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The impact of advertising on security returns

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THE IMPACT OF ADVERTISING ON SECURITY RETURNS

by

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TABLE OF CONTENTS

SECTION 1

INTRODUCTION

This study proposes that advertising affects purchasing behavior of security investors in some similar way as it affects consumer behavior in product purchasing. Product advertising may influence investors to buy stock in the advertising companies. Test results demonstrate that product advertising is an important factor in explaining security returns. Moreover, we infer that by using product advertising, firms can increase their market value. A case in point was the statement made by Wayne Callaway, chairman of the board of Pepsico, at the 1989 annual shareholders' meeting. When questioned as to why Pepsico's annual advertising expenditures reached close to a billion dollars in 1989, Mr. Callaway replied, "We advertise this much because it makes good sense to our consumers and increases our sales and shareholder value."

Two advertising-security purchase related processes were distinguished in this study, namely "brand-linked"and "non-brand-linked". A "brand-linked" situation takes place when an advertised product and the company that

produces it have the same name. In this case, the name listed on the securities exchange is the same name as the product that is being advertised. An example of a "brand-linked"situation is the Coca Cola company where the product brand name is Coca Cola and the exchange listing is Coca Cola. A "non-brand-linked"situation occurs when the name of the advertised product differs from the name of the company producing it. In this case the exchange-listed name is different from the product name being advertised. For example, Proctor and Gamble, the exchange listed name, differs from the product brand name Crest. The "brand-linked"situation was found to be the most powerful in explaining security returns. The concept of a product name being linked to the name of the firm that produces the product is becoming increasingly popular. An article in Investor's Daily (1) dated March 16, 1988 quotes an executive as saying: "Companies are getting smarter. They recognize they have an asset with their name and they want to manage it better." An Aspach report showed that 1753 companies changed their firm's names in 1987, representing a 27% increase from the previous year. The principal of a major name consulting firm was quoted as stating: "These new names reflect a deliberate decision by management to signal a new direction

or strategy for the corporation, to capitalize on the familiarity of a brand name, or to eliminate a perceived limitation to future growth." "Brand-link" induces consumers to identify firms with their product brands. Our study suggests that the "brand-link"firm/product identification also creates a buyer's familiarity with the firm name that makes him, as an investor, more likely to purchase stock in these firms. This study demonstrates the increased tendency of security buyers to purchase "brand-linked" stocks that they are more familiar with. We test the relationship of "brand-linked" and "non-brand-linked" firms to security returns.

The Capital Asset Pricing Model (CAPM) is a traditional model used to evaluate security returns. One of the CAPM assumptions is that information is costless and simultaneously available to all investors. Our study uses a modified version of the CAPM. We relaxed the CAPM "information" assumption. In reality, the gathering of information takes time and costs money. Furthermore, differences in awareness do exist among investors. The differences in awareness between investors in the marketplace may result from differences in investor exposure to firms through advertising. Advertising is both an information provider as well as a persuader through

frequency of repetition. Both the informative and persuasive aspects combined are proxied by the size of a firm's advertising budget. In advertising campaigns, quantity of information and frequency of repetition both depend on the amount of money spent. Our modified CAPM model incorporated advertising and yielded statistically significant results. In other words, firms are able to increase their market value by increasing their visibility to investors through advertising.

Section 2 discusses the traditional CAPM model, in section 3 we discuss its limitations and the impact of differences in information assumptions on CAPM processes. Section 4 presents a conceptual explanation of the role of advertising influence on security investor behavior. A new model incorporating advertising, empirical test designs and procedures are outlined in section 5. Test results, interpretations and analysis of financial implications are discussed in section 6. Also, in section 7 an investor survey is presented together with results and statistical evaluation. Finally, section 8 presents some directions for future research and section 9 consists of concluding remarks.

SECTION 2

THE CAPITAL ASSET PRICING MODEL

OVERVIEW OF SECTION 2

A traditional vehicle for evaluating the influence of factors thought to explain security return behavior is the Capital Asset Pricing Model (CAPM). The model we use to demonstrate advertising effects on security returns in this study is a modified version of the traditional CAPM. Before explaining the modified version we used in this study, we summarize below the original model together with its assumptions. We discuss the empirical tests, and findings that lead to conclusions on the overall risk/return patterns CAPM helps to explain and those it fails to explain. Several factors other than beta are found to be significant in explaining security return behavior.

CAPITAL ASSET PRICING MODEL

The Capital Asset Pricing Model was jointly developed by Sharpe (2) and Lintner (3). (CAPM) is based on simple economic assumptions. It implies that prices of assets in the capital markets adjust until equivalently

risky assets have identically expected returns.

The CAPM equation is:

$E(R_p)=R_F+\beta_p[E(R_m)-R_F]$

where:

$E(R_p)$ = expected portfolio return

R_F = risk free rate

β_p = systematic risk beta

$E(R_m)$ = expected market return

This equation states that the expected return on a security portfolio should exceed the riskless rate of return by a quantity proportional to the systematic risk of the portfolio (beta). The theoretical implication of CAPM is that the relationship between return and risk is linear.

CAPM states that the expected risk premium of an investor's portfolio is equal to its beta values times the expected market risk premium. The expected return on portfolios with different levels of risk must be equivalent to the expected return for different levels of portfolio beta. When beta = 0, a safe investment, CAPM implies that an investor will expect to earn the risk free rate of interest on his portfolio. When beta > 0, for a risky investment,

the model states an investor will expect a rate of return in proportion to beta, the market sensitivity of the investment.

CAPM ASSUMPTIONS

CAPM assumptions involve conditions in the capital markets and about investor behavior. The following assumptions allow a simple derivation of the model.

(1) The market is composed of risk-averse investors who measure risk in terms of standard deviation of portfolio return. This assumption provides a basis for the use of beta-type risk measures.

(2) All investors have a common time horizon for investment decision making. Such a common time interval allows for meaningful comparisons of investor expectations.

(3) All investors are assumed to have the same expectations about future security returns and risks.

(4) Capital markets are perfect in the sense that all assets are completely divisible, there are no transaction costs or differential taxes, and borrowing and lending rates are equal to each other and the same for all investors.

(5) Risk free assets exist.

Although these assumptions are sufficient to derive CAPM, several of them may be substantially relaxed without major change in the form of the model.

CAPM is surely an elegant model. Numerous tests have been done to see how it holds up explaining observed risk-return patterns. If CAPM were completely accurate, empirical tests should find that:

1. Over long time periods, and on average, securities with high systematic risk have high rates of return.

2. There is, on average, a linear relationship between risk and beta.

3. The slope of the relationship is equal to the mean market risk premium during the period used.

4. The constant term is equal to the mean risk-free rate.

5. Unsystematic risk plays no significant role in explaining security returns.

CAPM EMPIRICAL TESTS

Tests found a significant positive linear relationship between realized returns and systematic risk. Results of the Jacob Study (4) showed a positive relationship between security returns and risk from 1946 to 1955 and from 1956 to 1965. Furthermore, Jacob's results show an average increase of 6.7 percent annually for every unit increase in beta. Although the relationship

between return and risk was predicted by CAPM in each of the periods studied using both monthly and yearly regressions, *abnormal returns were greater than theoretically predicted* and the *coefficient for beta was less than predicted*. Similarly, Miller Scholes (5) found a significant positive relationship between mean security return and beta. Their tests indicated that a 7.1 percent increase in mean return was associated with a one unit increase in beta. They also tested for the impact of unsystematic risk by adding standard deviation of return as a factor in CAPM. Their results showed higher realized return to be associated with high unsystematic risk. They also found both beta and standard deviation of return to be significantly positively related to mean return. Theoretically, standard deviation should not have been related to mean return according to CAPM. However, they suggested that this disagreement with CAPM predictions might well be due to statistical sampling problems.

