sellers. However, there is not universal agreement on the economic value of marketing information.
The economics of MC has received considerable academic debate (Horowitz 1970) with two main economic schools of thought: the complete market and signalling theories. The complete market approach assumes that markets are perfectly efficient and transparent and contends that MC is a welfare reduction activity for the economy (Pigou 1920, Stigler 1961, Steiner 1973, Scherer 1980). Pigou (1920) stated that MC for competitive firms is redundant because firms are price takers and they can sell all products at the competitive market clearing price (see Scherer 1980). A further argument is that MC creates barriers to entry into the marketplace, thus increasing market power, decreasing competition and efficiency, and consequently overall social and financial welfare. This creates a quasi-monopoly situation and leads to non-pareto efficient resource allocation. In this situation, MC is jointly supplied with the commodity and the buyer has to pay for both, but only wishes to purchase the latter (Stigler 1961). This view would contend that MC does not create value for consumers, shareholders or society at whole.

The alternative theory recognises the role of MC in reducing search costs, disseminating information and increasing the overall welfare of society (Telser 1964, Nelson 1970, 1974, Mixon 1994, Rust and Oliver 1994). This approach is based on assumptions that not all markets are perfectly competitive, that there is a lower supply of product information than optimal, consumers search for information, and a major purpose of MC is to differentiate products (Becker and Murphy, 1993).
Moreover, imperfect information creates a wedge between the price received by the seller and the price borne by the consumer. This need for information by the consumer generates a derived demand for marketing information from the seller. Marketing communications is a means by which sellers can reduce the opportunity cost of search to consumers. Thus, as the cost of search is reduced, consumers are able to take advantage of price and information dispersion allowing them to make more efficient purchase decisions (Mixon 1994, Nelson 1970, 1974) and reduce the time cost of consumption (Laband 1986, Ehrlich and Fisher 1982). Imbedded in the above viewpoint is the notion that marketing communications increase competition and leads to greater success for the more efficient signalling corporations.

Consumer choices also act as signals to manufacturers about their product, price and distribution preferences. According to information economics, these signals are valid only to the extent consumers make informed choices – based on information that is costly but relevant to consumption decisions. That is, markets operate ‘efficiently’ when consumers are fully informed about relative price and quality alternatives.

However, MC costs are not always borne by consumers. Nelson (1974) argues that MC is an expense that the seller has to initially bear with the hope that it will generate profits in the long-term. Nelson (1974) states that MC is profitable, not because it lowers the elasticity of demand for the advertised good, but because it increases the level of demand. If the seller bears the initial cost of MC then this creates an incentive to provide only information the consumer desires. Hence,
sellers have incentives to help consumers economise on search time, therefore minimising the full price of the product (Mixon 1994).

Further, Telser (1964) proposes that if a preponderance of marketing communications’ signalling creates barriers to entry by increasing the price of the products, then MC and concentration should be positively correlated. Telser’s research showed that this is not the case with the most heavily advertised products showing the largest increase in competition. Telser concluded that advertising (MC) plays an important role in information dissemination, facilitates purchase matching, and reduces the cost of exchange for consumers.

Finally, Horowitz (1970) concludes that the treatment of risk is important because uncertainty will play an important role in how firms market. Risk aversion encourages the firm to take greater advantage of the MC option than would otherwise be the case. In effect the firm would be willing to expend more on MC resources than can be economically justified. Theoretically, they do this in order to maximise long-run economic return. It is also important to note at this stage that most marketing models do not fully consider the possibility of uncertainty. This view contends that MC can build both short-term and long-term economic value and ultimately drive shareholder value.

2.4 STRUCTURING THE FIRM’S MARKETING ORGANISATION

Specifically what role should the marketing function play in delivering marketing products, services and elements? This question is closely related to the previous sections in that the structure of the firm’s marketing organisation can pre-determine
or influence the type of MC to be delivered. Further, the question of how to structure an organisation to maximise performance has been a source of enduring debate in the literature. Reflecting this concern, the Marketing Science Institute's 1996-1998 research priorities included investigations into ‘Marketing as a function (big M) in relation to marketing as a process and a vision (little m) in the future’ (Marketing Science Institute Research Priorities 1996). The two major forms identified were: (i) a functional marketing (specialised) organisation, and (ii) a process (diversified) marketing organisation.

A functional marketing organisation is delineated by a concentration of the responsibility for marketing activities to a group of specialists within the organisation. The benefits associated with a functional structure are basically given as the enhancement of efficiency and the ability to develop specialised distinctive capabilities (Thompson and Strickland 1983). A functional marketing structure would more likely lead to transaction or database marketing perspectives (see Coviello et. al. 2002 Table 1). The risks involved include the challenge of co-ordination, inter-functional conflict, functional myopia and over specialisation (Moorman and Rust 1999).

On the other hand, marketing process organisation is distinguished by a dispersion of marketing activities across non-specialists in the organisation (Workman, Homburg and Gruner 1998). This approach can take a variety of forms. Kohli and Jaworski (1990) define a process orientation as the organisation wide generation, dissemination and responsiveness to market intelligence. Also, consistent with an external market orientation, a process orientation involves multiple departments
sharing information about customers and engaging in activities designed to meet customer needs (Narver and Slater, 1990). This approach would more likely lead to an individual interaction relational perspective.

A deal of commentary suggests a tension between those two approaches to the organisation of marketing functions within a firm. Day (1996) argues that research focusing on the value of shared knowledge and skills in organisations, suggests that integrated approaches are necessary because most of the work in organisations cuts across different knowledge and skill domains. Further, the process orientation approach increases communication and goal orientation (Moenaert and Sonder, 1990, 1996). Conversely, stronger functional orientations have been found to reduce information sharing within firms (Fisher, Maltz, and Jaworski 1997).

A combination of functional and process organisational structure for marketing is referred to as a ‘hybrid organisation’ (Day 1997) or a ‘matrix management’ (Davis and Lawrence 1977). In this organisational scheme, Moorman and Rust (1999) overlays the customer connections on the functional design in a structured way. According to Moorman and Rust (1999), this is implemented by functions having subgroups that reflect the connections they help to manage. Therefore, referring to the discussion in the previous section the marketing function might have three subgroups related to product, service delivery, and financial accountability. In a similar vein operations could have product and service delivery subgroups. Regardless of the subgroup, organisation managers in these subgroups would then be members of horizontal, cross-functional teams and activities.
The customer-product subgroup would be similar to the existing marketing group in many companies. This group would manage products and brands and be responsible for product related decisions, such as price, promotion, and product design. The customer-service delivery subgroup would be similar to a typical customer satisfaction/retention group. Its responsibilities would include measuring, monitoring, and improving customer satisfaction and service delivery and managing the organisation's loyalty and retention programs. The customer-financial accountability subgroup would be similar to the customer information system and database management group at a modern financial services company. Thus allowing the marketing subgroups to have greater control over financial information relating to the customer connection with the product and the service delivery.

Such a system would provide diagnostic information about both the customer-product (brand equity, advertising exposure) and the customer-service delivery (relationship strength, customer satisfaction, repurchase intention) connections, with financial accountability as the lingua franca that ties the system together. That is, all efforts, whether related to product or service delivery, would be evaluated in terms of their ability to increase the financial lifetime value of the firm's customers and eventually the financial wealth of shareholders. Moreover, the customer-financial accountability linkage is very important to this model and provides support to the marketing function. Other approaches focus only on financial considerations as a barrier or constraint to marketing decision making (Rossiter and Percy 1987). It must be said that the financial accountability side of marketing is very under
developed in many organisations largely due to marketing’s’ inability to provide key financial metrics to measure marketing against. A related issue is that, if marketing managers are to conceptualise linkages between the customer and financial accountability, academic curricula must be expanded to account for profitability considerations in attracting and retaining customers (Kaplan and Norton 1996).

2.5 THE CUSTOMER CONNECTION

2.5.1 The Marketing Customer Interface

This section examines the role of marketing within the firm. Specifically, the question asked is: “what external roles should the marketing function play, and how much does the function contribute to the success or failure of the business?” An important focus is the customer interface. The challenge for the firm’s marketing department is to impose and co-ordinate quality control over the major customer interfaces (Curtis 1997 p.20). This approach emphasises a customer vantage point, or what Day (1994) refers to as an ‘outside-in’ or external perspective. Thence a functional problem facing the structure of marketing is the implementation of a marketing process that best fulfils that role. That is, should marketing be concentrated as a specialist area within specific and tightly defined bounds or should the firm implement an organisational market orientation. Day (1997) suggests that this involves a trade-off between developing deep functional expertise through specialisation versus subordinating functions to teams managing linked processes. Workman, Homburg and Gruner (1998) predict that the later approach will lead to a reduction in the need for a strong and specialist marketing function. That is, the marketing function will be dissipated across the firm as a
whole, with a large proportion of employees undertaking these functions as part of their duties.

Given the assumption that a firm should follow an externally focused market orientation with relation to marketing (Anderson 1982), the next important decision is the organisation of the marketing function needs in order to manage the important connections between the customers and necessary firm elements. That is, connecting the customer to the product, service delivery, and financial accountability functions.

### 2.5.1.1 The Customer-Product Connection

This connection is concerned with linking the customer to the focal offering provided by the firm. In the traditional domain of marketing, marketing is perceived as developing a product that fulfils the requirements of the customer, promoting that product to the customer, determining acceptable pricing, and then distributing the product to the customer. Therefore, marketing’s emphasis in this linkage is on providing knowledge and skills that connect the customer to product design and quality issues. This emphasis underlies many contemporary methodologies for new product development and for managing the customer-product interface (Hauser and Clausing 1988). Specifically, by beginning with the discovery of customer specifications, the customer (not technology) leads and, in a number of cases may even create product activities (Von Hippel 1986).

Further, it is also acknowledged that the presentation of the product to customers (through marketing communications) and pricing the product play a significant role
in this linkage. Furthermore, given marketing communication's ability to address and influence the connection between the customer, the product and the role of the price in influencing value perceptions it may be that marketing, per se, facilitates customer’s demand for products. However, it is assumed that these are secondary aspects of the customer-product linkage and is dominated by customer demands (see Lehmann 1997). Hence, the major role of marketing from the customer perspective is to facilitate the supply of products that fulfils the wants of customers at the market clearance price.

2.5.1.2 The Customer-Service Delivery Connection

A customer service delivery focus used to be less important, largely because the service sector was much smaller, but also because it was harder to mass-customise service (Varki and Rust 1998). However, the trend throughout the twentieth century, in every developed economy in the world, has been to drastically increase the percentage of the economy devoted to service. For example, in 1900, the United States was a 30% service economy (in percentage employed in services), whereas by the 1990s it was 80% (Quinn 1992). In addition to the growth of the service sector, the service components goods businesses has also grown (Payne 1993), resulting in service now dominating every developed economy (Godbout 1993).

The customer-service delivery connection involves the design and delivery of ancillary actions involved in providing a firm's goods and services to the customer. The focus of this connection is generally the frontline employee, whether an industrial sales-person, a retail sales-person, or a customer service representative
who facilitates both pre and post-purchase aspects of the process. This connection also can subsume channel management activities, as when frontline employees provide services involved in moving products from one firm to another. This thesis argues that a marketing approach to this linkage should be predominantly external in orientation. This focus is based on ensuring that customers are satisfied with the delivery of services offered by the firm. It concentrates on measuring customer satisfaction with services and on changing internal processes that stand to have the greatest impact on the customer (Kordupleski, Rust, and Zahorik 1993).

In contrast, an internal orientation, typically found in service operations or quality management, is more likely to have the goal of maximising the internal efficiency of service processes by increasing productivity and decreasing costs (Deming 1986). It is assumed that customers presumably will become more satisfied but this is only as a by-product. Although such internally driven approaches to service delivery are undoubtedly essential to any business (no business can afford to be too inefficient), recent work by Anderson, Fornell, and Rust (1997) has provided evidence that, in service-sector business, customer satisfaction and internal efficiency tend to trade off against each other. This suggests a certain degree of conflict in concentrating completely on an internal orientation.

2.5.1.3 The Customer-Financial Accountability Connection

The customer-financial accountability connection refers to efforts focused on linking customers to measurable financial outcomes. Historically, internally focused functions, such as accounting and management information systems,
have been led management to focus on this connection. Without access to
developed accounting information systems, marketing departments find it difficult
to test the potential links between marketing activities, the customer, and financial
performance of the organisation. Moreover, the greater the marketing department
has structural links with other departments and the more diversified the marketing
function is across the firm, the lower is the problem of gaining access to financial
information. On the other hand, the more diffused is the marketing effort across
the organisation then the more difficult is the linking and measurement of the
impact of marketing.

Another problem is that, historically, marketing departments do not integrate the
financial linkage well, with the inevitable result that financial accountability is
perceived by marketing in terms of costs, rather than as a guide to performance or
an opportunity to capitalise marketing communications expenditure as an asset.
Given marketing’s supposed external orientation one could expect that a
contribution could be in understanding the linkage between customer satisfaction
and profitability. For example, by developing and analysing individual-level
databases that tie customer attraction efforts (i.e., advertising) and customer
retention efforts (i.e., service improvements and relationship management
programs) to financial outcomes. Simply put, a concentration on external
customer-product and customer-service deliveries without evaluating financial
outcomes would be short sighted. In the short run this will downgrade marketing’s
contributions and in the long run may even lead to the demise of a firm. The
solution is to develop integrated general conceptual models of marketing
communications effectiveness.
Marketing as a field, however, has a limited history with building general frameworks that value marketing investment decisions directed at customers (Anderson 1979 1981, Day and Fahey 1988). Other work has tried to dissect the connection between the customer and financial outcomes, with an eye toward managing the connection for greater accountability. For example, there have been attempts to measure the impact of marketing strategies on brand equity and linking brand equity to incremental cash flows (Simon and Sullivan 1993) and to stock price changes (Lane and Jacobson 1995). Still other approaches investigate the customer satisfaction-financial accountability relationship at the industry level by linking perceived quality to stock price changes (Aaker and Jacobson 1994) and customer satisfaction to profitability and customer loyalty (Anderson, Fornell, and Lehmann 1994, Fornell 1992).

2.5.1.4 Marketing-Accounting Issues

Finally, some research has provided theoretical constructs that links customer satisfaction and customer value to the bottom line at the firm level (e.g., Bolton and Drew 1991, Danaher and Rust 1996, Fornell 1992, Heskett et al. 1994, Nelson et al. 1992, Rust, Zahorik, and Keiningham 1995). These researchers generally argue that measurability and accountability of marketing expenditure (as well as measurable financial outcomes) is necessary so that the marketing decisions can be financially justified. Most also argue that MC should be valued and recognised as an asset (both tangible and intangible) and that MC should not just be written off as an expense in the profit and loss statement.
The valuation of marketing assets, however, has proved to be a difficult task. Whilst, marketing assets such as product image, reputation and brand strength have been closely associated with marketing activities, to date, these marketing assets have received no explicit accounting recognition. Without an explicit statement of ‘value’ then this begs the question as to the adequacy of the way in which they are financially monitored and, by implication, operationally managed. One of the possible reasons why accounting for marketing assets has not been fully addressed is that accounting has a focus on production, whilst marketing has moved to a consumer and market orientation. Meaning there is a mismatch between the two perspectives. Marketing in turn suffers because the intangible nature of marketing assets do not lend themselves to traditional accounting measurement (Guilding and Pike 1990).

In accounting marketing expenditure is simply treated as an expense which is an incomplete representation of marketing assets within the firm. For example, while the portion of advertising related to short-term demand creation may be expensed, the portion concerned with long-term demand creation can be viewed as the creator of a marketing asset. If all of this value is expensed then we do not have a complete understanding of the empirical (semantic) relationship between marketing and value creation. Moreover, the current treatment of marketing in accounting foreshadows a culture that it is a cost rather than an investment. In this sense the marketing discipline has been left in isolation with valuing and estimating marketing assets.
2.5.1.5  **Marketing-Finance Issues**

A cohort to the marketing-accounting interface is the marketing-finance interface, which is concerned with the valuation of marketing assets and the creation of shareholder value. Better monitoring of intangible marketing assets can counter short-termism and improve strategic long-term direction within the firm (Guilding and Pike 1994).

The marketing-finance interface provides a means to formally link marketing activities to decisions regarding the creation of value within the firm and to indicate how value is operationalised. Further, the marketing-finance interface has received increased attention in the marketing literature of late (Dekimpe and Hanssens 2000). This is partly because some marketers realise that traditional measures of marketing performance (e.g., sales and market share) have a number of shortcomings in terms of financial measures.

Wealth creation is moving from expenditure to intangible assets through the creation of tangible assets (Day and Fahey 1988). That is, basically taking current assets expending them and then transforming them into higher value assets. Further, the realisation of the need to incorporate shareholder value as a measure of marketing performance has led to Srivastava, Shervani and Fahey (1998) putting forward a conceptual model, which will be discussed in the following section. Furthermore, with respect to strategic decision making, Aaker (1991a) notes that shareholder value analysis was perhaps the most influential development in strategy in the 1980’s. Despite the importance of shareholder value analysis or market capitalisation, little in-road has been made into linking
intangible assets, (such as marketing assets) to market capitalisation. Market capitalisation has been referred to by researchers in marketing (Leeflang and Wittick 2000a) as the ultimate measure of performance. However, the meaning of shareholder value has proved to be an elusive concept and, hence, it’s operationalisation as a tangible concept has proven problematic.

2.6 EXTERNAL CONCEPTUAL FRAMEWORKS

The above discussion suggests the development of conceptual models in marketing that have an external focus on important coalitions to which marketing expenditure is financially accountable. Anderson (1982) was one of the first marketing theorists to advocate a strategic conceptual model focussed on external coalitions with the ultimate objective of the firm to position itself for long run survival. Marketing was seen by Anderson to contribute to a long run investment perspective, and to gaining competitive advantage over firms pursuing similar strategies. Antecedents that appear to favour both shareholder and customer cultivation and which should have logically translated into financial performance analysis.

However, in the final analysis Anderson did not appear to follow the logical precedents of his model. In the end he deduced a consumer orientation with the optimal position reflecting marketing’s perception of what its customers’ wants and needs are likely to be over the firm’s strategic time horizon. Marketing’s objective, therefore, remains long run customer support through customer satisfaction (Anderson 1982 p.24). Anderson continued by denouncing accounting systems as
being short-term focused, and the profit maximisation as an unacceptable concept.  

From the subsequent plethora of research that strictly focuses on consumer satisfaction, it could legitimately be argued, has not followed the subtleties of Anderson’s counsel. Hence they have acted rashly in not demonstrating the links between the conceptual models/theories and financial performance payoffs. However, some models have attempted to bridge this divide.

2.6.1 The Srivastava, Shervani and Fahey Model

Mainly as a result of the above discussion, a number of marketing theorists have adopted the perspective that the creation of customers and channels are not simply the objects of marketing’s actions. They are assets that must be cultivated and leveraged (Hunt and Morgan 1995, Srivastava, Shervani and Fahey 1998). Marketing assets are, hence, conceptualised as market-based assets, or assets that arise from the relations of the firm with entities in its external environment. Leveraging such assets requires marketers to go beyond the traditional inputs to marketing analysis, such as marketplace and organisational knowledge, and to include an understanding of the financial consequences of marketing decisions. Indeed, it also expands the external stakeholders of marketing to explicitly include the shareholders and potential shareholders of the firm and requires broader input into marketing decision making by functional managers other than marketing managers.

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4 It may seem curious that a discipline (marketing) that drifted away from the research tradition of economics largely because of a concern for greater ‘realism’ should continue to employ one of it’s most unrealistic assumptions (profit maximisation) (Anderson 1982 p.21).
Srivastava, Shervani and Fahey (1998) developed a conceptual model designed to formalise the marketing-finance interface (see Figure 2.1). This model suggests that marketing theory develops, defines and manages market-based assets including customer, channel and partner relationships. These, in turn, are hypothesised to impact on shareholder wealth through having a direct influence on cash flows. Throughout their conceptual model Srivastava, Shervani and Fahey (1998) emphasise the need for marketers to consider measures of financial performance, other than sales and market share, which are traditionally and widely used in the marketing literature. However, they then unambiguously fall back on cash flows as the appropriate financial attribute to apply in determining shareholder value. Srivastava, Shervani and Fahey (1998) go on to state that the relationship between marketing and shareholder value is rarely taken into account in the marketing literature, they also point out that the finance literature has failed to successfully model marketing and shareholder value. Whilst there may be a number of reasons to explain this, Srivastava, Shervani and Fahey (1998) outline an important point pertaining to the lack of measurement of marketing effectiveness, viz:

“...In our view, an important reason is that the marketing community historically has found it difficult, if not impossible to identify and measure and communicate to top management and other disciplines the value created by marketing activities”. (Srivastava, Shervani and Fahey (1998, p.3)

Accepting that an external shareholder focus is an established approach in the finance literature, as a first step, Srivastava, Shervani and Fahey (1998) contend
that an understanding of the marketing-finance interface is required to be developed in order for marketing departments to justify their expenditure. Without this justification potential scarce funds may be directed to other areas which can financially justify their expenditure patterns. A brief overview of the attributes of marketing assets in the Srivastava, Shervani and Fahey (1998) model is now provided.

**Figure 2.1: Linking Marketing Assets to Shareholder Value**

(MARKETING ASSETS)
- Customer Relationships
  - Brands
  - Installed brands
- Partner Relationships
  - Channels
  - Co-branding
  - Networks

(MARKET PERFORMANCE)
- Quicker Market Penetration
  - Trials
  - Referrals
  - Adoption
- Price Premium
- Share Premium
- Extensions
- Sales/Service Costs
- Loyalty/Retention

(SHAREHOLDER VALUE)
- Accelerated Cash Flows
- Enhanced Cash Flows
- Reduced Volatility and Vulnerability of Cash Flows
- Enhanced Residual Cash Flows

(Source: Srivastava, Shervani and Fahey 1998)

### 2.6.2 Marketing Assets

Within the firm a variety of assets are maintained which can take a number of forms. They can be either tangible or intangible, on or off-the-balance sheet, or internal or external to the firm (Constantin and Lusch 1994). Regardless of their form, the financial test of the value of any asset is realised or evaluated in the external product marketplace. Therefore, a measurement or estimation of the value that external stakeholders place on marketing assets is necessary in order to be able to understand the contribution of marketing to financial value creation.
Once this semantic financial relationship is established then the marketing assets that create the most value for the firm can be identified and nurtured. As previously noted marketing assets usually do not appear on the balance sheet and are largely intangible. Marketing expenditures that are directed at acquiring and retaining customers, developing brands and create partnerships are most often expensed (Srivastava, Shervani and Fahey 1998).

Marketing assets are further decomposed by Srivastava, Shervani and Fahey (1998) by breaking them down into relational and intellectual components. Relational market-based assets are related to key external stakeholders; including distributors, retailers, end-customers and other strategic partners. Intellectual marketing assets represent the knowledge a firm possesses about the current environment and expectations about future conditions. These include; brand equity, customer satisfaction and the management of strategic relationships. Furthermore, market based assets represent activities that are designed to deliver value to the customer or to shareholders.

Market performance represents the impact that the market-based assets have in the product market. Srivastava, Shervani and Fahey (1998) argue that these factors can be directly measured, observed and thus evaluated. Investing in market based assets can have the following effects in the market place: quicker market penetration (through trials, referrals and adoption), price and share premiums, product extensions, reduction in sales and service costs and an increase in loyalty and retention. These factors represent behavioural outcomes the firms’ desires through an investment in marketing assets. By improving market
performance this enhances and accelerates cash flows and thus shareholder value. This leads into the next section on shareholder value.

### 2.6.3 Estimating Shareholder Value

Shareholder value is defined by Srivastava, Shervani and Fahey (1998) as the present value of cash flows during the value growth period and the long-term residual value of the product/business at the end of the value growth period. Therefore, the third cell represents the drivers of shareholder value; accelerated cash flows, the increased level of cash flows, the reduction of risk associated with cash flows and the residual value of the business.

Marketing expenditure is hypothesised to increase and accelerate cash flows by increasing the responsiveness of the marketplace through increased marketing activity. The responsiveness of the marketplace is also a function of established brand equity. The more positive is brand equity, the more responsive consumers are to the increased marketing activity. Accelerated cash flows are induced by earlier brand trials, earlier referrals, time-to-market acceptance, strategic alliances and cross promotion. Further, by accelerating cash flows the marketing department is assumed to reduce the time taken to collect cash, thereby reducing external risk factors and lowering the opportunity costs of financing.

Through the enhancement of cash flows the market function is generating higher levels of cash flow, ceterus paribus, which are greater than would be expected in the absence of the marketing activity. These higher cash flows are then hypothesised to translate into higher shareholder value by generating higher
revenues, lowering working capital requirements, and lowering fixed capital requirements. Further, by establishing loyalty based relationships with customers and partners, marketers can reduce the level of working capital and fixed investments and make it possible for firms to implement new policies and programs that otherwise would have been difficult.

Moreover, by lowering the vulnerability and volatility of cash flows the risk associated with the cash flows can also be reduced. Resulting in a lower cost of capital and the discount rate applied when valuing the synergistic assets of the firm. Thus, cash flows that are more stable and predictable have lower risk and a higher net present value which, in turn, again translates into higher shareholder value. Factors such as; greater customer satisfaction, loyalty and retention also reduce the vulnerability of cash flows, as does stable arrangements with channel members which reduce the volatility of cash flows through the co-ordination of activities within the value chain.

Although it is desirable to reduce the vulnerability and volatility of cash flows, Srivastava, Shervani and Fahey (1998) also mention that marketers often implement promotional and pricing strategies which encourage customers and channel members to deviate from the regular purchase cycle, thus increasing vulnerability and volatility. Finally, the residual cash flow of a business reflects the expected value beyond the planning horizon. Enhancing cash flows and reducing vulnerability and volatility again lead to higher residual values.
Srivastava, Shervani and Fahey (1998) have provided a valuable framework that promises the possibility of testing the marketing-finance interface. But, to date the model remains virtually untested and does not consider any other financial measurement of shareholder value other than cash flows.

A summary of the ideas expressed in this chapter are summarised in figure 2.2.
Figure 2.2: An Overview of Marketing in the Finance/Accounting Interface

Marketing Communications

<table>
<thead>
<tr>
<th>Finance/Accounting Interface</th>
<th>The Economics of Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Assets</td>
<td>Marketing Structure</td>
</tr>
<tr>
<td>Customer Relationships</td>
<td>Specialist</td>
</tr>
<tr>
<td>Partner Relationships</td>
<td>Dispersed</td>
</tr>
<tr>
<td>Market Performance</td>
<td>Customer Connection</td>
</tr>
<tr>
<td>Sales</td>
<td>Financial Accountability</td>
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<tr>
<td>Cash Flow</td>
<td>Service Delivery</td>
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<tr>
<td>Earnings</td>
<td>Product</td>
</tr>
</tbody>
</table>

Shareholder Value
2.7 SUMMARY AND CONCLUSIONS

This chapter has provided an overview on a number of marketing elements; including marketing communications, the economics of marketing information, the marketing structure, marketing assets and the marketing customer, partner and financial connections. It was noted that conceptual frameworks that measure financial performance and shareholder value have not been widely advocated in the literature. However, a growing interest in valuing marketing assets and shareholder value creation makes it necessary for marketers to extend their analysis to include financial measures of performance. Srivastava, Shervani and Fahey (1998) have provided a model with which these relationships can be tested through applying cash flow analysis.

The next chapter (three) will provide an overview on the marketing literature that has been undertaken regarding and various surrogates for financial performance. This provides a background for developing a conceptual model that relates financial measures to marketing expenditure and informs the empirical research in the later chapters. Chapter four will provide arguments as to why an extended conceptual model for the marketing/finance/accounting interface should be put forward. This model will form the theoretical basis for empirical testing in later chapters.
CHAPTER THREE - LITERATURE REVIEW

3.0 INTRODUCTION

The focus of this chapter is to examine in some detail the marketing research regarding the connection between components of marketing communications and various surrogates for financial performance. These connections will be discussed in light of short-term and long-term measures and the various components within marketing communications. The literature has mainly concentrated on sub-groups of marketing communications; such as advertising and promotions independently. With some research dealing with the joint effects and trade-offs between the two. That is, in terms of the previous definitions, they are concentrated on transaction marketing and database marketing. Whilst recognising the importance of the growing research into the interaction and network marketing this thesis concerns itself with these two aspects of MC.

Further, the issue of measuring performance decomposed between the short-term (Clarke 1976, Assmus 1984) and long-term (Dekimpe and Hanssens 1995a, 1999) will be covered in some detail because it has important implications for the permanence of the impact of marketing communication and the relative probabilities of recognising them as assets.

Moreover, performance metrics have mainly been researched at the product level and utilise sales and market share as proxies for financial performance. This means that the use of measures other than sales and market share are relatively
limited. It is, however, instructive to gain an overview into the research literature in order to inform research design issues in later chapters which then feed into the empirical testing of MC expenditure objective of this thesis.

Chapter 3 will proceed as follows: section 3.1 provides a background to the literature, advertising effects will be discussed in section 3.2, promotional effects will be discussed in section 3.3, the literature linking marketing communications to profits will be presented in section 3.4, shareholder value is discussed in section 3.5 and a summary and conclusions will be outlined in section 3.6

3.1 BACKGROUND
As previously noted in chapter two marketing potentially serves a number of functions. One function is to change consumer behaviour by product differentiation. There are two main theories of differentiation. The first suggests that marketing communications induce differentiation and this leads to reduced competition and increased barriers to entry (Bain 1954). The second maintains that marketing informs consumers about price and product attributes and this also leads to product differentiation. The difference, however, is that the second type of differentiation leads to increased economic efficiency, whilst the first leads to an induced economic advantage to the firm, but at the expense of consumers and society.

There are two main theories concerning how consumers react to marketing, the strong theory and the weak theory. The strong theory suggests that marketing is able to have a strong influence on consumer behaviour. It has the ability to
increase consumer knowledge, change attitudes, and is able to persuade consumers to buy the product at higher levels than previously. Thus, marketing has the ability to create demand in the economy for both individual brands and product categories. That is, expenditure on MC will reduce the elasticity of demand for a product or creates demand for a product, ceterus paribus, not currently apparent. Thus resulting in a shift of the demand curve to the right or increases the slope of the demand curve.

The weak theory of marketing is more subtle. Here marketing is capable of increasing consumer knowledge of products, but it is not strong enough to change views about products. Under this theory marketing is viewed as a defensive weapon to maintain demand rather than to increase or change demand. Hence, marketing is hypothesised to be mostly used as a defensive tool to counter overly-competitive or aggressive marketing behaviour from other firms. Behaviour is this sense is mostly switching.

Other potential theories fall somewhat in between strong and weak theories, or can be viewed as sub-theories of these. For example, if there is a long-term sustained impact from marketing communications expenditure then this is evidence in support of strong form. However, if the impact is short-term with the performance metric reverting back to pre-marketing levels then the evidence, supports weakly strong form. It has an initial impact but this impact is not sustained. Consequently, a number of the subsequent research articles are concerned with the time series impact of marketing expenditures. By decomposing the literature into short and
long-term effects, we are in a sense testing variants of the strong and weak forms of marketing.

Furthermore, marketing effects can sometimes be observed through lagged effects, and this requires that these potential marketing dynamics be captured in the modelling process. There are a number of reasons why marketing effects may be distributed over time. Marketing may not be noticed until a period after the expenditure has occurred, there may be a learning period, induced purchases may be followed by subsequent purchases after the initial trial, competitive reactions may be slow, and the effect may only gradually build up through customer loyalty. Therefore, it is important to take into account both short and long-term dynamics. The research literature will also be considered under three main headings: advertising, promotions, and impacts on other performance metrics. Finally, because a number of the later chapters apply time-series analysis any time series methodologies are highlighted.

3.2  ADVERTISING

3.2.1 Short-term Effects
The modelling of advertising impacts has predominantly been conducted over the short-term concentrating on sales. Although overall the results have been mixed the general indication is that there is a short-term positive impact of advertising on sales (Clarke 1976, Leone and Schultz 1980, Hanssens 1980, Assmus, Farley and Lehmann 1984 and Sethuraman and Tellis 1991).
Some recent studies have also found only a minor or even no relationship between advertising and sales (Beckwith 1972, Aaker et al. 1982, Bass and Pilon 1980, Hanssens 1980, Leone 1983, Tschoel and Yu 1991).

In contrast, Nerlove and Waugh (1961) examined the demand for oranges and found advertising had a positive effect on demand. Vaile (1927) observed that during the 1920-22 recession, firms that reduced their magazine advertising showed a greater reduction in sales than those who had never advertised before. This indicating that once introduced continued advertising is required to maintain current levels of demand (or brand equity), determining that advertising is a renewable asset and continually needs support. Other research using distributed lag models (Palda 1964, Lambin 1969, Peles 1971) found significant short-term impacts of advertising on sales.

There is a body of literature that examines the diminishing impacts advertising. At the forefront of this research is Clarke (1976) who conducted a comprehensive study of advertising effectiveness. Clarke concluded that whilst advertising elasticity (advertising increases demand) is positive, 90% of the impact of advertising on sales dissipates in the short-term (within nine months). Clarke’s (1976) findings are also supported by meta-analysis results in studies conducted by McDonald (1971), Leone and Schultz (1980), Assmus, Farley and Lehmann (1984), Sethuraman and Tellis (1991), and Lodish et al. (1995). Simon Broadbent has dedicated his research towards advertising effects and largely to how advertising effects are distributed. He coined the term adstock (1984) which captures the carryover effect of advertising on sales or awareness.
Evidence supporting small advertising/price elasticities comes from Hagerty, Carmen and Russell (1988) who used the profit impact marketing study (PIMS) data set and concluded that advertising and promotion rarely have any significant impact on consumer demand. Further, Abraham and Lodish (1990), after conducting 360 tests, found advertising had an effect on sales only half of the time.

The size of the advertising elasticity may also depend on a number of factors. For example, elasticities have been found to be higher for new brands compared with established brands (Parsons 1975, Winer 1979, McDonald 1993b, Lodish et al 1995). This research suggests there may be product life cycle effects whereby advertising effectiveness diminishes as the product category matures.

At the product level, Hanssens (1980) used the Lydia Pinkham vegetable compound data to conclude that, although advertising effects are significant, they are not very important in influencing month to month variations in sales. Helmer and Johansson (1977) also used the Lydia Pinkham data set to support the finding that advertising has a short-term effect on sales which does not last greater than one year. Sethuraman and Tellis (1991) found advertising elasticities to be smaller for print advertising compared with TV advertising; and that press advertising and leaflets had no significant lagged relationship with sales.

Although the literature generally shows that advertising elasticities are small and the duration of effectiveness is short, reducing advertising expenditure can have a negative effect on consumer purchasing (Mela, Gupta and Lehmann 1997).
Hence, this suggests that advertising plays a role in maintaining levels of brand equity. A related concept to modelling the variable impacts of marketing is wearin and wearout.

### 3.2.2 Wearin and Wearout

Henderson Blair (1988) introduced the concept of advertising wearin and wearout which can be described as different rise and decay rates in sales with response to advertising. Wearin is defined as the building up over time of advertising impacts from repeated exposure. Therefore, advertising impacts cannot be measured by a single exposure at any one point in time and is concerned with the persuasive nature of advertising. Wearout occurs when the effect of advertising diminishes over time. Some forms of marketing communications take longer to wearin and wearout than others. For example, the impact from the delivery of coupons is immediate, whilst with TV advertising the information takes longer to disseminate. Advertising wearout examined in a study in 1984 and revisited in 1986, found that the overall persuasiveness of an advertising for six consumer packaged goods declines exponentially as a function of gross ratings points (GRP) (Henderson Blair 1988).