The following studies used grouping procedures to eliminate errors-in-variable and unsystematic risk component effects. These problems generally arise in tests that use individual securities and can effectively be eliminated using grouping procedures described in section 5 (Advertising and Security

Returns Test).

The same positive linear correlation was shown in tests based on portfolio returns. Friend and Blume (6) found that NYSE stocks with above average risk had higher returns than those with below average risk. They concluded, however, that there was no substantial gain in assuming additional risk within the group of stocks with above average betas. In another series of tests covering three sequential periods, 1955-1959, 1960-1964, and 1965-68. Friend and Blume found that both the value for abnormal return and their beta coefficient value were not in accordance with CAPM predictions. *The slope of the fitted line was less than predicted in the first two periods and then reversed itself and became greater in the third test period.* Overall, however they found that a linear model was a tenable approximation of the empirical relationship between risk and return for NYSE stocks. The deviations between the empirical tests of CAPM and the model's predicted values have not yet been explained.

In a related study covering a 35-year period, Black, Jensen, and Scholes (7) found average returns increased by 13 percent per year for a one unit increase in beta. This represented about three quarters of the amount

predicted by the CAPM. In most of the subperiod tests they performed the *slopes of the regression lines understated the theoretical values, but overall indicated a positive linear description.* Their study showed that a positive linear relationship existed between realized returns and systematic risk over long periods of time. Fama and MacBeth (8) tested for nonlinearities in the risk return relationship and for the impact of residual variation. They did not find the coefficients of these factors to be significant.

Tests on the value of beta have been conducted as well. Robert A. Levy (9) found beta coefficients to be very predictable for large portfolios and progressively less predictable for smaller portfolios and individual securities. Pogue and Conway (10) found that historical betas do contain useful information about future values. They stated, however, that the degree of predictability of beta depends on the extent to which measurement errors have been eliminated from beta estimates.

SUMMARY OF CAPM EMPIRICAL RESULTS

All empirical tests of CAPM to date have found: generally, the *abnormal return coefficient is significantly different from zero prediction by the model. The beta coefficient, or slope, is somewhat less than the predicted market*

return minus the risk free rate. The model is linear in beta and has a positive slope line over long time periods. The market portfolio return has been found to be greater than the risk free rate. Both unsystematic risk factors and nonlinear factors have not generally played a major role in CAPM. Beta seems to be the dominant risk factor. Generally CAPM results show that *low beta securities earn higher rates of return than CAPM predicts and high beta securities earn lower rates of return than CAPM predicts.*

We have discussed the CAPM and described how well the predicted model values match the empirical test values observed. However, other important objections to the CAPM have been noted that effect the structure of the model used in this study. Empirical tests of CAPM have found that beta doesn't explain security returns completely. Several additional factors were found that helped to explain security return behavior. These factors include market values (11) , ratio of book value to market value (12), price/earnings ratio (13), tax effects (14), firm size (15), dividends (16), unanticipated earnings (17, 18, 19, 20, 21, 22), period of listing (23), extent of analyst agreement (24), and others. Clearly, there is a need to explore the importance of factors other than beta in explaining security returns.

SECTION 3

INCORPORATING INFORMATIONAL DIFFERENCES INTO CAPM

OVERVIEW OF SECTION 3

This section discusses modification of the Capital Asset Pricing Model (CAPM) by reviewing some of the literature that incorporates other return predicting variables into the CAPM. Later,in section 5,(Advertising and Security Return Tests), we introduce a new variable that helps explain security returns, namely advertising. An extensive literature has developed around CAPM which examines and highlights its limitations due to the lack of inclusion of informational factors. Empirical tests of CAPM have found that beta doesn't explain security returns completely. We now explore the nature of some of the other variables found to explain security returns.

CAPM EMPIRICAL TESTS WITH ADDITIONAL INFORMATION FACTORS

R. W. Banz (11) examined the relationship between the total market value of the common stock of a firm, and its return. Banz concluded his evidence suggested that CAPM was misspecified. Average small NYSE firms proved to have significantly larger risk adjusted returns than large NYSE firms

during the 1936-1975 period studied. The size effect was not linear in the market proportion, and was most evidenced for the smallest firms in the sample. Banz could not explain the size effect. He added that his results should be interpreted with caution for *either the size effect is significant or it is a proxy of some as yet unknown factor.* Further research was suggested in order to examine the relationship between size and other factors such as the dividend yield effect. Additionally, Banz suggested that tests should be expanded to include OTC stocks as well.

Stattman (12) in his unpublished M.B.A. honors paper, found a significant negative relationship between the ratio of book value and the market value of equity and its return. He reported that *this relationship was a proxy for the size effect.*

S. Basu (13) empirically determined the relationship between investment performance of equity and their P/E ratios. He found that while efficient market theory denies the possibility of earning excess returns, price-earnings ratios, because of the exaggerated expectations of investors, may indicate future investment performance. This hypothesis on price-earnings ratios, called *the price-ratio hypothesis*, was tested over the April 1957-March

1971 period. Basu felt that the behavior of security prices over that period was not completely captured by the efficient market hypothesis. On a risk adjusted basis, low P/E portfolios earned more, thus confirming Basu's price-ratio hypothesis. He stated that there appeared to be lags and frictions in the adjustment process of public available information to security prices. Basu concluded that *publicly available P/E ratios seemed to possess "information content"* that would interest the investor when forming or revising his portfolio.

Brennan (14) concluded that *differential tax effects are important* in the determination of security yields.

Reinganum (15) also found evidence suggesting that the one-period capital asset pricing model is misspecified. Portfolios based on firm size or earnings/price ratios had systematically higher returns than predicted by CAPM. *The factors omitted seemed to be related more closely to firm size than to price earnings ratios.* Because the abnormal returns persisted for at least two years, Reinganum felt that market inefficiency was not involved in the misspecification. He concluded that risk factors omitted in CAPM might account for the misspecification.

Jones and Litzenberger (17), Brown and Kenelly (18), Latane, Jones and Ricke (19), Latane and Jones (20), Joy, Litzenberger and McEnnally (21) and Watts (22) have claimed than *unanticipated earnings forecasts, based on publicly available information*, can be used to systematically predict stock prices.

Barry and Brown (23), in their 1984 article "Differential Information and the Small Firm Effect", studied a market equilibrium model in which there was less information available about some securities than about others. They tested the model to see if the differential information factor could be associated to the abnormal returns of small firms (small firm effect). Period of listing was used as a proxy for the quantity of information available. Barry and Brown found that there was a *relationship between period of listing and security returns that could be associated with the small firm effect.* Differential information, however, did not explain the small firm effect completely. Thus, Barry and Brown stated that they found a new empirical regularity in their data and named it the "period of listing" effect. *They concluded that it might be profitable to also study other proxies for quantity of information.*

Atiase (24) and Freeman (25) studied the *magnitude of the earnings*

announcement effect as a function of firm size and found that the monotonic relationship could best be explained as an information effect that might explain in part the small firm effect.

Figlewski (26) and others have examined the extent of analyst agreement as a measure of relative information.

Litzenberger/Ramaswamy (16) found dividend yield to be an important explanatory factor of security returns.

In their 1985 article titled "Differential Information and Security Market Equilibrium," Barry and Brown (27) developed a model of differential information in which the amount of information available was different across securities. They found that *estimation risk can have an effect on market equilibrium*. Securities for which there was relatively little information available were found to have relatively higher systematic risk. Thus Barry and Brown concluded that estimation risk can have effects upon observable attributes of market equilibrium when the degree of estimation risk varies across securities. Their model also provided theoretical support for the empirical study of three proxies for differential information: period of listing, number of security returns observations available, and divergence of analyst

opinion.