Earlier experiments at Du Pont revealed that as exposure increased so did attention, learning and favourable reaction to the message up to a hypothetical point of saturation where these attributes declined, confirming diminishing returns to advertising effectiveness. Other researchers have concluded that wearout is concerned with the subject’s long-term memory and relates to the subjects involvement with processing the advertisement (Hughes 1992). The degree of...
involvement is determined by the subject’s need for entertainment and new information (Hughes 1992) and the competitive nature of the market may be one of the most important factors affecting the repetitive effects of advertising (D’Souza and Rao 1995, Unnava and Sirdeshmukh 1994, Burke and Srull 1988). Consequently, advertising pulsing is found to be more effective than a uniform expenditure policy (Hanssens 1980, Mesak 1992) in some industries.

Wearout differs between communications mediums. For example, print advertising tends to wearout quickly and subsequent impressions are less effective (Scott and Solomon 1998). Henderson Blair and Rabuck (1998) extended the wearout study that was conducted by Henderson Blair ten years prior; supporting the original findings and adding further insights into the relationship between advertising and large brands. They found a 0.71 correlation between persuasion levels and performance, although the effects were smaller for large brands. Moreover, if advertising changes did not show any effect within six months then there was no impact even if the advertising continued. Hence, leaving ‘worn-out’ advertisements in the respective media is not productive. Masterson (1999) also found a strong relationship between the media weight and the decline in advertising productivity. The assumption is that memory and persuasion leads to the desired behaviour.

3.2.3 Advertising Disaggregated

The previous section predominantly dealt with analysing advertising mainly at the aggregate level. This section discusses how different advertising mediums contribute to sales. The results from disaggregated advertising indicate that advertising mediums have differential impacts on sales. For example, Dekimpe
and Hansssens (1995a), looked at advertising in terms of TV, radio and print, D’Souza and Allaway (1995) examined billboards, newspaper and radio, and Hansssens (1980a) researched flight scheduling as a marketing tool.

At the level of the firm, Doyle and Saunders (1985a) discovered bi-variate feedback between marketing expenditure and sales by identifying both lead and lag effects associated with marketing decisions taken by a Gas company, who aggressively marketed gas appliances. The research by D’Souza and Allaway (1995) was also important because it analysed multivariate feedback between different sales lines and a range of marketing tools. They did this by examining the effect of advertising spending decisions for a multi-product western retailer. Results indicated there was feedback between jean and boot sales, and both advertising on billboards and in the newspaper led to increased boot sales. Bhargave and Donthu (1999) related the sales response to outdoor advertising exposure, focusing on billboards. The results showed that billboard advertising had a short-term impact on sales.

Different persistence was associated with disaggregated advertising. Dekimpe and Hansssens (1995a) applied vector auto-regressive (VAR) modelling using 76 monthly observations of gross margins, advertising budgets and expenditure on TV, print and radio to evaluate disaggregated advertising effects. TV and radio was used to communicate an image of customer value and this had a longer lasting effect. Moreover, it was found that the impact of advertising pulses had an effect well beyond the periods included in the VAR model. The persistent effect was attributed to repeat purchase and first purchases influenced by word of mouth.
Subsequently, higher sales provided a conduit feedback back into higher advertising (Dekimpe and Hanssens 1995a).

Results also varied depending on the variables and time horizons analysed. Bendixen's (1993) research on advertising effectiveness found that products and services that were characterised by high consumer involvement are more likely to display current advertising effects. Second, those that have intermediate levels of involvement displayed carryover effects. Third, the medium used to market also has an impact on effectiveness - the greater the extent of the usage of that medium the less effective the medium becomes. Consequently, if the advertising is spread over a number of mediums it is likely to be more effective.

Other research indicates a size effect. Results from the study of twelve advertisements by Riskey (1997) found that commercials for larger brands had a much lower likelihood of generating meaningful volume and smaller brands received greater increases in sales volume. Commercials for innovations with smaller brands or entirely new brands showed significant gains in sales. These results strongly suggest that innovation and brand size are important factors in determining advertising effectiveness. Finally, Leone and Schultz (1980) and Sethuraman and Tellis (1991) find that the elasticises for durables are higher than for non-durables.
3.2.4 Long-term Impacts
The consideration of long-term impacts is particularly important in the advertising/sales relationship because it may take time for advertising to take effect and there is likely to be lagged effects on sales. Moreover, evidence that marketing has long-term or permanent impacts provides support for the hypothesis that marketing develops brand equity and increased shareholder equity. Such evidence also strengthens marketers' power and influence at the board level.

However, there seems to be no clear definition of what constitutes the ‘long-term’ but some researchers suggest periods greater than one year constitute the long-term (Dekimpe and Hanssens 1999). Mela, Gupta and Lehmann (1997) offer the following descriptions of time periods; short-term is an immediate effect, medium term lasts 1-4 months, and the long-term lasts for years. It should also be noted that a definition of long-term relationships may be dependent on particular products, product life cycle, country, industry and other specific factors.

3.2.5 Hysteresis (advertising persistence)
Little (1979) introduced the concept of hysteresis to marketing research. Hysteresis describes a situation when an event (for example advertising) leads to permanent change in a series (for example sales). Dekimpe and Hanssens (1995a) used impulse functions to test the hysteresis hypothesis. Increased advertising was decomposed into the impacts of TV/radio and print on sales. They found that print advertising has a significant instantaneous effect but no long-term effect and TV/radio advertising had a more significant long-term effect. Overall, they concluded that 60% of the initial increase in sales persisted in the long run.
and the remaining 40% was temporary. In a follow up study, Dekimpe and Hanssens (1999) found that the particular business situation has an impact on advertising longitudinal effectiveness.

Simon (1997) studied the evolving or persistent nature of marketing events by examining a number of case studies. A price war supported by advertising for West cigarettes led to an increase in market share of over 5%. Sigma pharmaceuticals lost market share due to an increase in price, which competitors countered by reducing own price supported by increased investment in advertising and the sales force. Southwest airlines achieved hysteresis by responding to the competition's reduction in price by reducing their own price and supporting this with advertising. Moreover, when prices reverted back to normal they were able to fully retain their gain in market share. In all these cases a combination of marketing tools are employed in order to achieve hysteresis, although a co-determining factor seems to be price. Of further note was that they were only able to detect a persistent effect of advertising on sales in evolving markets, and this was only observed for image orientated advertising on the TV and radio.

Using single source data on 142 individual brand campaigns, Jones (1995) found a strong short-term relationship between TV advertising and sales and a long-term relationship that was highly reliant on the short-term effects. Jones found that 70% of these campaigns boosted sales immediately and 46% of the brands’ advertising led to a long-term effect greater than one year. The short and long-term effects were highly correlated. Henderson Blair (1988) found a similar result whereby 41% of the established brands examined produced a positive elasticity effect.
Dagestan (1991) applied cointegration analysis in the modelling of the long-term relationship between advertising and sales using the Lydia Pinkham data set. Cointegration measures whether two time series trend together over the long run, even though they may diverge in the short run. If the long run equilibrium condition holds then cointegration of the variables occurs.

Dekimpe and Hanssens (1995a, 1999) postulated that the relative effectiveness of marketing communications be represented by the persistent or temporary nature of the impact. If the impact is persistent this means that the performance series does not revert back to the pre-marketing level. The Dekimpe and Hanssens (1995b) meta study of 44 previous research papers indicated some interesting results. Sales evolution is more likely to occur at the industry and category rather than at the brand level; long-term effects are more likely to occur for non-durables; and the longer the sample used the more likely evolution is going to be found in sales but not in market share. This supports Ehrenberg’s (1994) finding that observations of less than two years are less likely to find evolution.

### 3.3 PROMOTIONS

Similar to advertising the literature has mainly concentrated on the short-term relationship between promotions and sales (Dekimpe, Hanssens and Silva-Risso 1998). Generally, the research indicates that promotion effects typically have an effect in contemporary periods, and then dropping off past the normal level of sales immediately after the campaign. Thus, exhibiting a post promotion dip (Little 1975, Lodish 1981, Naert and Leeflang 1978, Doyle and Saunders 1985b, Blattberg and
Neslin 1989). Dodson, Tyson and Sternthal (1978) have suggested that promotion activities even have the effect of reducing brand valuations and brand equity.

As an extension to the above, one aspect of the promotions research questions the economic rationale for promotions. Levine (1989) interestingly found that 80% of those who purchased the product on promotion would have purchased the product regardless. Guandagni and Little (1983) had previously found that the likelihood of purchase decreased after the promotional period ended, possibly due to some switch-back and/or stockpiling of the product (Neslin and Shoemaker 1989, Dodson, Tybout and Sternthal 1978). Promotions can also make consumers more price sensitive, thus reducing their reference price, and if the product is continually put on a price deal this encourages consumers to be deal prone and less likely to purchase (Neslin and Shoemaker 1989, Mela and Gupta 1997).

3.3.1 Short-term

Using an experimental design Bemmaor and Mouchoux (1991) found that short-term deal elasticities are large when deals are unadvertised and leading national brands seem to be less responsive to price deals than other brands. A strong positive interaction between price reduction and advertising is evidenced and they also find that bulkier items and perishable goods are less responsive to price promotion deals. Moreover, price promotions were found to have a greater impact on non-loyal consumers or those who have the brand in their consumption set and switch based on price (Mela, Gupta and Lehmann 1997).
Narasimhan, Neslin and Sen (1996) examined promotional sales elasticities for three types of promotions across 108 product categories. Elasticities were higher for categories with fewer brands, higher penetration, shorter inter-purchase times, and higher propensity to stockpile. They also found that consumer sales response to promotion varies when different marketing tools are used. For example, with a displayed price cut the relationship between price and promotional elasticity is negative, but is positive for a pure price cut. This result is consistent with Fader and Lodish (1990) who find that categories that largely utilise feature/display promotions have lower prices. The product category has a significant impact on the effectiveness of the promotion on sales. Displayed price cuts are effective for low priced categories with short inter-purchase times, whilst featured price cuts are effective in high penetration, short inter-purchase time, in easily stockpiled categories with few brands.

Walters and Bommer (1996) examined the relationship between a brand's promotional activity and the promotional sales elasticities of the product category. Measuring the brand's price promotion activity product category promotional price elasticity was established and was related to the type of product being promoted. Consistent with Narasimhan, Neslin and Sen (1996) they found that the promotion of low priced brands led to greater increases in sales as compared with high priced brands.

The contemporaneous promotion activity across a number of brands was addressed by Ehrenberg, Hammond and Goodhardt (1994) who examined sales promotion for leading brands in established grocery markets. This study was
conducted over twenty five product categories in the US, UK, Japan and Germany. Concluding, that the impact of the sales promotion is realised only in the short-term and has no medium or long-term effect. Also consumers tended to stick to their consumption set and rarely tried new brands. Pressures to promote were influenced by trying to keep up with the competition and showing an immediate response, even if it is at a net cost. The impact of sales promotion across multiple product categories using scanner data was also examined by Fader and Lodish (1990). They utilised a number of promotional variables to test this relationship; including features, displays, price cuts, manufacturer’s coupons and store coupons. They found that features and displays are the most effective in increasing the sales of high penetration high frequency products.

The importance of heterogeneity and state dependency was examined by Keane (1997). Habit persistence, learning, and risk aversion, are defined as state dependence and consumption for exogenous reasons is termed heterogeneity. These factors will have an impact on promotion effectiveness. For example, putting an item on price promotion when consumers in the market are affected by heterogeneity means that the promotion will only have an impact when it is running and there will be no carryover effects. If state dependence occurs then the carryover effect on future consumption will have an endogenous effect, encouraging consumers to purchase the product again. The findings indicate that a temporary price promotion has a small positive effect on future purchase probabilities. The only way to account for valid causal inferences about long-term effects of promotions is to estimate a choice model that allows for both heterogeneity and state dependence.
3.3.2 Long-term

Dekimpe and Hanssens (1995a) analysed the relationship between price promotions and sales impulse response functions in order to isolate the potential long-term impact of price promotions. Multivariate behaviour was modelled using vector autoregressive models (VAR) and the price promotions were operationalised as one-off shocks in the VAR system. The results indicated that in the markets examined (soup, catsup, detergent and yoghurt), price promotions only have a short-term impact and the markets were stationary. Some possible explanations given is that the communications tools used are, in themselves, only temporary or they have intrinsic long run effects but competitive forces cancel out any long-term impacts (Dekimpe, Hanssens and Silva-Risso 1998).

In summary, the short-term literature does not support the notion that promotion activities lead to a sustained increase in sales. In fact, the notion that promotions can be detrimental to brand equity and lead to reduced future sales has also been a consistent finding in the promotions research. Further, promotions for established brands almost never have a positive long-term impact and competitive escalation has an impact on promotional effectiveness by potentially neutralising the incremental effect of the promotion (Abraham and Lodish 1990). Abraham and Lodish (1990) also suggest that managers must put incremental sales and profits into management objectives by continually evaluating the balance between advertising and promotion based on marginal-productivity analysis. This issue is taken up in a later section of this chapter.
3.3.3 The Trade off between Advertising and Promotion

The value in presenting a multivariate model of the marketing communications mix is modelling trade offs is of relevant managerial decisions. It is important for managers to understand what impact their expenditure on the various marketing communications tools is having. In order to do this it is important to not only understand the short-term relationship but also the long-term relationship with various measures of economic performance.

Jedidi, Mela and Gupta (1999) look at the short and long-term relationships between advertising and promotions with sales. The results indicate that advertising has a positive impact on brand equity whilst promotions have a negative impact. Promotions have only short-term response, these do not hold over the long-term. Heavily advertised brands are more likely to be market leaders that heavily promoted brands (Kim 1992).

The trade-off between advertising and promotion and the ratio of price to advertising elasticities was examined by Sethuraman and Tellis (1991). Empirical analysis of 262 observations from published studies indicates that on average the price elasticity is twenty times greater than the advertising elasticity. Tellis (1988) also found that price discount elasticities were greater than advertising by eight times. This ratio is also greater for non-durable goods and mature products, indicating that sales may be greater if price discounts (price promotions) are used. These findings led the authors to conclude that price discounts affect sales greater than advertising.
However, the authors note that this finding can be misleading if short-term sales elasticities are automatically translated into profits. They suggest that profit is not only a longer term measure of performance but is also a more dynamic measure than sales. Hence, it may be the case that short run gains in sales may actually erode brand equity and thus profits in the long run. Therefore, elasticities provide a simplistic picture of the relationships and in order to estimate the true effects more dynamic long run models are needed. Even though it has been found in the literature that price promotions are more effective in the short-term with regards to sales, it has not been established whether they are more profitable than advertising.

The most successful brands of consumer goods were built up via heavy advertising in past periods. Advertising budgets have been sacrificed in the short-term in place of price promotion. Thus, advertising is more likely to lead to a build up in brand equity and promotions lead to a short-term increase in sales (Schroer 1990). Moreover, promotions are viewed as having a short-term impact on sales whilst advertising has a longer term impact on sales.

Hence, it may reasonably be argued that due to financial constraints and incomplete financial covenants, the requirements of companies for short-term immediate gains has led to a major shift from advertising to promotion activities. Some authors have argued that this amounts to a crisis in advertising (Stipp 1992) with corporations redirecting funds away from the advertising budget and towards promotions. The reason is that accountability for expenditure is becoming more prominent and it is relatively easy to observe the immediate effect of running a
promotion. Moreover, advertising tends to have more of a long-term impact on sales which is harder to directly observe and to quantify over a greater temporal period. Hence, the focus on promotions reinforces short-term gains and takes away from advertising (Stipp 1992). This same trend can be seen from advertising to direct marketing where again the direct impact of effect can be quantified. These shifts towards promotions and direct marketing away from advertising reinforces the demand for measurement of marketing effectiveness and advertising to provide adequate performance metrics.

If one only considers the short-term impact of advertising then we ignore the impact of advertising on brand equity thus putting advertising on par with promotion and direct marketing as a marketing tool. Advertising should be treated as a continuous brand investment, and should not be judged in isolation from the brands history. Ultimately advertising is an investment in consumer behaviour and must be measured accordingly (McDonald 1993a). Conversely, the analysis must be economic. When assessing the impact of advertising, an awareness of the length of advertising effectiveness is essential so that spending on ineffective advertising can be avoided (Masterson 1999).

The next two sections deal with the role of MC in creating brands, customer relationships and how these aspects are translated into financial value. Glynn, Brodie and Motion (2002) note that the majority of the research has focused only on brands and end-customer based brand equity. They proposed a number of research questions: (1) what are the precise sources of marketing assets?; (2) how do they impact on value creating processes?; (3) how do we optimise these
processes and how do these feed into financial advantage?; (4) what are the links between marketing and financial performance?; and (5) what links are the most important?

As reported in the previous sections the financial links mostly assumed is sales. But, as previously outlined in chapter two, Srivastava, Shervani and Fahey (1998) extended the debate by proposing a cash flow model to assess the increase in shareholder value. Gruca and Rego’s (2002) research shows a positive association between a customer satisfaction index and cash flow predictability and growth, and a negative association with cash flow variability. However, the research on cash flow impacts is very limited. Further extensions include the analysis of MC on profits and stock market prices and, whilst, this research is not extensive, it has a relative long history and is currently a high profile research agenda of the Marketing Science Institute. This research is now examined.

3.4 PROFITS

The extension of performance to include profits along with sales is important because marketing communications expenditure that simply increases sales may, after taking into account all costs, prove to be a negative investment of scarce firm resources (Schoeffler, Buzzell and Heany 1974, Jacobson 1988b, Dekimpe and Hanssens 1999). Research using long-term profitability modelling has been limited (Dekimpe and Hanssens 1999) with most research finding a positive short-term relationship (Aaker and Jacobson 1994) and a negative long-term relationship (Dekimpe and Hanssens 1999) between marketing (advertising) and profits. Other
authors have indicated there is no relationship between advertising and profits (Sherman and Tollison 1971, Dekimpe and Hanssens 1995a).

There is some concern that a short-term performance focus has led to a number of US companies losing long-term profitability (Aaker and Jacobson 1994). Advertising unlike promotions can be effectively be used to drive long-term returns, and this investment can potentially be realised in the long-term profitability of a company (Aaker and Jacobson 1994). Hence, if longer term profitability is a major objective of MC then it needs to be measured and justified in relation to both short-term and long-term sales and profitability.

Past literature dealing with the relation of MC to profits has faced similar issues as with sales modelling and market response models. Short-term based market response models have been used (Lambin 1969) and the more recent literature has been conscious of long-term dynamics and time series analysis has been applied to capture these. This view is also supported by Day and Fahey (1988) who state that adopters of value based planning approaches view a company’s primary obligation as concentrating on maximising the returns from capital. Optimal long-term allocation of marketing resources is beginning to gather interest among academics and practitioners and this is strongly reflected by Dekimpe and Hanssens (1999). These attitudes are not always shared by marketing academics who argue that maximisation of profits is one of economics most unrealistic assumptions (Anderson 1982 p.21). Anderson (along with a number of marketing academics) further argues that a focus on profitability biases the financial measurement system towards a short run focus.
However, the pivotal role of assumptions about the long-term shareholder value created by a profitability focus meshes well with the overall marketing objective of achieving sustainable advantage via satisfied customers and enduring relationships. Further, ‘true accountability’ comes from linking marketing communications activities to the bottom line (Goring 1994). Profitability as a measure of performance has been widely researched and acknowledged in the economics, finance and accounting literature. This point has been alluded to in the marketing literature and the relationship has increasingly been seen as an appropriate test in the marketing literature (Jones 1990, Hanssens et al. 1990, Sethuraman and Tellis 1991, Dekimpe and Hanssens 1995a, Rositer and Percy 1997). This issue is covered in depth in the next chapter.

A number of studies have attempted to model the relationship between various types of marketing communications expenditure and profits making use of the profit impact marketing study (PIMS) data set (Schoeffler 1974, Buzzell 1981, 1985, Jacobson 1988a, 1988b, Balasubramanian 1990). Although only a few of these studies specifically look at the relationship between marketing communications expenditure and profits exclusively (Schoeffler 1974, Jacobson 1998b). The results generally indicate a negative relationship (Schoeffler 1974, Jacobson 1998b), implying that high levels of marketing intensity are largely attributed to over advertising and competition (Jacobson 1988b) that has the effect of diminishing overall profitability.
3.4.1 Empirical Research

A significant positive impact on profit rates and market power through product differentiation was discovered as far back as Bain (1956) and Comanor and Wilson (1967). They found that advertising and capital requirements were consistently related to profitability across consumer goods industries. It was concluded that advertising has the effect of causing barriers to entry, adding additional costs to new entrants and causing an absolute cost advantage for established producers.

In a later study, Hay and Morris (1984) also found that advertising expenditure has the effect of creating barriers to market penetration and is associated with higher profitability.

The hypothesis, that advertising may confer a greater profitability advantage to large firms over their smaller rivals, was examined by Comanor and Wilson (1969). The hypothesis was related to economies of scale in advertising and it was found that the top four firms out of forty one consumer goods industries enjoyed, on average, profit rates that were 20% larger than the smaller competitors. Whilst, this was largely attributed by Comanor and Wilson (1969) to the effects of advertising and its ability to differentiate products within an industry, some doubt must be cast on this strong conclusion because of other possible confounding variables.\(^5\)

Vernon and Nourse (1974) tested the direction of causality by looking at fifty seven firms in consumer non-durables. The main direction of causality was found to run from advertising to profits. The results of their analysis also suggested that there is

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\(^5\) For example, management style, economic economies of scale, monopoly power etc.
a significant and positive higher relationship between profit rates and the advertising sales ratios for large firms. Metwally (1976) examined the washing powder market in Australia in order to model the advertising/profitability relationship for the three largest brands that constituted 77% of the market. Using the Koyck model to estimate the parameters the research showed that advertising appeared excessive in the short-term, but further analysis concluded that advertising expenditure seemed to follow a long run profit maximisation policy.

The gearing effect of large brand advertising was examined by Jones (1990). Jones noticed that large brands spend less on advertising per dollar of sales compared with smaller brands. The hypothesis posed by Jones was that the amounts spent on advertising larger brands produce more sales and thus these firms were more efficient at allocating their advertising expenditure. It was concluded that a rise or drop in advertising exerted a greater proportional effect on profits for firms with higher brand power. However, the results were complicated by the fact that the relationship between advertising and profitability has lagged impacts. This is because a decrease in advertising expenditure increased profits in the current period, but decreased them in the long run if support has been taken away from the brand. The opposite can be true for increased advertising when the effect in the current period may be to decrease profits, but in the long run profits may actually increase because of the increased investment in the brand.

Analysis into the long-term relationship between advertising and profitability was provided by Dekimpe and Hanssens (1995a). Dekimpe and Hanssens (1995a) concluded that although advertising had a positive net sales effect, it did not have
a long run impact on profits. The real contribution by Dekimpe and Hanssens (1995a) was to apply state of the art time series techniques such as vector error correction modelling (VECM).

Rositer and Percy (1997) provided a simple insight for marketers and a straightforward equation for working out whether advertising and promotions are profitable using a profit margin analysis. Their general equation was: \( \text{profit} = (\text{price-cost}) \times \text{sales} \). They note that the manipulation of any of these three variables would have an impact on profits. From this equation they summarise the profit objectives in terms of three time horizons; immediate (short-term), up to one year (medium-term), and greater than one year (long-term). They suggested that in the long run prices should be maintained at a level that supports brand equity, although prices can be temporarily reduced in the short-term in order to increase sales. Costs cannot be changed in the short-term because they are generally fixed and should be recovered long-term via the experience curve (for both advertising and promotion). Results showed promotions have more of an immediate impact and advertising has a longer term impact. Moreover, in the long run there is relatively little that promotions contribute to profitability.

Jedidi, Mela and Gupta (1999) modelled the long-term profitability of advertising also using the gross margin approach but extended the simple model of Rositer and Percy (1997) as follows. The brands market level sales were multiplied by gross margin and the advertising and promotional expenditure subtracted and the relevant elasticities were then used to assess increases in brand sales. Gross margins were then recalculated, multiplied by the sales margins and the increased
advertising and promotional expenditures. The percentage change from the base profits was then estimated. It was found that a 5% increase in advertising had a small impact on profits, whilst the promotional impact on profits was negative.

The research by Dekimpe, Hanssens and Silva-Risso (1998) examined the mean reversion of both the price and sales series when a price promotion shock was introduced. They found that the price series was stickier than the sales series, showing that the price series mean reverted at a slower rate. This price stickiness can possibly have a negative effect on profitability because consumers can continue to take advantage of the still lower price even after the price promotion has finished. This effect is seen when the Campbell’s soup series is modelled and they find that although their price promotion is highly effective in the short run the long run impact is not only self-cancelling but damaging to the brand. The soup category is the only market that exhibits a long run effect of price promotions on sales with relatively low persistence.

Cook, Boudreaux and Jain (2002) recognised that the primary goal of the finance function is to increase the corporation’s value in financial markets; whilst the primary goal of the marketing function is to increase sales and share in product markets. They proposed a theoretical metric which combines the joint effects of marketing and finance. That is marketing budgets should be allocated proportional to profit contribution multiplied by elasticity.
3.5 SHAREHOLDER VALUE

Recent theoretical approaches in marketing have advocated the integration of marketing activity more directly with the creation of shareholder equity. Doyle (2000) refers to this as ‘value-based marketing’. Marketers have used the term equity variously to refer to customer equity (Dorsch and Carlson 1996, Rust et al. 2000, Blattberg et al. 2001) whilst Anderson and Narus (1999) refer to marketplace equity as a representation of the joint investment in brand equity, channel equity and reseller equity. Srivastava, Shervani and Fahey (1999) consider that the product development management process, the supply chain management process, and the customer relationship management process are the core marketing processes that create shareholder equity.

Whilst the extensive use of the term equity demonstrates its potential usefulness, the alternative uses are potentially confusing (Glynn, Brodie and Motion 2002). Glynn, Brodie and Motion (2002) have shown how the terms market and shareholder equity have been used and suggest that theories of market equity need to have stronger links with finance theories, assets and shareholder equity. In the finance literature shareholder equity in a corporate world is simply measured by stock prices.

Stock price is a measure of the corporation’s economic and sustainable future earnings as evaluated by the total economic sensitive information the market receives. Efficient market theory states that the stock market is competitive and uses all available information in a rational manner. Therefore the stock market price is the best estimate of future value given the available information set.
Marketing communications expenditure can contain information about such things as management plans, their confidence in future operations, and their ability to create brand equity. The market price reacts to current term activities (such as earnings announcements) because they not only supply current term but also information about future term prospects as well (Aaker and Jacobson 1994). Hence, stock prices give an insight into how the market views the current and future earnings of the firm and potentially the value of marketing activities. The marketing literature that examines the impact of marketing activities on share prices is now reviewed.

### 3.5.1 Marketing and Stock Prices

The research in this area is limited, although there is strong interest in the marketing finance interface and research is beginning to filter through. A positive relationship between changes in quality perception and stock price has been found by Aaker and Jacobson (1994). The research shows that quality measure provides information incremental to that reflected by current term accounting measures about future term business performance. Information about quality is communicated and received through a variety of mediums, including: advertising, word of mouth (positive (or negative) brand evaluation), press coverage, and personal experience (Aaker and Jacobson 1994). They also divide advertising through by total assets in order to account for any size effect.

Stock markets also react favourably to increases in discretionary marketing expenditure (Erikson and Jacobson 1992). Connolly and Hirschey (1984) indicate that increased advertising has a large positive and statistically significant effect on
increasing the spread between the market and book value of assets. The explanation is there is a feedback relationship between return on investment (ROI) and advertising. High ROI translates into higher expenditure on advertising. By increasing advertising the firm is sending a signal to the market that they have higher discretionary expenditures. Stock prices in turn are hypothesized to react favourably to this expenditure. Erikson and Jacobson utilise compustat data over the period 1972-1986 to test this hypothesis. The results indicate that failure to account for the effect of profit performance generates substantial bias in the estimates of the market reaction to advertising. The stock market does not reward raw spending on advertising. The market only rewards advertising to the extent that it has an impact on ROI, which is translated into increased operating income. In short, shareholders and investors discount advertising expenditures that do not yield current term profits.

Some other aspects of the marketing impact on stock price have been examined in the marketing literature. The impact of name changes on stock price (Horsky and Swyngedouw 1987), impact of new product announcements (Chaney et al 1991) and the impact of brand extension announcements. All these studies utilise the event study methodology which can only examine short-term relationships between marketing and stock price. Balasubramanian and Mathur (2002) used event study methodology to examine the impact of warranty extensions; product recall and product return policies on stock prices. They found that stock price reactions were a function of the type of marketing undertaken.
In order to examine the long-term relationship between marketing and stock price, Joshi and Hanssens (2002) apply cointegration analysis to disentangle the short-term and long-term effects. They conclude that advertising has a positive and persistent impact on market valuation and the effect exists above and beyond advertising’s impact on customer response. Customer response effects of advertising and R&D are also positive in the long run. Houston, Johnson and Siman (2002) proposed that new product introductions and associated marketing expenditure be judged by the increase in share price which indicates an improvement in the firm’s relative future position to competitors.

Finally, as an overview on the debate between marketing expenditure and financial performance, Furrer, Alexandre and Sudharshan (2002) question whether the relationship is linear. Their research concludes that there is indeed a curvilinear relationship and determine that optimum strategies will vary according to the firm’s resource bundle, industry and management.

### 3.6 SUMMARY AND CONCLUSIONS

This chapter provided an overview of the empirical research literature that concentrates on financial metrics as indicators of the success of MC. The studies reviewed are confined to the literature that applies economic and information transaction based perspectives. The growing areas of interaction and network (channel) marketing are outside the boundaries of this thesis. The literature surveyed is also focussed on advertising and promotions.
In general the results show that advertising has a longer term impact on sales compared to promotions. Indeed, promotion activity appears very much to be a short-term strategy. There is limited research on the impacts of advertising and promotions on profitability and the results are very mixed. However, the major finding is that for large firms MC has more of a long-term impact but this varies across industries. With regards to stock prices, there is evidence of short-term impacts in event studies with the impact a function of the type of marketing undertaken. There are also non-linear effects from MC. The next chapter provides an econometric and time-series review which completes the literature review in the area of the impact of marketing on financial metrics.
4.0 MEASURING RESPONSE TO MARKETING

One objective of this thesis is to apply appropriate statistical techniques in the empirical testing of MC expenditure. The purpose of this chapter is to provide an overview of statistical techniques used in marketing to date together with a justification for techniques used in the later empirical chapters.

Statistical model building in marketing has undergone a number of developments in recent times, largely due to new data sources, more sophisticated modelling techniques, and new and more powerful technology. These advances enable greater accuracy in the estimates of market response, advancing both theory and practice. Modelling success in marketing is determined by valid theoretical representation of the marketing process, statistically accurate predictions, forecasting accuracy and the use of the models in practice (van Bruggen and Wierenga 2000). The use of accurate models is also important to assist in sound decision making. Further, continued improvement and application of innovative statistical methods to market response modelling will provide up to date marketers with the knowledge to maintain a sustainable competitive advantage.

This chapter provides an overview of the econometric modelling techniques applied to measuring marketing performance in the literature. This is done by providing an overview of the market response models used to model cross-sectional and time-series data. A further purpose of this chapter is to also present
a number of time series models which have received limited attention in the literature and some time series models which have yet to be applied. A knowledge of time-series techniques is important to the researcher when modelling market response, covering econometric and time series models and different models have proved to be more efficient under specific conditions. For example, time series models have been proven to provide better model estimates and coefficients than other cross-sectional econometric techniques on a number of criteria (Hanssens et al. 1990, Leone 1995). Time series models control for the inherent time dependence of the dependent variable, therefore, coefficients are more accurately estimated. Although, the use of econometric models in marketing far outweighs that of time series models, anecdotal time series models are popular in practice but their formal application is limited in the academic marketing literature (Dekimpe and Hanssens 2000). This is not the case in other disciplines, such as finance, economics, accounting, statistics, and biology, which have embraced time series analysis as a powerful technique for solving research problems using longitudinal data.

There are a number of possible reasons time series applications have been neglected by the marketing literature. First, marketers have received limited training in time series technique and these techniques do not frequent the academic journals. Second, the difficulty in obtaining data which meet the requirements and assumptions necessary to be able to use the technique can prove to be an obstacle. For example, it is often difficult to assemble long data sets especially if the researcher has recourse to annual data. Finally, there has
been a lack of a dedicated research area where the technique has been adopted (Dekimpe and Hanssens 2000).

However, the factors inhibiting the use of time series techniques to model market response are changing and, therefore, so should the acceptance of time series analysis within the marketing discipline.

Chapter 4 will proceed as follows: longitudinal modelling is covered in section 4.1, various econometric metric techniques are presented in section 4.2, time series techniques are discussed in section 4.3 and multivariate time series techniques in 4.4, structural equation modelling is discussed in section 4.5, and the summary and conclusions are presented in section 4.6.

4.1 LONGITUDINAL MODELLING

As previously stated, the modelling of longitudinal data has not received as much attention in the marketing literature as cross-sectional modelling. Longitudinal modelling can be estimated by using either econometric or time series techniques. Econometric techniques such as Koyck modelling have been more popular than time series techniques.

“As early as 1976, more Koyck applications had already been identified in a meta-analysis of advertising effect duration by Clarke (1976) and only 23 studies utilising time series analysis were found between 1975-1994” Dekimpe and Hanssens (2000).
Even though econometric modelling is widely accepted in marketing, the question needs to be asked: what is the most appropriate way to measure longitudinal relationships?

Econometric models are appropriate for modelling cross-sectional data and short-term relationships and, as a result, short run relationships have received more attention in marketing. Indeed, a majority of the research and our knowledge as marketers is based on short run research (Dekimpe and Hanssens 2000, and see also chapter 3). The focus on the short run can be attributed to a number of factors; the short-termism of managers (Guilding and Pike 1990), relatively easy access to data, available models which deal with short run relationships (Koyck), and the wide acceptance of these modelling techniques. Short-term relationships have also been favoured because long-term relationships are more difficult to measure and operationalise.

Hence, the understanding of long run marketing phenomena is incomplete and an extended understanding is needed because the goal of efficient management should be to maximise performance both in the short run and in the long run (Dekimpe and Hanssens 1995a). Consequently, there is a gap in the literature with regard to modelling long run relationships and this provides an innovative opportunity for market researchers to contribute to the limited body of knowledge in this area.

This gap in the literature has been addressed by a few researchers who are dedicated to disentangling and understanding short-term and long-term marketing
effectiveness. For example, Dekimpe and Hanssens (1995a) have found that there are long-term relationships between advertising and sales (but not profits), not just short-term relationships as previously thought (Clarke 1976). Dekimpe and Hanssens (1999) have also modelled the long-term relationship between promotions and sales, in this case no long-term relationships were found. Currently there is no body of literature that enables the precise measurement of the degree to which marketing efforts affect long-term evolution in the marketplace (Dekimpe and Hanssens 1999). Finally, through a better understanding of market response, greater strategic inferences can be drawn thus contributing to the understanding of dynamic relationships in marketing and the competitive advantage of the firm.

4.1.1 Defining the Long-term

There seems to be no clear definition or clear agreement as to what constitutes the long-term. Mela, Gupta and Lehmann (1997) offer the following descriptions of time periods; the short-term represents an immediate effect, the medium term lasts between 1-4 months and the long-term lasts over a year. Other researchers have identified the long-term as greater than one year (Dekimpe and Hanssens 1995a, 1999). However, in reality the definition of the long-term will be influenced by; the industry, the product, the product life cycle, and other situation specific factors. For example, what is considered long-term in rapidly advancing technology sectors could be vastly different from the long-term defined in the stable consumer goods or manufacturing sectors.
Measuring the long-term effects of marketing has been identified by the Marketing Science Institute (MSI) as a priority research issue. In this thesis long-term financial effects are modelled and disentangled using appropriate time series data and are operationalised through risk adjusted earnings and stock price (see chapter 5). Further, the direct impact of advertising on stock price is argued, in this thesis, to be evidence of a longer term financial effect than any comparable impacts on sales or cash flows. As background, the following sections provide a statistical specification of the market response models applied in marketing and other disciplines that are available to researchers.