SUMMARY OF SECTION 3

In summary, a host of different informationally related factors have been found significant in explaining security return behavior in what has been termed a "misspecified CAPM". However, some of the suggested factors lost their significance when controlled for by others. With regard to the remaining factors, these may be proxies for other effects yet unknown. No theory of the way in which any of the factors operate has been suggested. Our study will proceed to outline in the next section, a theory of both why and how advertising acts as a firm exposure variable influencing investor behavior. Our empirical tests will link a firm exposure proxy to security returns. After describing the mechanism we will proceed to test it.

SECTION 4

ADVERTISING THEORY

OVERVIEW OF SECTION 4

This section defines advertising and examines its relevance in explaining security returns by exploring the path that advertising takes in influencing investors. We examine how advertising affects security buyers through risk perception, the tendency for investors to concentrate in only a few securities, and willingness of investors to pay more for highly advertised securities. We then introduce and discuss the concept of "brand-linked" advertising.

ADVERTISING DEFINED

Bovee and Arens (28) define advertising as "nonpersonal communication of information usually paid for, and usually persuasive in nature, about products, services, or ideas by identified sponsors through various media." As a marketing tool advertising serves several functions:

(1) To identify products and differentiate them.

(2) To communicate information about the product.

(3) To induce the trial of new products by users and to suggest repurchasing

by existing users.

(4) To stimulate a product's distribution.

(5) To increase product use.

(6) To build brand preference and loyalty.

Our thesis is that in the same way as advertising creates benefits in product markets, it proceeds to create some similar benefits in securities markets, specifically:

(1) To identify and differentiate *securities*.

(2) To communicate information about *securities*.

(3) To induce investors into buying *new/different* stocks and to suggest reasons to investors to continue *holding on to stocks* they have already purchased.

(4) To stimulate a wider distribution of a security by *increasing the size of the investor base*.

(5) To increase the sales of a *security*.

(6) To build up a trust and loyalty of investment for a particular *stock*.

WHY ADVERTISING WORKS

In 1885, an experimentalist in marketing research named Ebbinghaus (29) demonstrated that the more times a particular lesson is repeated, the

longer it takes for that lesson to be forgotten. The implications with regard to media scheduling are clear. According to Krugman (30) building strong consumer awareness must involve more than just one media exposure. Testing of media plans reveals that with only one exposure there is no recall. The second exposure generally results in a recollection of the ad, but not the brand. Finally, the third exposure enables the consumer to recall the specific brand. Thus the number of exposures required to insure familiarity is between four and ten. Current advertising practice works on this principle.

THE DIFFERENT ROLES OF ADVERTISING

Traditionally advertising has been known to change consumers tastes causing buyers to perceive fewer substitutes for the advertised products, and in turn causing demand to become less and less price elastic. This traditional view also suggests that advertised goods will increase in price and reach price levels not possible without advertising.Another theory is that, instead of persuading, advertising provides information to buyers. This actually increases competitiveness, lowers prices, and thus serves to fight monopoly power.Mark Albion and Paul Farris (31), Harvard Business School professors describe the

different roles of advertising as follows:

> "The traditional doctrine maintains that advertising is form of persuasion that creates product differentiation and allows firms to exercise market power at the consumer's expense.The more recent approach views advertising as information - an inexpensive means for communicating with large numbers of potential buyers - which stimulates competition and diminishes market power."

The advertising-as-information view is best described by Ornstein (32) as

> "The essence of this new view is that advertising provides information on brands, prices, and quality, thus increasing buyer knowledge, reducing consumers' search costs, and reducing the total costs to society of transacting business. Advertising induces sellers to improve the quality of goods: better informed buyers sire not likely to purchase or repurchase low quality or unsatisfactory goods. By increasing information, advertising increases the number of substitutes known to buyers, thereby increasing price elasticity of demand and reducing price-cost margins. Far from being a barrier to entry, advertising facilitates entry by allowing previously unknown products to gain rapid market acceptance. Without advertising, market penetration would be much slower for new products than it is with advertising."

Sheth (33) describes the persuasive advertising theory as "increasing perceived instrumentality, restructuring choice criteria, introducing new criteria, and intensifying emotive and reward needs."

The following chart (34) summarizes the two schools of thought on advertising's role in the economy:

ADVERTISING = MKT. POWER	ADVERTISING=INFORMATION
Advertising affects consumer preferences and tastes, changes product attributes and differentiates the product from competitive offerings.	Advertising informs consumers about product attributes and does not change the way they value those attributes.
Consumers become brand loyal and less price sensitive and perceive fewer substitutes for advertised brands.	Consumers become more price sensitive and buy"best"value. Only the relationship between price and quality affects elasticity for a given product.
Potential entrants must overcome established brand loyalty and spend relatively more on advertising.	Advertising makes entry possible for new brands because it can communicate product attributes to consumers.
Firms are insulated from market competition and potential rivals; Concentration increases, leaving firms with more discretionary power.	Consumers can compare competitive offers easily and competitive rivalry increases. Efficient firms remain as the inefficient leave, new entrants appear; the effect on concentration is ambiguous.
Firms can charge higher price are not as likely to compete on quality or price dimensions. Innovation may be reduced.	More informed consumers put pressure on firms to lower prices and improve quality. Innovation is facilitated via new entrants.
High prices and excessive profits accrue to advertisers and give even more incentive to advertise their products.	Industry prices are decreased. The effect them on profits due to increased competition and increased efficiency is ambiguous.

Information theory relates information to uncertainty (risk) and the concept of variance. This theory purports that information concentrates the expected probability distribution thus lowering the variance. Stigler (35) and Nelson (36) state that after obtaining information, decision makers are more certain of the ultimate results of the decision. However Hirschleifer (37) has defined information as"events tending to change.... distributions."So, information may change the assessments of probabilities attached to different outcomes. Accordingly, it is difficult to distinguish between information and persuasion. Boyer (38) states that the difference between informative and persuasive advertising"depends upon the acceptance of the nature of a good", and, men will disagree on this. Advertising"s informational vs. persuasive content will change from ad to ad. Possibly the definition of information and persuasion will depend on the product and / or consumer.

THE GENERALIZED USE OF INFORMATION

Paroush/Peles (39) have proposed that information obtained about a given asset will be used by investors toward investment in other assets for which that information is relevant. Their investigation was limited to securities, but the extension of their findings to situations that relate product information to stock information is tempting. Indeed, the major result of this

thesis is to demonstrate that this relationship in fact exists.

PRODUCT MARKET AND STOCK MARKET RELATIONSHIP

Kenneth P. Uhl (40) studied share holdings and found definite evidence of a positive association between stockholding and product purchases. More specifically, Uhl studied "purchasing preference by shareowners of the goods produced by 'their' company relative to the disposition of the general public for the company's goods." In one test with the Ford Motor Co., Uhl determined that "people who own Ford cars were more inclined to invest in Ford stock than those who owned competitive makes of cars."

If a consumer prefers a brand product, then he/she will probably prefer the stock of that company, and so they would be more likely to purchase that stock issue. This type of shareholder reasoning associates quality of corporate product with quality of stock investment.

Uhl has proved that the consumer product decisions process effects the security investment decisions process. Information from the consumer product market can lead to purchasing securities in the investment market.

PRODUCT ADVERTISING INFLUENCE ON INVESTOR STOCK BUYING BEHAVIOR

We propose that the security investment decision process and consumer

buying decision process are related. Advertising increases investors' familiarity and lowers risk perception. Investor behavior is influenced by information shared between product markets and stock markets.

Security investment decisions are principally based on financial information about the company. Dividend payment, firm leverage, earnings/price ratios, size, etc. effect investors' decisions to buy securities. This study demonstrates that stock purchasing decisions are not based solely on financial information about the firm. Stock purchasing decisions are also significantly impacted by information from the consumer product sector.