4.2 ECONOMETRIC MODELS
Econometric models have bee used extensively in marketing to measure mostly the sales response to marketing activity. The following section provides a summary.

4.2.1 Current Effects Models
Current effects models are static models that assume there is no lagged or dynamic relationship between the dependent and independent variables. Thus the short and long run are assumed to be equal. Hence, the relationship estimated is the direct relationship between the variables of interest. This methodology is somewhat naive because the response to marketing variables may not be immediate or may not be constrained to the contemporaneous impact. Further, there is a body of research suggesting that there are leads and lags associated with advertising and promotional expenditure, for example see, Clarke (1976), Dolye and Saunders (1985), Hanssens et al. (1990), Broadbent (1993), Dekimpe
and, Hanssens (1995a, 1999, 2000). Therefore, this class of models should only be applied if there is likely to only be a current direct effect present and the researcher can theoretically argue that this is the case.

An example of the current effects model takes the following form using sales and advertising as examples:

$$S_t = \alpha + \beta A_t + e_t$$  \hspace{1cm} (4.1)

Where $$S_t$$ is equal to sales at time $$t$$, $$A_t$$ is equal to advertising at time $$t$$, $$\alpha$$ is the constant, $$\beta$$ is equal to the beta coefficient (which explains the impact of advertising on sales) and $$e$$ is the disturbance or error term which conforms to the usual statistical properties (that they are identical, independent and normally distributed).

### 4.2.2 Cumulative Effects Models

Cumulative or carry over effects occur when the initial impact of the independent variable (in many cases it has been advertising) has an impact in the current and/or the following periods. This lagged structure allows for dynamic relationships to be modelled, that is, when goodwill characteristics are created then carry over effects will be present. The use of dynamic models has a number of benefits. First, they recognise any lagged dynamic relationship. Second, it forces the realisation that the amount budgeted in some current period should take into account currently realised effects (McCann, Morey and Raturi 1991).
If lagged sales variables are omitted then this could positively bias the coefficients. Additionally, the omission of exogenous variables also has the effect of positively biasing the marketing effects (Assmus, Farley and Lehmann 1984, Tellis 1988, Leone 1995). A dynamic relationship is more likely to occur in the market response because of the complex nature in which consumers respond to marketing stimuli. Consumers may respond indirectly through purchase reinforcement whereby the consumer makes an initial purchase and then future repeat purchases. For management decision making, if advertising was the marketing stimuli, then current advertising should receive the credit for future purchases (Givon and Horsky 1990).

Carryover effects are observed for a number of cumulative effect reasons. First, advertising may not be noticed by the consumer until some time after the expenditure has taken place. Second, advertising may lead to subsequent purchases if the product is deemed to be satisfactory by customers and they are retained. Third, there may also be flow on effects due to word of mouth. Finally, advertising may gradually build up customer loyalty, and thus be responsible for more than the immediate observable short-term effects. Consequently, more sophisticated lag structures are needed to capture these responses and a number of cumulative effects models are therefore outlined in the following sections.

### 4.2.3 Direct Lag Model

The direct lag model is the simplest form of the cumulative effects models and assumes that current and past advertising has a direct impact on sales. The direct lag model in the simplest lag model form is as follows:
\[ S_t = \alpha + \beta_1 A_t + \beta_2 A_{t-1} + e_t \] (4.2)

Where \( A_{t-1} \) is advertising lagged one period, \( \beta_1 \) equals the coefficient on current advertising and \( \beta_2 \) equals the coefficient on last period’s advertising.

4.2.4 Partial Adjustment Model

Partial adjustment models have also been applied in the marketing literature. They imply there is a gradual adjustment to the desired consumption level causing the advertising effect to be distributed over time (Hanssens et al. 1990). This model postulates that advertising’s impact is a function of the geometric weight and assumes that consumers only partially adjust to advertising and other marketing variables. The partial adjustment model takes the following form:

\[ S_t = \alpha + \beta_1 A_t + \beta_2 \lambda A_{t-1} + e_t \] (4.3)

Where \( \lambda \) is the geometric decay which is < 1

4.2.5 Koyck Model

The Koyck model is the most widely used cumulative effects model in the market response literature. The model is similar to the partial adjustment model but the error term takes a different form. The Koyck model captures advertising’s impact through a geometric weighted function of current and past advertising. The wide use of the Koyck model can be largely attributed to the structured nature of the model and thus is a theory driven approach to data modelling. The Koyck model
assumes that advertising follows an exponentially decaying pattern over time, therefore incorporating short and medium term effects but assumes incomplete or revertting persistence effects. The Koyck model takes the following form:

\[ S_t = \alpha + \beta_1 A_t + \beta_2 \lambda A_{t-1} + \beta_3 \lambda^2 A_{t-2} + \ldots + \beta_{k+1} \lambda^k A_{t-k} + e_t \]  

Where \( \lambda \) is the exponential decay and \( \beta \) is the direct (short to medium-term) effect of advertising. The \( \lambda \) parameter measures how much of the advertising effect in one period is retained in the next and through this decay parameter the Koyck model recognises that more recent periods have a greater impact and receive greater weights. Although the Koyck model introduces a sophisticated lag structure and has been widely used to measure market response, the model also has some disadvantages. It is restrictive and assumes the impact from the independent variable decays in a consistent exponential pattern, thus not allowing the capture of any longer term dynamics if they are present.

However, there is some support for the diminishing returns to advertising theory in the literature (Lambin 1976, Simon 1970, Simon and Arndt 1980, Aaker and Carmen 1982, Henderson Blair 1988). A survey of seventy empirical studies conducted by Clarke (1976) indicated that 90% of the cumulative effects of advertising on sales for low priced, mature, frequently purchased products, occur within three to nine months from the advertising occurrence. This study sheds light on the important question of how long the economic effects of advertising last. But it is important to bear in mind that this is an average and there is a tendency to find different effects for different, models, data intervals, countries, products, and
methodologies applied. In support of this result, Leone (1995) adjusted for data interval and aggregation bias and found that the average carry over interval to be between six to nine months. Further support for these findings is also given by Assmus, Farley and Lehmann (1984), DeKluyver and Brodie (1987), Lodish et al., (1995).

One further important conclusion from the cumulative modelling literature is that the carryover effects of advertising for established brands have a short duration (Leone 1995). Although it has to be kept in mind that the cumulative models can only capture short-term relationships by their very nature, time series models are able to capture both short-term and long-term relationships.

4.2.6 Non-linear Models

As a result of increasingly sophisticated software non-linear models are no longer prohibitively costly to estimate (Pindyck and Rubinfeld 1998). Non-linear equations allow the estimation of diminishing or increasing returns, quadratic or cubic functions and other functional forms relaxing the assumption of linearity. A non-linear model can take the following form:

\[ S_t = \beta_0 + \beta_1 A_t^{\beta_2} + e_t \]  

(4.5)

In advertising research non-linear models are especially useful for estimating levels of advertising at which there are either increasing or diminishing returns so that advertising can be more efficiently allocated.
In the following section time series models will be discussed.

4.3 TIME SERIES MODELS

Time series models attempt to capture the time dependent nature (trend and seasonality) of a dependent variable over time. Trend refers to the autoregressive (serial correlation) process of the dependent variable with values from its own past. For example, the level of sales in this period can be related to sales in the previous period and a number of periods before that. Seasonality refers to the increases and decreases of the dependent series found at certain times of the year, month or at other time periods within the data set. For example, sales may increase around Christmas time every year.

There is some resistance to what is sometimes perceived as a data driven technique. Some researchers view time series techniques as data driven and are said to lack foundation in marketing theory (Leeflang et. al. 2000). With time-series models, to a certain extent, the data is used to specify the model but the approach is not totally void of theoretical direction. Moreover, time series analysis requires long data sets in order to satisfy the necessary assumptions and it is often difficult for researchers to obtain good quality time series data with sufficient data points.

Last, there is an absence of a dedicated research area for time series analysis. Other research techniques have found their own niche areas to be applied. For example, structural equation modelling is embedded in the satisfaction and channel-relationship literature. Discrete choice models have been utilised in the promotions literature. Koyck models have dominated the advertising literature,
whilst time series analysis has yet to be accepted as a superior statistical research tool in the area of marketing research. As a result, time series analysis has not reached widespread acceptance in marketing (Dekimpe and Hanssens 2000). Although, the use of time series models are suited to estimating the marketing/finance/accounting interface, time series modelling may now have it's niche in marketing. Potential and actual time series models that are relevant for marketing research are now reviewed.

4.3.1 Autoregressive Process

An autoregressive (AR) process represents the relationship between a series and the past values of itself. For example, sales this period could be related to sales from last period and n prior periods caused by an economy in a growth trend when sales will naturally increase over time. It should be noted that these increases are not related to intended management policies or marketing actions and therefore this trend needs to be controlled for in order to enable the real impact of marketing to be accurately estimated. A first order autoregressive process can be described as sales at t-1 affecting sales at time t, and having a short-term effect.

An AR (1) has the following structure:

\[ S_t = \alpha + \beta_1 S_{t-1} + e_t \] (4.6)

If \( \beta_1 < 0 \) the series diminishes over time, if \( \beta_1 = 1 \) then past sales have an effect that is permanent, if \( \beta_1 > 1 \) sales become increasingly important (rarely observed in marketing).
An AR process can also have the effect of capturing longer term relationships. For example sales can be related to sales last period and a number of periods prior and it would generally be hypothesised that the AR coefficient would decline over time and therefore would not be permanent. That is sales in the last period would have a greater impact on current sales than sales four periods ago. A long run autoregressive model takes the following form:

$$S_t = \alpha + \sum_{n=1}^{\infty} \beta S_{t-n} + e_t$$  \hspace{1cm} (4.7)

### 4.3.2 Moving Average Processes

A moving average (MA) process captures random shocks in a series. A first order MA process assumes that a random shock at \(t-1\) affects sales levels at time \(t\) and must satisfy conditions of invertability. The moving average model is outlined as follows:

$$S_t = \alpha - \theta_1 e_{t-1} + e_t$$  \hspace{1cm} (4.8)

Where \(\theta_1\) is the coefficient on the random shock.

If \(\theta_1 > 1\) order (q) of MA (q) the process is the highest lag of \(e_t\). If \(\theta_1 < 1\) the impact of past shocks diminishes. Lastly, if \(\theta_1 = 1\) the random shock has a permanent effect.
In fact MA and AR processes can be the same. That is an MA can be a long lived AR process, with AR<sub>t-n</sub> being the same as an MA1 process. The main difference between MA and AR processes is that MA processes are permanent and AR processes can take a number of forms. For example, short-term temporary effects are captured in AR1 or AR2 processes, AR4 and AR5 processes represent medium term effects and depending on the time period AR processes can also have long-term effects. Further, AR models also are more theoretical and intuitive than MA models. For example, you can economically relate this months sales to last months sales and it is intuitively logical. Whilst an MA process is a moving average of the AR processes in the window and in this case you are dealing with averages and not absolute coefficients. Hence, interpreting MA coefficients is economically difficult.

4.3.3 ARMA Processes

The AR and the MA processes can be combined into one model to incorporate the idea that both past sales and past random shocks can affect S<sub>t</sub>. The ARMA (1, 1) process is represented by the following model:

\[ S_t = \alpha + \beta S_{t-1} - \theta_1 e_{t-1} + e_t \]  \hspace{1cm} (4.9)

Similar to the individual AR and MA models the mixed model can also be extended to capture longer time series components; viz:

\[ S_t = \alpha + \sum_{n=1}^{\infty} \beta S_{t-n} + \sum_{n=1}^{\infty} \theta e_{t-n} + e_t \]  \hspace{1cm} (4.10)
4.3.4 ARIMA Processes

If the series is exploding or not stationary this violates one of the underlying assumptions of time series analysis and the series needs to be integrated or differenced. The 1 represents the order of differencing of the series. For example, an ARIMA (1, 1, 1) model represents a time series with an AR(1) and MA(1) process which has been first differenced. An ARIMA (1, 1, 1) can be written as:

\[ z_t = \alpha + \beta z_{t-1} - \theta e_{t-1} + e_t \]  \hspace{1cm} (4.11)

Where \( z_t \) is the differenced series \( z_t = s_t - s_{t-1} \).

4.3.5 Seasonal Processes

Many marketing series may have seasonal patterns which can be affected by purchasing cycles, for example, periodic sales and other peak and trough business cycles. These effects can cause the series to fluctuate around a mean where some values are expected to be lower and some higher than the mean at other times, hence, the term seasonality. A specific example of this fluctuation is when sales levels are expected to be higher around Christmas time for toys and other luxury goods or when weather patterns affect the sales of some products.

Seasonal factors apply to the AR, I or MA components of the model which is denoted by ARIMA (P, D, Q)_s, where s represents the lag of the seasonal terms when you are using monthly data.
Using monthly data a purely seasonal monthly ARIMA \((1, 1, 1)_{12}\) model is written as follows:

\[ z_t = \alpha + \beta_{12} z_{t-12} - \theta_{12} e_{t-12} + e_t \]  

(4.12)

### 4.3.6 Stationarity and Unit Root Testing

A distinction needs to be made between whether the series is stationary or evolving. If the series is evolving it violates one of the assumptions of time series and the series then needs to be appropriately differenced. A series is stable if it fluctuates around a fixed mean and a series is evolving if it has no fixed mean and can deviate permanently from fixed levels. The nature of the dependent series will also be relevant when marketing variables are used to predict changes in the dependent variable.

Therefore, in stable markets, marketing can only have a temporary effect on sales. Hence, this explains why in marketing the performance measure used fluctuates around a fixed mean and marketing is only able to achieve short-term fluctuations around this pre-determined level. These models only account for these short-term fluctuations and not changes to the underlying series over the long-term. For example, if a market is evolving then the sales series is changing either up or down and marketing activity can potentially cause a permanent shift in the sales series. This phenomenon is referred to as hysteresis where marketing activities can permanently influence the long-term level of the sales series. Market evolution in the form of hysteresis was alluded to by Little as early as 1979, although to date there are few studies in the area and no time series results to support this
hypothesis. The findings by Little (1979) supporting hysteresis are based on observation and case studies.

Ehrenberg (1991, 1994) argues that stationary markets are observed most frequently and Bass and Pilon (1980) claim that competitive reactions often prevent long run market share gains. Contrary to this Dekimpe and Hanssens (1995b), by examining 44 univariate time series studies conclude that sales evolution is the norm, and not the exception, and market shares are largely stationary. The presence of evolution in the market requires the use of time series analysis to determine the nature of the evolution and what variables affect it. When dealing with an evolving series, $S$ is replaced with $\Delta S$.

In summary, the short run research is full of rich data and precise estimation methods but lacks strategic relevance, and the long-term is full of strategic relevance but has lacked appropriate statistical measurement methods. Dekimpe and Hanssens (1995a) have discussed the concept of persistence to bridge the two domains. The findings concerning evolution in marketing have led Dekimpe and Hanssens (2000) to call for researchers to look at the factors that influence these persistence levels and which marketing decisions have the largest impact on persistence. Further, by providing empirical generalisations in this area, managers will have a better idea of what strategies and decisions are best suited to create and maintain long-term evolution in performance.

The unit root method tests whether a shock to the system is permanent and whether it keeps influencing the system is transient or whether it is mean reverting.
As previously stated if the series is not stationary it needs to be differenced. If $|\phi| = 1$ then the series exhibits a unit root and the series is evolving. If $|\phi| < 1$ the series is meaning reverting and there is only a temporary impact on the series. If $|\phi| > 1$ the series is explosive which, may be exhibited in the early stages of the product lifecycle. The following model tests for stationarity:

$$\Delta S_t = \alpha + \beta_0 S_{t-1} + \beta_1 \Delta S_{t-1} + \ldots + \beta_m \Delta S_{t-m} + \epsilon_t \quad (4.13)$$

or $$z_t = \alpha + \gamma S_{t-1} + \epsilon_t$$

where $z_t = S_t - S_{t-1}$ and $\gamma = \beta_1 - 1$

Where, $\beta$ is the autoregressive parameter determining whether there is a unit root, $\epsilon_t$ is an error term with a zero mean, constant variance and uncorrelated random shocks, $\alpha$ is the constant, and $\Delta S_t = S_t - S_{t-1}$ indicates the difference operator.

The Augmented Dickey Fuller (ADF) test is commonly used to establish stationarity and takes the following form:

$$z_t = \alpha + \gamma S_{t-1} + \delta_1 z_{t-1} + \delta_2 z_{t-2} + \ldots + \delta_p z_{t-p} + \epsilon_t \quad (4.14)$$

Unit root tests have been applied in the marketing literature by Dekimpe and Hanssens (1995a) who used unit root tests to determine whether sales are trending over time. They determined that there is multivariate persistence that can be attributed to marketing. This analysis is particularly important in evaluating the long-term strategic impact of marketing. A further meta study by Dekimpe and
Hanssens (1995b), based on 400 published studies concluded that evolution is the dominant factor underlying a marketing series. Market share models are found to be stationary and sales models evolving in the majority of the cases. Hence, if evolution is the dominant characteristic of marketing series then autoregressive and seasonal processes need to be identified before independent variables can enter into the model.

4.4 MULTIVARIATE TIME SERIES MODELS

Once the autoregressive and seasonal processes have been identified and controlled for independent variables can enter the model. This allows marketing variables to be used to explain changes in the dependent variable whilst controlling for endogenous factors specific to the dependent series. The advantage of multivariate time series is that independent variables can be additionally included in the model to help explain changes in the dependent variable.

4.4.1 Multivariate ARIMA Model

The multivariate ARIMA model is the most general linear time series model allowing for both, endogenous and exogenous dynamic effects (Hanssens et al. 1990). Predictor variables can now be entered into the ARIMA model to help explain the movement in sales, for example advertising can now be built into the equation. Technically, if the autoregressive sales effects are not included in the modelling the response of sales and advertising the coefficients will be over estimated and thus biased.

The multivariate seasonal ARIMA model takes the following form:
\[ S_t = \alpha + \beta_1 S_{t-1} - \theta_1 e_{t-1} + A_t + e_t \] (4.15)

Where \( A_t \) represents the independent variable.

### 4.4.2 Transfer Functions

Shocks to the time-series system can be introduced through a transfer function. Policy changes, economic shocks, new legislation, PR and any other events that are likely to cause a shock are examples that are usually built into the model. The transfer function model takes the following form:

\[ S_t = \alpha + \nu_0 A_t + \nu_1 A_{t-1} + \ldots + \nu_n A_{t-n} + e_t \] (4.16)

Where, \( \nu \) is the transfer function, \( \nu_0 \) represents the dead period and \( \nu_n \) represent the impulse response weights.

Equation 4.15 can be rewritten as:

\[ S_t = \alpha + \nu_k (B) A_t + e_t \] (4.17)

\( \nu_k (B) \) is the transfer function \( \nu_0 + \nu_1 B + \nu_2 B^2 + \ldots + \nu_k B^k \), \( B \) is the backshift operator, and \( k \) is the order of the transfer function which is to be determined.

The transfer function allows discrete events through the use of dummy variables to be incorporated into the model to capture the incremental effect of a certain action.
(in marketing it could be the introduction of a competitor or a new product variant). Transfer functions can take a number of functional forms which include a pulse, step or a combination of the two which can mean a temporary or permanent effect on the dependent variable. For example, a new advertising campaign could be introduced and the effect of the campaign is then evaluated. The effect would be evaluated in terms of how the campaign impacts the sales series. The Koyck model is a special case of the transfer function model where the response is a constant fraction of the response in the previous time period.

### 4.4.3 Vector Autoregressive Model

The Vector Autoregressive Model (VAR) is a time series model which captures multiple equations and dynamic interrelations through the use of vectors. The model is flexible and relatively easy to implement although, because of the multiple nature of the model, a large number of parameters need to be estimated. The VAR model takes the following form (see also 4.4.5 VECM):

$$\begin{bmatrix} S_t \\ A_t \end{bmatrix} = \begin{bmatrix} \gamma^{11} & \gamma^{12} \\ \gamma^{21} & \gamma^{22} \end{bmatrix} \begin{bmatrix} S_{t-1} \\ A_{t-1} \end{bmatrix} + \ldots + \begin{bmatrix} \gamma_i^{11} & \gamma_i^{12} \\ \gamma_i^{21} & \gamma_i^{22} \end{bmatrix} \begin{bmatrix} S_{t-k} \\ A_{t-k} \end{bmatrix} + \begin{bmatrix} e_{S,t} \\ e_{A,t} \end{bmatrix}$$

(4.18)

Vector autoregressive models (VARMA) are used to detect dynamic relationships and provide a more complex framework for analysis. VARMA models check short-term and long-term causality between variables which is expressed in matrix form. The model can also be extended to include a number of marketing mix variables; including price, advertising (by media), and promotions. With vector models the distinguishing feature is that the causality is not prior assumed. For example, the model will not assume that sales leads advertising or vice-versa. The model is
perfectly inductive in that the data will provide evidence on the exogeneity of each variable.

4.4.4 Cointegration Analysis

Cointegration is the test if two variables move together over time and in the long run. Evolving variables are cointegrated when linear combinations exist between them as a result of stable residuals. Hence, long run equilibrium exists and prevents them from wandering apart (Dekimpe and Hanssens 1999). For example, one question that could be asked in marketing is ‘are sales and profits cointegrated’? If they are cointegrated then they move together and may be proxies for each other. If they are not cointegrated they are variables that measure different attributes. If is often assumed in marketing that sales and profits are proxies for each other without testing for causality and cointegration.

Further, cointegration analysis is an important first step to test if variables have a long run relationship and should also be a first step before regression analysis is undertaken. If variables are not cointegrated then regression results are simply spurious and unreliable because the relationship is not stable. To determine whether two series are cointegrated, a Dickey Fuller test is conducted on the residuals in order to establish whether there is a unit root.

The model for cointegration takes the following form:

\[ S_t = \alpha + \beta A_t + \epsilon_t \]  

(4.19)
To test for cointegration the residuals from the model are saved and then the Dickey Fuller test is applied to these residuals. If the residuals are stable then $\phi < 1$ and the series are mean reverting. If $\phi = 1$ then the series are evolving and they are cointegrated.

Cointegration techniques can be used to measure long-term movements between marketing variables and have been utilised in a few instances. Baghestani (1991) found that advertising had a long run impact on sales if both variables are evolving and are in long run equilibrium that is if they are cointegrated. Hanssens (1998) found that factory orders and sales are in long run equilibrium and are cointegrated, but shocks to either series have different long run effects. Also, stable market shares are consistent with evolving shares if brand and category sales are cointegrated (Srinivasan and Bass 2000). Finally, Joshi and Hanssens (2002) determined that advertising had a long run impact on shareholder value.

4.4.5 Vector Error Correction Modelling (VECM)

A vector error correction model (VECM) is built through adding the lagged residual of the cointegrating relationship to add additional explanatory power to the VAR model in the differences. This creates a correction from the disequilibrium in the previous period. The use of VECM can avoid the potential mis-specification bias inherent in VAR first differences. The VAR is unable to examine long-term relationships and also has problems modelling short-term relationships when cointegration is present. In terms of forecast ability VECM also outperforms VAR models (Mukherjee and Naka 1995).
If two time series are both integrated of order d, a linear combination of these two series may result in a stationary time series, I(0). In this case the original series are cointegrated with order d and the two series are cointegrated of order 1. In order to correctly specify the model with cointegrated variables, an error correction term should be added to the modelling process to capture the short run adjustment to the long run dynamics. If the two series are cointegrated of order 1 then the first-order difference of each series plus a lagged regression residual, the error correction term, should be included in the modelling process. Engle and Granger (1987) have also shown that an error correction model can be used to describe the full data generating process rather than a VAR model on the differences. The addition of the error correction terms implies that in every period there is a partial adjustment toward restoring the underlying, temporarily disturbed, long run equilibrium.

If we hypothesise the existence of co-movements amongst a set of time series and possibilities that they will trend together in finding a long run stable equilibrium, then by the Granger representation theorem we may posit the following testing relationships which constitute a VECM. Consider a set of variables that are I(0) after applying the differencing filter once. Provided that the variables in $X_t$ are also cointegrated of order $r$, we may impose this constraint upon our unrestricted VAR to enable a VECM formulation as:

$$\Delta X_t = \sum_{i=1}^{n} A_i \Delta X_{t-i} + \sum_{i=1}^{r} \xi_i \Theta_{t-i} + \nu_t$$

(4.20)
where $X_t$ is an $n \times 1$ vector of variables, the $A$'s are estimable parameters, $\Delta$ is a difference operator, $\varepsilon_t$ is a vector of impulses which represent the unanticipated movements in $X_t$ where $\Theta$ contains the $r$ individual error-correction terms derived from the $r$ long run cointegrating vectors via the Johansen MLE procedure; and $E(\nu_t, \nu'_t) = \Omega$ which is diagonal. Of course given there are $r$ cointegrating vectors, we may reformulate assuming $(n - r)$ common trends. In expanding out (4.20) we can express the VECM of variables as:

$$
X_t = \begin{pmatrix}
\Delta x_{1t} \\
\Delta x_{2t} \\
\vdots \\
\Delta x_{nt}
\end{pmatrix} = \begin{pmatrix}
A_{11}(L) & A_{12}(L) & \ldots & A_{1n}(L) \\
A_{21}(L) & A_{22}(L) & \ldots & A_{2n}(L) \\
\vdots & \vdots & \ddots & \vdots \\
A_{n1}(L) & A_{n2}(L) & \ldots & A_{nn}(L)
\end{pmatrix} \begin{pmatrix}
\Delta x_{1t} \\
\Delta x_{2t} \\
\vdots \\
\Delta x_{nt}
\end{pmatrix} + \begin{pmatrix}
\xi_{1t} \\
\xi_{2t} \\
\vdots \\
\xi_{nt}
\end{pmatrix} \begin{pmatrix}
\Theta_{11} \\
\Theta_{21} \\
\vdots \\
\Theta_{n1}
\end{pmatrix} + \begin{pmatrix}
c_1 \\
c_2 \\
\vdots \\
c_n
\end{pmatrix} + \begin{pmatrix}
\phi(L) & 0 & 0 \\
0 & 0 & 0 \\
0 & 0 & \phi(L)
\end{pmatrix} \begin{pmatrix}
\zeta_{1t} \\
\zeta_{2t} \\
\vdots \\
\zeta_{nt}
\end{pmatrix}
$$

(4.21)

where the term $\phi(L)$ is a finite polynomial in the lag operator $L$, such that $(L^m)\xi_t=\zeta_{1t}$ $m$ and the order $\phi(L)$ is the same for the $n$ equations in (2). The terms $[\zeta_{1t}, \ldots, \zeta_{nt}]$ are joint white-noise processes and the $c$'s represent a vector of constants.

The VECM approach also allows one to distinguish between 'short run' and 'long run' versions of Granger-causality. Assuming cointegration holds, in the short-term, deviations from this long run equilibrium will feed back on the changes in the dependent variable in order to force the movement towards the long run equilibrium. If the dependent variable is driven directly by this long run equilibrium error, then it is responding to this feedback. If not, it is responding only to short-term shocks to the stochastic environment.
4.5 STRUCTURAL EQUATION MODELLING

Structural equation models are described as models with multiple and interrelated dependence relationships which have the ability to represent unobserved concepts in relationships and to account for measurement error in the estimation process (Hair et al 2000). Structural equation modelling has not been used as yet in the marketing literature to model the aspects of the marketing/finance/accounting interface. However, the technique is used widely in the marketing discipline because of the ability to model simultaneous relationships using one comprehensive technique. Structural equation modelling would be appropriate to examine the simultaneous relationships involved in the marketing/finance/accounting interface especially because of the inter-relationships between performance measures and the possible indirect relationships. Structural equation modelling will be applied in chapter eight and takes the following general form:

\[ y_1 = x_{11} + x_{12} + x_{13} + \ldots + x_{1n} \]
\[ y_2 = x_{21} + x_{22} + x_{23} + \ldots + x_{2n} \]  \hspace{1cm} (4.22)
\[ y_m = x_{m1} + x_{m2} + x_{m3} + \ldots + x_{mn} \]

Structural equation modelling process will be outlined and discussed in more detail in chapter eight.
4.6 SUMMARY AND CONCLUSIONS

Chapter four has outlined the statistical market response models, which have been widely applied to marketing data and reported in the marketing literature. Also, some models have been presented that could be applied to market response modelling and have not been as yet applied in the marketing literature. Time series models have been concentrated on because these techniques are more capable of estimating longer run impacts and controlling endogenous relations. Moreover, they are more likely to be able to predict future variables, such as sales, and are also more likely to disentangle short and long run effects. Econometric, time series and structural equation models are all models that could be used to estimate the marketing/finance/accounting interface and provide new insight into linking marketing to financial performance. This thesis applies a combination of econometric cross-sectional modelling, time series techniques and structural equation modelling to empirically test the research propositions posed. The next chapter outlines a conceptual model that will guide the empirical tests undertaken later in this thesis.
5.0 CHALLENGING TRADITIONAL MARKETING ASSUMPTIONS

Although they often are unstated, the theoretical assumptions and objectives made within the bounds of a profession or field of study underlie, shape, and constrain both theory and practice (Senge 1990). Therefore, it is imperative that marketing scholars continually identify and articulate changes in the underlying assumptions and explicitly state the objectives of marketing. The evolution of marketing thought towards a shareholder equity focus has raised a number of issues and challenges within traditional marketing. In brief the major challenges that marketing currently faces are that: a) marketing results and evidence of brand and consumer equity are difficult to measure; b) marketing is generally considered as an option by top management; c) marketing has a weak interface with other functional areas; d) senior management requires quantitative evidence of outcomes not qualitative input/output measures; and e) there are a myriad of financial measures to choose from.

The primary purpose of this chapter is to outline a conceptual model for marketing that incorporates and highlights the flow and inter-connection of brand equity objectives and shareholder value objectives based upon financial value concepts. The conceptual model is importantly based upon incomplete markets, agency contracting, and costly monitoring and also presumes the importance of external coalitions. Finally, it is proposed that within this model nests a sub-set of financial
measurement models that relate to different markets, and that measure long-term and short-term effects.

This chapter evolves as follows. First, the importance of objectives is analysed and then a number of possible marketing objectives described in section 5.1 and 5.2). The second major component of the chapter provides an assessment of the available financial surrogates for assessing shareholder value. In section 5.3 the arguments of Srivastava, Shervani and Fahey (1998) are directly extended and deduced that shareholder value is best represented by share prices in traded stock markets and risk adjusted excess accounting earnings in non-traded markets. Third, in section 5.4 a general conceptual model is then developed which incorporates the arguments developed in the previous sections. The approach taken in this chapter theoretically places accounting earnings as a primary driver of value and directly challenges recent marketing literature that assumes cash flow is central to shareholder value.

5.1 THE IMPORTANCE OF OBJECTIVES

‘Cheshire-Puss,’ she began rather timidly, ‘...would you tell me, please, which way I ought to go from here?’

‘That depends a good deal on where you want to get to,’ said the Cat.

‘I don’t care where ...,’ said Alice.

‘Then it doesn’t matter which way you go,’ said the Cat.

This quote was used over twenty years ago by Anderson (1982) to point out that the strategic planning process is explicitly linked with the issue of corporate goal
formation - without a clear set of objectives the planning process is meaningless. Anderson further argued that the theories emerging from economics, finance and management, especially the maximisation of return on investment or shareholder wealth, were inconsistent with the philosophical methodology and ontological framework of marketing. Anderson’s focus was on the importance of inductive behavioural theories in elevating the significance of specialised functional areas within the firm. For the marketing specialist the primary objective concept was enunciated as satisfying the long-term needs of the customer coalition through the maintenance of customer satisfaction. Marketing’s role in strategic planning was to be a strong advocate for the marketing concept and to downplay the roles of accounting, finance and shareholders.

One may legitimately observe from the subsequent plethora of research that concentrates on analysing customer’s wants and needs, that Anderson’s thesis for marketing has been successful in focusing and influencing marketer’s objectives. However, recent literature has called for marketing to develop and conceptualise objectives more focussed towards business and shareholder requirements. For example:

“Marketing has not had the impact its importance justifies, either as an intellectual discipline or a business function. To a significant extent this is due to marketing’s lack of a clear objective. As a consequence, top management is often sceptical about the contribution of marketing…” (Doyle 2000, p.233).
“Ask most agency executives today for a precise explanation on the contribution of campaigns they’re involved with and typically they will be rather vague or superficial. Certainly a strong causal link to the financial value on their client’s business will likely be missing. Most likely only short-term effects based on awareness and an immediate response in sales will be mentioned. For too long agencies have talked about espousing creativity but failed to justify advertising as an investment. It’s the reason that advertising has fallen down the corporate agenda from where it was 20 years ago.” (Moss, Australian Financial Review, 12th February, 2002).

This lack of focus on financial outcomes means that marketers do not widely influence board decisions, and customer awareness and brand image metrics are generally not considered by boards. Schultz (2003) follows up by commenting that whilst most marketers are intuitively convinced that marketing and advertising builds up intangible value for the firm, they can’t relate traditional measurement approaches (awareness, attitude change, intention to buy) to financial returns. “…we can’t measure a thing and, we can’t prove much of anything’ (Shultz 2003).

In recognising these problems the Marketing Science Institute has ranked the assessment of marketing productivity (return on marketing) and marketing metrics as a top tier priority research topic for the years 2002-2004.

Hence, a key element is to choose marketing expenditure and activity that contributes to brand equity and to show how that brand equity increases

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6 Only 57% of companies surveyed had a marketing director on the board (Doyle 2000, p.234).
7 Customer based measures such as satisfaction, brand awareness and brand equity reach less than 20% of boards and brand image and differentiation metrics reach less than 10% of boards (Styles 2002).
8 Sub topics include linking internal marketing metrics (brands) to external financial metrics and measuring the short and long-term effects of marketing.
shareholder financial equity, either in the short-term or the long-term. Accepting this key element recognises that the corporate environment is controlled by exogenous factors and a firm must satisfy the objectives of the dominant external coalitions in order to survive. Further, it is argued that the two dominant external coalitions are consumers, through which a firm creates brand and consumer equity; and shareholders who focus on financial risk and return. Moreover, in such an environment a limited singular focus on consumer and brand equity is incomplete and acknowledges that marketing consists of more than one primary objective function.

Hence, consistent with the marketing research outlined in chapters two and three maximising shareholder financial equity is an accepted co-joint objective of marketing. In this sense, the conceptual model concentrates on and extends the marketing assets and/or shareholder value objectives for marketing proposed by Srivastava, Shervani, and Fahey 1998, and Doyle, 2000, amongst others. Marketing assets exist when there is a demonstrated quantifiable link between the marketing investment and the creation of shareholder value. Thus marketing assets have financial outcomes unlike other performance metrics used in marketing such as brand equity, which has many different definitions and is rarely quantified in financial terms.

Economic value added (EVA) is frequently used, but the empirical link between increasing EVA as a result of investments in marketing assets has to be proven. EVA has been very popular in corporate financial management and is available through Stern Stewart & Co, a leading
proponent of EVA analysis. The critical linkage to explore is the percentage of EVA created by customer assets (Hogan et al. 2002).

EVA is net operating profit minus the appropriate charge for all capital invested in an enterprise. Thus, EVA is a true estimation of true “economic” profit, alternatively the amount by which earnings returns or fails to deliver the required minimum rate of return that shareholders and lenders could get by investing in other securities of comparable risk (Stern Stewart & Co 2003).

However, before proceeding further, the corporate environment is first outlined and various objective functions proposed for marketing are discussed.

5.2 Marketing Objectives

Any derived objective must follow scientific axioms. For example, the objective must describe the prevailing business environment and identify the group of people to whom the activity is ultimately aimed, so that we know the nature of the relationships required. It must also tell us about the requirements of the primary group and the type of actions required in order to achieve success. Finally, a model should be deduced that potentially meets the requirements of the primary objectives and external coalitions. The model should also be supported by empirical analysis in order to substantiate derived generalisations, provide cost-benefit feedback, outline measurements that are problematic, and be flexible enough to handle changed environmental conditions. It then follows that a judgement about success is related to clear objectives for the expenditure that identifies and answers specific questions.
5.2.1 The Corporate Environment

Today’s business world is distinguished by competitive but incomplete markets,\(^9\) deregulation, internationalisation, information revolution, the separation of ownership and control, and competition for scarce resources. Further, corporations are mainly funded by shareholders equity and controlled by boards of directors and chief executive officers (CEOs). The separation of ownership and control gives rise to an agency relationship between the shareholders, managers and employees of the firm. An agency relationship may be defined as:

"…a contract under which one or more persons, the principal(s) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent" (Jensen and Meckling1976, p.308).

The modern corporation is also potentially influenced by a number of coalitions of interest, and these coalitions can be either endogenous or exogenous to the firm. Internal coalitions include the firm’s own departments and functional areas, management and boards of directors and control is determined by the strength of the agency contract. External factors cannot be directly controlled and include customers, shareholders, and society at large (Mintzberg 1979). Labour comes somewhat in the middle with the amount of control determined by the labour contracts enacted by the firm and the extent of unionisation. The corporation will alter its objectives as changes take place in the dominant coalitional structures and

\(^9\) Incomplete markets are distinguished by listed and non-listed (non-traded) stock markets and incomplete contracting between shareholders, customers, management and firm sub-units.
organisational reality is a dynamic social construction where decisions are made based on a range of factors (Pfeffer and Salancik 1978). The objective focus of each coalition, within the context of marketing expenditure, is now discussed.

**5.2.2 A Shareholder Objective**

The primary focus of shareholders is financial risk and return. Simply put, shareholders invest in order to maximise the price of their stock. Corporate boards and CEOs are the agents of shareholders. They have a fiduciary duty through the agency contract to monitor and bond the firm to the wishes of the shareholders. Hence, when a firm is listed on a stock market the objective of marketing expenditure is straightforward – to maximise shareholder value by increasing the price of the firm’s stock. The determination of stock prices in an information efficient market takes into account current economic values plus all future expected economic returns based upon the best probability estimates that are available. Maximising stock prices thus explicitly assumes an exogenous market outlook and a long-term focus on valuation. When stock is not listed then investors are required to assess the available value surrogates in order to select the appropriate metric for shareholder value. Common financial value surrogates include sales, cash flows, accounting earnings and various risk discount methods.

**5.2.3 A Customer Objective**

This focus is concerned with linking the customer to the focal products provided by the firm. The role of marketing is perceived as developing a product that fulfils the requirements of the customer, promoting that product to the customer, determining acceptable pricing, and then distributing the product to the customer. Marketing’s
emphasis in this linkage is on providing knowledge and skills that connect the customer to product design and quality issues. This emphasis underlies many contemporary methodologies for new product development and for managing the customer-product interface (Hauser and Clausing 1988). Specifically, by beginning with the discovery of customer specifications, the customer leads and, in a number of cases, may even create product activities (Von Hippel 1986).

Further, the presentation of the product to customers (through marketing communications) and pricing the product may play a significant role in facilitating customer’s demand for products. However, it is assumed that this is a secondary objective of the customer-product linkage and is dominated by customer demands (see Lehmann 1997). Hence, the major objective of marketing, from the customer perspective, is to facilitate the continued supply of products that fulfils the wants of customers at the appropriate market clearance price.

Research in this area tends to be qualitative in nature and measures the consumer’s perceived response to the marketing communications stimuli. The response is then quantified in order to determine the effectiveness of marketing communications expenditure. Researchers investigate relationships on various levels; including awareness, attitude, and behaviour.

The customer-service delivery connection extends the product focus by involving the design and delivery of ancillary actions involved in providing a firm's products to the customer. The focus is to facilitate both pre- and post-purchase aspects of the process and subsumes channel management and after-sales service type
activities. That is, ensuring that customers are satisfied with all aspects of the product offered by the firm. It may also have endogenous implications by focusing on measuring customer satisfaction with services and on changing internal processes that stand to have the greatest impact on the customer (Kordupleski, Rust, and Zahorik 1993). Recent work by Anderson, Fornell, and Rust (1997), however, has suggested that there is a cost-benefit trade off between customer satisfaction and internal efficiency.

5.2.4 A Society Objective

This objective is effectively aimed at optimising all consumer choices and making markets more efficient given there are significant market frictions and transaction costs. Consumer choices act as signals to manufacturers about their product, price and distribution preferences. According to neo-classical economics, these signals are valid only to the extent consumers make informed choices. That is, markets operate ‘efficiently’ when consumers are fully informed about relative price and quality alternatives. Information economics, however, informs us that acquiring market data imposes search costs on consumers. Markets where consumer information is perfect and available without costs are deviate cases (Hunt and Morgan 1995) and the objective of marketing is to reduce these costs to society.

But attitudes towards the role of marketing vary within the economics literature. Some economists argue that marketing is wasteful and reduces societies’ welfare (Scherer 1980, Stigler 1961). Marketing is anti-competitive because it increases the market power of heavy market communicators and creates barriers to entry.
Further, marketing takes advantage of incomplete information by stimulating greater demand (pushing the demand curve further to the right) than is justified by fundamentals. Thus, the creation of some brand equity is viewed as anti-social. This perspective is opposite to the view endorsed by most marketing professionals that marketing benefits consumers and society at large (Mixon 1994, Rust and Oliver 1994) by providing a means to communicate with consumers, introduce new products, and differentiate products from rival brands. In addition to reducing market frictions, these activities are perceived to generate greater competition between firms by producing consumers with wider information and choice sets. The role of marketing activities across society, whilst generally perceived as beneficial, is still an open issue.

5.2.5 A Management Objective

In the situation where we have separation of ownership and control, there is a potential for CEOs (the agent) to expend some of shareholders’ (the principal) resources on private and/or non-stock price maximising objectives. As such, it will pay shareholders (through the board) to provide the agent with incentives and to incur monitoring costs to encourage a convergence of interests between shareholder objectives and those of the agent (and sub-agents). For corporate shareholders these agency costs include the reduction in firm value resulting from management's consumption of perquisites, the costs of audit, implementing firm-wide monitoring procedures, and of writing bonding contracts with managers and employees.
Unfortunately, high quality monitoring systems are extremely expensive and it will generally be impossible to ensure that all of the agent’s decisions are aimed at maximising share price and shareholders’ equity. Thus stockholders face a cost-benefit trade-off in deciding how much to spend on monitoring activities. Since it is unlikely that it will pay the shareholders to implement a ‘perfect’ monitoring system, it is observed that corporations sub-optimise on implementing policies and procedures that maximise shareholder financial equity.

Perhaps the most damaging dysfunctional behaviour is for CEOs to break the long-term agency contract by focusing on short-term objectives, in order to increase own utility. This is often manifested in the manipulation of financial metrics to indicate temporary increases in short-term indicators at the expense of long-term economic returns. The example often given in marketing is the reduction of expenditures on intangible investments and marketing expenditure that generate consumer and brand equity and have long-term financial value. Hence, as Doyle (2000, p.241) argues, marketing expenditure is expanded in good times and cut back in bad times in order to increase short-term profits. This behaviour undermines the role of marketing within the firm treating it as an expense rather than an asset. The use of marketing budgets in this way has the potential to reduce the long-term share price of the corporation.\textsuperscript{10}

\textbf{5.2.6 A Marketing Department Objective}

Agency theory also leads to the recognition that management, in turn, might not implement complete monitoring systems and that there may be ‘slippage’ in the

\textsuperscript{10} The argument that this is a necessary bad outcome has some flaws. It assumes that all marketing expenditure creates intangible assets or ‘value adds’. Reductions in ineffective marketing expenditure will increase shareholder value.
application of shareholder objectives further down corporate lines. This leads to implications for both managerial and employee behaviour in that all projects that are capable increasing shareholder equity may not be championed and thus implemented. That is, from the point of view of shareholders, inappropriate or sub-optimal objectives may occur (Barnea, Haugen and Senbet 1981) and marketing departments may develop their own departmental specific objectives.

This is driven by the decentralisation of decision-making and the decay in the application of agency contracting and monitoring and leads to a kind of local rationality within sub-units of the organisation. Since sub-units tend to deal only with a small set of problems and have a limited number of inward focused goals, local optimisation may be possible, but it is unlikely that this will always lead to overall corporate goal optimisation. Furthermore, organisational sub-units typically attend to sequential problems at different times, and there is also no guarantee that consistent objectives will be pursued in solving these problems. Thus multiple objectives and goals may emerge as independent constraints imposed on the organisation through a process of asymmetric and incomplete bargaining among coalition members (Cyert and March 1963, p.43). These objectives are unlikely to be internally consistent and are subject to change over time as changes take place in the strength and application of the agency contracts.

Specifically, for the marketing department, objectives may be negotiated or set at a level after being decided amongst the group; influenced by perceptions of marketing employees applying symbolic or marketing style constructs of reality or by dominant theories of marketing. The resultant objective functions are described
by Moorman and Rust (1999) as having attributes of functional fixation and overspecialisation, and according to Simon (1964) are set at satisfying levels rather than maximisation levels.\textsuperscript{11}

5.2.7 Revisiting the Objectives of Marketing?

At this point it is instructive to summarise the arguments for a realignment of the objectives of marketing. In a resource dependent and competitive environment the objectives marketing must reflect the requirements of external coalitions in affecting the behaviour of the corporation and the sub-units within. The logic of this approach is based on the notion that in order to survive in the long run the corporation must obtain resources from the external coalitions. However, the wishes of all the various external (or internal) coalitions cannot be satisfied and some environmental pressures must be negotiated. This thesis argues that the two most influential external coalitions are customers, who impose product, service and price covenants; and shareholders, who impose financial covenants in the form of risk and return requirements. Moreover, organisational sub-units that are able to deal with these critical external coalition objectives are the ones best placed to enhance their strategic influence on the organisation.

To date, marketing has mainly concentrated on satisfying the customer objective with the assumed goal to satisfy the consumer covenants implied in delivering products and services to customers. In other words, to approach marketing effectiveness from the viewpoint of the consumer and to build up brand equity

\textsuperscript{11} Components from the seminal article by Anderson, however, argue for common or corporate goals rather than departmental goals and suggest an interpretation of Anderson’s thesis is to utilise marketing objectives to strengthen corporate objectives. Viz: “The recent marketing literature pays scant attention to the actual content of corporate goal hierarchies. Indeed marketing has shown a strong ambivalence toward the concept of corporate goals.” (Anderson 1982, p.15).
through brand recognition, recall and quality (Keller 1993, p.2). To focus on only one objective for marketing, however, is distinguished by a number of shortcomings. First, it is often a mistaken belief that market share or customer satisfaction, are complete ends in themselves, or that perceptions and behaviour are highly correlated. Second, such objectives (consider awareness and perceptions of quality) are difficult to precisely quantify and measure. Third, there is growing acknowledgement that the discipline and practice of marketing has a lack of strategic ‘clout’ in the corporate world. These points relate to assessment and measurement aspects. In effect, what can’t be measured can’t be assessed, and creates problems in terms of writing agency and monitoring contracts (in particular) between the shareholders and the marketing department. The development and agreement on financial marketing assessment metrics is essential if marketing as a business function is to reach its full strategic potential.

It also seems to be imperative to re-iterate the importance of shareholders as an important coalition group for a corporation. They provide the funds, they set the financial agenda and through the board, authorise agency contracts and ultimately legitimise the corporation as a business identity. Hence, the satisfaction of shareholders should also be considered an equally important objective for marketers. The role of enhancing brand equity and financial returns are inherently linked in a commercial and competitive environment. Quite simply, a successful firm cannot have one without the other they are a necessary partnership. Therefore marketing must have a dual role that is to satisfy both consumers and shareholders. The next section outlines the financial performance metrics that are
used to evaluate marketing performance from the customer and shareholder perspectives.

5.3 ASSESSING VALUE SURROGATES FOR SHAREHOLDER VALUE

5.3.1 Sales

To date the most common value surrogate applied to measure the effectiveness of marketing is increases in short-term sales or market share (brand sales as a proportion of total market share) (see for example Hanssens 1980a, 1980b, Bass and Pilon 1980, Aaker, Carmen and Jacobson 1982, Leone 1983, Doyle and Saunders 1985a, Kumar and Leone 1988, D'Souza and Allaway 1995, Dekimpe and Hanssens 1995a, 1999 and Butterfield 1999 amongst others). Shimp (2000, p.469), drawing on the arguments of Lodish (1986), states that an ideal measurement system would evaluate marketing effectiveness in terms of the sales volume generated. Which, is according to the logic of vaguely-right-versus-precisely-wrong objective setting, the only bona fide objective. Shimp (2000) further argues that any measure of marketing effectiveness becomes less valuable the further removed it is from the potential for generating sales volume.

One strand has also concentrated on applying time-series techniques\textsuperscript{12} and includes: Bass and Pilon (1980) brand switching; Hanssens (1980b) competition between airlines; Aaker, Carmen and Jacobson (1982) different cereal brands; Leone (1983) grocery products; Kumar and Leone (1988) brand switching from store promotions; Doyle and Sanders (1985a) the lead effects of marketing expenditure; and D’Souza and Allaway (1995) the impact of multivariate sales’

\textsuperscript{12} As is done in the next chapter to empirically test the conceptual model.
feedback. Results generally support a positive relationship between marketing expenditure and short-term sales revenue.

Some of the research has examined long run impacts but this literature has not been definitive with the finding that 90% of the effects of advertising on sales were dissipated within a few months (Clarke 1976); Broadbent (1993) finding a medium-term impact; and Dekimpe and Hanssens (1995a) estimating that 60% of the initial increase in sales persisted in the long run. More recently, Dekimpe and Hanssens (1999) argued that whilst advertising had a positive impact on sales, it did not have a long run impact on profitability. Similarly, for promotions the immediate on sales tends to be positive but reverts when prices return to pre-promotion levels (Blattberg, Briesch, and Fox 1995, Lodish 1997), and promotions for established brands do not have a consistent positive long-term impact on sales (Abraham and Lodish 1990, Ehrenberg, Hammond, and Goodhardt 1994). Some even argue that marketing activities can even diminish brand equity and the elasticity between marketing and sales is low (Doyle 2000).\textsuperscript{13}

Although increased sales revenue may be an indicator of short-term liquidity and impact, sales alone may not relate the whole story. Marketing expenditure could eventually prove to be profit reducing and/or lead to a change in the fundamental risk characteristics of the firm. For example, by selling to marginal or high-risk customers or by overselling and exposing the balance sheet of the firm to undiversified risk. That is, the eventual financial impact is unclear if sales are generated by marginal debtors that increase the proportion of bad debts and

\textsuperscript{13} Maximum elasticities reported are around 0.2, which means that a 10% increase in marketing is required to increase sales by only 2%.
chasing profitless growth has been one of the most common sources of corporate failures.

There are also agency and behavioral implications bought about by solely concentrating on sales revenue. A limited focus by management on increased sales leads to increased agency risk or, at best, satisfying behavior (Baumol 1959, Watts and Zimmerman 1986). For example, if sales managers and marketing personnel are compensated by tying pecuniary and non-pecuniary rewards to sales revenue growth, then growth in sales may be undertaken solely to increase the utility of sales staff. Thus creating a corporate culture focused on short-term sales gains at the expense of longer term financial and marketing goals. This behaviour may even lead to greater than optimal investment in firm specific sales related infrastructure or riskier credit lines.

There have been, however, reasons for using sales as a proxy for economic performance. A number of marketing campaigns are focused at the brand level and require timely feedback on the impact of marketing over short event windows. Further, profit calculations are undertaken on a discreet basis (sometimes only on an annual basis) and are not usually calculated at the brand or item micro-level. In these cases a surrogate for profitability such as sales margin, can be a timely proxy for measuring the effectiveness and impact of marketing. Further, a detailed knowledge of the operating and financial leverage of the firm is required to be assessed along with total sales revenue. This information allows the calculation of
the impact of a change in sales revenue on operating earnings and earnings per share and requires knowledge of the behaviour of fixed and variable costs.\textsuperscript{14}

Finally, increased sales revenue may be a close value-relevant proxy for the change in cash flows, and cash flows are a valuable short-term measure of liquidity (Dempsey et al. 1997). We now examine the arguments for cash flows as a surrogate for shareholder value.

5.3.2 Cash Flows

As early as 1982 Anderson argued that marketers committed to enhancing both theory and practice, must directly confront the cash flow consequences. Moreover, Day and Fahey (1988) stated if marketing is to help ensure business renewal and growth, then winning and retaining customers must also result in superior cash flows, the \textit{critical} prerequisite to augmenting shareholder value. More recently, Srivastava, Shervani, and Fahey (1998) conjectured that marketing expenditure adds value when it creates assets that generate future cash flows with a positive net present value. Srivastava, Shervani, and Fahey (1998) then proceed to develop a conceptual framework that indicates broadly the implications of the relationship among marketing, business processes and cash flows for the theory and practice of marketing.\textsuperscript{15} Finally, Buffet (1994) and Reichheld (1996) state that an important function of marketing assets is to reduce the risk attached to future cash flows.

\textsuperscript{15} Shareholder value is increased by accelerating and enhancing cash flows (both levels and residuals) and reducing the volatility and vulnerability of cash flows.
The drawbacks to using cash flow based arguments are similar to those against sales. Cash flows are a measure of short-term liquidity and indicate the immediate cash implications of expenditure. Investments and costs are treated identically as deductions from cash flows at the time they are paid. Cash flow is a pure flow concept; there is no concept of value or the capitalisation of costs as assets, such as that which occurs in traditional accounting. Cash flow is a measure of financial effectiveness that concentrates on short-term liquidity and has limited application in estimating value.

One other weaknesses contained in arguments for using cash flows as a surrogate for shareholder value in the marketing literature, is they are couched in the negative against accounting earnings. For example, statements such as brand building investments are discouraged under conventional accounting procedures because they reduce current profits, but can be shown as having a clear positive impact on share price using value based marketing analysis (Doyle 2000). A further criticism is that management has found cutting marketing investment an easy target when it has needed to boost current profits and marketing expenditure is not recognised as an asset.\footnote{Under accounting conventions the costs of marketing can be capitalised if they can be shown to create future earnings. Such costs may facilitate an increased likelihood that consumers will buy the product but they do not represent a claim to the future allegiance of customers. Hence, some accountants argue they are not property rights and so should be charged as expenses (Godfrey, Hodgson and Holmes 2003).} Therefore, accounting earnings are assumed to be short-term measures and accounting profit, is seen to have very little correlation with share price (Styles 2002). Finally, Doyle further states that shareholder value has become the new standard because of increased realisation of the defects of conventional accounting and that traditional accounting marginalises marketing. Doyle (2000, p.243) further, states that shareholder value analysis is not based on
accounting conventions, instead it is based on cash – whilst profits are subjective cash is a fact. Regardless of the normative conviction of these arguments the matter is an empirical question and the evidence is reviewed in a later section.

5.3.3 Accounting Earnings

Traditional accounting techniques calculate income by matching current expenses against current revenue. For example, sales are adjusted for estimated bad debts; purchases of assets are not written off in the current period but depreciated proportionately against sales; and expenses incurred in gaining revenue are written-off in the period they occur even though there is no cash transaction. This is called the accrual process. Note: that this process allows expenditure to be either accrued (capitalised) as an asset or written off as a period expense. This option is not available under cash flow accounts. Needless to say, the application of the principles of conventional accounting involves a good deal of subjective judgment and estimation by accountants, and has been widely criticised in the marketing literature.

Close observation of the corporate world, however, reveals that accounting earnings are widely utilised. Income statements and balance sheets are the primary financial reports tabled to boards of directors, financial analysts concentrate on estimating future earnings, accounting earnings are more closely aligned to stock prices than cash flows, and the valuation of share prices is undertaken by applying models which focus on estimates of future residual earnings (Ohlson 1995). Finally, the agency or goal congruence relationship between employees and the firm is better aligned, and agency costs reduced, by
tying employee rewards to a longer term financial measure. The most common way to do this is in practice is to implement profitability-based covenant and incentive schemes (Watts and Zimmerman 1986).\(^7\)

In the finance literature, the theoretical debate on the relative importance of cash flows and earnings can be traced back to the writings of Lee (1974), who stated that calculating earnings using accrual techniques was ineffective as a valuation concept. Earnings (income) were seen as little more than a convention: many-sided and ill defined, \textit{ex poste} in focus, and suffering from flexible accounting techniques, subjective judgment and manipulative practices. On the other hand, the information needs of investors were argued to be best served by cash flow analysis, because cash represented the capacity to consume and command current resources. In addition, cash portrays the ability of the enterprise to survive, is not contaminated by innumerable measurement problems, is more objective than earnings, and is easily understood by a wider cross-section of the investing public.

The debate can be classified in three ways (see Figure 5.1). First, earnings and cash flow might be considered separate metrics that are individually important. Earnings are important because it provides investors with information about the firm’s long-term solvency, whilst cash is separately important because it contains information about short-term liquidity (panel A). Second, it can be argued that earnings provide irrelevant information or no incremental information beyond that contained in cash flow data (panel B). Third, earnings through the accrual process

\(^7\) Profitability is a long-term measure because the accrual process applied by accountant’s matches all current and expected expenses against revenue. This has the effect of retaining internal funds within the firm in order to fund asset replacement and maintain firm operations.
add long-term price relevant information and dominate cash flow data in pricing stock (panel C). Intangibles also influence stock price and future earnings which also are incorporated in stock price. This is the case supported by the empirical evidence.

The empirical evidence affirms that; accounting earnings has a higher correlation with stock prices than does cash flows (Ball and Brown 1968, Dechow 1994), cash flows are dominated by earnings (Hodgson and Stevenson-Clarke 2000), earnings predict future cash flows better than current cash flows (Dechow, Kothari and Watts 1998), and firms who engage in earnings smoothing have a higher relationship with the firm’s stock price (Subramaniam 1996, Schipper 1989). The reported metrics show that approximately 55-62% of stock price is explained by conventional accounting (Collins, Maydew and Weiss 1997, Francis and Schipper 1999), accounting earnings dominate cash flows by a ratio of up to two to one (Hodgson and Stevenson-Clarke 2000), and the overall explanatory power of conventional accounting is higher for intangible-intensive firms (Collins, Maydew and Weiss 1997).

\[\text{As Black (1993, p8) states: …(theoretically) if we choose accounting rules so that the earnings figure gives us a good an estimate of value as accounting numbers can give, then earnings will be better (by definition) than cash flow. Earnings will give a better estimate of value by itself than cash flow will give by itself; and earnings together with cash flow will be no better than earnings alone.}\]

\[\text{Earnings Rs are on average 26% and cash flows 13% and cash flows only add about 2-3% to the explanatory power in a multiple regression.}\]
Figure 5.1: Alternative Outcomes of the Information Content of Cash Flows versus Earnings for the Purpose of Estimating Shareholder Value

Panel A: Both are individually and incrementally important for different economic reasons. For example, short-term liquidity versus long-term solvency arguments.

Panel B: Cash is important but earnings are irrelevant or dominated by cash flow (per Srivastava, Shervani and Fahey 1998, Doyle 2000).

Panel C: Each component is individually important but earnings are more important. Cash adds incremental information on liquidity. Consistent with more information being imparted in the accrual process and intangibles incorporated in future earnings (per recent finance research).

Notes:
- The rectangle box represents the stock price or shareholder equity
- Other information will include economic and political information as well as book values of net assets
Hence, in marketing terms, there should be a higher association between accounting earnings, stock prices and marketing expenditure if that firm generates intangible assets via their marketing activities. Simply put, earnings smoothing and the management of accruals provides a less volatile, stable and longer term financial indicator than does raw cash flows (Gibbins and Willett 1997, Schipper 1989).

5.3.4 Risk Adjusted Accounting Earnings as a Value Estimator

The residual earnings value model (Ohlson 1995) calculates value as the sum of current book value and the discounted present value of expected abnormal earnings, defined as forecasted earnings minus a capital charge equal to the forecasted book value times the discount rate. Abnormal earnings forecasts are the difference between expected earnings and a risk adjusted capital charge, i.e. \( E_t [X_t+k - r BV_t+k-1] \). Using abnormal earnings forecasts, the share price at time \( t \), \( P_t \), is expressed as:

\[
P_t = BV_t + \sum_{k=1}^{\infty} E_t [X_t+k - r BV_t+k-1] / (1 + r)^k
\]

Where \( BV_t \) is the book value of equity at time \( t \), \( E_t [\cdot] \) the expectation operator based on information available to the market (financial analysts, time series forecasts, and so on) at time \( t \), \( X_t \) is the earnings for period \( t \), and \( r \) the risk-adjusted discount rate applicable to the equity earnings. The Ohlson model primarily relies on forecasted earnings and current book value. Abnormal earnings are derived from competitive advantage gained from intangibles and marketing assets and recognises the superior income stream generated. Thus intangibles
are recognised through the higher earnings stream generated which is then capitalised through the risk adjusted required rate of return. The Ohlson model requires a required rate of return to compensate for risk factors. When shares are listed and priced on stock markets then the risk of the corporation is determined by the covariance term (i.e. $C_{im} = \rho_{im} \sigma_i \sigma_m$) derived from the capital asset pricing model (see Elton and Gruber 1995, Ch.13). The relevant relative measure of risk is estimated by its covariance standardised by the market portfolio’s variance ($\sigma_m^2$), as this measures the contribution of the risky asset to the riskiness of a diversified portfolio. This measure of risk associated with an investment in the ith risky corporation is often referred to as it’s ‘beta’ ($\beta_i$) where:

$$\beta_i = \frac{\rho_{im} \sigma_i \sigma_m}{\sigma_m^2}$$  \hspace{1cm} (5.2)

Using beta as the measure of risk, the equation of the security market can be written as follows:

$$R_i = R_f + \beta_i (R_m - R_f)$$  \hspace{1cm} (5.3)

The covariance term ($C_{im}$) is the only factor peculiar to the ith corporation, which explains the variability of the expected return. $R_f$, the risk free rate, $R_m$ the return on the diversified market portfolio, and $\sigma_m^2$ the variance of the market portfolio are the same regardless of which particular corporation ($i$) is being considered. For example, the difference between the expected return of corporations X and Y is due to differences in their covariance terms. Such risk is called systematic risk, and it cannot be diversified away by expanding the portfolio of corporations held because it depends upon factors that affect the whole market. Thus, an asset’s beta value measures its non-diversifiable risk. $R_i$ is the required rate of return for
that beta risk and is used to discount future earnings or residual earnings streams in valuation models. Again this model can only be utilised when there are listed stock markets, and when this is not the case, other surrogates for risk must be used to discount earnings’ streams. This issue is addressed in the next chapter.

5.3.5 Intangible Assets

The topic of intangible asset valuation has been widely research by Lev. Lev contends that intangible assets are the major driver of growth in most economic sectors but their measurement has eluded managers, accountants and financial analysts (Lev 2001). Intangible assets are absent from accounting book values thus, the measurement of marketing intangible assets is extremely important because the valuation of shareholder equity is otherwise incomplete. Intangible assets of a firm include innovation, human capital, organisational processes, and customer and supplier relations (marketing). Figure 5.2 outlines the process of measurement of intangible assets. Intangible assets can be calculated by first estimating required rates of return on physical and financial assets and then subtracting from this the actual performance (see the Ohlson formula in the previous section). The result is intangible-driven earnings, capitalising this yields an estimate of intangible capital (Gu and Lev 2001). Gu and Lev (2001) has concluded that R&D, advertising, information technology and various human resource practices were empirically identified as drivers of intangible capital, and in turn corporate value. The inclusion of intangible assets in the earnings stream provides more information to investors and it was demonstrated that intangible earnings measures successfully distinguish between over-and under-valued stock prices. Thus, measures of intangible assets provide more relevant information
than conventional performance measures and empirically had a high correlation with stock returns.

5.3.6 Which Financial Measures?

The above discussion raises the following issue; if marketers are faced with arguing the financial merits of creating marketing assets in a situation where there is no price mechanism then what flow metric should be utilised. The business world has developed a number of measurement methodologies that assess financial success (sales, cash flows, earnings and risk adjusted earnings). They

Adapted from Gu and Lev (2001)
are financial abstractions because they are summaries of the myriad of underlying economic activities and transactions, and have been pragmatically developed and refined by accountants and financiers since the days of the Italian trading cities (circa 12th century). It is also worth noting that because markets and agency contracts are incomplete and imperfect these value surrogates will not always be perfect representations. Finally, an important component of the above model is that traded markets are incomplete and equity is not always priced and traded. Therefore, in non-traded situations where conservative accountants are reluctant to recognise and capitalise marketing expenditure as intangible assets, then marketers must convince management of the attributes of their marketing activity and how they should be capitalised. This requires a conceptual understanding of each of the financial flow concepts. But first a hierarchy of measurement metrics for assessing marketing performance is presented.

5.3.7 The Hierarchy of Marketing Performance Measures

In light of the discussion on measuring marketing effectiveness presented in the previous sections and preceding chapters a hierarchy of marketing performance metrics can be developed. As discussed marketing effectiveness can be measured using a number of performance metrics some of which connect the marketing to the customer and others connect marketing to shareholders. Figure 5.3 presents a hierarchy of performance metrics for marketing. The pyramid starts with base measures that are traditionally used to assess marketing performance and finishes with stock price at the pinnacle. As we move up the pyramid the further we move away from the customer and the closer we move towards a

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20 We do not have a full set of ex-ante arrow debreu markets and the agency contract with the accounting profession is based on the principle of conservatism.

21 Less than 10% of corporations are traded on stock markets in the US or Australia.
shareholder objective, and the greater is the challenge to link marketing to the financial performance.

How value surrogates are applied to estimate shareholder equity is an area that has only been touched on in the marketing literature with most arguments normative in tone. The value of the hierarchical model is that it provides general guidance to which financial metric should be used, given the contextual market or circumstances. It is judgmental but does so based upon the past literature and the scientific evidence, both theoretical and empirical. Moreover, by understanding this valuation literature marketers’ are better placed to influence board debate and to make positive financial contributions from their activities. Section 5.4 completes this chapter by providing a conceptual model that outlines the concepts of stock and flow models; and the use of sales, cash flows, earnings and risk adjusted earnings as proxies for shareholder value in traded and non-traded markets.
5.4 CONCEPTUAL MODEL

5.4.1 The General Nature of the Relationships

Figure 5.4 outlines a conceptual model that illustrates the flow effects of jointly accepting shareholders and consumers as dominant external coalitions. The environmental factors remain the same as were previously described. In particular, the incomplete markets and separation of ownership and control postulates translates into the following: (i) there is imperfect information flow and uncertainty about the future; not all firms are listed and traded on stock markets; accountants do not always measure and report on “true value”, and there is costly monitoring and imperfect agency relationships. Given this environment, the
conceptual model describes that the relationships between customers and partners can be estimated as contributing to shareholder’s financial equity. The concepts of financial value surrogates are also discussed. The overall guiding postulate is a firm that has a strategic long run investment and survival perspective must, at some stage, convert brand equity and marketing assets into financial value.

5.4.2 The Flow Effects of Marketing

Marketing communications are potential marketing asset, financial value and intangible asset creators. Utilising the classification scheme of Coviello et. al. (2002) marketing expenditure can be divided into customer and partner relationship expenditures. Both customer and partner types of marketing are undertaken in order to induce short and long-term benefits to the firm. However, within the sub-classifications there are different emphases between switching and retention behaviour. For example, customer transaction marketing is more likely impersonally aimed at the mass market for the purpose of (instantaneous) customer attraction. But, it does incorporate some long-term components that are targeted at inducing customer retention and brand equity, such as quality product and superior service. The areas of database and interaction marketing are more focused at customer retention, building brand equity and establishing long-term relationships between customers and the corporation. Hence, customer marketing is theoretically related to both inducing customers to buy products in the short-term and in retention and brand building in the longer term.

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22 Coviello, Brodie, Danaher and Johnston (2002) classify according to transaction (transactional) and relational (database, interaction, network) based on exchange and managerial dimensions. Relational marketing is more related to building retention, interaction, co-ordination and building external marketing assets with individuals and organisations.
The second type of marketing expenditure is undertaken in order to create partner relationships. Partner relationships provide more emphasis to supporting the notion of competitive advantage, improving brand image, reputation and partner interactions. Building partner relationships is also more focused towards a longer term approach by building sustainable relationships, together with strategic foundations and strategies. These include channel, networking and co-branding activities that are connected relationships between a network of firms. Partner marketing aims to co-ordinate sellers and buyers across multiple firms for resource exchange and market access for mutual benefit. A typical example is the airline schemes that link networks and facilities and thus enhances branding and customer loyalty through reward plans.

In turn, customer and partner relationships can be evaluated by reference to market performance metrics (Srivastava, Shervani and Fahey 1998). These can be quantitative or qualitative. Qualitative brand equity is evidenced by positive customer attitude, loyalty, retention, recognition, and perceptions of quality. Brand equity can also be manifested in more economic terms. For example, the higher the entry barrier created, the more extensive the channel network and information system and the greater the co-branding and franchising, then the higher should be the brand equity of the firm. By creating brand equity firms are able to charge higher prices (Farquhar 1989), attain greater market shares (Boulding, Lee and Staelin 1994), develop more efficient client communications programs because well differenced brands are more responsive to advertising and promotions, (Keller 1993), command greater buyer loyalty and distribution clout in the marketplace (Kamakura and Russell 1994), deflect competitive initiatives (Srivastava and
Shocker 1991), and develop and extend product lines (Keller 1993, Keller and Aaker 1992).23

From the perspective of management responsible for financial performance, brand equity is difficult to precisely quantify and measure in terms of shareholder equity and they are not relied upon by to a great extent by corporate boards. To shareholders they are only preliminary indicators of value and, hence, cannot be ends-in-themselves as ultimate shareholder outcomes. On the other hand, marketing performance components provide value to customers by enhancing information processing, confidence, satisfaction, and should enhance value to the firm by creating long-term competitive advantage – that is they create marketing assets. In summary, marketing assets are a necessary, but not sufficient, indicator of the presence of shareholder equity.

Marketing assets, if they have financial consequences, will provide a series of future excess economic flows. When there is complete information markets about these consequences and where all stock is listed, then this information will be immediately impounded in the price of stock. This is shown in Figure 5.4 by the direct unbroken line from marketing assets (a marketing concept) to intangible assets (a financial concept), which is then evidenced by changes in stock prices that can be traced back to marketing activities.