ADVERTISING DIRECTS INVESTOR ATTENTION TO SPECIFIC STOCKS

Paroush/Peles (31) state "search might bring investors to more concentration in specific securities for which the same information is valuable." The product sector provides information through advertising, that may be used in the investment sector. It is thus reasonable to expect that if products are more heavily advertised, their impact on investment buying behavior will be greater. Investors would then tend to focus on the more heavily advertised shares. Merton (41) discusses the importance of a firm advertising directly to investors in order to make them aware of the firm's identity and induce them to invest in the firm's securities. This type of firm

advertising, not directed towards promoting product sales is known as "corporate advertising." Merton's article states:

> "there are fixed costs that an investor must pay before detailed substantive information about a firm can be processed into a portfolio decision. Investors that are not aware of the firm in this sense will not become stockholders of the firm. If an increase in the size of the firm's investor base is in the best interests of the current stockholders, then management should expend resources of the firm to induce investors who are not currently shareholders to incur the necessary costs of becoming aware of the firm...
> ...Thus, our model provides a rationale for expenditures on advertising about the firm that is targeted for investors and on public relations designed to generate stories about the firm...In standard financial equilibrium models, there is no purpose for expenditures that increase the visibility of the firm in the investment community without providing new and meaningful information for investor evaluation of the firm."

Merton's conclusion is that corporate advertising initially attracts investor attention to a firm. Our study demonstrates that an investor's familiarity with the product advertisement of firms influences him to buy securities. Product advertising expenditures account for 98% of all dollars spent annually on advertising by all firms in the United States (currently about $125 billion). Corporate advertising only amounts to 2% of total advertising expenditures.

Clearly, these tremendous expenditures create both product and firm visibility through media exposure which in turn create familiarity to those individuals exposed. Whether the familiarity is created by a consumer perspective through exposure to product advertisements and then is transfered into the consumer's investment perspective when he makes stock purchases; or whether the corporate advertisements affect his security purchase decisions directly, it is certain that advertising plays a major role. Investor familiarity is influenced by the quantity of advertising he is exposed to. The concentration in attention to heavily advertised products and their associated stocks may serve as a partial explanation for Lintner's (42) observations that "...In actuality, most investors simply have no judgement whatsoever with respect to most stocks available on the market. Small investors are entirely ignorant of all but a very small subset of stocks.". Product advertising also reduces search cost to investors. As a consequence it appears likely that investors exposed to heavily advertised products are more likely to focus on the stocks associated with those products. This phenomenon is the same as that caused by advertising in consumer product markets whereby consumers focus their attention on heavily advertised products and therefore purchase

those products.

INFLUENCES OF ADVERTISING ON RISK PERCEPTION

Not only does product advertising affect stock purchase but there is a direct relation between volume of advertising and percieved risk. One aspect of familiarity, from an investment perspective may be described as a reduced perception of riskiness. The real world is one of costly information. Investors differ in the amount of information that they have and in the amount spent for search for information. Investment decisions and search for information are linked. The more information an investor obtains, the less risk he perceives in connection with a particular investment, since he has greater knowledge of it. Advertising is a form of information and persuasion. The more advertising, the less risky the investor perceives the firm. This model incorporates the effects of advertising in reducing perceived risk.

In the Markowitz (43) mean-variance approach, variances and covariances are assumed to be externally given to the investor in environmental parameters. The Paroush/Peles (31) model introduces a world where riskiness, defined as variances and covariances, is no longer assumed externally given. Investors obtain more information through search

procedures and become more certain about security returns the more they search. Paroush/Peles state that as an investor collects more information he becomes more sure and less uncertain about the mean return of a specific security. Thus, they found that information obtained through search will be used by investors in many different applications. If the information that an investor obtains is also of value toward some alternative investment he will be more comfortable about the alternative investment than other investors who don't have the information. Based on this, we demonstrate that product information obtained through advertising induces investors to purchase securities of the advertised firms. In this setting risk changes with search for additional information about rates of return. In the Paroush/Peles model final variances of securities depend on information made available, or estimation techniques, and so - optimal portfolio selection winds up depending on funds spent on search and research. Since advertising reduces search costs, it lowers variances and covariances inducing greater investment in stocks that are associated with advertised products ($\sigma_{ADV}<\sigma_{UNADV}$)

Wiggins and Lane (44) relate choice of advertised versus unadvertised goods, to consumer characteristics of risk aversion and quantity of units purchased. They found that both consumers and investors who are risk averse will be willing to pay a greater premium to obtain the lower levels of risk associated with advertising. It is reasonable to expect, that the risk averse investors would be willing to pay higher prices for securities associated with product advertising. This too, will be demonstrated in our experimental results section.

"BRAND-LINKED" ADVERTISING

This study distinguished between two types of advertising, namely what we term "brand-linked" and "non-brand-linked". "Brand-linked" advertising occurs when a company's stock is listed on the exchange in the same name as the product advertised or principal product line of the firm. "Non-brand-linked" advertising occurs when the name of the advertised product differs from the name of the company producing it.

It is widely recognized that a well known brand name is a valuable asset that can greatly enhance the demand for a firm's products. Both economic and marketing literature recognize brand name influence on

product sales. Investor's Daily newspaper (1) of March 16, 1988 gives an example of the importance of firm identification with product brand:

> "1985 Consolidated Foods Chairman John H. Bryan Jr. started looking for a new name to identify the company better, especially on Wall Street."

The name of Consolidated Foods was changed to Sara Lee Corp. The article quoted

> "subsequent research showed Sara Lee had almost 100% recognition and conjured nearly 100% images of quality...Eighteen months and 1.5 million later, Sara Lee Corp executives are pleased with the results of their search for a new identity."...[Vice President Robert Lauer said] 'We just don't think (the stock) would be where it is today if we hadn't changed the name. People just weren't excited about holding a stock of Consolidated Foods, but the case was different with Sara Lee Corp.'"

Investor Daily stated:

> "Research also showed stocks of consumer foods companies that shared their name with a premier product tended to trade at higher multiples."

The investor associates the company's name with the product advertisement. Repeated advertising reinforces the connection in the investor's mind when

the advertised product's name and the firm name are the same. Our study will demonstrate that "brand-linked"advertising has the highest efficiency and that the impact on the investor is most powerful. Additionally, research has shown that once a brand has achieved dominance within an industry, proportionally less money is spent advertising the well known brand than the less known products of its competitors.

The effects of advertising should be more significant for firms whose products have the same name as their listed security name, than for the product/firm population in general.

SUMMARY OF SECTION 4

In summary, we have shown that repetitive advertising increases ability to recall. Paroush/Peles proposed that information obtained in one sector is utilized in other related sectors. Their theory was supported by Uhl's empirical research demonstrating a positive relationship/association between the product/stock markets. Our proposal is that product advertising influences investor buying decisions. Further product advertising may lead to greater investor concentration in stocks that are the most heavily advertised. We suggest that advertising may reduced perceived risk, both as an

information provider by reducing cost of search, and as a persuader. This supports the conclusion that risk averse individuals are willing to pay more for more heavily advertised securities. The greater impact of "brand-linked" advertising was discussed. In the next section, we design tests to measure the relationship between advertising and security returns.

MODEL 1 - *THE EFFECTS OF PRODUCT ADVERTISING ON STOCK PURCHASING BEHAVIOR*

Traditional theory

Product Advertising *buy* ▷ product

New theory

Product *buy* ▷ product (Primary effect)

Advertising *buy* ▷ stock (Secondary effect)

Model 2 - *RELATIONSHIP BETWEEN RISK AND WILLINGNESS TO BUY IN A RISK AVERSE BUYER'S MIND*

Low Advertising ▷ higher perceived risk ▷ low willingness to buy

High Advertising ▷ lower perceived risk ▷ high willingness to buy

SECTION 5

ADVERTISING AND SECURITY RETURNS TESTS

OVERVIEW OF SECTION 5

In this section we develop an empirical model to test the effects of product advertising on investor demand for securities. Using this model, we demonstrate that, in addition to selling products, product advertising also influences consumers to purchase stocks. Following a statement of the assumptions, we outline our empirical model, together with an explanation of its terms. Our test hypotheses are stated, and the various information sources and methodology used are discussed.