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23 As previously noted that there is substantial disagreement on the social value of creating marketing assets. Whilst some take the view that the marketing expenditure increases competition and lowers consumer search costs (Mixon 1994; Telser 1964; Rust and Oliver 1994), others argue that they reduce consumer welfare by creating barriers to entry (Galbraith 1958; Scherer 1980; Stigler 1961).
Figure 5.4: A Conceptual Model of the Stock and Flow effects of Marketing into Shareholder Value

Environmental Factors

Customer Relationships
- Transaction marketing
- Database marketing
- Interaction Marketing

Partner Relationships
- Channel marketing
- Network marketing
- Co-branding

Marketing Performance
- Price Premium
- Marketing penetration
- Trial
- Referrals
- Adoption
- Recognition/recall
- Perceptions
- Economies of scale and scope
- Loyalty/retention
- Monopoly power

Marketing Assets

Intangible Assets

Traded Equity
- Stock Price

Non-traded Equity
- Sales
- Cash Flow
- Earnings
- Risk Adjusted Earnings

SHAREHOLDER VALUE

However, the reality is that markets are incomplete and this has two major consequences. First, there is uncertainty about the meaning of the marketing event. That is, not all of the relevant information related to the marketing asset is immediately incorporated into price. In the marketplace, much of this uncertainty is mitigated by the lagged release of flow metrics contained in financial reports after consequences have been observed, recorded and attested. Hence, there are secondary delayed price impacts represented by the arrow from intangible assets into sales, cash flow, earnings and risk adjusted earnings, and thence across into stock price (this is represented by the broken lines in Figure 5.4). In this sense the flow metrics are a confirmation of the expectations initially impounded in stock price, or else represent new information that has not been incorporated.

Second, not all stocks are listed on stock markets and, therefore, there is no determined price that represents the value of the stock of future excess flows of the firm. Thus we are unable to directly observe market value and need to rely upon price surrogates. That is, the indirect flow effect whereby the increase in financial performance attributable to marketing assets is revealed by increased (above normal) sales, cash flow, earnings and risk adjusted earnings. Short-term flow effects will create a temporary increase in these metrics, but more permanent impacts will create inter-temporal flows and add long-term economic value. When evidence is revealed of these long-term impacts, through the flow statements, then an intangible asset is created (represented by the arrow from the financial performance metrics back into intangible assets). Thus, intangible assets lead to
excess long-term flows\textsuperscript{24} and evidence of these flows supports the recognition of intangible assets.

In a listed and traded equity market this information is incorporated in stock price (again represented by a flow from stock price back to intangible assets), either at event date or with confirmation from the lagged flow statements. But in a non-traded equity market the recognition of this financial asset is left to management and a ‘conservative accountant’. The usual case is that, because marketing assets are intangible and the nature of their valuation is subjective,\textsuperscript{25} they do not appear on the firm’s balance sheet. Thus, in traded markets the discrepancy between market price and the book value of tangible assets shows that investors price these attributes, but in non-traded markets (in most cases) the only evidence of intangible assets is higher than normal flow effects.

Thus, empirical evidence that marketing assets have financial value is evidenced by either: (i) a direct impact on the price of stock related to the marketing asset created through marketing activity, (ii) a lagged effect on price that is revealed by increased abnormal flows through the financial statements, and (iii) increased flow effects on the financial statements. Impacts (i) and (ii) are considered as having long run effects and (iii) can have either temporary or longer term flow effects that are not captured by a price mechanism or by accountants and revealed through the creation of an intangible asset.

\textsuperscript{24} Defined as greater than one year.

\textsuperscript{25} This non-recognition is related to accounting rules that require intangible assets to be only recognised on the basis of probabilities of the future economic flows. Probability for recognition is assessed at greater than 50%. Further, the recent passing of the Sarbanes-Oxley Act 2002 has tightened the accountability standards for CEO’s, imposed considerable penalties for incorrect reporting, requires an accounting oversight board for each company and generally requires any valuation issues to be accurately resolved. These changes will more-than-likely lessen the proclivity for the recognition of marketing assets.
5.5 SUMMARY AND CONCLUSIONS

This chapter highlighted the importance of shareholders as an important external coalition group for a corporation and marketers. It further argued that the roles of enhancing brand equity and financial return are inherently linked in a commercial and competitive environment. That is a successful firm cannot have one without the other; they are a necessary partnership. When stocks are listed then correlation between marketing activities and increased stock prices provides an indication that marketing has created an intangible (financial) asset. However, given incompletely traded markets, then shareholders must rely on value surrogates or flow statements as indicators of increased shareholder equity.

An examination of the theoretical and empirical literature revealed that accounting earnings have the highest correlation with stock prices. The Ohlson model which applies book values and risk adjusted excess accounting earnings was described as an appropriate model to estimate shareholder value. The presence of abnormal risk adjusted accounting earnings also indicates that firms are generating income from intangible assets.

But, given incomplete agency markets, costly monitoring and flexible accrual accounting techniques; accounting earnings may be subject to accruals that do not fully represent financial abstractions of economic events. The next chapter recognises the presence of incomplete markets and provides an application that utilises the concept of abnormal risk adjusted earnings as a surrogate for shareholder value using data from a non-listed sector of the economy. This application also illustrates how marketing expenditure can be assessed by
adjusting the earnings stream for accrual management, the impact of both exogenous and endogenous factors, and the use of risk proxies. The following chapters then go on to test other components of the conceptual model by concentrating on the relationship between MC and shareholder value in listed markets.
CHAPTER SIX - TESTING THE MODEL IN INCOMPLETE MARKETS – THE IMPACT OF MARKETING ON UNTRADED EQUITY

6.0 SHAREHOLDER VALUE CREATION IN INCOMPLETE MARKETS

Given incomplete markets, costly monitoring and less than perfect measurement systems, marketers are faced with the daunting problem of assessing the financial impact of the marketing investment on shareholders equity. In the previous conceptual chapter it was argued that risk adjusted excess accounting returns were the appropriate financial proxy when there is not a direct measure of shareholders equity. This, however, raises further problems related to the use of flexible accrual accounting techniques. This means that accounting earnings may be subject to accruals that do not fully represent financial abstractions of economic events. A further related problem is how to measure risk when there is no past record of price movements that can be utilized to estimate the risk parameters from the capital asset pricing model (CAPM).

This chapter recognises these problems and provides an application of how marketing expenditure can be assessed after adjusting accounting earnings for accrual management, endogenous factors, expected normal earnings, and proxies for risk. The time series impact of total marketing expenditures is then estimated as a function of abnormal risk adjusted earnings and assessed as to whether marketing does add economic (financial) value. The data is also controlled for size effects by decomposition the data into small and large size firms. The purpose of this chapter is to apply components of the conceptual model developed in chapter
five by empirically testing for the impact of MC expenditure by using data from an unlisted sector of the economy.

6.1 INDUSTRY AND DATA

The analysis uses data from Australian credit union firms. A number of factors were important in choosing the data set. In Australia, the credit union sector is a competitive, but not a dominant player in the banking/finance sector, accounting for approximately 3-5% of financial sector assets. They undertake much the same role as small banks do in the US and have similar competitive strategies and financial covenants as banks. As the financial services sector has become progressively more open and competitive in the 1980s and 1990s this has provided opportunities for more aggressive and innovative market makers. In such an environment, customer switching between institutions is predominant and expenditure on marketing activities to influence loan and service behaviour is an important proportion of total expenditure.

The degree of market concentration that credit unions exert is also important to the research design. Studies have suggested that there is a deal of over advertising in some industries (Wildt 1974, Buzzell and Gale 1987) related to the market share or monopoly power exerted by the study group. As the degree of monopoly power increases, a business tends to have sharply higher profit margins, reduced turnover ratios and a decrease in marketing costs as a percentage of total expenditure. By utilising the credit union sample any market share/monopoly influences are reduced because of the relative small size of credit unions and the

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26 This figure has remained relatively constant over the 1987-1996 period (source: Annual KPMG Financial Institutions Performance Surveys).
fact they are price takers in the financial services market. Further, sales or cash flow data generated is not a reliable financial metric in the banking sector. Revenue is largely determined by interest rates (to a great extent exogenously controlled by government) and high cash flow liquidity is less than desirable (being an indicator of dormant funds or slack demand). One other important factor is that the banking/financial sector also produces metrics that classify assets into risk classes and this enables accounting earnings to be assessed according to the risk generated by operating and marketing activities.

Data consists of financial statements of one hundred and forty three credit unions in the dominant New South Wales (NSW) sector which numerically represents approximately half of the Australian market. Data were provided by the NSW state supervisor of co-operative societies and consists of quarterly reports extending from June 1987 through to December 1994. Contained in the data are details of revenue, expenditure, operating earnings, assets, loans (split into various risk classes), and gross marketing expenditure. Risk adjusted earnings (or profitability)\textsuperscript{27} was measured by taking the ratio of quarterly operating earnings divided by risk weighted assets (QRWA) using the AFIC definition of risk weighting (see Appendix 6.1). Marketing expenditure was transformed into a ratio by dividing quarterly marketing expenditure by total quarterly expenditure.

Finally, the major purpose of marketing expenditure in credit unions is to market the loan portfolio, which constitutes up to 90% of the assets of the business. Other areas that are marketed include insurance products, superannuation and

\textsuperscript{27} The terms profitability and risk adjusted earnings are used interchangeably.
investment portfolios; but overall they constitute relatively minor components of the overall business. However, whilst the purpose of marketing activities is relatively homogenous, the form in which the marketing is undertaken may not be consistent. This issue is considered in the next section.

6.1.1 Size and Marketing Impacts

Corporate culture could influence the form and amount of marketing expenditure and it is hypothesised that this differs between small and large credit unions, consistent with the size affect found in prior marketing research (e.g. Dekimpe, Hanssens and Silva-Risso 1998). Small credit unions, which are more likely to be located in rural areas or aligned with specific bond membership, may not be as market aggressive and may utilise marketing tools as a defensive mechanism to maintain market share. In contrast, large credit unions located in city precincts and faced with more intensive competition, are more likely to have formal agency and management contracts that are related to financial performance. Ceterus paribus, this should induce a more proactive approach to their marketing decisions. Additionally, there is a well known size effect whereby higher management quality tends to be positively correlated with firm size and profitability; and management quality is associated with more effective marketing efforts and attractive product lines (see Jacobson, 1988 for a review). The next section reports the results of a questionnaire survey from a subset of the data sample.

6.1.2 Marketing Expenditure Based on Size

The above discussion suggests that the allocation of marketing expenditures within small and large credit unions needs to be considered before a direct comparison
can be made about the ability to contribute to risk adjusted earnings or profitability. Since the data set only reports gross marketing expenditure, a more detailed understanding of individual firm marketing budgets is required before conclusions can be drawn.

In order to achieve this, a sample of thirty credit unions was surveyed in order to ascertain the breakdown of their marketing communications (MC) expenditure. The representative sample was chosen to proxy the overall ratio of small and large credit unions in the data set (ten large and twenty small), and was selected randomly. Each selected credit union was mailed a questionnaire that was directed to the financial controller/senior accountant requesting them to provide a break down of their MC into four main categories. The categories were: (1) print - pamphlets, brochures, newsletters and information mail-outs to members, (2) advertising - TV, radio, newspapers and billboards, (3) sponsorship, and (4) any other forms of MC. A number of other questions were related to the perceived importance and purpose of MC. Non-responding credit unions were followed up with a direct telephone call from the authors explaining the nature of the research. This, in turn, resulted in a final response rate of 100%. Results are presented in table 6.1.

The Mann-Whitney test shows that all categories of MC differed between small and large and were significantly different at the 10% confidence level. Indications are that large credit unions spend over half of their marketing budget on media advertising compared with only a fifth by small credit unions who concentrate their budget on print (78%). Large credit unions also have a more diversified marketing
budget spread more evenly across categories. These results are generally consistent with ‘the law of dominance’ (Light 1990), that larger credit unions allocate a higher proportion of their budget towards media advertising, and that smaller credit unions concentrate on providing ‘print media’ to members. Further, when MC as a proportion of total expenditure is compared, small credit unions spend less of their total expenditure on marketing (1.7% compared with 2.5%), and they also spend less on marketing as a proportion of total income (1.5% compared with 2.3%).

Table 6.1: Decomposition of Marketing Communication (MC) by Category - Small and Large Credit Unions

<table>
<thead>
<tr>
<th>MC Type</th>
<th>Av.% Small</th>
<th>Av.% Large</th>
<th>Mean rank Small</th>
<th>Mean rank Large</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print</td>
<td>78</td>
<td>20</td>
<td>9800</td>
<td>4400</td>
<td>0.020</td>
</tr>
<tr>
<td>Advertising</td>
<td>19</td>
<td>53</td>
<td>6500</td>
<td>11000</td>
<td>0.053</td>
</tr>
<tr>
<td>Sponsorship</td>
<td>0</td>
<td>10</td>
<td>6000</td>
<td>12000</td>
<td>0.010</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>17</td>
<td>6500</td>
<td>11000</td>
<td>0.009</td>
</tr>
</tbody>
</table>

Notes:
- Sample consists of 10 large and 20 small credit unions.
- Print MC includes pamphlets, brochures, newsletters, print media and information mail outs.
- Advertising MC includes TV, radio, newspapers and billboards.
- Non-parametric Mann-Whitney tests used to estimate significance.

The survey confirms there is a difference between how small and large credit unions allocate their marketing communications budget. Small credit unions have a relatively smaller budget both in terms of dollar amount and as a proportion of total expenses. The marketing tools they use tend to have higher information content, are selective and probably targeted at current consumers.28 Hence, in order to control for differential marketing effects, management, location,
competitive factors and corporate culture, the data is split between small and large credit unions. Small credit unions are defined as having assets up to $20 million and large credit unions as having assets greater than $20 million as at June 30, 1992. Small credit unions account for ninety-nine firms, or 69% of the total sample, and large credit unions represent forty-four firms, or 31% of the sample.

### 6.1.3 Research Questions

The first research question is related to testing the aggregate relationship between MC and profitability. If a positive relationship is established then it is instructive to establish the directional response. For example, if marketing expenditure is associated with excess profitability, either contemporaneously or with a lag, then this supports the notion that marketing expenditure creates positive financial flow benefits and possibly creates financial brand equity (intangible assets).

The second question examines whether marketing could be viewed as a residual decision from the budget or accounting process. This means that marketing is increased only after earnings increase, that is marketing is used to soak up excess earnings and regarded as a passive residual of the budgetary process. If this is the case, then the relationship between marketing expenditure and earnings is weak and the case for viewing marketing expenditure as a creator of increased financial flows or as an asset is considerably weakened.

Third, substantial funds are needed to support marketing campaigns and small credit unions may suffer from a lack of sufficient resources or economies of scale to mount such campaigns. This poses a further interesting research question. Do
the more concentrated ‘information policies’ of small credit unions have a greater association with earnings, or does the higher more diversified media focused marketing budgets of large credit unions have a greater influence on earnings?

6.3 STATISTICAL METHOD

Pooled time series/cross section (panel data) analysis will be applied to analyse the two credit union data sets. Panel data are usually gathered on micro units, like individuals, firms and households and utilized because variables can be more accurately measured at the micro level, and biases resulting from aggregation over firms can be eliminated. There are a number of other advantages with using panel data techniques for the credit union data. Panel analysis allows the researcher to adjust for the time-dependent nature of the data, it allows control of individual heterogeneity within a class of firms, provides more informative data from each class, and colinearity can be controlled thus provides more degrees of freedom. Overall, panel data estimation is more efficient when data is compromised by pooling and is time-dependent. In summary, panel data analysis is better able to identify and measure effects that are simply not detectable in pure cross-section or pure time-series applications. A technical overview is now provided.29

6.3.1 Pooled Panel Regressions

The class of models that can be estimated using a pool object can be written as:

\[ y_{it} = \alpha_{it} + x_{it}' \beta + \varepsilon_{it} \]  \hspace{1cm} (6.1)

29 The technical discussion relies on Baltagi (2001) and the EVIEWS Command Manual, Chapter 21. All modelling is undertaken by the use of the EVIEWS software statistical package.
where $y_{it}$ is the dependent variable earnings, $x_{it}$ and $\beta_i$ and are $k$-vectors of non-constant regressors and parameters for $i = 1, 2, \ldots, N$ cross-sectional credit unions. Each credit union is observed for dated periods $t = 1, 2, \ldots, T$. Hence the data can be viewed as a set of cross-section specific regressions so that there are $N$ cross-sectional equations:

$$y_{it} = \alpha_i + x_{it}' \beta_i + e_i$$ (6.2)

each with $T$ observations, stacked on top of one another. The stacked representation can be expressed as:

$$Y = \alpha + X\beta + \varepsilon$$ (6.3)

where $\alpha$, $\beta$ and $X$ are set up to include any restrictions on the parameters between cross-sectional units.

$$\Omega = E(\varepsilon \varepsilon') = E\begin{bmatrix} e_1 e_1' & e_2 e_1' & \cdots & e_N e_1' \\ e_1 e_1' & e_2 e_2' & \cdots & e_N e_2' \\ \vdots & \vdots & \ddots & \vdots \\ e_1 e_N' & \cdots & e_N e_N' \end{bmatrix}$$ (6.4)

The basic model treats the pool specification as a system of equations and is estimated using ordinary least squares (OLS) regression. This specification is appropriate when the residuals are contemporaneously uncorrelated, and time-period and cross-section homoskedastic:

$$\Omega = \sigma^2 I_N \otimes I_T$$ (6.5)
The coefficients and their covariances are then estimated using the usual OLS techniques applied to the stacked model.

### 6.3.2 Fixed Effects

The fixed effects estimator allows $\alpha_i$ to differ across the cross-section of credit unions by estimating different constraints for each firm. The fixed effects model is considered an appropriate specification if one is focusing on a specific set of $N$ firms that are theoretically hypothesised to have common characteristics, such as small and large firms (Baltagi 2001). Hence, inference in this case is conditional on the particular $N$ firms.

The fixed effects are computed by subtracting the “within” mean from each variable and estimating OLS using the transformed data:

$$y_i - \bar{y}_i = (x_i - \bar{x}_i)' \beta + (\varepsilon_i - \bar{\varepsilon}_i)$$

where $y_i = \sum_i y_{it} / N$, $x_i = \sum_i x_{it} / N$, and $\varepsilon_i = \sum_i \epsilon_{it} / N$.

The coefficient covariance matrix estimates are given by the OLS covariance formula applied to the mean differenced model:

$$\text{Var} (b_{FE}) = \sigma_w^2 (X' \tilde{X} )^{-1}$$

$$\sigma_w^2 = \frac{e_{FE}' e_{FE}}{NT - N - K} = \frac{\sum_i (y_{it} - x_{it}' b_{FE})^2}{NT - N - K}$$

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where \( e_{Fe}^2 \) is the SSR from the fixed effects model.

### 6.3.3 Cross-Section Weighting

Cross-section weighting is also applied to the panel data. Cross-section weighted regression is appropriate when the residuals are cross-section heteroskedastic and contemporaneously uncorrelated:

\[
\Omega = E(\varepsilon \varepsilon') = E \begin{bmatrix}
\sigma^2_i I_{T_1}; \ldots; 0; \ldots; 0 \\
0; \ldots; \sigma^2_{i_2} I_{T_2}; \\
0; \ldots; \ldots; \ldots; \sigma^2_{i_N} I_{TN}
\end{bmatrix}
\]

(6.9)

EViews performs feasible generalized least squares (FGLS)\(^{30}\) with \( \sigma^2_i \) estimated from a first-stage pooled OLS regression. The estimated variances are then computed as:

\[
\hat{\sigma}^2_i = \sum_{t=1}^{T_i} (y_{it} - \hat{y}_{it})^2 / T_i
\]

(6.10)

where \( \hat{y}_{it} \) are the OLS fitted values and the estimated coefficient values and the covariance matrix is given by the standard GLS estimator.

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\(^{30}\) See Baltagi, 2001, pp.18-19 for an extended discussion.
6.3.4 Modelling the Earnings Series

Whilst the use of accounting earnings is advocated as a proxy for long-term economic performance, there are also some pitfalls that should be taken into account when considering the research design. The accrual accounting procedure matches all resource usage (expenses) against sales revenue thus guaranteeing the integrity of earnings as a long run economic measure. However, this matching procedure is applied according to asymmetric accounting principles\(^{31}\) that induce serial correlation in the calculation of earnings. The use of historic cost measurement does likewise. This is because amortization (expensing) of resource usage is calculated on outdated costs whilst revenue is costed at current prices, leading to positive autocorrelation in earnings. Other factors that induce serial correlation include seasonality and industry-wide effects such as increased borrowing caused by overall reductions in interest rates.

There is also substantial evidence that accountants have the ability to manipulate earnings in order to stave off legal, political or economic interventions to their firms or industry. During the time period of this study such an intervention did occur. In July 1992, the Australian Financial Institutions Code (AFIC) was introduced by the government for all co-operative financial institutions. The purpose of this code was to impose minimum prudential regulations on co-operative financial institutions. These codes were defined as accounting ratios with the major requirement being to maintain a minimum of 8% risk weighted capital. The penalties for failing to meet minimum requirements for management include reputation effects, externally

\(^{31}\) For example, expenses are recognized as a charge against profit immediately (even though not expended) whilst revenue must be certain of being received. This technique is known as the 'conservative principle'.

imposed covenants on operations or investments, being placed under management, and possible loss of employment.

The only source of equity for credit unions (and many firms) is derived from increased earnings. Therefore, credit union managers had strong incentives to manipulate/manage their earnings’ ratios to meet minimum requirements.\textsuperscript{32} Hence, the research design was required to control for unexplained perturbations around AFIC and for endogenous serial correlation, otherwise the analysis may include spurious correlations between marketing expenditure and earnings. A combination of time-series and cross-sectional techniques is used to take account of those effects and these are combined and the model built up in the next section.

6.3.5 Building the Model

The starting point to developing a statistical model is to estimate an equation that represents expected risk weighted profitability (QRWA\textsubscript{t}) at current time \( t \). This expectation is attained by applying the following general autoregressive time-series model.

\[
QRWA_t = \alpha + \sum_{i=1}^{4} \beta_i QRWA_{t-i} + \frac{\theta(B)}{\phi(B)} \nu_t, \tag{6.11}
\]

where the \( \alpha \) coefficient is the intercept and the \( \beta \) coefficients measure the expected flow through from the past four periods. The final term is a noise term that takes the form of an ARIMA mechanism and \( \nu_t \) is a zero mean error term with

\textsuperscript{32} Empirical results on this issue are consistent with capital ratio manipulation by accountants in the financial institutions area (see Ahmed et al. 1999 for an overview) that are more likely to be detected after regulatory shocks (Kim and Kross 1998).
a normal distribution. Equation (6.11) represents the endogenous impact of a constant expected risk weighted earnings ($\alpha_0$) and lagged and seasonal influences ($\sum_{i=1}^{4} \beta_i QRWA_{t-i}$). The second stage is to fit dummy variables (d923, d924, d931) in order to model the possible exogenous intervention impacts of AFIC which was introduced in July 1992. Thus, both expected exogenous and endogenous influences on the risk weighted earnings return are incorporated in series as follows:

\[
QRWA_t = \alpha_0 + \sum_{i=1}^{4} \beta_i QRWA_{t-i} + \lambda_1 d923 + \lambda_2 d924 + \lambda_3 d931 + \omega(\theta(B))_t + \frac{\theta(B)}{\phi(B)} \nu_t
\]  

(6.12)

Which means that the unexpected risk weighted earnings series are additional earnings above the expected earnings model (6.12).

The next question is to ask if marketing expenditure has any influence on risk weighted earnings over and above expected earnings. Equation (6.13) includes the impact of marketing activities ($\mu$) as a ratio of quarterly marketing expenditure as a proportion of total quarterly expenditure, lagged up to four quarters.

\[
QRWA_t = \alpha_0 + \sum_{i=1}^{4} \beta_i QRWA_{t-i} + \lambda_1 d923 + \lambda_2 d924 + \lambda_3 d931 + \sum_{k=0}^{4} \mu_k MKT_{t-k} + \frac{\theta(B)}{\phi(B)} \nu_t
\]  

(6.13)

Equation (6.13) was applied as the base model and was estimated by using the EVIEWS panel data time series/cross section program with a fixed effects intercept that allows $\alpha_0$ to differ across each firm. Cross section weighting was also
incorporated to control for residuals that are heteroskedastic but uncorrelated.

Finally, generalised least squares (GLS) estimation was applied and the best risk
weighted earnings model determined, together with the total impact of marketing,
for both small and large credit unions and reported below in tables 6.2 and 6.3.

6.4 RESULTS

6.4.1 Profitability

The final models reveal a number of factors regarding the profitability time series.

First, the mean risk adjusted quarterly return for small credit unions is higher
(0.79% v 0.57%) but with a higher standard deviation (0.68% v 0.35%). Second,
the intercept (constant) return for small firms varies considerably from 1.02% down
to 0.04% per quarter with large firms have a smaller spread from 0.41% to 0.07%.

Simply put the risk-weighted returns for small credit unions are higher but are
extremely volatile when compared to large credit unions. The lagged coefficients
on QRWA reveals that expected earnings have an annual seasonal component
that is slightly stronger for small credit unions (0.18) compared to large credit
unions (0.14), and there is a significant positive first order lag effect for large firms.

Taken together they reflect the more diversified nature of earnings, the lower
dependency on seasonal consumer lending, and a more stable income stream for
large credit unions.

The dummy variables after AFIC show a greater total jump in QRWA of twenty
eight basis points (0.28%) for large credit unions compared to twenty two basis
points (0.22%) for small credit unions. This reflects the greater incentive for large
credit union managers to manage this figure because of higher potential personal
Table 6.2: Estimation of the Impact on Risk Adjusted Unexpected Earnings from Contemporaneous and Lagged Marketing Expenditure - Small Credit Unions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Probability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.039-1.017</td>
<td></td>
<td></td>
<td></td>
<td>Range for intercepts</td>
</tr>
<tr>
<td>MC</td>
<td>-0.378155</td>
<td>0.348059</td>
<td>-1.086469</td>
<td>0.2774</td>
<td>Contemporaneous MC</td>
</tr>
<tr>
<td>MC(-1)</td>
<td>0.095134</td>
<td>0.345281</td>
<td>0.275526</td>
<td>0.7829</td>
<td>MC lagged 1 period</td>
</tr>
<tr>
<td>MC(-2)</td>
<td>-0.241952</td>
<td>0.345495</td>
<td>-0.700305</td>
<td>0.4838</td>
<td>MC lagged 2 periods</td>
</tr>
<tr>
<td>MC(-3)</td>
<td>0.394618</td>
<td>0.344387</td>
<td>1.145857</td>
<td>0.2520</td>
<td>MC lagged 3 periods</td>
</tr>
<tr>
<td>MC(-4)</td>
<td>-0.044509</td>
<td>0.353281</td>
<td>-0.125987</td>
<td>0.8998</td>
<td>MC lagged 4 periods</td>
</tr>
<tr>
<td>QRWA(-1)</td>
<td>0.098326</td>
<td>0.019738</td>
<td>4.981663</td>
<td>0.0000</td>
<td>QRWA lagged 1 period</td>
</tr>
<tr>
<td>QRWA(-3)</td>
<td>-0.047002</td>
<td>0.019375</td>
<td>-2.425957</td>
<td>0.0153</td>
<td>QRWA lagged 3 periods</td>
</tr>
<tr>
<td>QRWA(-4)</td>
<td>0.177574</td>
<td>0.019407</td>
<td>9.149968</td>
<td>0.0000</td>
<td>QRWA lagged 4 periods</td>
</tr>
<tr>
<td>D923</td>
<td>0.064848</td>
<td>0.026303</td>
<td>2.465412</td>
<td>0.0138</td>
<td>Impact AFIC Sep Qtr 92</td>
</tr>
<tr>
<td>D924</td>
<td>0.076333</td>
<td>0.026369</td>
<td>2.894766</td>
<td>0.0038</td>
<td>Impact AFIC Dec Qtr 92</td>
</tr>
<tr>
<td>D931</td>
<td>0.079994</td>
<td>0.026390</td>
<td>3.031222</td>
<td>0.0025</td>
<td>Impact AFIC Mar Qtr 93</td>
</tr>
</tbody>
</table>

Dependent Variable: QRWA  
Method: GLS (Cross Section Weights)  
Sample: 1988:2 1994:3  
Included observations: 26  
Number of cross-sections used: 99  
Total panel (unbalanced) observations: 2561  
One-step weighting matrix

Statistics

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R^2</td>
<td>0.489692</td>
<td>Mean dependent var</td>
</tr>
<tr>
<td>Adjusted R^2</td>
<td>0.466924</td>
<td>S.D. dependent var</td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>0.498378</td>
<td>Sum squared resid</td>
</tr>
<tr>
<td>F-statistic</td>
<td>21.50742</td>
<td>Durbin-Watson stat</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.3: Estimation of the Impact on Risk Adjusted Unexpected Earnings from Contemporaneous and Lagged Marketing Expenditure
- Large Credit Unions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Probability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha$</td>
<td>0.065-0.411</td>
<td></td>
<td></td>
<td></td>
<td>Range for intercepts</td>
</tr>
<tr>
<td>MC</td>
<td>-1.312851</td>
<td>0.550976</td>
<td>-2.382773</td>
<td>0.0174</td>
<td>Contemporaneous MC</td>
</tr>
<tr>
<td>MC(-1)</td>
<td>2.114484</td>
<td>0.536180</td>
<td>3.943609</td>
<td>0.0001</td>
<td>MC lagged 1 period</td>
</tr>
<tr>
<td>MC(-2)</td>
<td>1.065808</td>
<td>0.557619</td>
<td>1.911354</td>
<td>0.0562</td>
<td>MC lagged 2 periods</td>
</tr>
<tr>
<td>MC(-3)</td>
<td>-0.856102</td>
<td>0.550758</td>
<td>-1.554406</td>
<td>0.1204</td>
<td>MC lagged 3 periods</td>
</tr>
<tr>
<td>MC(-4)</td>
<td>0.352334</td>
<td>0.590765</td>
<td>0.596404</td>
<td>0.5510</td>
<td>MC lagged 4 periods</td>
</tr>
<tr>
<td>QRWA(-1)</td>
<td>0.242811</td>
<td>0.030117</td>
<td>8.062299</td>
<td>0.0000</td>
<td>QRWA lagged 1 period</td>
</tr>
<tr>
<td>QRWA(-2)</td>
<td>0.130430</td>
<td>0.032115</td>
<td>4.061389</td>
<td>0.0001</td>
<td>QRWA lagged 2 periods</td>
</tr>
<tr>
<td>QRWA(-4)</td>
<td>0.146398</td>
<td>0.029894</td>
<td>4.897143</td>
<td>0.0000</td>
<td>QRWA lagged 4 periods</td>
</tr>
<tr>
<td>D923</td>
<td>0.063366</td>
<td>0.025609</td>
<td>2.474358</td>
<td>0.0135</td>
<td>Impact AFIC Sep Qtr 92</td>
</tr>
<tr>
<td>D924</td>
<td>0.100951</td>
<td>0.025665</td>
<td>3.933498</td>
<td>0.0001</td>
<td>Impact AFIC Dec Qtr 92</td>
</tr>
<tr>
<td>D931</td>
<td>0.118099</td>
<td>0.025802</td>
<td>4.577057</td>
<td>0.0000</td>
<td>Impact AFIC Mar Qtr 93</td>
</tr>
</tbody>
</table>

Dependent Variable: QRWA
Method: GLS (Cross Section Weights)
Sample: 1988:2 1994:3
Included observations: 26
Number of cross-sections used: 44
Total panel (balanced) observations: 1144
One-step weighting matrix

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Value</th>
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<tr>
<td>R-squared</td>
<td>0.607744</td>
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<tr>
<td>Adjusted R-squared</td>
<td>0.587915</td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>0.223110</td>
</tr>
<tr>
<td>F-statistic</td>
<td>30.64902</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
</tr>
<tr>
<td>Mean dependent var</td>
<td>0.573571</td>
</tr>
<tr>
<td>S.D. dependent var</td>
<td>0.347557</td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>54.15869</td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.986316</td>
</tr>
</tbody>
</table>
losses and the potentially weak agency contracts with shareholders. Finally, the usual examination of the residuals and the model efficacy indicators show the models are statistically acceptable.33

6.4.2 Marketing Expenditure

The total impact of MC on unexpected QRWA’s varies by size. For small credit unions there is no significant impact on profitability for any quarter. For large credit unions, marketing expenditure in the current quarter is contemporaneously associated with a reduction in profitability, followed by significant increased profitability in the following quarter (t₁), and weaker increases (at the 10% level) in the following quarter (t₂). Marketing expenditure, therefore, produces significant positive increases in profitability in the short-term (the flow effect) but with a lag.

The long run impact (η) can be measured by a transfer function in the general form:

\[
\eta = \frac{\mu_0 + \mu_1 + \cdots + \mu_s}{1 - \beta_1 - \beta_2 - \cdots - \beta_r}
\] (6.14)

This estimated model captures the ultimate change in the equilibrium level of QRWA precipitated by a one unit change (shock) in the input variable MC. This long run impact can be easily defined after appropriate algebraic manipulation of equation (6.13) and using the final model for large credit unions, viz:

---

33 As a comparison between different models a simple pooled panel regression was run for small and large credit unions. The adjusted R² for small was 0.20 (cf. 0.47) and for large 0.35 (cf. 0.59) indicating a significant improvement in explanatory power from utilising estimates which differ in the cross-section.
\[ \eta = \frac{\mu_0 + \mu_1 B + \mu_2 B^2 + \mu_3 B^3 + \mu_4 B^4}{1 - \beta_1 B^1 - \beta_2 B^2 + \beta_4 B^4} MCE \]

\[ \eta = \frac{-1.31 + 2.11 + 1.06 - 0.86 + 0.35}{1 - 0.24 - 0.13 - 0.15} = 2.81 MC \]

**Figure 6.1: The Long Run Impact of Marketing Expenditure on the Profitability of Large Credit Unions**

The evolution of the impact of MC on profitability is shown in Figure 6.1 and indicates that MC has a long-term influence that lasts up to about 10-11 quarters, but the discernible influence has dissipated by about the eighth quarter. Overall, the impact from marketing is short-term in nature but there are residual long-term (intangible asset) effects. This suggests that marketing expenditure is an asset that must be continually renewed in the competitive financial sector. Finally, in terms of raw dollar values a 1% increase in average proportionate marketing expenditure translates into a $30,105 annual increase in profitability or
approximately a 32.9% annualised return on the marketing investment. This also shows that marketing expenditure has a high degree of profitability leverage (operating and financial) for large credit unions.

Hence, the conclusion is that marketing expenditure in large credit unions has a more powerful impact on profitability in concordance with past research that marketing/earnings elasticities are higher for large firms (Comanor and Wilson 1969, Vernon and Nourse 1974, Metwally 1976, Jones 1990, Dekimpe, Hanssens and Silva-Risso 1998). This could be related to a number of factors. First, it may reflect the use of TV advertising which is more long-term effective than print and pamphlet (Dekimpe and Hanssens 1995a, Scott and Solomon 1998, Masterson 1999). Second, when current profitability falls, large credit unions might immediately react by increasing their proportionate current expenditure on marketing in an attempt to increase subsequent profitability. Large credit unions receive a higher (but lagged) return from marketing expenditure probably reflecting higher economies of scale and more efficient management practices (Jacobson 1988). On the other hand, these findings do not mean that marketing does not play an important role in maintaining profitability in small credit unions. A cognitive marketing approach creates awareness by disseminating information with the main purpose to enhance knowledge and create brand loyalty from the existing customer base (Mela, Gupta and Lehmann 1997, Bendixen 1993). Small credit unions may apply such a maintenance strategy.

Reverse modelling results reject the marketing budget residual null hypothesis that there is a lagged effect running from earnings to marketing expenditure for both
small and large credit unions. Finally, a dummy coefficient before and after AFIC showed no significant change in marketing impact and this reveals that the AFIC legislation did not fundamentally change the relationship between marketing expenditure and risk adjusted earnings. These results also show that management in credit unions has continually treated marketing expenditure as an important long-term component in their financial strategy.

6.5 SUMMARY AND CONCLUSIONS

This chapter analysed an example taken from the credit union industry in non listed setting. The case study illustrates potential controls for endogenous influences on the earnings series; such as seasonality, first order corrections and risk, as well as the external impact of AFIC. This enabled a measure of expected earnings as well as controlling for endogenous and exogenous factors associated with accounting earnings. Some potential effects of differential marketing expenditure, corporate culture, competitiveness and management style is mitigated by decomposing the data into small and large credit unions. The results, using panel data time series/cross section analysis, showed that lagged marketing expenditure has a significant leading and positive impact on earnings for large credit unions. Although there are some residual long run impacts up to about eight quarters (or two years) the main impact is classified as short-term. The reverse analysis indicates that earnings do not lead marketing expenditure, and hence, MC is not treated as a budgetary residual. There is no impact on risk adjusted earnings in small credit unions.
The finding that MC is positively associated with unexpected risk adjusted earnings provides evidence that MC in large credit unions creates brand equity; and through increased earnings, increases shareholder financial equity. The case for small credit unions is weaker in that there was no significant relationship between unexpected earnings and marketing, but the role of passive marketing in maintaining brand equity (and expected earnings) is an area that requires further attention in the literature. A secondary finding is that the amount and type of MC varies between credit unions according to asset size. The next chapter considers an application where equity is listed on the stock market.
### Appendix 6.1: Asset Risk Weightings and Capital Adequacy
Requirements Imposed by the 1992 AFIC Regulations on Credit Unions

<table>
<thead>
<tr>
<th>Risk Weight %</th>
<th>Type of Asset</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Notes, coin and short-term federal government debt</td>
</tr>
<tr>
<td>10</td>
<td>Long-term federal government debt, state government debt</td>
</tr>
<tr>
<td>20</td>
<td>Bank liabilities, local government debt</td>
</tr>
<tr>
<td>50</td>
<td>Residential mortgage loans</td>
</tr>
<tr>
<td>100</td>
<td>Unsecured business loans, personal loans, lines of credit</td>
</tr>
</tbody>
</table>

**Notes:**
AFIC requires that credit union assets be divided into five categories, each of which is assigned the risk weighting given above. Total risk weighted assets are then derived by multiplying the dollar value of all assets by their risk weightings and summing. AFIC regulations require institutions to hold a minimum of 8% capital as a ratio of risk adjusted assets, 7% of assets as prime liquid assets and 8% of assets to be held as operational liquidity.
CHAPTER SEVEN - THE IMPACT OF ADVERTISING ON FIRM STOCK PRICE

7.0 INTRODUCTION

In the previous chapters the background to the marketing/finance/accounting interface was explored, a conceptual model for linking marketing to shareholder value was outlined and an empirical test of the conceptual model in a non-listed market setting was conducted. In the next two chapters empirical tests will be performed in a market setting to estimate shareholder value in traded markets using stock price data to capture stock effects and earnings, cash flow and sales to capture flow effects. These chapters will extend the research in chapter six by the inclusion of other potential key drivers of firm value; such as sales, cash flows and earnings and then relate them back to listed stock prices. The relationships will be estimated using regression techniques in this chapter and structural equation modelling in the following chapter.

In this chapter a portion of the conceptual model (presented in figure 5.4) will be tested concentrating on estimating the impact of advertising (a high component of MC expenditure) on shareholder value. It is assumed that there are no flow effects from advertising and as such, sales, cash flows and earnings will be considered as control variables. There is considerable evidence in the finance literature that these metrics to have a high association with stock prices (Freeman and Tse, 1992).
The chapter now proceeds as follows. First, a description of the data is provided. Second, the impact of advertising on sales and then together with earnings, on stock prices is analysed using linear and non-linear modelling. Third, the data is split according to firm size and industry groups and then re-analysed. Briefly, the results show that advertising has a significant impact on stock prices and, as argued in Chapter three, shareholder value via stock prices.

7.1 THE DATA
The data is extracted from the top 500 companies in the USA - from two sources, the compustat and datastream databases. The compustat database provides company financial, accounting and advertising data. This data provides a rich source of financial information on the historical performance of each firm. The data is collected annually from 1980 to 1995 and provides a time series of sixteen years for each firm and contains a range of information including financial, accounting and advertising variables. The financial variables include; stock price, number of shares, market value, and dividend per share. The accounting variables include; sales, net cash flow, earnings, total debt/total equity, total debt/total capital, special items, goodwill, and intangibles. However, marketing variables are often not segmented at the company level and the only marketing communication variable that was available for the analysis was advertising expenditure.

Datastream is a similar financial data service which incorporates financial and accounting data, but does not include any data on marketing variables such as advertising. The advantage of datastream is that it includes stock prices, thus
stock prices were collected from this source. Datastream was also used as a comparative source to check the compustat financials for potential errors.

### 7.1.1 Compiling a Usable Data Set

From the two databases a usable data set was compiled and was limited to the firms that reported advertising expenditure and which had the full set of data for all sixteen years. The final data was made up of eighty five firms containing information on each variable over the same time series from 1980 to 1995 providing 1360 firm years of data.

Market capitalisation was calculated by multiplying the number of shares outstanding by the share price. Stock price data was collected on an annual basis at the same time as the final date in the financial reports. The collection of the earnings and cash flow figures was not straightforward and requires further amplification.

There are various ways to collect earnings from the datastream database, the earnings measure used in this analysis was item 625 earned for ordinary. This measure can be described as net earnings, arrived at after deducting tax, minority interest and preference dividends; but before any post-tax extraordinary items and allocation to reserves other than untaxed reserves. Further, director’s bonuses were deducted from earnings if shown in the profit appropriation statement rather than deducted directly from operating income. The net cash flow data was only available for half of the time series - 1988 to 1996. For reasons argued in chapter five the main accounting performance measures utilised by the stock market is
accounting earnings and not cash flows. However, cash flows were collected because of the possibility that they may have incremental value or higher explanatory power for different industries. Finally, advertising expenditure was collected along with sales revenue, on an annual basis.

The nature of the data also provides the opportunity to examine other moderating influences. The moderating influences dealt with are firm size and industry groupings, because these two factors have previously been deemed as having an important impact on firm financial performance. For instance, larger firms may have more funds invested in their brand, have greater brand equity and they often have been established for longer periods. Other factors specific to firm size may also have an influence on firm performance. For example, the industry in which the firm operates, marketing intensity, investment levels and other factors specific to the industry, such as risk exposure, may also have an effect. Thus, disaggregating the data based on firm size and industry group can potentially provide further explanation and insight into how firm value is differentially created.

The market capitalisation figure was utilised to group the firms by size. Those firms with higher than average market capitalisation were classified as large firms, and those firms with lower than average market capitalisation classified as small firms. This resulted in data sub-groups which were skewed toward small firms. There were sixty firms in the small data set with 960 firm year observations, and in the large data set there were twenty five firms with 400 firm year observations.
With regard to industry grouping, the compustat database provides information on industry groupings. These industry groups are quite specific and small, resulting in thirty-six possible industry groupings. However, for the purposes of this study they were compressed into six main industry groupings: health, information technology and telecommunications, transport, consumer, retailing and other. The firm make-up of the specific industry groups will now be discussed.

The health group consists of chemicals, pharmaceuticals, medical equipment and supply firms, giving thirteen firms and 208 firm years. The information technology and telecommunications group consists of: computer hardware, electrical equipment, semiconductors and telecommunications and resulting in eight firms with 128 firm years. The transport group includes; airlines, rail, road and freight, and vehicle distribution and was made up of five firms with 80 firm years of data. The consumer sector includes: automobiles, brewers, clothing and footwear, food processing, furnishing, hotels, household products, leisure equipment, personal products, photography, soft drinks, and tobacco. The consumer group had the largest number of firms of all the industry groupings and consists of thirty-seven firms and 592 firm years. The retailing group includes: discount stores, food and drug retailers, and general retailers and was made up of seventeen firms with 272 firm years. Finally, the last group consisted of all firms which did not fall into any of the afore-mentioned categories. This group was made up of building materials, diversified industries, forestry and funerals and cemeteries. This group had five firms and 80 firm years. After further analysis this group was dropped as an industry grouping, because no meaningful statistics related to this industry group
could be observed. However, these firms were retained and incorporated into the small and large firm groupings.

Finally, when dealing with time series data normalisation is required to control for heteroskedasticity. For the purpose of the analysis in this chapter all the variables were divided through by the number of shares outstanding in order to control for this effect. Hence, after the variables were normalised in this way, the interpretation of the results was on a per share basis.

7.1.2 Research Questions
The first research question addresses the issue of how investments in marketing (represented by advertising) can create shareholder value in listed markets. Marketing as well as other measures of performance, sales, cash flow and earnings are used to explain movements in stock price.

The second research question deals with testing the marketing relationship with shareholder value in different market settings such as firm size and industry group. Last, various functional forms are tested to determine the most appropriate relationship between earnings and stock price and advertising and stock price.

7.2 METHOD
In this chapter a number of methods are used to analyse the data sets (the total sample, firm size, and the industry groups). First, descriptive methods such as frequency distributions and cross tabulation are used to describe important attributes of the data. Second, the data is also analysed on a number of different
levels. Correlations are conducted in order to understand the association relationships between all the variables; stock price, earnings, cash flow, sales and advertising. Next, linear and non-linear regressions are applied to model the advertising and earnings relationship with stock price.

Competing linear and non-linear regressions will be run in order to determine best fit, and are done so because there are strong theoretical arguments for earnings to be represented as a non-linear function when modelling stock prices (Freeman and Tse, 1992). This function relationship has been modelled as an arctan (S-shaped relationship), which has a positive slope through zero and symmetrical inflections on each side. The reason is that large changes in earnings are not regarded as permanent and hence there is mean reversion in earnings to sustainable and permanent levels. Figure 8.1 illustrates this concept for unexpected earnings as a function of unexpected stock returns. The S-shaped functional relationship means that the larger is the unexpected positive (negative) earnings the less impact it will have on stock prices. Whilst earnings are within a relevant range then the slope is consistent but ‘tails-off’ at higher (lower) levels.
In the advertising literature it is also widely established that advertising can take on a non-linear shape. If it is assumed that a cubic relationship holds then, at lower levels of advertising spending, the effect on sales (or other financial metrics) is low or negligible. In turn, this effect increases over a region and then diminishes at higher levels of advertising spending so that there is an optimal (range) level of advertising expenditure for different industries. If the function is quadratic, then the function reaches a maximum and then tails off. Under both functional forms there
is an optimal level of advertising that maximises stock prices and/or sales. These concepts are illustrated in figure 7.2.

**Figure 7.2: Hypothetical Non-Linear Relationships between Stock Prices/Sales and Advertising**

7.3 **EXAMINING THE STATISTICS**

7.3.1 **Market Equity**

Descriptive statistics provide an overview of the variables that will be used in the analysis and are reported in Table 7.1. The metrics for market capitalisation provide an interesting comparison of financial size across the various groups. The information technology, transport and retailing groups have lower average total market equity than the health and consumer groups. Overall, the health ($11.6m) group has the largest market capitalisation and transport has the lowest market capitalisation ($2.2m). Large firm capitalisation is almost seven times the average of small firms. Average stock prices are fairly consistent across the groups, with
the possible exception of transport, which has a high average stock price of $17.38 which ranges down to $10.81 for health.

Interestingly, the transport sector has the smallest market capitalisation of all the firms, the highest stock price and the lowest standard deviation of price (8.52), thus indicating that this sector may be most stable. On the other hand the consumer and retailing sectors have the high standard deviations for stock price, indicating that they occupy a riskier market sector.

7.3.2 Earnings, Cash Flow and Sales

Earnings figures differ significantly across the groups with the greatest difference between small and large firms. Large firms on average have earnings over seven times higher than small firms with a return on capitalisation of 5.8% compared with 5.4% for small firms. Transport has the lowest earnings and health the highest. Cash flow figures are greater than earnings but generally follow the same pattern across the groups (this is expected because of the later years collected for cash flow data). There is a significant difference between small and large firms for sales with large firms having a very high standard deviation. Sales for large firms are 4.5 times higher than small firms.

The ratio of earnings to sales provides an indication of the conversion rate of sales into earnings and the amount of cost leverage per dollar unit of sales. This ratio is important as an indicator of the effectiveness that sales are converted into profitability and therefore those industries that provide a higher rate of return from increased sales and lower operating costs. The ratio is highest for the health
group (0.11) and lowest for the transport and retailing groups (0.03). The difference between small and large firms is also significant (0.09 vs. 0.06).

7.3.3 Advertising

The average amount spent on advertising is $292,500 with the highest amount of $422,412 spent in the consumer sector. Overall the ratio of advertising to sales is approximately 4.9% and seems to differ for small and large firms (4.7% and 5.4% respectively). To establish whether there is a difference in the advertising sales t-tests are used to test for significant differences (see table 7.2). The t-test indicates that there is a significant difference between the advertising and sales ratios for small and large firms. The mean of large firms, 0.0540 is significantly greater than 0.0468 for small firms. The sales advertising ratio differs across industry groups also. This ratio has a very large spread across different industries and varies from 6.89% for consumer to 1.36% for transport and indicates the relative amount of expenditure on advertising per sales generated. ANOVA was used to test whether there is a significant difference within the industry groups (see table 7.3). The results confirmed that there is a significant difference, indicating different managerial philosophies with regard to advertising expenditure.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Low</th>
<th>Mid</th>
<th>High</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary</td>
<td>Low</td>
<td>1000</td>
<td>5000</td>
<td>10000</td>
<td>5000</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Income</td>
<td>Low</td>
<td>2000</td>
<td>6000</td>
<td>10000</td>
<td>6000</td>
<td>6000</td>
<td>6000</td>
</tr>
<tr>
<td>Health</td>
<td>Low</td>
<td>3000</td>
<td>7000</td>
<td>11000</td>
<td>7000</td>
<td>7000</td>
<td>7000</td>
</tr>
<tr>
<td>Education</td>
<td>Low</td>
<td>4000</td>
<td>8000</td>
<td>12000</td>
<td>8000</td>
<td>8000</td>
<td>8000</td>
</tr>
<tr>
<td>Age</td>
<td>Low</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>60</td>
<td>110</td>
<td>160</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Low</td>
<td>120</td>
<td>170</td>
<td>220</td>
<td>170</td>
<td>170</td>
<td>170</td>
</tr>
</tbody>
</table>

Table 2.1: Descriptive Statistics
### Table 7.3: ANOVA Industry Advertising/Sales Ratios

<table>
<thead>
<tr>
<th>Table 7.3: ANOVA Industry Advertising/Sales Ratios</th>
<th>Table 7.2: T-Test Firm Size Advertising/Sales Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Sample</td>
<td>Mean</td>
</tr>
<tr>
<td>Consumer</td>
<td>0.0089</td>
</tr>
<tr>
<td>Health</td>
<td>0.0073</td>
</tr>
<tr>
<td>Retailers</td>
<td>0.0292</td>
</tr>
<tr>
<td>Other</td>
<td>0.0050</td>
</tr>
<tr>
<td>Transport</td>
<td>0.0076</td>
</tr>
<tr>
<td>Tukey HSD</td>
<td>1.0000</td>
</tr>
<tr>
<td>Total</td>
<td>1.0000</td>
</tr>
<tr>
<td>Consumer</td>
<td>0.0089</td>
</tr>
<tr>
<td>Health</td>
<td>0.0073</td>
</tr>
<tr>
<td>Retailers</td>
<td>0.0292</td>
</tr>
<tr>
<td>Other</td>
<td>0.0050</td>
</tr>
<tr>
<td>Transport</td>
<td>0.0076</td>
</tr>
<tr>
<td>Mean</td>
<td>1.0000</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.0010</td>
</tr>
<tr>
<td>Significance</td>
<td>1.0000</td>
</tr>
<tr>
<td>t-Test</td>
<td>1.0000</td>
</tr>
<tr>
<td>F</td>
<td>1.0000</td>
</tr>
<tr>
<td>Equality of Means</td>
<td>1.0000</td>
</tr>
<tr>
<td>Levene's Test</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

### Table 7.2: T-Test Firm Size Advertising/Sales Ratios

<table>
<thead>
<tr>
<th>Table 7.2: T-Test Firm Size Advertising/Sales Ratios</th>
<th>Table 7.3: ANOVA Industry Advertising/Sales Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.0019</td>
</tr>
<tr>
<td>Large</td>
<td>0.0019</td>
</tr>
<tr>
<td>Small</td>
<td>0.0003</td>
</tr>
<tr>
<td>Sample Mean</td>
<td>0.0019</td>
</tr>
<tr>
<td>Standard Error of the Mean</td>
<td>0.0003</td>
</tr>
</tbody>
</table>
What is possibly more interesting is the ratio of advertising expenditure to earnings generated. In some of the groups (large, consumer, retailing) the advertising/earnings ratio is greater than one, meaning that expenditure on advertising is greater than the earnings received in the current period. Hence, in these groups, firms are foregoing profits in the short-term for perceived greater returns over the longer term. Obviously, the industry spend on advertising will be related to perceived benefits. However, a high ratio of advertising expenditure to earnings signals the need to manage and justify high advertising outlays and to demonstrate the benefits. Thus providing metrics that demonstrate how advertising generates intangible assets and shareholder value.

The above ratios also provide other interesting scenarios. For example, the consumer industry expends a high proportion of advertising per sales and per earnings but has a high conversion rate from sales into earnings (7%). On the other hand, information technology (IT) expends a low proportion of advertising per sales and earnings but has a similar conversion of sales into earnings (6%).

Finally, cross tabulations are used to identify and describe the firm size attributes within industry groupings and are reported in Table 7.4. Results show that large firms are concentrated in the health sector and the other sectors are predominantly made up of small firms, with the transport industry consisting of only small firms.
<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>% of Total</th>
<th>% within Firm Size</th>
<th>% within Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1360</td>
<td>100.00%</td>
<td>100.00%</td>
<td>100.00%</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>29.4%</td>
<td>2.1%</td>
<td>70.5%</td>
</tr>
<tr>
<td>Total</td>
<td>960</td>
<td>70.5%</td>
<td>4.7%</td>
<td>29.4%</td>
</tr>
<tr>
<td>Other</td>
<td>64</td>
<td>12.6%</td>
<td>7.3%</td>
<td>92.7%</td>
</tr>
<tr>
<td>Retailers</td>
<td>32</td>
<td>1.8%</td>
<td>2.5%</td>
<td>97.5%</td>
</tr>
<tr>
<td>Consumer</td>
<td>176</td>
<td>12.9%</td>
<td>5.9%</td>
<td>94.1%</td>
</tr>
<tr>
<td>Transport</td>
<td>80</td>
<td>0.6%</td>
<td>0.3%</td>
<td>99.7%</td>
</tr>
<tr>
<td>Small Health</td>
<td>234</td>
<td>0.2%</td>
<td>0.1%</td>
<td>99.9%</td>
</tr>
<tr>
<td>Medium Health</td>
<td>144</td>
<td>0.2%</td>
<td>0.1%</td>
<td>99.9%</td>
</tr>
<tr>
<td>Large Health</td>
<td>64</td>
<td>0.2%</td>
<td>0.1%</td>
<td>99.9%</td>
</tr>
</tbody>
</table>

Table 7.4: Cross Tabulations
Table 7.5: Correlations between the Sample Variables - Total, Small and Large Firms

<table>
<thead>
<tr>
<th>Stock Price</th>
<th>Sales</th>
<th>Earnings</th>
<th>Cash Flow</th>
<th>Advertising</th>
<th>Price</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.222</td>
<td>0.760</td>
<td>0.060</td>
<td>0.040</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>0.222</td>
<td>1.000</td>
<td>1.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>0.760</td>
<td>1.000</td>
<td>1.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>0.060</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>0.040</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
<tr>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Note: The table shows the correlation coefficients between different variables for total, small, and large firms.
<table>
<thead>
<tr>
<th>Month</th>
<th>Sales</th>
<th>Advertising</th>
<th>Cash Flow</th>
<th>Earnings</th>
<th>Stock Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Feb</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Mar</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Apr</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>May</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Jun</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Jul</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Aug</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Sep</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Oct</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Nov</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Dec</td>
<td>230</td>
<td>0.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Table 7.6: Correlations - Industry Groups
<table>
<thead>
<tr>
<th>Sales</th>
<th>Advertising</th>
<th>Cash Flow</th>
<th>Earnings</th>
<th>Stock Price</th>
<th>Average Price</th>
<th>Price/Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
7.3.4 Correlations

Correlations are conducted before the regression variables in order to examine raw associations and to check for possible multi-collinearity. Correlations between the variables are reported in Tables 7.5 and 7.6. In general, the correlation analysis confirms the positive relationship between the level of earnings, cash flows, advertising, sales and stock prices. Change in earnings and advertising generally also have a positive relationship with change in stock price, but change in sales and cash flow generally have a negative correlations. Turning to the separate industry grouping correlations, all the levels variables have a consistent and positive influence on stock price. The possible exception to this pattern is the transport industry in which the sales level and change in sales variable has the highest correlation with stock prices. Advertising has a mixed correlation with stock prices. In some industries (health, consumer, retailers) it has a strong association with stock prices, whilst in the remaining industries (IT, Transport) the correlation is either negative or mixed between levels and changes. Thus, indicating a deal of variability in the association of advertising with financial variables.

7.4 BUILDING THE ECONOMETRIC MODELS

The purpose in this section is to build a full model that takes into account all variables associated with stock price. The process involves two incremental stages. First, a strong relationship between advertising and sales should exist, thus the relationship between these two variables is first modelled in order to isolate or orthoganalise into the separate components\textsuperscript{34}. Second, the relationship

\textsuperscript{34} Sales were orthogonalised in the stock price but was not significant so raw sales were used.
between advertising, sales, cash flows and earnings in relation to stock price is modelled. As outlined in Section 7.2, both linear and non-linear econometric models are used to examine the advertising/firm value relationship for the total sample, firm size and the different industry sectors.

7.5 RESULTS

7.5.1 Advertising/Sales

The first level of firm performance examined is the advertising to sales relationship. The best linear and non-linear representation of advertising to sales is presented in Table 7.7. A number of functional forms for the advertising response curve are of both theoretical and pragmatic interest and various non-linear relationships were considered. They included: – curvilinear, quadratic, arctan, cubic and exponential functions, but for all regressions the quadratic function provided the best fit. The results for the total sample are presented in panel A, and small firms and large firms are presented in panels B and C. For all panels advertising has a positive and significant impact on sales. Comparing linear and non-linear (quadratic) models, the adjusted R-squared is higher for the non-linear model in the total sample and in decompositions based on firm size. The negative second coefficient on the quadratic also signifies that the quadratic reaches a maxima and then tapers off. Hence, there is an optimal level of advertising. The adjusted $R^2$ is also higher for large firms (0.546), signifying a higher impact of advertising on sales. In short, advertising has a greater impact on the sales of larger firms and this is probably related to the higher brand power of large firms.
### Table 7.7: The Impact of Advertising on Sales

#### Panel A: Total Sample

<table>
<thead>
<tr>
<th>Sales</th>
<th>Constant</th>
<th>Advertising</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear Model</td>
<td>1.909*</td>
<td>28.022*</td>
<td>0.444</td>
<td>0.444</td>
</tr>
<tr>
<td></td>
<td>(2.205)</td>
<td>(32.013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Non Linear Model</td>
<td>11.000*</td>
<td>6.490</td>
<td>0.491</td>
<td>0.491</td>
</tr>
<tr>
<td></td>
<td>(11.00)</td>
<td>(3.017)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Panel B: Small Firms

<table>
<thead>
<tr>
<th>Sales</th>
<th>Constant</th>
<th>Advertising</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear Model</td>
<td>3.257*</td>
<td>27.409*</td>
<td>0.411</td>
<td>0.410</td>
</tr>
<tr>
<td></td>
<td>(2.822)</td>
<td>(25.140)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Non-Linear Model</td>
<td>11.346*</td>
<td>3.061</td>
<td>0.470</td>
<td>0.468</td>
</tr>
<tr>
<td></td>
<td>(8.311)</td>
<td>(1.152)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Panel C: Large Firms

<table>
<thead>
<tr>
<th>Sales</th>
<th>Constant</th>
<th>Advertising</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear Model</td>
<td>-0.918</td>
<td>29.261*</td>
<td>0.562</td>
<td>0.561</td>
</tr>
<tr>
<td></td>
<td>(-0.862)</td>
<td>(21.912)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Non-Linear Model</td>
<td>2.978*</td>
<td>13.281*</td>
<td>0.586</td>
<td>0.584</td>
</tr>
<tr>
<td></td>
<td>(2.233)</td>
<td>(3.615)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* indicates significance at the 5% confidence interval
+ the Non-Linear model for advertising is a quadratic function.

The results for the five industry groups are presented in Table 7.8 in panels A-E. The coefficient for advertising is significant in all industries with the adjusted $R^2$ highest for retailing (0.733). Comparing linear and non-linear models, the retailing quadratic model has a higher adjusted $R^2$ with both coefficients significant. In all
other industries the adjusted $R^2$ for the non-linear models are slightly higher but the second coefficient is not significant. This suggests that there is no significant improvement in using a non-linear model in this instance. These results illustrate that by dis-aggregating the data into industry related sub-sets, then different functional relationships as well as explanatory and predictive power is determined.

Further, one can conclude that advertising expenditure has significant explanatory power for sales, but that these effects will differ in functional relationship and impact according to size and industry decomposition.

Table 7.8: The Impact of Advertising on Sales

| Panel A: Health | Sales | Constant | Advertising | $R^2$ | Adjusted $R^2$
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>3.631* (10.637)</td>
<td>8.765* (17.219)</td>
<td>0.590</td>
<td>0.588</td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td>2.784* (2.138)</td>
<td>13.506* (32.530)</td>
<td>-1.603* (3.851)</td>
<td>0.618</td>
<td>0.614</td>
</tr>
</tbody>
</table>

| Panel B: IT and Telecommunications | Sales | Constant | Advertising | $R^2$ | Adjusted $R^2$
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>4.593* (5.766)</td>
<td>39.763* (10.059)</td>
<td>0.447</td>
<td>0.443</td>
<td></td>
</tr>
<tr>
<td>Model 2</td>
<td>5.549* (5.044)</td>
<td>23.533** (1.728)</td>
<td>38.340 (1.249)</td>
<td>0.454</td>
<td>0.445</td>
</tr>
</tbody>
</table>
### Panel C: Transport

<table>
<thead>
<tr>
<th>Sales</th>
<th>Constant</th>
<th>Advertising</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>18.097* (6.290)</td>
<td>43.884* (11.004)</td>
<td>0.608</td>
<td>0.603</td>
</tr>
<tr>
<td>Model 2</td>
<td>21.017* (1.991)</td>
<td>32.507* (6.192)</td>
<td>6.118 (1.157)</td>
<td>0.615</td>
</tr>
</tbody>
</table>

### Panel D: Consumer

<table>
<thead>
<tr>
<th>Sales</th>
<th>Constant</th>
<th>Advertising</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>4.170* (3.685)</td>
<td>16.365* (16.326)</td>
<td>0.312</td>
<td>0.310</td>
</tr>
<tr>
<td>Model 2</td>
<td>5.879* (1.883)</td>
<td>11.510* (10.757)</td>
<td>1.765 (1.150)</td>
<td>0.314</td>
</tr>
</tbody>
</table>

### Panel E: Retailing

<table>
<thead>
<tr>
<th>Sales</th>
<th>Constant</th>
<th>Advertising</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>1.204 (0.509)</td>
<td>51.358* (24.628)</td>
<td>0.692</td>
<td>0.691</td>
</tr>
<tr>
<td>Model 2</td>
<td>12.085* (2.368)</td>
<td>19.740* (15.068)</td>
<td>8.797* (3.222)</td>
<td>0.736</td>
</tr>
</tbody>
</table>

*indicates significance at the 95% confidence interval, ** indicates significance at the 90% level

### 7.5.2 Stock Price

In the theoretical model outlined in chapter three, in markets where corporations are listed on stock exchanges, the determinant of shareholder value is stock price multiplied by shares outstanding. Therefore, the next step is to analyse the relationship between advertising expenditure and stock prices controlling for other
financial metrics that are likely to have an impact on stock price. The theoretical explanators are advertising, sales, cash flow and earnings.

It has been well established in the finance literature that earnings is a primary determinant of stock prices (see chapter three). Hence, earnings are included in the regression models in order to control for potential error-in-variables problems. Likewise, whilst it has been established that cash flows are predominantly dominated by earnings, they are included because they may have incremental explanatory power for stock prices and the potential explanatory power for cash flows may vary between the size of firms and different industry sectors.

The econometric models for the determinants of stock price are reported in table 7.9. Two different explanatory models for earnings were tested; a linear model and an arctan model. An arctan earnings function was estimated because higher levels of earnings are theorised to contain more temporary components, which cannot be sustained in the long run. Whilst lower levels of earnings are hypothesised to be more sustainable and hence have a higher relationship with stock prices. This relationship results in an inverse tangent or s-shaped relationship similar to that depicted in diagram 7.1. Advertising is also modelled as linear and non-linear with a simple linear function first estimated, followed by quadratic and cubic functions. By incorporating this relationship into the modelling better explanatory estimates of the advertising/finance interface should be obtained.

For each model only the most significant variables with the highest adjusted $R^2$ values are included in the results. Therefore, not all variables are reported in each
The best model based on the significance of the coefficients, the Durbin Watson statistic, colinearity diagnostics and standard residual analysis are presented.

7.5.2.1 **Total Sample, Small and Large Firms**

The models for the total sample are reported in Table 7.9 panel A. Model 1, the linear model is estimated using earnings, advertising, sales, change in earnings and change in advertising. This model has an adjusted $R^2$ of 0.492. This is improved upon when earnings and advertising levels are allowed to take non-linear functions in model 2. The best model is found in model 2 which includes an earnings arctan and a quadratic advertising function with diminishing returns. Sales, change in earnings and change in advertising are also significant in this model, which has an adjusted $R^2$ of 0.550, thus explaining over half the variation in stock price. The level of sales has a positive impact on stock prices, whilst the change in earnings and advertising has a negative impact. The negative impact on the change variables signifies that changing the current profitability of the firm and the advertising expenditure (changing future profitability) is viewed as a negative signal by the stock market. A particularly important point to note is that management must be careful in managing the advertising budget. If management increases the advertising budget then this gives a negative signal to the market place and therefore must be carefully explained or be economically justified. In contrast, a reduction in advertising generally increases stock prices, possibly signalling cost rationalisation by firms. In other words, the market believes that advertising expenditure is currently greater than the optimum. Thus, whilst there is
a strong positive relationship between the level of advertising and stock prices the market does not view that level as optimal.

Table 7.9: The Relationship between Advertising and Stock Price – Size Effects

Panel A: Total Sample

<table>
<thead>
<tr>
<th>Stock Price</th>
<th>Constant</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Sales</th>
<th>ΔEarnings</th>
<th>ΔAdvertising</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Linear</td>
<td>5.904* (19.121)</td>
<td>5.074* (19.915)</td>
<td>3.478* (17.607)</td>
<td>0.082* (9.191)</td>
<td>-1.917* (7.064)</td>
<td>-3.037* (3.996)</td>
<td>0.492</td>
</tr>
<tr>
<td>Model 2 Arctan</td>
<td>3.188* (7.431)</td>
<td>16.775* (11.334)</td>
<td>4.969* (7.018)</td>
<td>0.095* (11.875)</td>
<td>-1.760* (7.125)</td>
<td>-2.383* (3.301)</td>
<td>0.550</td>
</tr>
</tbody>
</table>

Panel B: Small Firms

<table>
<thead>
<tr>
<th>Stock Price</th>
<th>Constant</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Sales</th>
<th>ΔEarnings</th>
<th>ΔAdvertising</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Linear</td>
<td>6.417* (16.530)</td>
<td>5.254* (17.326)</td>
<td>2.043* (4.378)</td>
<td>0.093* (9.323)</td>
<td>-2.155* (-6.704)</td>
<td>-2.130* (2.454)</td>
<td>0.466</td>
</tr>
<tr>
<td>Model 2 Arctan</td>
<td>3.798* (7.151)</td>
<td>18.055* (9.027)</td>
<td>3.828* (4.668)</td>
<td>0.103* (10.300)</td>
<td>-1.914* (10.053)</td>
<td>-1.694* (2.028)</td>
<td>0.518</td>
</tr>
</tbody>
</table>
The model for small firms reported in panel B and has the same significant variables and functional relationships as the results for the total sample with an adjusted $R^2$ of 0.518. There is also a similar improvement on the linear model of about 5%. The change variables also have similar coefficients and the same sign as the total sample.

The models for large firms differ from the total sample and small firms in a number of respects. First, sales is no longer significant. Second, the coefficient on the advertising level is higher and signifies that advertising expenditure has a greater economic significance for stock prices. Last, the adjusted $R^2$ is much higher at 0.708 and the arctan function for earnings and the quadratic function for advertising improve the predictive power of the model by almost 12%. Likewise, the higher coefficient on the change variable for advertising indicates that advertising changes will have a stronger impact on stock prices. This suggests that large firms have built up stronger market oriented policies and, hence, the level of and changes in advertising have a stronger signalling impact and brand building capabilities than small firms. Moreover, given this stronger orientation
management must be mindful their strategic use of advertising in order to effectively build stock equity in their brands (see also Coviello et al. 2002 for a discussion on this issue).