ASSUMPTIONS

This model contains the following assumptions:

1. Investors are risk averse, and want to maximize the expected utility of their end period wealth. (Our model uses beta as a risk measure.)
2. Investors have homogeneous expectations.
3. Risk free assets exist.
4. Every asset is marketable, divisible and quantities of assets are fixed.
5. No market imperfections are assumed.

6. Information is *not* simultaneously available to all investors, namely firms advertise their products to different degrees, reaching different numbers of investors with their message and different target populations depending on their total dollar expenditures.

THE MODEL

The following annual cross-sectional regression model was used to investigate impact of advertising on security returns over a ten-year period:

$$R_p = a + b\beta_p + c(\ln[lag\ A_p])$$

In this model:

R_p represents a single period return for portfolio p.

Coefficient *a* represents abnormal portfolio return for the portfolio p, where abnormal returns are returns greater than predicted by CAPM.

b is the coefficient of systematic risk β_p. Beta values have been included here to take into account traditional impacts of systematic risk on firm returns.

a and *b* in the current model correspond to exactly the same coefficients used in the CAPM. *c* is the new coefficient introduced in our model. *c* represents the coefficient of the advertising variable for the portfolio.

GROUPING TECHNIQUE

Generally, the risk return tradeoffs based directly on securities that indicate a positive relationship between return and beta are inefficient for two reasons:

(1) Errors in variable bias due to the fact that the independent variable beta usually has error associated with its measurement and this error tends to weaken the potency between mean return and beta.

(2) Realized security returns have a large random component that is unsystematic or diversifiable. This random component obscures the effect between mean return and beta.

Both the above problems can be largely eliminated by grouping stocks into portfolios. A frequently used technique is to estimate the betas of every security during a five year period. This is accomplished by computing the covariance between returns on a stock and a market index based on an equally weighted group of all common stocks. After betas are computed, securities are ranked by beta and then grouped into large portfolios providing a range of different systematic risk (beta). The grouping into portfolios avoids most of the measurement error in estimating betas of individual stocks.

Finally, the portfolio betas and returns are calculated over a second five year period. Then the CAPM regression is run.

TIME LAG

The buying process motivated by advertising starts with awareness, followed by comprehension and conviction. Finally, action is induced. Since the process requires multiple exposure, there is a time lag between different media exposures and investor action. Compustat data in this study provided annual advertising expenditures. The best lag found to explain advertising/return relationships was one year. This is the reason for selecting the (lag A_p) instead of simply A_p.

The reason for choosing the natural logarithm of (Lag A_p) is as follows:

Advertising expenditures for many of the firms in the sample are in the order of millions of dollars. On the other hand, beta and return values are in the order of one. In order to achieve a more manageable scale of comparison, we applied the natural logarithm operator to all advertising expenditures.

A DISCUSSION OF POSSIBLE OUTCOMES

This model utilizes product advertising expenditures (dollars spent on buying media time to obtain product/firm exposure visibility) as a proxy for differences in information and influence among investors. Theoretically, the test of the impact of advertising on investor behavior can result in various outcomes:

1. A positive value of *a* would indicate that after adjustment for risk, and impact of advertising, there are abnormal profits for the portfolio.

2. Significance in coefficient *b* but not *c* would be a verification that the traditional CAPM framework captures informational/advertising differences through the traditional systematic risk channel.

3. If differences represented by advertising do not affect capital asset prices, *c* would not be significant. Both beta and returns would then be independent of advertising levels.

4. If the CAPM is an inadequate model for capturing differences in information and influence among investors, an additional yield term would take on statistical significance independently of beta. A significant variable *c* with an insignificant *b* would indicate that CAPM, in of itself, does not

capture advertising differences. This would confirm our theory that advertising expenditure is a statistically significant proxy variable for investor exposure and that it helps explain security returns.

5. A significance in both coefficients *b* and *c* would indicate that both systematic risk (beta) and advertising (ln [lag A_p]) play a role in explaining security behavior. Such results would also confirm our theory.

TEST I

HYPOTHESES

The following hypotheses were examined:

H1 : The beta coefficient is a function of informational/ advertising differences.

H2 : After adjusting for systematic risk and market performance, returns of high and low information/advertising securities are the same.

H3 : After adjusting for systematic risk and market performance, returns are higher for securities for which advertising is low and returns are lower for securities for which advertising is high.

METHODOLOGY

The data used comprised of the set of all securities traded on the New

York Stock Exchange from January 1974 through January 1984 which had advertising and sales data on Compustat industrial tape formats as well as return data on CRSP. Not all firms were used in the actual regressions. All firms whose advertising plans/expenses with Compustat entry equal to zero were excluded from the sample. Between 468 and 626 firms' data were utilized in any single year cross sectional regression.

Firms with advertising expense information were sorted by CUSIP number, following which, these CUSIP numbers were then fed into a PL-1 program on the CRSP stock monthly returns file drawing monthly securities returns and market returns for the period January 1969 to January 1985 (fifteen years).

The variable selected as a proxy for informational differences and persuasion differences is advertising expense. Advertising expenditure values were drawn for all securities in the sample. Specific firm returns as well as market returns were used to calculate beta for each firm in the sample by performing quarterly regressions of the form $R_{it} = f(r_m)t$. Return on firm i during quarter t was regressed on the market return for the same quarter. This resulted in estimating a coefficient of the regression representing a

quarterly beta for each firm. For each successive period t the first R_i/R_m observation of the preceding period was dropped and the next current R_i/R_m observations were added to the end of the series. This procedure was repeated forty times. Finally forty quarterly betas were generated for each firm using twenty observations per regression. In order to obtain the necessary 10 annual betas, every fourth one was selected and used in the ten annual cross-sectional regressions eventually to be performed. Monthly security returns were drawn and converted into quarterly or annual returns as needed using the formula $r=(1 + r_i)(1 + r_{i+1})(1+r_{i+2})....(1 + r_{i+n})$.

After converting all variables to annual data, beta, returns, advertising expenditures and net sales were merged. A series of annual cross-sectional regressions were performed using the entire pooled set of securities jointly from Compustat and CRSP each year from 1974 to 1984 using a macro-SAS program found in appendix B.

TEST II

In addition to the above, we also performed another test comparing zero advertising firms to advertising firms. Our goal was to ascertain whether there was a significant difference in return behavior between those firms that

advertise and those that don't advertise. The structure of this test is now described.

TEST TO COMPARE RETURNS OF ADVERTISING FIRMS WITH RETURNS OF ZERO ADVERTISING FIRMS

The annual cross-sectional regressions used to investigate the impact of advertising on security returns in test I excluded all firms with zero advertising expenditures. Our theory of the impact of advertising hypothesized that firms advertising more would display returns that were lower compared to firms that advertised less. We also posited that zero-advertisers should have substantially higher returns than advertisers do. We compared the mean returns of advertising and non-advertising firms. We expressed the differences in return between advertisers and zero advertisers in percentages.

METHODOLOGY

Our data of 1850 firms was taken from CRSP tapes. The computer program separated the firms into two groups - advertising and zero or non advertising firms. About 1150 firms per year had advertising budgets. Between 700 and 960 firms annually did not advertise. We calculated mean

returns for both groups.