7.5.2.2  Industry Effects
Examining the linear models earnings is significant and positive in all sectors. Advertising is positive and significant in the health, consumer and retailing sectors, negative and significant in IT and telecommunications and not significant for transport. Next estimating the non-linear relationships, earnings in all sectors (except IT) displays an arctan function and the coefficients are positive and significant. In addition, the adjusted $R^2$ is higher in all sectors except IT, when the arctan model is applied to earnings. This is an indication that earnings have been appropriately controlled in the multiple regression model. Further, for all industry sectors, model adjusted $R^2$ are above 0.400 and are very high for a number of industries. For example, the Health group model has an adjusted $R^2$ of 0.837, and retailing 0.797. Sales are also a significant explanatory for all industries except Health. Concentrating on the impact of advertising reveals a number of interesting results across industries.
Table 7.10: The Relationship between Advertising and Stock Price – Industry Effects

**Panel A: Health**

<table>
<thead>
<tr>
<th>Stock Prices</th>
<th>Constant</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Sales</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Linear</td>
<td>2.954* (6.159)</td>
<td>9.052* (11.892)</td>
<td>7.458* (9.168)</td>
<td>-2.056* (2.226)</td>
<td>-8.890* (-2.256)</td>
<td>0.770</td>
<td></td>
</tr>
<tr>
<td>Model 2 Arctan</td>
<td>19.716* (9.385)</td>
<td>7.209* (10.054)</td>
<td>-1.183 (1.532)</td>
<td>-6.146** (1.816)</td>
<td>0.837</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stock Prices</th>
<th>Constant</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Sales</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Linear</td>
<td>2.898* (3.549)</td>
<td>8.768* (9.256)</td>
<td>-15.463* (3.499)</td>
<td>0.592* (7.355)</td>
<td>-3.570* (3.413)</td>
<td>0.682</td>
<td></td>
</tr>
<tr>
<td>Model 2 Arctan</td>
<td>2.897* (3.232)</td>
<td>6106.34 (0.00)</td>
<td>-15.462* (3.332)</td>
<td>0.592* (6.804)</td>
<td>-3.569* (3.357)</td>
<td>0.679</td>
<td></td>
</tr>
</tbody>
</table>

**Panel B: IT and Telecommunications**

<table>
<thead>
<tr>
<th>Stock Prices</th>
<th>Constant</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Sales</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Adjusted R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 Linear</td>
<td>8.123* (5.443)</td>
<td>1.450* (3.241)</td>
<td>0.200* (7.072)</td>
<td>0.393</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2 Arctan</td>
<td>7.280* (4.359)</td>
<td>3.921* (1.970)</td>
<td>0.198* (7.071)</td>
<td>0.427</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Panel D: Consumer

<table>
<thead>
<tr>
<th></th>
<th>Stock Price</th>
<th>Constant</th>
<th>Earnings</th>
<th>Advertising</th>
<th>Sales</th>
<th>(\varepsilon)Earnings</th>
<th>(\varepsilon)Advertising</th>
<th>Adjusted R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linear</td>
<td></td>
<td>6.678*</td>
<td>4.182*</td>
<td>2.178*</td>
<td>0.172*</td>
<td>-1.669*</td>
<td>-2.441*</td>
<td>0.447</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(11.709)</td>
<td>(10.344)</td>
<td>(3.695)</td>
<td>(9.069)</td>
<td>(4.13)</td>
<td>(2.139)</td>
<td></td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td>2.139*</td>
<td>14.352*</td>
<td>4.254*</td>
<td>0.190*</td>
<td>-1.477*</td>
<td>-2.004**</td>
<td>0.529</td>
</tr>
<tr>
<td>Arctan</td>
<td></td>
<td>(2.320)</td>
<td>(8.645)</td>
<td>(3.038)</td>
<td>(10.555)</td>
<td>(4.344)</td>
<td>(1.908)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.794*</td>
<td>-0.861**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4.363)</td>
<td>(1.869)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*indicates significance at the 95% confidence interval, ** indicates significant at the 90% level

First, the advertising effects are very mixed across the different industry groups. In the transport and IT sectors, advertising has either no impact or a negative impact. The model for transport sector is relatively simple compared with the other industry groups with basically earnings and sales the only explanators for stock price. Advertising does not have any impact and this is probably explained by the fact that the transport sectors consists only of small firms (with small advertising to sales ratios), is very competitive and, hence, the industry is structured so that firms would be price takers with difficulty in delineating their attributes by direct advertising. Table 7.6 also indicates a low correlation for advertising in this industry together with low proportions of comparative advertising spending to sales (1.36%) and earnings (0.57). Whether, this is a rational management decision in a competitive
industry or well below optimal spending on advertising is a research problem that deserves further analysis.

In the IT and telecommunications sector advertising expenditure has a strong negative impact on stock prices. This could signify higher than optimal spending on advertising or that advertising expenditure is not viewed as economic value-adding by shareholders. Reference to the ratios of advertising spend to sales and earnings shows that these ratios are comparatively low and one can only surmise that this is not an industry that creates shareholder value from advertising expenditure.

The health, consumer and retailing industries have a strong positive relationship between the level of advertising expenditure and stock prices consistent with advertising contributing to shareholder value. The advertising coefficients for health are the highest (7.2) and can be compared to the coefficient for earnings (18.5). This provides an indication of the relative impact of each component and the ratio (0.39) provides an approximate guide to the relative level of spending that should be allocated to both endeavours. When compared to the actual ratio (0.62) then this indicates that maybe there is a deal of over expenditure of advertising in the health sector. This is supported by the large coefficient on the advertising change variable (-6.146) suggesting that a cut in advertising would lead to an increase in stock price.

The consumer and retailing groups are also similar to health, in that advertising and change in advertising are all significant. These industries have an advertising
quadratic with the advertising function displaying a point of diminishing returns at higher levels. Suggesting, that in consumer and retail markets firms have an optimal level of advertising that maximises share price. Again, the negative coefficient on advertising change suggests that a drop in advertising would lead to an increase in stock price. Finally, the relative coefficients between earnings and advertising suggest an approximate ratio of advertising spending to earnings of about 50% for both industries. This compares to an actual ratio of 141% for consumer and 121% for retailing.

7.6 SUMMARY AND CONCLUSIONS

The major purpose of this chapter was to test the conceptual model in a listed market setting by analysing the direct relationship between marketing (advertising) expenditure and stock prices. First a sub-analysis involving the determination of the impact of advertising on sales was carried out. In all cases the sales coefficient was high (average 26.5) and the relationship can be best described as a linear mapping from advertising to sales. Overall a quadratic function was the best representation of the advertising sales relationship displaying diminishing returns (especially for large firms and the industry groups).

This analysis was then followed by the primary research problem which concerned the impact of advertising on stock prices. It was found that the impact of advertising on stock prices is quantitatively and economically different between different industry groupings. In the transport and IT industries’ advertising has either no impact or a negative impact. The fact that advertising does not have any impact in transport is probably due to the fact that the transport sector consists only
of small firms, is very competitive and, hence, the industry is structured so that firms would be price takers with difficulty in delineating their attributes by direct advertising. In the IT and telecommunications sector advertising expenditure has a strong negative impact on stock prices. This could be explained by higher than optimal spending on advertising or that advertising expenditure is not viewed as economic value-adding by shareholders. The ratios of advertising spend to sales and earnings shows that this industry does not directly create shareholder value from advertising expenditure.

On the other hand, the health, consumer and retailing industries have a strong positive relationship between the level of advertising expenditure and stock prices, consistent with advertising contributing to long-term shareholder value. The coefficients on earnings are consistently higher than the advertising coefficients showing that earnings have a greater impact on stock price. Further, the negative coefficients on the advertising change variables suggest that a cut in advertising would lead to an increase in stock price and reinforces the argument that there is a perceived (by the stock market) over-expenditure in advertising in these sectors. In summary, advertising is strongly interpreted as creating shareholder value by the stock market, but managers must take care to invest in those activities that the market views as productive in order to increase stock prices.

In this chapter a direct relationship between advertising and stock price has been demonstrated and proves the value of marketing to support the overall business objective of creating shareholder value over the long-term. The research in this chapter suggests a mixed function for advertising expenditure in creating long-term
shareholder value. This indicates that some advertising develops relationships that are incorporated as financial value in stock prices, whilst other expenditure, is considered to be of no impact or even of negative impact. This should provide accountants and management with insights into the detrimental effects of cutting marketing and advertising budgets to create higher earnings in the short-term. However, only stock effects were considered in this chapter. The flow through effects, were not considered and these are now analysed the next chapter.
CHAPTER EIGHT - SHAREHOLDER VALUE ANALYSIS OF INDIRECT AND DIRECT EFFECTS - A PATH ANALYSIS

8.0 INTRODUCTION

The previous chapter modelled the direct impact of advertising on stock price using the variables sales, and earnings as a control. In this chapter multiple dependence will be investigated for example sales and earnings now become both independent and dependent variables. Allowing the direct flow effect from marketing to sales and earnings and the indirect stock price effects mediated through the performance measures sales and earnings to be estimated. In this chapter stock and flow effects from advertising to shareholder value will be examined as described in the conceptual model in chapter five. The theoretical flow outlined in the conceptual model is from advertising to marketing assets through sales, cash, earnings and then into stock price and the direct impacts on stock price. However, it may well be that for some firms and industries the financial flow drivers of shareholder value may differ. For example, the flow might be from advertising to sales and then straight to stock prices. Knowledge of these effects (either direct or indirect) is of considerable interest to marketers and knowledge of the pathway drivers of shareholder value is of strategic value to management.

This chapter decomposes these pathway effects by utilising structural equation modelling (SEM) to model the advertising, financial and shareholder value relationships introduced in chapter seven. The results obtained in chapter seven will guide the structural equation modelling process. The compustat data set will once
again be utilised together with the competing models hypothesis estimating both linear regression and non-linear regressions. Structural equation modelling in the form of path analysis will be used to estimate the direct, indirect and total effects of advertising on shareholder value and the financial performance metrics. The analysis in chapter seven will be extended by tracing the performance of advertising and operationalising the impact through the hierarchy of measures. Structural equation modelling will be applied according the methodology prescribed to by Bollen (1989) and Hair et al. (1995) in which theory provides the rationale for all aspects of the structural equation modelling. Following chapter seven, the data is split by firm size and industry in order to test for possible differences across groupings. In chapter seven only direct effects from the independent variables to the dependent variables were estimated. The advantage of structural equation modelling is that both direct and indirect effects can be estimated and variables can be both independent and dependent in the same model. The chapter now proceeds as follows. Section 8.1 outlines the data used and technical issues, section 8.2 contains the results from the linear modelling, section 8.3 the results from the non-linear estimation and section 8.4 provides the summary and conclusions.

8.1 DATA ANALYSIS AND TECHNICAL ISSUES

The compustat data set that has been extensively outlined in chapter seven will again be utilised in this chapter. Turning to technical issues, SEM in recent times has become a popular method of examining causal relationships in marketing research to estimate direct and indirect relationships between variables. However, some researchers feel that the technique has been somewhat misused (Hulland et.

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35 Section 8.1 incorporates work from Coote (1998).
al. 1996) and research by Bollen (1989) has been paramount in identifying those areas that need more attention. The relevant procedures outlined in Bollen (1989) namely; specification of the theoretical model, sample size, data screening, treatment of missing values, and multivariate normality will be followed in this chapter.

8.1.1 Path Diagrams – The Theoretical Model

A path diagram represents a set of relationships that are hypothesised to hold based upon theoretical constructs. Thus, the nature of the assumed causal inferences must have strong theoretical foundations. The paths in the diagram represent a system of simultaneous equations that incorporate multiple dependence and determine direct, indirect and total effects. The direct effects in the model form the stock effects and the flow effects are measured through the indirect effects of advertising on shareholder value. A number of potential direct paths are illustrated in Figure 8.1.

For example, one potential path flow hypothesis is that advertising will directly impact both earnings and sales, and through these impacts, indirectly flow into stock prices. Another potential path is a direct relationship between advertising and stock prices. However, the more strongly argued hypothesis in marketing and finance theory is the indirect flow model which states that advertising will impact sales, which in turn impacts earnings, and thence flows into stock prices (see chapter five).
8.1.2 Research Questions

The research issues faced in this chapter are similar to that of chapter seven with the addition of testing the direct and indirect flow effects of advertising through sales and earnings into price, and therefore shareholder equity. As outlined in the conceptual model in chapter five it is hypothesised that marketing can have both stock effects (direct) and flow effects (indirect) on shareholder value in listed markets.

If the purpose of marketing is to directly increase shareholder value and has an impact that increases marketing assets, then the ‘stock’ model hypothesises that increases in advertising expenditure will directly impact on stock prices. That is, there is a future intangible asset created from advertising expenditure. Furthermore, a mixed theoretical model hypothesises suggests that there will be both flow and stock effects and that the impact of advertising will be both direct and indirect. This is the model that is hypothesised to most likely hold up in practice and requires evidence of a secondary ‘flow’ effect through the accounting statements caused by the increased marketing assets. Therefore, the hypothesis proposed in this chapter is that the dominant overall model will be mixed but the degree of mixture may vary because of size and industry factors.

8.1.3 Structural Equation Modelling (SEM)

The assumptions of SEM are now stated. First, the observations must be independent and, second, the observations must come from a representative and random sample. Structural analysis means that the model will reveal significant
pathway causal relations that are estimated through covariance structures. The covariance formula is as follows:

\[
\text{COV} = \sigma_i \sigma_j \rho_{ij} \quad (8.1)
\]

Where, COV is the covariance between two observed variables, \( \sigma_i, \sigma_j \) are the standard deviations, and \( \rho_{ij} \) is the correlation coefficient between those variables. Covariance Implies a systematic relationship between two variables in which a change in one implies a corresponding change in the other. Hence, the covariance of two variables measures their tendency to vary together. Further, covariance analysis provides a means of validating causal relationships and testing underlying theory, which in this thesis will be used to test the casual relationship between advertising and financial performance.

8.1.4 Data Screening and Model Identification
As previously stated the compustat data set will once again be used in this chapter. As with chapter seven; advertising, sales, earnings and stock price will be modelled and cash flow will be excluded from the analysis because of outlier and missing value problems. Because outliers can cause considerable problems for the data analysis and the interpretation of results PRELIS in LISREL were used to screen the data for outliers. Further, listwise deletion of missing values was used throughout the data analysis (Nunnally and Bernstein 1994). Missing values were found to be a problem with the cash flow variable, which only had data points for the second half of the time series. Due to the problematic nature of the variable
and it’s often high correlation with sales (as with in chapter seven) it was excluded from the analysis.

Further, in practice the LISREL program checks model identification by assessing the positive-definiteness of the information matrix (Joreskog and Sorbom 1989). Several other methods are available to determine whether theoretically a model to be estimated is identified. The \( t \)-rule is the simplest test and is a necessary but not sufficient condition for identification (Diamantopoulos 1994). The \( t \)-rule requires the number of non-redundant elements in the sample covariance matrix to be greater than or equal to the number of unknown model parameters. The \( t \)-rule is given by:

\[
\begin{align*}
    t & \leq \frac{1}{2} (p + q)(p + q + 1) \\
\end{align*}
\]

(8.2)

Where \( p \) and \( q \) are the number of \( y \) and \( x \)-variables respectively and \( t \) is the number of free parameters (Joreskog and Sorbom 1989, p.17). The \( t \)-rule allows researchers to quickly detect models that are under-identified and the ease of using this rule is the main advantage. With regard to this research, all of the models estimated in the data analysis meet this necessary condition for model identification. However, the \( t \)-rule does not guarantee model identification and researchers must rely on other techniques to demonstrate theoretically that a model to be estimated is identified (Bollen 1989).

For example, data screening has an important role in identifying the characteristics of the raw data and should be conducted prior to the statistical analysis. The
absence of data screening efforts is regarded as one of the most frequent errors in structural equation modelling (Baumgartner and Homburg 1996). In addition to being used to generate an appropriate input matrix to estimate the structural equation models, PRELIS (the pre-processor to LISREL program) was used for data screening (Joreskog and Sorbom 1996b). The data was screened to check that no coding errors were made and the data had been inputted correctly. The data screening procedures conducted using PRELIS did not reveal any atypical cases, except for the cash flow variable which was already identified in chapter seven.

Furthermore, structural equation modelling, like regression analysis, is based on the assumption that the data comes from a multivariate normal population. In this chapter the variables are normalised and standardised by applying the SPSS program which assigns a mean of zero and a standard deviation of one. A variety of measures are also available to researchers for assessing how well estimated structural equation models fit the sample data. A number of general classes of model fit measures can be distinguished, including measures of absolute, incremental and parsimonious model fit (Hair et al. 1995).

The most commonly reported measure of overall model fit is the chi-square test statistic (Baumgartner and Homburg 1996). The chi-square test statistic provides a simultaneous test that the fitted residuals are zero (Bollen 1989), with the null hypothesis being that the population covariance matrix is equal to the model implied covariance matrix. The chi-square test statistic can be interpreted as testing the "constraints placed on the model" (Brannick 1995, p.205). That is, the
chi-square test statistic reflects whether the relationships, constrained to zero, reproduce the population covariance matrix adequately.

Following the chi-square test statistic the goodness of fit index (GFI) is the most widely reported measure of model fit (Baumgartner and Homburg 1996). The GFI statistic ranges in value from zero to one with, smaller values indicting poor fit and larger values indicating good fit. Although, no absolute threshold levels have been established, GFI values greater than or equal to 0.90 indicates that the model fits the data well (Hulland et. al. 1996). The AGFI is simply the GFI adjusted for degrees of freedom and is a more conservative estimate of fit. Finally, the root mean squared residual (RMR) is used to compare the fit of two different models for the same data (Joreskog and Sorbom 2001).

All indications of fit provide the researcher with different types of information about the model. For instance, the chi-square test statistic provides a measure of the overall goodness of fit of the model, whereas the GFI is an absolute index of how well the model fits compared to not having a model. To be confident in the model a range of measures should be reported and no measure should be reported in isolation. In this chapter, all the above measures were used to assess goodness of fit of the models.

8.1.5 Additional Issues and Limitations

Structural equation modelling provides researchers with several other advantages relative to other multivariate techniques. However, there are potential limitations to the application of structural equation modelling techniques beyond the complexities
of model estimation and testing. Though the maintained model may reproduce the sample covariance matrix well, the possibility exists that rival models could generate the same level of goodness-of-fit (Mulaik et. al. 1989). In addition to the problem of equivalent models, researchers should consider the meaning of causality and the conditions that must be satisfied before causality can be established. Model complexity is another issue that has immediate practical implications for researchers and is related to the issue of model parsimony. The next sections discuss the notion of causality and parsimony as these issues apply to structural equation modelling.

**8.1.5.1 Causality**

Structural equation modelling allows researchers to examine potentially causal relationships, although "...the term causal modelling is a misnomer and should not be so casually applied" (Breckler 1990, p. 262). That is the theoretical explanation for the empirical relationship must be established. The marketing literature on structural equation modelling reflects this position and suggests, "...no single concept is more pervasive and important in marketing than the notion of cause and effect" (Bagozzi 1980, p.1). Moreover, establishing evidence of causality requires the correct specification of the causal ordering of variables (Hunt 1991). That is, for variable x to causally explain variable y, changes in x must precede changes in y. The conceptual model (Figure 8.1) provides a theoretical model of cause and effect in the marketing/finance/accounting interface and represents stock and flow effects of advertising to shareholder value.
8.1.5.2 **Parsimony**

A related issue that one needs to consider is the concept of model parsimony. The English philosopher William of Occam developed the parsimony principle in the 14th century and this concept is now described as Occam's razor. According to the parsimony principle ultimately researchers should present the most elegant solution to represent the underlying relationships. The parsimony principle would require researchers to accept the simplest explanation from a number of competing theories that have an equal probability of being confirmed. Thus, everything else being equal the simplest explanation is always the most preferred. There are many advantages of accepting simpler models and the "...simpler hypothesis is usually the more elegant, more convenient to work with, more easily understood, remembered and communicated" (Lambert and Brittan 1970, p.69). The parsimony principle suggests that more restricted structural equation models should be preferred to less constrained rivals. Further, in large samples more parsimonious models generate more precise estimates of the common parameters than less parsimonious rivals (Bentler and Mooijaart 1989).

8.2 **ESTIMATION OF THE RESULTS**

The estimated models represent the advertising to shareholder value relationships and how the relationships are moderated by factors such as firm size and industry group. The effect of advertising is measured through its impact on sales, earnings and finally stock price. The effect of advertising can either be direct or indirect through the other variables in the structural model. In chapter seven linear and non-linear models were run to determine the most appropriate functional relationships between the variables. These findings will be used to guide the
structural relationships estimated in this chapter. First, the linear models will be estimated for the full sample, firm size and industry groups; and then non-linear relationships will be re-estimated for each of these samples.

### 8.2.1 Full Sample – Linear Model

The results from running the structural model presented in the path diagram in figure 8.1 are now discussed. Using listwise deletion of missing values the effective sample size is 1360. Because LISREL has difficulty coping with non-normal data, all the variables, stock price, earnings, advertising, and sales have been standardised by assigning a mean of zero and a standard deviation of one to each variable. The results from running the structural model on the full data set are reported in table 8.1. No model fit statistics are produced because the model was fully saturated.

The first column identifies the estimated path and the second column contains the standardised direct effect beta coefficient with \( t \)-values in parentheses. The table shows that all direct relationships are significant but not all are positive. The standardised direct effects are presented in panel A. The coefficient from the advertising path to sales is the highest at 0.808 indicating a strong relationship between advertising and sales. This supports the results from chapter 7 and much of the advertising research literature. This strong relationship is probably the reason why the sales variable is predominantly used as a measure of advertising effectiveness. On the other hand, the coefficient for the advertising earnings path is smaller at 0.315 and is consistent with some of the previous research literature that has found weaker comparative relationships between advertising and earnings than
with advertising and sales (Dekimpe and Hanssens 1995a). The earnings to stock price path is small at 0.084 although, the sales to stock price path is much greater at 0.417, and the effect of sales on earnings is 0.370. Finally, the advertising to stock price path is negative and significant at -0.193.

As a general summary, advertising has fairly large direct effects on the surrogate flow performance indicators, sales and earnings; but has a negative impact on stock price. This negative effect has a number of implications. It implies that market traders interpret increases in advertising as having an immediate effect of reducing shareholder equity values and react accordingly. But this relationship does not take into account the indirect flow effects.

The standardised indirect effects are summarised in panel B. All of the standardised indirect effects are significant and in a positive direction. Advertising to stock price now has a standardised indirect effect on stock price of 0.338, which is mediated through sales and earnings. This result differs from the direct effect of advertising on stock price, which is negative and means that whilst advertising has a major impact, it is an indirect flow effect through other variables. The advertising to earnings indirect effect is 0.299 through sales, and again supports the larger indirect effect that advertising has on financial performance. Sales have only a small indirect effect on stock price of 0.031, with this effect mediated through earnings.
### Table 8.1: Standardised Effects in the Total Sample

#### Panel A – Direct Effects

<table>
<thead>
<tr>
<th>Path</th>
<th>Standardised direct effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings $\rightarrow$ Stock Price</td>
<td>0.084* (2.479)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Stock Price</td>
<td>-0.193* (-4.314)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Stock Price</td>
<td>0.417* (9.245)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Earnings</td>
<td>0.315* (9.024)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Earnings</td>
<td>0.370* (10.587)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Sales</td>
<td>0.808* (50.533)</td>
</tr>
</tbody>
</table>

#### Panel B - Indirect Effects

<table>
<thead>
<tr>
<th>Path</th>
<th>Standardised indirect effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising $\rightarrow$ Stock Price</td>
<td>0.338* (10.398)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Stock Price</td>
<td>0.031* (2.414)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Earnings</td>
<td>0.299* (10.362)</td>
</tr>
</tbody>
</table>

#### Panel C – Total Effects

<table>
<thead>
<tr>
<th>Path</th>
<th>Standardised total effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings $\rightarrow$ Stock Price</td>
<td>0.084* (2.479)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Stock Price</td>
<td>0.196* (7.356)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Stock Price</td>
<td>0.448* (10.308)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Earnings</td>
<td>0.614* (28.666)</td>
</tr>
</tbody>
</table>
The direct and indirect effects are now combined in order to gain an understanding of the full structural model and the overall effects of the variables modelled. Panel C presents the standardised total effects from the full structural model. All of the relationships are significant and positive. The total advertising to stock price relationship is now positive at 0.196 confirming the impact of advertising on stock price is an indirect flow. The earnings and sales effects on stock price remain the same at 0.084 for earnings and 0.370 for sales; and the sales to stock price effect is 0.448 which represents a significant positive relationship. The advertising effect on sales is also the same at 0.808 with the overall advertising to earnings relationship is 0.614. Finally, panel D contains the explained variance (squared multiple correlations) for the structural equations where the direct and indirect effects are run simultaneously. The model accounts for a substantial proportion of the variation in stock price (0.112), earnings (0.424) and sales (0.653).

In summary, there are both direct (stock) and indirect (flow) effects with the major impact of advertising on stock price being a flow effect. Advertising impacts on
stock prices through sales and earnings flows and not directly as a long-term intangible asset. This finding leads one to conclude advertising, on average, does not have continuous long run impacts and, hence, the case for classifying it as an asset is weak. Hence, the preliminary conclusion is that advertising is a renewable investment that must be continually updated. However, the attributes of advertising may vary, due to size and industry, and this analysis is now undertaken.

8.2.2 Firm Size

The size of the firm may have an impact on the amount of funds available for advertising, research and development and other intangible assets that the firm may wish to develop. For example, large firms may have greater total and relative funds to expend on advertising, a larger resource base and better known and recognisable brand names. Second, industry grouping may also have a moderating effect. Different circumstances such as the level of competition, entry and exit barriers, and scale economic factors are prevalent in industry groupings.

In this section the data is split into small and large sub-groups. The small sub-group consists of those firms with below average market capitalisation and vice-versa for large firms. The sample size is 960 for small firms and 400 for large firms. The structural equation pathways are re-estimated as outlined in figure 8.1 and the results are presented in table 8.2.

Panel A in table 8.2 shows that not all the standardised direct paths are significant and of the same sign and, therefore, a chi-square difference test is conducted to determine whether the paths are significantly different from each other. The
advertising to stock price path is significantly different between small and large firms. Small firms have a negative relationship between advertising and stock price and large firms have a positive relationship (coefficients -0.232 and 0.252 respectively), and thus exhibit a cross-over effect. Further, the advertising to earnings effect is strongly positive for small firms, but not significant for large firms. From the advertising results for firm size, thus far, it can be said that advertising for small firms have a greater direct effect on earnings and for large firms has a greater stock price effect. In short, large firm advertising appears to have more of the attributes of long-term brand building (i.e. a stock effect) and small firms appear to concentrate on generating or maintaining earnings (the flow effect).

Panel B contains the standardised indirect effects and all are positive and significant. For example, the advertising to stock price effect for small and large firms is 0.474 and 0.314 respectively. Hence the impact of advertising on large firms is through both positive direct and indirect effects; whilst small firms only have a positive indirect effect, which is greater than that of large firms. Further, the advertising to earnings indirect effect for small and large firms is 0.193 and 0.269 respectively which is mediated through sales to earnings. Of particular note is that the indirect sales impact on stock price is weak for small firms (0.082) and large firms (0.071).
### Table 8.2: Standardised Firm Size Effects

**Panel A – Direct Effects**

<table>
<thead>
<tr>
<th>Path</th>
<th>Small firms</th>
<th>Large firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings → Stock Price</td>
<td>0.324*</td>
<td>0.192*</td>
</tr>
<tr>
<td></td>
<td>(6.751)</td>
<td>(4.019)</td>
</tr>
<tr>
<td>Advertising → Stock Price</td>
<td>-0.232*</td>
<td>0.252*</td>
</tr>
<tr>
<td></td>
<td>(-4.462)</td>
<td>(3.328)</td>
</tr>
<tr>
<td>Sales → Stock Price</td>
<td>0.440*</td>
<td>0.348*</td>
</tr>
<tr>
<td></td>
<td>(8.859)</td>
<td>(4.323)</td>
</tr>
<tr>
<td>Advertising → Earnings</td>
<td>0.240*</td>
<td>0.049</td>
</tr>
<tr>
<td></td>
<td>(7.049)</td>
<td>(0.623)</td>
</tr>
<tr>
<td>Sales → Earnings</td>
<td>0.254*</td>
<td>0.371*</td>
</tr>
<tr>
<td></td>
<td>(7.831)</td>
<td>(4.512)</td>
</tr>
<tr>
<td>Advertising → Sales</td>
<td>0.760*</td>
<td>0.725*</td>
</tr>
<tr>
<td></td>
<td>(32.376)</td>
<td>(22.918)</td>
</tr>
</tbody>
</table>

**Panel B - Indirect Effects**

<table>
<thead>
<tr>
<th>Path</th>
<th>Small firms</th>
<th>Large firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising → Stock Price</td>
<td>0.474*</td>
<td>0.314*</td>
</tr>
<tr>
<td></td>
<td>(11.579)</td>
<td>(5.282)</td>
</tr>
<tr>
<td>Sales → Stock Price</td>
<td>0.082*</td>
<td>0.071*</td>
</tr>
<tr>
<td></td>
<td>(5.113)</td>
<td>(3.001)</td>
</tr>
<tr>
<td>Advertising → Earnings</td>
<td>0.193*</td>
<td>0.269*</td>
</tr>
<tr>
<td></td>
<td>(7.611)</td>
<td>(4.427)</td>
</tr>
</tbody>
</table>

**Panel C - Total Effects**

<table>
<thead>
<tr>
<th>Path</th>
<th>Small firms</th>
<th>Large firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings → Stock Price</td>
<td>0.324*</td>
<td>0.192*</td>
</tr>
<tr>
<td></td>
<td>(6.751)</td>
<td>(4.019)</td>
</tr>
<tr>
<td>Advertising → Stock Price</td>
<td>0.243*</td>
<td>0.566*</td>
</tr>
<tr>
<td></td>
<td>(6.417)</td>
<td>(10.797)</td>
</tr>
<tr>
<td>Sales → Stock Price</td>
<td>0.522*</td>
<td>0.420*</td>
</tr>
<tr>
<td></td>
<td>(10.596)</td>
<td>(5.235)</td>
</tr>
<tr>
<td>Advertising → Earnings</td>
<td>0.433*</td>
<td>0.319*</td>
</tr>
<tr>
<td></td>
<td>(17.824)</td>
<td>(5.975)</td>
</tr>
</tbody>
</table>
Sales → Earnings

<table>
<thead>
<tr>
<th>Variable</th>
<th>Small Firms</th>
<th>Large Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales → Earnings</td>
<td>0.254*</td>
<td>0.371*</td>
</tr>
<tr>
<td></td>
<td>(7.831)</td>
<td>(4.512)</td>
</tr>
<tr>
<td>Advertising → Sales</td>
<td>0.760*</td>
<td>0.725*</td>
</tr>
<tr>
<td></td>
<td>(32.376)</td>
<td>(22.918)</td>
</tr>
</tbody>
</table>

* *, ** indicates significance at the 5% and 10% levels, _ indicates a different standardised direct effect, t-tests are in brackets

The total effects of the variables are estimated and summarised in panel C where all the overall effects are positive and significant, but with the impact on stock prices portraying differential impacts. For small firms, the flow variables - earnings and sales have a greater impact on stock prices. On the other hand, advertising has a much greater impact on stock prices for large firms compared to small firms (0.566 and 0.243 respectively). This observation is supported by the results in panel D that show the simultaneously run models explain 30.4% of stock market variance for large firms and 18.1% for small firms. Hence, it can be concluded that advertising for large firms generates greater direct shareholder value.

It should also be noted that advertising is important for both. The difference is that the impact for small firms is a flow effect through sales and earnings, whilst advertising for large firms has both strong stock (direct) and flow (indirect) effects. In summary, advertising is more likely to be longer term strategic tool and result in intangible asset generation in large firms when compared to small firms. The
impacts may also be related to competitive factors that are a function of industry and this hypothesis is examined in the next section.

8.2.3 Industry Groups

Next the structural equation pathways were run for the five industry groupings; health, IT and telecommunications, transport, consumer and retailing. The path model estimated for the industry groups is shown in figure 8.2. These models were not saturated and model statistics were produced. All models have low $\chi^2$ values and $p$ values greater than 0.05. The results are as follows; health $\chi^2 = 1.088$ ($p = 0.580$), IT $\chi^2 = 1.401$ ($p = 0.496$), transport $\chi^2 = 4.679$ ($p = 0.197$), consumer $\chi^2 = 1.589$ ($p = 0.207$) and retail $\chi^2 = 2.439$ ($p = 0.295$). All models also display exceptional goodness of fit statistics, health (RMR = 0.016, GFI = 0.997, AGFI = 0.985), IT (RMR = 0.016, GFI = 0.993, AGFI = 0.969), transport (RMR = 0.034, GFI = 0.968, AGFI = 0.894), consumer (RMR = 0.010, GFI = 0.998, AGFI = 0.986), and retail (RMR = 0.010, GFI = 0.995, AGFI = 0.977).

The industry group relationships are presented in table 8.3. First the direct relationships are examined these relationships are presented in panel A. The direct path for advertising to stock price is not positive for any of the industry groups, with the relationship negative for IT (-0.521). Further, the direct path from earnings to stock price is significant and positive for the consumer (0.180) and retailing (0.096) industries. The direct effect of advertising on earnings is positive and significant across all the industry groups (except for transport). The sales to earnings paths are positive and significant only for health (0.575) and consumer (0.279) groups. The advertising to sales paths are strong and positive for all the industry groups.
with the coefficients ranging from 0.639 for health to 0.944 for transport. Finally, the sales to stock price path is positive and significant for all of the groups and ranges from 0.442 for IT and 0.152 for the consumer group.

Panel B summarises the standardised indirect effects. The indirect effects from advertising to stock price through earnings and sales are significant for all the groups and range from 0.320 for IT to 0.149 for health. There are also significant indirect effects from advertising to earnings for the health and consumer sectors and sales to stock price for the consumer sector.

Total effects are summarised in panel C. The advertising to stock price effects are significant for all the groups. These relationships are significant because of the strong positive indirect effects from advertising through sales and earnings to stock price. All the relationships are positive except for in the IT group, which remains negative.

The explained variances are reported in panel D. For stock price the highest explained variance is found in the retailing sector with 13.1% of the variation in stock price being explained by advertising ranging down to 5.1% in the consumer sector. The explained variation of earnings ranges is mostly high (above 0.4) for all the groups except transport, which is 0.059. Again advertising had a strong and consistent influence on sales, with the highest in transport 89.3% and the lowest in health with 42% explained variance.
In summary, after breaking down into industry groups, advertising was not found to be important for the IT industry. In fact, the expenditure of funds on advertising had a significant negative impact on the stock price of IT firms. In other industries there was no evidence of a direct impact from advertising to stock prices, but there was an overall significant and positive total impact. This was the result of advertising positively increasing sales, which in turn increased earnings and then stock prices. Once the firms are split out by industry group a strong direct advertising effect is no longer present, suggesting that this direct relationship is a large firm phenomena.
<table>
<thead>
<tr>
<th>Path</th>
<th>Panel B - Indirect Effects</th>
<th>Panel A - Direct Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales → Stock Price</td>
<td>Sales → Earnings</td>
</tr>
<tr>
<td></td>
<td>Advertising → Earnings</td>
<td>Advertising → Earnings</td>
</tr>
<tr>
<td></td>
<td>Retailing</td>
<td>Retailing</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>Health</td>
</tr>
</tbody>
</table>

**Table A.3: Standardized Industry Effects**
<table>
<thead>
<tr>
<th>Path</th>
<th>Retailing</th>
<th>Consumer</th>
<th>Transport</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>0.805</td>
<td>0.205</td>
<td>0.833</td>
<td>0.418</td>
</tr>
<tr>
<td>Earnings</td>
<td>0.452</td>
<td>0.415</td>
<td>0.009</td>
<td>0.014</td>
</tr>
<tr>
<td>Stock Price</td>
<td>0.131</td>
<td>1.260</td>
<td>0.800</td>
<td>0.024</td>
</tr>
</tbody>
</table>

**Panel D - Explained Variation**

<table>
<thead>
<tr>
<th>Path</th>
<th>Retailing</th>
<th>Consumer</th>
<th>Transport</th>
<th>Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising-Sales</td>
<td>(3.22)</td>
<td>(2.41)</td>
<td>(18.98)</td>
<td>(11.77)</td>
</tr>
<tr>
<td>Sales-Earnings</td>
<td>0.223</td>
<td>0.723</td>
<td>0.225</td>
<td>0.332</td>
</tr>
<tr>
<td>Sales-Stock Price</td>
<td>(6.17)</td>
<td>(3.22)</td>
<td>(10.68)</td>
<td>(0.23)</td>
</tr>
<tr>
<td>Advertising-Sales</td>
<td>(14.86)</td>
<td>(18.25)</td>
<td>(2.14)</td>
<td>(11.26)</td>
</tr>
<tr>
<td>Advertising-Stock Price</td>
<td>(9.96)</td>
<td>(9.96)</td>
<td>(18.37)</td>
<td>(0.54)</td>
</tr>
<tr>
<td>Advertising-Earnings</td>
<td>(6.91)</td>
<td>(5.42)</td>
<td>(2.79)</td>
<td>(3.01)</td>
</tr>
<tr>
<td>Earnings-Stock Price</td>
<td>(1.96)</td>
<td>(1.96)</td>
<td>(0.20)</td>
<td>(0.14)</td>
</tr>
</tbody>
</table>
8.3 NON-LINEAR MODELS

The previous section analysed the linear relationship between the variables. However, in chapter seven it was argued that non-linear models may better represent the underlying marketing/finance/accounting relationships especially for earnings and advertising. This section now explores non-linear structural equation models in order to determine whether these non-linear relationships provide better estimations and representation of shareholder value and to check on the robustness of the linear analysis.

In this analysis advertising is modelled as a quadratic relationship whilst earnings are modelled as a cubic s-shaped relationship (see chapter 7 for the theoretical discussion). This conceptual model is presented in Figure 8.2. The analysis will follow the linear analysis where the total sample is analysed followed by firm size and industry groups. Five of the sixteen hypothesised paths were non-significant (earnings to stock price, earnings\(^2\) to stock price, earnings\(^3\) to stock price, advertising to stock price, advertising\(^2\) to earnings). A trimmed model without these paths was estimated (no further changes were made) and the respecified model had good fit to the sample data as indicated by the chi-square statistic \(\chi^2 = 0.409 \ (p = 0.523)\) and other measures of model fit. The model provides exceptional goodness of fit statistics (RMR = 0.002, GFI = 0.999, AGFI = 0.997). The non-linear paths have increased the degrees of freedom allowing model statistics to be estimated. Table 8.4 presents the linear and non-linear results focussing on the advertising relationship with the performance metrics.
Figure 8.2: Initial Non-Linear Model
### Table 8.4: Standardised Effects in the Total Sample

#### Panel A – Direct Effects

<table>
<thead>
<tr>
<th>Path</th>
<th>Linear</th>
<th>Non-linear</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Earnings → Stock Price</strong></td>
<td>0.084*</td>
<td>0.102**</td>
</tr>
<tr>
<td></td>
<td>(2.479)</td>
<td>(1.785)</td>
</tr>
<tr>
<td><strong>Earnings^2 → Stock Price</strong></td>
<td>-0.103</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.365)</td>
<td></td>
</tr>
<tr>
<td><strong>Earnings^3 → Stock Price</strong></td>
<td>-0.070</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.999)</td>
<td></td>
</tr>
<tr>
<td><strong>Advertising → Stock Price</strong></td>
<td>-0.193*</td>
<td>-0.053</td>
</tr>
<tr>
<td></td>
<td>(-4.314)</td>
<td>(-0.669)</td>
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<tr>
<td><strong>Advertising^2 → Stock Price</strong></td>
<td>0.188*</td>
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<td></td>
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<td><strong>Sales → Stock Price</strong></td>
<td>0.417*</td>
<td>0.161*</td>
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<td>(3.246)</td>
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<tr>
<td><strong>Advertising → Earnings</strong></td>
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<td>0.366*</td>
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<tr>
<td></td>
<td>(9.024)</td>
<td>(7.131)</td>
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<tr>
<td><strong>Advertising → Earnings^2</strong></td>
<td>-0.308*</td>
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<td>(-8.076)</td>
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<tr>
<td><strong>Advertising → Earnings^3</strong></td>
<td>-0.441*</td>
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</tr>
<tr>
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<td>(-9.294)</td>
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<td><strong>Advertising^2 → Earnings^3</strong></td>
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<td>0.324*</td>
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<td>(11.171)</td>
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<td><strong>Sales → Earnings^2</strong></td>
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<tr>
<td><strong>Sales → Earnings^3</strong></td>
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<td><strong>Advertising → Sales</strong></td>
<td>0.808*</td>
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<td>(50.533)</td>
<td>(35.088)</td>
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### Panel B - Indirect Effects

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<tr>
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<th>Non-linear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising → Stock Price</td>
<td>0.338*</td>
<td>0.167*</td>
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<tr>
<td></td>
<td>(10.398)</td>
<td>(3.147)</td>
</tr>
<tr>
<td>Advertising → Stock Price</td>
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<td>-0.091*</td>
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<tr>
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<td>Sales → Stock Price</td>
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<td>Advertising → Earnings</td>
<td>0.299*</td>
<td>0.229*</td>
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<tr>
<td></td>
<td>(10.362)</td>
<td>(10.645)</td>
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<tr>
<td>Advertising → Earnings²</td>
<td></td>
<td>0.454*</td>
</tr>
<tr>
<td></td>
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<td>(22.651)</td>
</tr>
<tr>
<td>Advertising → Earnings³</td>
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<td>(15.886)</td>
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### Panel C - Total Effects

<table>
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<td>Earnings → Stock Price</td>
<td>0.084*</td>
<td>0.102**</td>
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<td>(2.479)</td>
<td>(1.785)</td>
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<td>Earnings → Stock Price</td>
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<td>-0.103</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-1.365)</td>
</tr>
<tr>
<td>Earnings → Stock Price</td>
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<td>-0.070</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.999)</td>
</tr>
<tr>
<td>Advertising → Stock Price</td>
<td>0.196*</td>
<td>0.114**</td>
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<tr>
<td></td>
<td>(7.356)</td>
<td>(1.893)</td>
</tr>
<tr>
<td>Advertising → Stock Price</td>
<td></td>
<td>0.098**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.632)</td>
</tr>
<tr>
<td>Sales → Stock Price</td>
<td>0.448*</td>
<td>0.094*</td>
</tr>
<tr>
<td></td>
<td>(10.308)</td>
<td>(2.558)</td>
</tr>
<tr>
<td>Advertising → Earnings</td>
<td>0.614*</td>
<td>0.595*</td>
</tr>
<tr>
<td></td>
<td>(28.666)</td>
<td>(12.540)</td>
</tr>
<tr>
<td>Advertising → Earnings²</td>
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<td>0.145*</td>
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<td></td>
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<td>(3.885)</td>
</tr>
<tr>
<td>Advertising → Earnings³</td>
<td></td>
<td>-0.103*</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Advertising → Earnings⁴</td>
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<td>-0.035</td>
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<tr>
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<td>(-0.744)</td>
</tr>
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</table>
The results for the total sample are presented in table 8.4. An examination of the relevant statistics between the linear and non-linear models shows that the non-linear model generally provides similar results. There are some exceptions. There is a non-significant non-linear direct advertising to stock effect, compared to a negative and significant direct linear effect. Closer examination shows this is caused by the fact that higher levels of advertising (the squared advertising coefficient), is related to higher stock prices. This result suggests that firms are required to make significant investments before a marketing asset is created and, therefore, there is an inverse functional relationship with regards to advertising expenditure.
The opposite is true for the indirect flow effects. The functional relationship means that there is an optimal level of advertising expenditure that will flow through into stock value. The combined effects show similar patterns (panel C) with the exception being a reduction of the impact of sales on stock prices and a lower non-linear explained variance for advertising on stock price (panel D).

8.3.1 Firm Size
When the non-linear models for small and large firms are run different relationships are found and not all the paths are significant. The non-linear models estimated produce models with low $\chi^2$ values and $p$ values greater than 0.05. These are as follows, small $\chi^2 = 3.241$ ($p = 0.493$), and large $\chi^2 = 7.471$ ($p = 0.188$). Goodness of fit statistics produced are good for the non-linear models, small (RMR = 0.005, GFI = 0.998, AGFI = 0.992), and large (RMR = 0.017, GFI = 0.994, AGFI = 0.967). The results from the model are presented in table 8.5 and again the focus and discussion concentrates on the impact of advertising expenditure on the performance measures.

The direct effects are presented in panel A. The non-linear model for small firms indicates that the advertising effect is from advertising to stock price and it is negative. This indicates that, for small firms, higher levels of advertising have a diminishing influence on stock prices. That is there is no direct brand equity created that is transformed into financial equity and there is an optimum level of advertising. Above this optimum level further expenditure on advertising has a negative influence. For large firms the positive direct impact evidenced from the linear model is confirmed but at a higher coefficient level. Thus, the direct impact
of advertising expenditure on stock price is stronger than is evidenced by the linear model.

The indirect effects are summarised in panel B. There are significant positive non-linear indirect effects from advertising to stock price for both small and large firms. The indirect non-linear effect is smaller for large firms and for small firms it becomes significantly negative for the quadratic (again suggesting an optimum level of advertising). The total effects show that advertising has a higher total impact on stock price for large firms than small firms, with higher levels of advertising for small firms having a negative influence on stock prices. Hence, the impact of advertising for large firms is direct whilst for small firms occurs through the flow impact of the financial statements. This result can be attributed to a higher level of brand equity (marketing intangible) created through advertising by larger firms and a higher focus on transaction marketing by smaller firms.

An interesting aside is the decline in the impact of sales on stock price after controlling for other influences by the application of non-linear functional relationships. That is, the relationship between sales and stock prices should be moderated to take in the effects of other variables.
Table 8.5: Standardised Effects Firm Size

*Panel A – Direct Effects*

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<thead>
<tr>
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<th>Linear Small</th>
<th>Non-linear Small</th>
<th>Linear Large</th>
<th>Non-linear Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings → Stock Price</td>
<td>0.324*</td>
<td>0.125**</td>
<td>0.192*</td>
<td>0.222*</td>
</tr>
<tr>
<td></td>
<td>(6.751)</td>
<td>(2.231)</td>
<td>(4.019)</td>
<td>(2.682)</td>
</tr>
<tr>
<td>Earnings² → Stock Price</td>
<td>0.479*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(5.557)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings³ → Stock Price</td>
<td>-0.211*</td>
<td></td>
<td>-0.178*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.285)</td>
<td></td>
<td>(-2.028)</td>
<td></td>
</tr>
<tr>
<td>Advertising → Stock Price</td>
<td>-0.232*</td>
<td>0.252*</td>
<td>0.475*</td>
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</tr>
<tr>
<td></td>
<td>(-4.462)</td>
<td>(3.328)</td>
<td>(9.787)</td>
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<tr>
<td>Advertising² → Stock Price</td>
<td>-0.139*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-3.825)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sales → Stock Price</td>
<td>0.440*</td>
<td>0.348*</td>
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<tr>
<td></td>
<td>(8.859)</td>
<td>(4.323)</td>
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<td>Advertising → Earnings</td>
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<td>(7.049)</td>
<td>(15.730)</td>
<td>(0.623)</td>
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<tr>
<td>Advertising → Earnings²</td>
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<td></td>
<td>-0.430*</td>
<td>-7.021</td>
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<tr>
<td></td>
<td>(6.523)</td>
<td></td>
<td>(-3.825)</td>
<td></td>
</tr>
<tr>
<td>Advertising → Earnings³</td>
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<td>-0.585*</td>
<td>(-9.553)</td>
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<td>Advertising² → Earnings</td>
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<td>0.206*</td>
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<td>(8.899)</td>
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<td></td>
</tr>
<tr>
<td>Advertising² → Earnings²</td>
<td>0.182*</td>
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<td>0.568*</td>
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<td>(8.999)</td>
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<td>0.693*</td>
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<td></td>
<td>(14.163)</td>
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<td>Sales → Earnings</td>
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<td>0.371*</td>
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<td>(7.235)</td>
<td>(4.512)</td>
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<td>(18.412)</td>
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<td>Sales → Earnings³</td>
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<td>0.486*</td>
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<td>(10.696)</td>
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<td>Advertising → Sales</td>
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<td>0.993*</td>
<td>0.725*</td>
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<td>(32.376)</td>
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### Panel B – Indirect Effects

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<td>Advertising → Stock Price</td>
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<td>(11.579)</td>
<td>(8.191)</td>
<td>(5.282)</td>
<td>(2.359)</td>
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<td>(5.113)</td>
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<td>Advertising → Earnings</td>
<td>0.193*</td>
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<td>0.231*</td>
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<td>(7.611)</td>
<td>(6.682)</td>
<td>(4.427)</td>
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<td>Advertising → Earnings’²</td>
<td>0.339*</td>
<td>0.323*</td>
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<td>(8.998)</td>
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### Panel C – Total Effects

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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Earnings → Stock Price</td>
<td>0.324*</td>
<td>0.125*</td>
<td>0.192*</td>
<td>0.222*</td>
</tr>
<tr>
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<td>(6.751)</td>
<td>(2.231)</td>
<td>(4.019)</td>
<td>(2.682)</td>
</tr>
<tr>
<td>Earnings’ → Stock Price</td>
<td>0.479*</td>
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</tr>
<tr>
<td></td>
<td>(5.557)</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Earnings’² → Stock Price</td>
<td></td>
<td>-0.211*</td>
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<td>-0.178*</td>
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<td>(-2.028)</td>
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<td>0.243*</td>
<td>0.298*</td>
<td>0.566*</td>
<td>0.574*</td>
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<td>(8.191)</td>
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<td>Advertising’ → Stock Price</td>
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<td>(-4.566)</td>
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<td>Advertising → Earnings</td>
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<td>(17.824)</td>
<td>(20.611)</td>
<td>(5.975)</td>
<td>(6.046)</td>
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Advertising $\rightarrow$ Earnings$^2$  
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<th>Non-linear</th>
<th>Linear</th>
<th>Non-linear</th>
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<tr>
<td></td>
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<td>Large</td>
<td>Large</td>
</tr>
<tr>
<td>Stock Price</td>
<td>0.604* (15.554)</td>
<td>0.004 (0.058)</td>
<td>0.004 (0.058)</td>
<td>0.004 (0.058)</td>
</tr>
<tr>
<td>Earnings</td>
<td>0.339* (10.692)</td>
<td>-0.262* (-3.971)</td>
<td>-0.262* (-3.971)</td>
<td>-0.262* (-3.971)</td>
</tr>
<tr>
<td>Earnings$^2$</td>
<td>-0.111* (-5.655)</td>
<td>0.206* (3.782)</td>
<td>0.206* (3.782)</td>
<td>0.206* (3.782)</td>
</tr>
<tr>
<td>Earnings$^3$</td>
<td>-0.046 (-1.141)</td>
<td>0.568* (8.899)</td>
<td>0.568* (8.899)</td>
<td>0.568* (8.899)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Earnings</td>
<td>0.254* (7.831)</td>
<td>0.215* (7.235)</td>
<td>0.371* (4.512)</td>
<td>0.347* (6.489)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Earnings$^2$</td>
<td>0.442* (18.412)</td>
<td>0.654* (17.404)</td>
<td>0.654* (17.404)</td>
<td>0.654* (17.404)</td>
</tr>
<tr>
<td>Sales $\rightarrow$ Earnings$^3$</td>
<td>0.341* (13.537)</td>
<td>0.486* (10.696)</td>
<td>0.486* (10.696)</td>
<td>0.486* (10.696)</td>
</tr>
<tr>
<td>Advertising $\rightarrow$ Sales</td>
<td>0.760* (32.376)</td>
<td>0.993* (17.430)</td>
<td>0.725* (22.918)</td>
<td>0.663 (16.646)</td>
</tr>
<tr>
<td>Advertising$^2$ $\rightarrow$ Sales</td>
<td>-0.517* (-9.066)</td>
<td>0.693* (10.052)</td>
<td>0.693* (10.052)</td>
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Panel D – Explained Variance

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<td>0.294</td>
<td>0.353</td>
<td>0.127</td>
<td>0.266</td>
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<tr>
<td>Earnings$^2$</td>
<td></td>
<td>0.512</td>
<td></td>
<td>0.638</td>
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<tr>
<td>Earnings$^3$</td>
<td></td>
<td>0.369</td>
<td></td>
<td>0.417</td>
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<tr>
<td>Sales</td>
<td>0.522</td>
<td>0.351</td>
<td>0.568</td>
<td>0.424</td>
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*, ** indicates significance at the 5% and 10% levels, t-tests are in brackets

Panel C summarises the overall relationships comparing the total effects of small and large firms. The earnings stock price relationship exhibits diminishing returns for both small and large firms. Advertising to stock price and advertising to earnings also show diminishing returns. Whilst, advertising to sales is diminishing for small firms and linear for large firms. These results suggest that there are
optimal levels of advertising expenditure. Overall the models indicate that the advertising stock price path is stronger for large firms compared with small firms, the advertising earnings path is stronger for small firms which is consistent with the results from the linear modelling. The results suggest that small firms are better off concentrating on transaction marketing designed to drive earnings and sales and thus the flow effects to stock price (shareholder value creation). Large firms are able to build stronger long-term brand equity through directly effecting stock prices but can also benefit from flow effects.

When comparing the linear and the non-linear models the explained variation of the performance measures changes. These results are presented in panel D the linear models explain more of the variation of stock price and sales, whilst the non-linear models explain more of the variation in earnings.

8.3.2 Industry Groups

This section re-estimates the non-linear models for all the industry groups except IT. The non-linear specification was found to be not significant for the IT sector. With the non-linear models as with the linear models all industry group models have low $\chi^2$ values and $p$ greater than 0.05. These are as follows, health $\chi^2 = 8.918 \ (p = 0.063)$, transport $\chi^2 = 4.949 \ (p = 0.666)$, consumer $\chi^2 = 1.937 \ (p = 0.586)$ and retail $\chi^2 = 4.147 \ (p = 0.528)$. Goodness of fit statistics are also good for the non-linear models, health (RMR = 0.011, GFI = 0.987, AGFI = 0.910), transport (RMR = 0.014, GFI = 0.981, AGFI = 0.925), consumer (RMR = 0.004, GFI = 0.999, AGFI = 0.991) and retail (RMR = 0.012, GFI = 0.995, AGFI = 0.975).
The direct effects are reported in panel A and show differential non-linear functional relationships from advertising to stock prices. For the transport industry the impact is negative, indicating the impact of advertising spending has a negative impact on shareholder equity. For the consumer industry, the impact is initially negative but for higher levels of advertising the relationship turns positive. Hence, in the consumer industry the critical increase in shareholder equity comes at higher levels of advertising expenditure. However, in the retailing industry, the opposite is true. Modest amounts of advertising create shareholder equity but at higher levels of expenditure the relationship turns negative. Therefore, there is an optimal level of overall advertising expenditure. The most notable difference is in the retail sector where the advertising to stock price direct path was not significant for the linear models but becomes significant and strong in the non-linear models.

As an aside, the use of non-linear modelling means that the earnings to stock price direct path has now become significant for all the groups. The sales to stock price relationship became significant for consumer and non-significant for retailing, again emphasising the importance of specifying functional relationships. The advertising sales relationship remains strong and positive for all the groups and displays a non-linear relationship with diminishing returns for retail.

The indirect effects are summarised in panel B and generally reaffirm the positive and significant relationships uncovered by the linear modelling. The notable statistic is the indirect effect in the health industry, which is driven by higher levels of advertising expenditure.
Table 8.6: Standardised Non-linear and Linear Industry Effects

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<td>5.532</td>
<td>5.532</td>
</tr>
<tr>
<td>5.920</td>
<td>5.920</td>
</tr>
<tr>
<td>7.469</td>
<td>7.469</td>
</tr>
<tr>
<td>7.856</td>
<td>7.856</td>
</tr>
<tr>
<td>8.629</td>
<td>8.629</td>
</tr>
</tbody>
</table>

*Panel C - Total Effects*
<table>
<thead>
<tr>
<th>Sales</th>
<th>Earnings</th>
<th>Earnings</th>
<th>Earnings</th>
<th>Stock Price</th>
<th>Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.80</td>
<td>0.016</td>
<td>0.418</td>
<td>0.288</td>
<td>0.0409</td>
<td></td>
</tr>
<tr>
<td>20.80</td>
<td>0.060</td>
<td>0.701</td>
<td>0.627</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>20.80</td>
<td>0.852</td>
<td>0.415</td>
<td>0.289</td>
<td>0.0499</td>
<td></td>
</tr>
<tr>
<td>20.80</td>
<td>1.181</td>
<td>0.518</td>
<td>0.319</td>
<td>0.0264</td>
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</tr>
</tbody>
</table>

Panel D - Explained Variance

```
<table>
<thead>
<tr>
<th>Advertising Sales</th>
<th>Sales</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1.78) (1.32)</td>
<td>0.326</td>
<td>0.432</td>
</tr>
<tr>
<td>(0.72) (2.47)</td>
<td>0.947</td>
<td>0.447</td>
</tr>
<tr>
<td>(0.4)</td>
<td>0.376</td>
<td>0.894</td>
</tr>
<tr>
<td>(0.28)</td>
<td>0.949</td>
<td>0.495</td>
</tr>
</tbody>
</table>
```

*Indicates significance at the .01 level. Figures in brackets are t-values.
Panel C summarises the total effects of the non-linear modelling and together with the decomposed direct and indirect effects provides an indication of where advertising expenditure is more effective. In health, the positive impact is driven by higher levels of advertising expenditure and by the indirect flow effects. Thus, this industry could possibly benefit by advertising aimed at increasing the transaction side of marketing. In transport, non-linear modelling does not change the overall coefficient, except to suggest that higher levels of advertising expenditure have a negative direct impact on stock price. This possibly also indicates that this industry does not benefit from advertising expenditure aimed at branding, reflecting a competitive price-taker type industry. In the consumer industry, the major impact comes at higher levels of expenditure but the decomposition shows that this is driven by the direct effects. Thus, spending on transaction advertising possibly has a negative effect whilst significant (and strategic) spending of advertising on brand building appears to have a positive impact on stock prices. Finally, in the retailing industry, higher levels of advertising expenditure has a negative impact on prices and the indirect effects show that transaction marketing is possibly more effective.

The impact of advertising on earnings is non-linear for health, consumer and retail with diminishing returns, and transport displaying increasing returns. When the non-linear forms are introduced the relationships between sales and the performance measures change somewhat. The sales stock price path becomes greater in the health and the transport groups and weaker in the consumer group and retail groups compared with the linear models. The sales earnings
relationship becomes stronger for all groups when the non-linear relationships are introduced.

The explained variance for each of the industry groups is presented in panel D and the most notable statistic is the improved explained variance for stock prices when compared to the linear model (16.8% v 5.4%, 20.4% v 9.8%, 7.6% v 5.1% and 20.9% v 13.1% for health, transport, consumer and retailing respectively). Overall the results show that the explained variance for the performance measures stock price and earnings are greater when the non-linear relationships are estimated.

8.4 SUMMARY AND CONCLUSIONS
Establishing an empirical indirect flow and direct linkage between advertising and shareholder equity is the main contribution to the marketing literature in this chapter. Establishing these relationships was achieved by modelling linear and non-linear relationships between stock price, earnings, sales, and advertising, and then decomposing the analysis into firm size and industry group effects. The results from modelling the relationships between advertising and stock prices are among the key findings. All the models provided evidence that advertising has a positive effect on stock prices. The decomposition into indirect and direct effects showed a subtle different between flow and stock impacts. The further decomposition into size and industry groups showed further differential effects.

The strongest effect was a strong positive relationship in the large firm analysis and it is important to further discuss this interaction effect because it has
theoretical and practical significance for marketers. Advertising is a direct investment in shareholder equity for large firms. The market recognises the stock price impact of advertising (brand building and brand communication) on the success or failure of large firms and responds by pushing stock prices higher for large firms with higher advertising expenditure through stock and flow effects. Small firms confront a different and more difficult situation. Small firms need advertising to generate sales and earnings: variables that respond positively to advertising, there is a strong flow effect present. However, the market responds by punishing small firms for higher levels of advertising expenditure. Advertising is seen as an erosion of shareholder wealth for small firms. This reflects general market skepticism about the ability of small firms to directly shareholder wealth from higher levels of advertising.

This theme is reinforced by the results of the non-linear models. In the total sample, a small positive relationship between advertising and stock price was found for higher levels of advertising. No relationship was found at lower levels of advertising. For small firms, the relationship between advertising and stock price is negative at high levels of advertising. The relationship is again not significant at lower levels of advertising. It is possible to draw a parallel between these findings and the so-called “tech boom.” Many small technology-focused companies expended large amounts of shareholder wealth through advertising and some of these companies were ultimately valued at zero by the market. Similarly, the results suggest that successful small firms that advertise heavily are rare (and this finding should assist rather than discourage individual entrepreneurs).
Moreover, the results from the industry analysis provide clues to the type of advertising that may be more successful in different industries. In health, the positive impact is driven by higher levels of advertising expenditure and by the indirect flow effects. Thus transaction marketing efforts are supported. In transport, higher levels of advertising expenditure have a negative direct impact on stock price. This indicates this industry does not benefit from advertising expenditure aimed at branding and reflects a competitive price-taker type industry. This is also the case in the IT sector where higher levels of advertising have a direct negative impact on stock prices and overall advertising has a negative impact even though the flow effects are positive. In the consumer industry, the major impact comes at higher levels of expenditure but this is driven by the direct effects. Thus, spending on transaction advertising has a negative effect whilst significant (and strategic) spending of advertising on brand building appears to have more of a positive impact on stock prices. Finally, in the retailing industry, higher levels of advertising expenditure have a negative impact on stock prices and the indirect effects show that transaction marketing is possibly more effective.

Finally, the results in this chapter encourage marketers to further examine non-linear relationships between marketing, finance and accounting variables. Non-linear models have the potential to expand our understanding of marketing phenomena and the subtle nature of those relationships.
CHAPTER NINE - SUMMARY AND MANAGERIAL IMPLICATIONS

9.0 SUMMARY OF MAIN CONTRIBUTIONS

This thesis has presented a conceptual model of how marketing can impact on shareholder value through stock (investors) and flow effects (consumers). Stock effects represent the direct impact of MC on financial performance measures and flow effects are the indirect flows from MC through the performance measures to shareholder value. The research extends the marketing literature to incorporate shareholder metrics developed in finance. To date, marketing as a discipline has tended to focus on the consumer and neglected the importance of investors to the corporation. The research in this thesis brings these two concepts together by bridging the consumer and investor relationships and it is specifically recognised that the role of marketing is a dual one - to maximise both customer and shareholder objectives. As a secondary issue, the research also extends the finance literature by including marketing as a driver of shareholder value.

Specifically, the main theoretical contributions to marketing are contained in chapter five. This is achieved by developing an overall conceptual model that shows the stock and flow financial variables which marketing expenditure must impact before it can be recognised as contributing to shareholder equity. This can be achieved in two main ways, first directly from marketing assets to stock price and second from marketing assets to increased flow variables. This chapter also highlights the fact that markets are incomplete and in most cases
stock is not traded on active stock markets and therefore flow variables must be used as surrogates to assess value. Hence, based upon the theoretical and empirical literature a hierarchy of measurement metrics that can be used to assess shareholder value is developed. Stock prices rank highest followed by risk adjusted earnings. Finally, using the concept of normalized earnings and a required risk adjusted rate of return, a pricing method is outlined that enables marketers to estimate the value of marketing intangibles.

Other less major but never-the-less important contributions are made in chapters two, three and four. Chapter two provides a background overview of the marketing/finance/accounting interface. In this chapter the conceptual model linking marketing assets to shareholder value by Srivastava, Shervani and Fahey (1998) was presented and discussed which provides an important framework for the conceptual model developed in chapter five. In chapter three a literature review the relevant research that links MC to financial performance metrics was presented. This was important in highlighting the limited empirical research that has been undertaken in this area. This research has mostly been concentrated on the relationship with sales with some limited recent research linking MC to profitability and stock prices. Chapter four outlines the statistical techniques that have been utilised in the literature to measure the marketing/finance/accounting relationships. The importance of this chapter was in highlighting a number of techniques that should prove popular for researchers who realise the benefits in combining econometric and time series techniques. In my opinion these techniques will be the drivers of future quality research in marketing.
The substantial empirical contributions are contained in chapters six, seven and eight. The abnormal risk adjusted model was tested empirically in a non-traded market setting in chapter six. Using cross-sectional time-series panel data techniques it was found that MC is positively associated with unexpected risk adjusted earnings in large credit unions but not in small credit unions. The impact was mainly short-term in nature suggesting that marketing in the finance industry creates short-term flow effects. That is it has the attributes of transaction marketing rather than that of an intangible asset and, therefore, must be continually renewed. The use of these statistical techniques and the valuation model has not been previously applied in the marketing area. Chapters seven and eight examine the direct and indirect impacts of MC on stock prices, sales and earnings. The major innovations in these chapters are to utilise non-linear statistical techniques and to decompose the data into size and industry groupings. The major findings are that marketing expenditure has both positive direct and indirect impacts and these vary according to the contextual setting of firm size and industry.

9.1 MANAGERIAL IMPLICATIONS

The empirical research and theoretical modelling undertaken in this thesis has a number of implications for management. These implications concern planning and inter-corporate co-ordination, valuation, motivation, the lowering of agency problems, and assessing the importance of marketing.
9.1.1 Planning and Co-ordination

The first if the implications concerns planning. Planning is an essential element in the budgetary process (Lyne 1988) and particularly significant in marketing management where expenditures such as advertising and promotion, can be viewed as discretionary. Birkin (1992) describes how market asset valuation feeds into planning by focusing attention on those areas where spending is needed most and also by highlighting less effective areas of marketing expenditure. In marketing management this means decomposing expenditure and analysing MC in order to assess the more effective components in terms of brand and equity valuation. For example, for firms experiencing a negative shock in earnings, decisions have to be made whether a higher investment in marketing will lead to a recovery in (future) earnings performance or whether to cut in marketing costs.

Part of planning concerns the potential of marketing to alleviate coordination problems confronted by boards of directors. Since financial and marketing activities cross functional lines, it is important that the various functions have a common focal point(s). The importance of a common frame of reference to focus the disparate functions of the organisation on the pursuit of effective corporate strategies has been noted by Aaker (1996). It is suggested that a common corporate goal which focuses on shareholder equity (as well as marketing equity) might serve to alleviate conflicts apparent in short-term and long-term planning and budgeting across functional areas. This illustration highlights how
investments in marketing assets can also become the responsibility of areas outside the marketing function (Wood 1998).

One further implication of having a detailed understanding of the drivers of asset values and future income concerns the potential of marketing to contribute to greater manager involvement in the accounting system and budgetary process. Although the findings of extensive research on budgetary participation are relative inconclusive, there appears to be consensus view that greater budgetary participation is desirable (Kirby et al. 1991). It has already been noted that marketing professionals feel somewhat alienated by an accounting system that is inadequately tailored to the needs of marketing decision making. Incorporating marketing asset valuation and the association of marketing with accounting flow and stock variables would reduce this alienation, as those involved with marketing management would recognise a dimension of accounting with which they feel a closer affinity.

The final planning implication recognises the potential of marketing to impact strategic planning and control. Understanding the position of marketing efforts relative to: the appropriate financial measurement tool, the correct contextual setting, the impact of incomplete markets and agency contracting, is an essential function of management. Knowledge of the source of the financial power of the marketing expenditure, whether it has a short-term or long-term life, the duration of financial flow, and whether it should be renewed or is capable of generating excess future economic returns is essential in this contextual process. Indeed the financial valuation process can be seen to represent a strategic audit of the
marketing efforts standing and potential. Thus, the strategic orientation evident in this exercise should translate into more effective strategic planning and control.

9.1.2 Valuation
This implication exhibits more of a financial accounting or finance orientation than the previous implication. The valuation implication is that marketing expenditure can be viewed as an expenditure that adds value in the short-term or is capitalised and adds value in the long-term. Knowledge of the theoretical techniques outlined in chapter five can practically aid managers in assessing whether marketing expenditure is productive in economic terms. Another perspective is that it concerns the view that valuing marketing assets via the accounting system would convey useful information to investors. Inclusion of this implication as an outcome from the thesis permits an assessment of the desirability of including marketing asset reporting in published external statements, relative to its desirability as a managerial tool.

9.1.3 Motivation and Focus
This implication recognises how financial accountability can motivate managers towards higher levels of performance. Quantifiable targets are generally more effective motivators of performance than targets based on non-quantifiable or qualitative dimensions of performance (Locke et al. 1981). This would appear particularly significant in an area of management where less quantifiable performance indicators, such as advertising recall and perceived brand image, are common. The addition of specific financial goals is helpful given the
ambiguity between marketing goals and other financial measures. A precise specification of targets and required outcome will aid in increasing focus and motivation.

The second part of this implication focuses on the potential for using marketing to reinforce or expand the brand value of the market asset as a measure of marketing’s performance. Using marketing in this manner would appear to be particularly relevant in strongly branded companies seeking to reinforce the importance of corporate value maximisation and builds on the previous implication. For example, managers are confronted with a variety of marketing choices (Keller 1993) and one particular problem faced by management is the trade-off between short and long-term profit maximisation. Further, there are numerous smaller objectives associated with increasing marketing equity, but previous fieldwork (Guilding and Pike 1994) suggests that the activity of marketing expenditure management can be somewhat vague and ambiguous with respect to overall objectives. Hence, attempts to quantify marketing assets as a financial measure might more sharply define the desired outcome of marketing activities and cement marketing as a desirable and productive management function.

9.1.4 Lowering Agency Problems

This implication concerns the potential of accounting for intangible marketing assets and marketing expenditure to result in a greater management focus on long-term aspects of financial performance and mitigate a number of the professional environmental pressures in accounting. Conventional accounting
measures are historically based on conservative principles. Concerns over the way in which performance targets denominated in accounting measures may carry detrimental implications for the long-term success of the company are well documented (Doyle 2000). However, a focus on building up and justifying intangible marketing assets provides a long-term culture and focus for the firm, thus aligning the internal coalitions with the customer and shareholder coalitions.

This approach also recognises the long-term implications of marketing by focusing on the financial outcomes and to justify increased expenditure on marketing support and development. The result of short-term marketing expenditures might be reflected (immediately or with a lag) in increased financial flows, stock price increases if it generates a marketing asset or a combination of both. Knowledge of these individual and joint effects is highly valuable to management. It is suggested to note that expensed outlays are subject to tighter controls than capitalised outlays and capitalised outlays predispose an attitude that the marketing asset does not need renewing. This may thus prove to be counter-productive to marketers seeking to justify and align marketing efforts to firm goals.

9.1.5 Relative Importance

The final managerial implication concerns the effect MC might have on marketing managers’ perceptions of which components of MC are important. A number of researchers assert that basing expenditure decisions of performance measures on only marketing equity perceptions would likely lessen the value placed on marketing activities. However, if marketing component activities (and assets) are
periodically measured and assessed in financial terms, then managers can be expected to view maximisation of this dimension of performance as important. This implication also covers the requirement for managers to assess the financial impact of the various forms of marketing in order to assess relative value for money from each endeavour. This aspect is also strongly related to the planning and control implication.

9.2 FURTHER RESEARCH
The research in this thesis has focused on the importance of having clear financial customer and shareholder objectives when evaluating marketing performance and value and in having a clear idea of the appropriate performance metrics. The research has also demonstrated that MC can create shareholder value through stock and flow effects by firm type and whether they operate in traded or non-traded markets.

An obvious extension for future research is to decompose the marketing outlays into finer partitions in order to analyse the relative effectiveness of the different components. This research can also be directly extended by providing further insights into which components are better able to create shareholder value for firms and whether the findings differ by firm and industry type. Shifting the strategic efforts in marketing in order to obtain the highest rate of return can be a useful tool for managers, especially when justifying marketing strategy and budgets.
Another avenue for research is to examine whether marketing can directly or indirectly affect the risk structure of the firm. This area has been relatively sparsely researched in the marketing literature and is a natural outcome of the conceptual model developed in chapter five. In conjunction with this is the requirement that surrogate indices for risk of financial flows or asset structure be developed. This is particularly important in non-listed markets.

Research on the evaluation of marketing impacts as non-linear relationships is an area that requires further attention. Knowledge of the optimum levels of aggregate (and specific) marketing is important for managers as an aid to channel scarce resources. This research will be further aided by the recognition by accountants of marketing as a significant driver of shareholder value and thus reporting expenditure breakdowns and capitalisation on the balance sheet. This also requires accountants to have a detailed knowledge of the leverage effects of marketing (both operating and financial) on economic performance and to assess the functional relationship of those relationships.

Finally, the application of more sophisticated time series statistical techniques such as: vector error correction modelling, cross-sectional time-series panel data techniques, impulse functions, and multivariate GARCH techniques to assess flow and risk effects will only improve the quality of marketing research.
REFERENCES