TEST III

Since our hypothesis was that, the greater the advertising, the lower the return, we hypothesized that the efficiency of advertising messages was far greater for "brand-linked"advertising than for "non-brand-linked"advertising. Investors should identify security names more closely with product advertisement in the "brand-linked"case. We therefor designed and tested specially for "brand-linked"advertising effects on security returns. The test is described hereunder.

TESTS ON THE ROLE OF BRAND ADVERTISING ON SECURITY RETURNS

We have theorized that the effect of "brand-linked"advertising is more pronounced than the effect of "non-brand-linked"advertising. In order to test this, we extracted all companies that list their name on Compustat the same way as their principal product line name. We ran our regression model on this subset of "brand-linked" firms. We hypothesized that the effect of advertising would be more pronounced in explaining security return behavior for the "brand-linked" subset than for the general advertising firms. This

hypothesis would be accepted if observations of greater magnitude in c coefficients appeared in "brand-linked" regressions than those c coefficients of "non-brand-linked" regressions.

The selection of the subset of brand firms was independent of all other factors except brand name. The average sample size was about 110 firms annually. The three tests described in this section were performed and results in fact validated all our hypotheses.

SECTION 6

EMPIRICAL RESULTS AND IMPLICATIONS

OVERVIEW OF SECTION 6

In this section, we find empirical results that validate our hypotheses. For test I on the general advertising/return relationship, hypothesis H 3 will prevail - after adjusting for beta and market performance returns are higher for securities of firms that have low advertising and lower for securities of firms with high advertising. For test II, a comparison of non advertising firms to advertising firms, the hypothesis that advertising firms will have lower returns than non-advertising firms will prevail. For test III, the hypothesis that "brand-linked" advertising is more powerful than "non-brand-linked" advertising in explaining security behavior will prevail.

TEST I

PORTFOLIO RETURN AS A FUNCTION OF BETA AND ADVERTISING

Test I determined whether advertising expenditures were statistically significant in explaining security returns.

RESULTS - Number of singificant advertising coefficients

Table I (see the following page) represents output results for the regression $R_p = a + b\beta_p + c[\ln(\text{lag } A_p)]$. As the table shows, t values are statistically significant for the $\ln(\text{lag } A_p)$ coefficients in seven out of the ten years. At $\alpha = .025$, for the given number of degrees of freedom, a t value of 1.96 or greater indicates statistical significance. In 6 out of 10 instances, *c* is statistically significant but not *b*. In a seventh case, both *c* and *b* are statistically significant.

DISCUSSION OF RESULTS

Indications are that advertising effects are not captured in the CAPM. Since *c* is statistically significant but not *b* in most cases, an additional variable is needed to capture the effect. The same set of regressions indicate that the beta coefficients *b* are only significant in two out of ten years.

COEFFICIENT MAGNITUDES

Since share of firms that advertise more become better known, and are usually more highly priced, investor returns on these shares should accordingly be lower. Over the seven years in which advertising was statistically significant in explaining security returns, the average value of the *c* was -.0129. The coefficient c unit is measured in percent per year, so the

interpretation of $\bar{c}$=-.0129 is that a one unit increase in advertising is associated with .0129 of one percent decrease in mean security return or (-.0129)(.01) = -.000129.

COEFFICIENT SIGNS

Five out of the seven coefficients of the advertising variable ln(lag A_p) in table I are negative. This represents the hypothesized direction, namely that increases in advertising expenditure levels result in decreased returns for the associated securities. In 1980 and 1981 the coefficients became positive yet remained significant. This sign reversal differs from the hypothesized direction. We will discuss possible causes for the sign reversal.

TABLE I

REGRESSION PARAMETER ESTIMATES AND t VALUES OF THE MODEL:

$$R_p = a + b\beta_p + c\ln(lagA_p)$$

*

YEAR	a	t(a)	b	t(b)	c	t(c)	DF
1974	1.3023	25.781	.0688	1.951	.0044	1.085	470
1975	1.2545	35.574	.0009	.041	-.0105	-3.725	468
1976	1.0443	36.230	.0036	.184	-.0060	-2.473	493
1977	1.0876	32.505	.0399	1.883	-.0061	-2.215	505
1978	1.2037	31.329	.0053	.222	-.0148	-5.003	522
1979	1.3531	26.470	.0240	.809	-.0140	-3.466	535
1980	.1663	35.464	-.0744	-3.724	.0091	3.512	565
1981	1.2762	33.216	.0108	.479	.0299	8.625	584
1982	1.4555	33.437	-.0477	-1.561	.0002	0.062	612
1983	1.0859	42.984	-.0602	-3.414	.0025	1.219	626

*

Cross-sectional annual regression estimates and t values obtained from a portfolio varying in size from 470 securities to 626 securities on the NYSE covering the period 1974 - 1983. (a Represents abnormal return, b the beta coefficient, and c the coefficient of the advertising term - the natural logarithm of the one year lag of advertising expenditures.

COEFFICIENTS' SIGN REVERSALS

Abnormal economic conditions may be responsible for the deviation in the model's behavior. The 1980/1981 economic period was especially hard hit with a move to high interest rates that dampened the automobile, housing and construction industries. By 1981 the inflation rate reached 9 percent. No upsurge in business that had been forecast ever materialized. The Federal deficit continued to grow. The prime rate reached a high of 20.5 percent in 1981. The high interest rates fostered recessionary conditions and especially dampened stock market prices. The business recession combined double digit inflation and general economic turmoil. Many prospering companies continued their advertising expenditures, failing to adapt to the reversal in economic conditions. Most large advertisers did not perform as usual relative to other large firms or other firms in their industries with lower advertising expenses.

Many of the large advertisers remained locked into a strategy of expenditures to maintain or increase their market shares. For example, during the 1979-1980 period, firms increased their advertising expenditures by 10%. However, as Bloom and Kotler (45) have shown, advertising

expenditures to maintain or increase market share are much more likely to be efficient in growth economies than in stagnant or recessionary ones. Thus, one possible cause for disruption of the hypothesized relation during the 1980/1981 period is the inefficiency of advertising expenditures in recessionary economy.

In light of results in table I and our explanation of sign reversals for 1980/81, we reexamine the original hypothesis and conclude the following:

Since *b* is not a function of informational or persuasive advertising difference, we reject hypothesis 1.

Since the capital asset pricing process is not independent of advertising, hypothesis 2 is rejected.

An additional return premium is needed in order to explain security returns. The fact that *c* describes an inverse relationship between advertising effects and security returns is consistent with hypothesis 3, so we accept hypothesis 3.

In table II (see the following page) we have ranked advertising by

TABLE II - *VARIATION IN MEAN RETURN WITH CHANGE IN Ln OF ADVERTISING LEVELS*

(1) YEAR	(2) Ln of Mean advertis-ing level in millions	(3) Mean return level	(4) Trend
1974	4.11 1.86 - .47	1.41 1.44 1.27	As advertising decreases, return increases & decreases.
1975	4.10 1.89 - .44	1.15 1.26 1.31	As advertising decreases, return increases.
1976	4.20 1.86 - .50	.97 1.04 1.17	As advertising decreases, return increases.
1977	4.23 1.90 - .38	1.10 1.13 1.18	As advertising decreases, return increases.
1978	4.39 2.04 - .29	1.11 1.15 1.45	As advertising decreases, return increases.
1979	4.49 2.05 - .21	1.27 1.34 1.74	As advertising decreases, return increases.
1980	4.60 2.03 - .42	1.10 1.09 .98	As advertising decreases, return decreases.
1981	4.73 2.14 - .26	1.42 1.37 1.26	As advertising decreases, return decreases.
1982	4.82 2.24 .10	1.31 1.46 1.46	As advertising decreases, return increases.
1983	5.03 2.37 .12	1.06 .98 1.03	As advertising decreases, return decreases & increases.

Natural Logarithm of the lag of annual advertising expenditures subdivided into Top 1/3, Middle 1/3 and Lowest 1/3 categories (column 2),is compared with Top 1/3, Middle 1/3 and Lowest 1/3 Mean Annual Returns (column 3),year by year from 1974
to 1983. (Column 4) shows how when advertising increases or decreases in magnitude
within each year, annual mean returns change correspondingly.

subdividing it into three groups. Namely, the highest third of advertising firms, the middle third and the lowest third. Having thus ranked, we observed whether as advertising decreased in rank within each year, returns increased, decreased or remained the same. *A comparison of return with advertising in eight of the ten years revealed that as advertising increased, return decreased or vice versa. The inverse advertising/return relation appears true for this study.* This demonstrates a powerful relationship between direction of advertising expenditures and direction of security returns.

TEST II

RETURNS OF ZERO OR NON ADVERTISERS COMPARED TO RETURNS OF ADVERTISING FIRMS

Table III (see the following page) provides a comparison of mean returns between firms that advertise and firms that don't advertise during the 1974-1983 period. *For each of the ten study years, mean returns of zero advertising firms were substantially higher than mean returns of advertising firms.* On average, mean returns of zero advertising firms were 42% greater than mean returns of firms that advertised. Zero advertising firms had mean returns that ranged from a minimum of 17% to a maximum of 64% more

TABLE III

YEAR BY YEAR COMPARISON OF MEAN ANNUAL RETURNS OF NON-ADVERTISING FIRMS WITH THE MEAN ANNUAL RETURNS OF ADVERTISING FIRMS OVER THE PERIOD 1974 TO 1983

(1)	(2)	(3)	(4)	(5)	(5)/(3)
YEAR	# of adv. firms	mean return of adv. firms	# of zero adv. firms	mean return of 0-adv. firms	0-adv return/ adv. return ratio
1974	1156	.837	703	1.37	1.64
1975	1130	.797	695	1.29	1.62
1976	1150	.698	732	1.09	1.56
1977	1142	.747	745	1.14	1.52
1978	1143	.832	774	1.22	1.46
1979	1142	.990	804	1.40	1.41
1980	1130	.783	839	1.06	1.34
1981	1135	.963	886	1.23	1.28
1982	1139	1.12	923	1.38	1.22
1983	1129	.875	960	1.03	1.17

than advertising firms.

These results lead us to accept our hypothesis that *firms that don't advertise have returns that are higher than firms who do advertise.* Additionally, these observations reinforce our earlier findings, in table I, that advertising levels and returns are inversely related.

TEST III

"BRAND-LINKED" VERSUS "NON-BRAND-LINKED" EFFECTS

Test III compares "brand-linked"advertising effects to the "non-brand-linked" advertising discussed in test I/table I.

RESULTS

Table IV (see the following page), demonstrates the greater power of "brand-linked"advertising to explain returns. The "brand-linked"name group of stocks was included in an identical set of 10 yearly cross sectional regressions of the form

$$[R_p = a + b\beta_p + c[\ln(lagA_p)]]_{BRAND\text{-}LINKEDFIRMS}$$

TABLE IV

"BRAND-LINKED" REGRESSION PARAMETER ESTIMATES AND t VALUES OF THE MODEL:

$(R_p = a + b\beta_p + c[\ln(lagA_p)])_{\text{Brand-Linked Firms}}$

YEAR	a	t(a)	b	t(b)	c	t(c)	DF
1974	1.81	9.8	.06	.634	-.074	-2.449	101
1975	.98	10.4	.09	2.146	.017	-1.040	102
1976	1.42	13.7	-.12	2.875	-.064	-3.048	109
1977	1.21	13.0	.10	2.844	-.066	-3.289	117
1978	1.46	18.8	-.07	-2.112	-.067	-4.827	117
1979	1.40	10.9	.21	4.167	-.085	-3.408	119
1980	1.46	11.9	-.05	- .992	-.053	-2.467	119
1981	1.14	7.4	.11	1.842	.035	1.323	121
1982	1.49	10.6	.26	.384	-.037	1.464	119
1983	1.16	13.1	-.10	-2.349	.010	- .649	119

Cross-sectional annual regression estimates and t values obtained from a portfolio varying in size from 101 to 119 "Brand-Linked" securities on the NYSE covering the 1974-1983 period ("a" represents abnormal return, "b" the beta coefficient, and the "c" the coefficient of the advertising term - the natural logarithm of the one year lag of advertising expenditures.

Table IV shows the results.

DISCUSSION

This outcome is a further confirmation of advertising's importance in the security pricing process since "brand-linked"advertising messages go hand in hand with stronger impact on returns. At α level of .05, t values are statistically significant (1.645) for the smaller "brand-linked"group (from 101 to 119 firm observations per regression) in six out of the ten years. At alpha level of .10, they are significant in eight out of ten years. Table IV *shows that the impact of "brand-linked" advertising on security buying behavior is greatly magnified/increased.* Moreover, table IV findings indicate that in every significant common year *the "brand-link" firm regression set ln(log* A_p*) coefficients maintain the same negative correlation with return as do the same general security advertising set coefficients in table I.* Again, the only sign reversal in coefficient *c* is 1981, a recession year.

COEFFICIENT MAGNITUDES

Over the eight years in which "brand-linked"advertising was significant in explaining security returns, the average *c* coefficient was -.0601. Thus a one unit increase in "brand-linked"advertising is associated with a -.0601 of one

percent decrease in mean security return, or (-.0601)(.01) = -.000601 decrease in mean security return.

Table V (see the following page) shows the multiplicative effect of "brand-linked" advertising by comparing the *c* coefficients of both groups. Table V "brand-linked"*c* coefficients range from 1.16 to 10.65 times greater than the "non-brand-linked"*c* coefficients observed in table I. On average,

TABLE V

A COMPARISON OF THE PARAMETER ESTIMATES OF TABLE I AND TABLE IV FOR THE PERIOD 1976 - 1981 (YEARS IN WHICH BOTH TABLES HAD SIGNIFICANT PARAMETERS.

The greater magnitude of "Brand-Linked" vs. "Non-Brand-Linked" coefficients is demonstrated by the multiplier effect shown in column (6).

(1) Overlapping years of significance	(2) "Non-brand-linked" coefficient c	(3) "Non-brand-linked" t(c)	(4) "Brand-linked" coefficient c	(5) "Brand-linked" t(c)	(6)=(4)/(2) "Brand-linked" multiplier effect
1976	-.006	-2.473	-.064	-3.048	10.65
1977	-.006	-2.215	-.066	-3.289	10.68
1978	-.015	-5.003	-.067	-4.827	4.50
1979	-.014	-3.466	-.085	-3.408	6.06
1980	.009	3.512	-.053	-2.467	5.81
1981	.030	8.625	.035	1.323	1.16

the "brand-linked" coefficients *c* were six and one half times more powerful than the "non-brand-linked" c coefficients. This confirms that the message given to investors is so much clearer and more powerful when the product

advertisement is in the same name as the parent firm. As we hypothesized, the "brand-linked" advertising coefficient turned out to be greater in magnitude than for those firms whose product names differ from the parent/firm security names.

Put otherwise, the efficiency of the advertising messages is far greater in the case of the "brand-linked" than "non-brand-linked" firms resulting in magnified coefficients of information/ advertising.

In this regard, other research done by Horsky and Swyngedouw (46) entitled DOES IT PAY TO CHANGE YOUR COMPANY'S NAME? indicated that effects of this type of corporate "image"change differed in success, depending on whether taken by financial or consumer goods firms. Consumer goods firms with the same names as their products were least successful when they changed their name to one that was different from their product name since their frequently purchased goods were well known by name or brand. Name changes for financial firms were also unsuccessful since they may have been construed as signalling increased risk.

THE ROLE OF BETA

Systematic risk (beta) is a valid risk measure. It has been established in the CAPM review section that a linearity exists between returns and beta, and that the risk/return trade off is positive.

Table I only had four significant beta coefficients. In order to check if our beta values were within normal range, we ran a direct regression of beta on security returns. When advertising was not included in the regression (see table VI on the following page) beta was significant in explaining security returns in 7 out of the 10 years of the study. For a comparison of our beta regressions with those reached by Black-Jensen Scholes (6) see table A in appendix A. Our beta coefficients were in the same range of magnitude and sign variation as those found by Black, Jensen, and Scholes in their cross sectional regressions.

The fact that our regression model indicates t values for coefficients of beta that are only significant in four out of ten years is an indication of possible multicollinearity between the independent variables beta and advertising.

We performed a regression of beta values on ln(lag A_p). Beta was

found to be significantly related to advertising in six out of

TABLE VI

CROSS SECTIONAL REGRESSION OF RETURN ON BETA

$$R_p = a + b\beta_p$$

YEAR	a	t(a)	b	t(b)
1974	1.30	35.49	.0599	2.14
1975	1.27	49.78	.0175	.93
1976	1.09	52.95	.0012	.08
1977	1.07	46.31	.0488	2.98
1978	1.15	44.13	.0472	2.63
1979	1.29	37.77	.0725	3.31
1980	1.14	50.44	-.0681	-4.63
1981	1.30	48.77	-.0489	-2.93
1982	1.38	47.59	-.0049	-0.23
1983	1.27	63.67	-.0837	-6.41

ten years, thus demonstrating the existence of multicollinearity. This also might serve to explain some of the smaller t statistics for beta coefficients in table I.

One way of eliminating multicollinearity is to drop an independent variable. Dropping beta, a relevant variable, from the regression analysis however would result in an incorrect specification of the model.

One classical assumption of linear regression is that no multicollinearity exists. When multicollinearity exists, one can still estimate the regression coefficients of the independent variable, however their standard errors will generally be large and the related t statistic will be smaller.

The impact of multicollinearity is directly proportional to the strength of the correlation coefficients between the independent variables. If the correlation between the independent variables was perfect, then we would not be able to distinguish which variable is responsible for the explanation. In our case, since the Pearson correlation coefficient for beta/ln(Lag A_p) is only -0.1106, we are able to uphold the results. *Advertising remains a significant*

variable in explaining security returns.

SECTION 7

INVESTOR SURVEY

In order to test for advertising impact on security investor behavior and, more particularly, "brand-linked" advertising versus "non-brand-linked" advertising effects, a direct cross sectional survey was conducted where primary data was collected. The interview was structured with predetermined questions.

PARTICIPANT SELECTION

The following criteria were used to select participants for the survey:

(A) Individuals had to be 25 or older.

(B) Individuals had to be employed.

(C) Individuals had to have purchased stocks or be stock owners.

All these criteria had to be met in order to participate in the survey.

Every qualified participant was shown the following list of securities, and asked to check off those he would consider investing in. (Participants were not told that five of the firms were high advertisers and five were not.)

QUESTIONNAIRE

Proctor and Gamble

Cooper industries Inc.

Taft Broadcasting

First Chicago Corp.

Bristol Meyers

Vornado Inc.

ITT

E.I. Du Pont de Nemours

Baldwin United Corp.

General Mills

The same question was again repeated with the following list substituted:

QUESTIONNAIRE

Sears Roebuck

American Home Products

Pepsico

Esmark

Consolidated Foods Corp.

Kellogg

Eastman Kodak

Schering-Plough Corp.

Gulf and Western Industries

Walt Disney

(Participants were not told that five were "brand-linked" firms whose stock and product name were the same, and that five were "non-brand-linked.")

Finally, each participant was asked the following question:

"If your stock broker called you to suggest an opportunity to make money by

investing in either-

Coca Cola

or

C and C Cola

which of the two would you chose?

Why?"

SURVEY CONTROLS

Extraneous factors were controlled as much as possible through:

(1) Randomization.

Participants were randomly selected and all were assigned the same treatment conditions.

(2) Physical control.

Following preliminary screening all undesirable participants were excluded.

(3) No selection bias took place.

Individuals were not put into groups by bias.

(4) Since mall interviews generally display demographic bias - we decided to conduct the survey on Fifth Avenue and 34th street where a broadly commingled population characteristic was present.

None of the participants were advised in any way of how or why particular stocks appeared on a list.

SURVEY DESIGN

Individuals were asked to choose desirable securities for investment on each of two lists. The first list variable was "non-brand-linked" advertising level. Ten cells which were all equally likely to be selected were offered. The second list test variable was "brand-linked" advertising impact and ten cells which were all equally likely to be selected were offered. Thus both lists were reliably designed to repeat conclusions with regard to the test variables, namely "high versus low advertising", and "brand-linked" versus "non-brand-linked" firms.

Security names on the survey were selected to convey:

For the first list, familiarity or lack of familiarity.

For the second list, brand orientation or lack of brand orientation.

STATISTICS AND HYPOTHESES

The survey design allowed measurement of the differences between mean values of the selected cells easily.

Our hypothesis for questionnaire part I is: Participants will select a statistically significant higher number of leading advertising expenditure companies to invest in rather than firms that do little advertising.

Our hypothesis for questionnaire part II is: Participants will more frequently select "brand-linked" companies than "non-brand-linked" ones.

Our hypothesis with regard to the Coca Cola versus C and C Cola question is that individuals will choose Coca Cola for familiarity. The Chi-squared goodness of fit test was selected to analyze results since it compares observed and expected frequencies.

SURVEY RESULTS

Each of the 10 firms listed in a questionnaire had an equal probability of being selected - 10%. A total of 500 individuals participated in the survey. Therefor, out of the total 500 individuals surveyed, the average expected total number of times any firm would be chosen is 50 (10% x 500 = 50) Tables I, II and III show the survey results.

PART I

QUESTIONNAIRE - RESULTS 500 INTERVIEWS

TABLE I

FIVE HIGH ADVERTISING AND FIVE LOW ADVERTISING FIRMS

Number of times *selected*	Firm name
138	Proctor and Gamble
14	Cooper industries Inc.
32	Taft Broadcasting
56	First Chicago Corp.
107	Bristol Meyers
12	Vornado Inc.
178	ITT
113	E.I. Du Pont de Nemours
37	Baldwin United Corp.
95	General Mills

The Chi square result was 732.8.

PART II

QUESTIONNAIRE - RESULTS 500 INTERVIEWS

TABLE II

FIVE HIGH ADVERTISING "BRAND-LINKED" FIRMS AND FIVE HIGH ADVERTISING "NON-BRAND-LINKED" FIRMS

Number of times *selected*	Firm name
204	Sears Roebuck
196	American Home Products
359	Pepsico
58	Esmark
97	Consolidated Foods Corp.
253	Kellogg
228	Eastman Kodak
84	Schering-Plough Corp.
218	Gulf and Western Industries
306	Walt Disney

The Chi square result was 6211.9

PART III

RESULTS - 500 INTERVIEWS

TABLE III.

INVESTORS' CHOICE BETWEEN COCA COLA AND C AND C COLA

453	Coca Cola
47	C & C Cola

The chi square result was 329.6

SURVEY RESULTS - EVALUATION AND IMPLICATIONS

To evaluate the survey results we needed to determine whether or not the observed responses corresponded to the previously calculated expected values. The Chi-square goodness of fit test was ideally suited for this purpose. Participant's readiness to invest in any firm's securities was represented by k mutually exclusive categories (k = 10) and each response fell into one of the k classes. Decisions of participants to invest in securities of a particular firm were independent. These conditions prove ideal for the use of the Chi-square test.

Our hypothesis for table I observations was that participants would have a particular preference for "high advertising firms" versus "low advertising" firms, and would not tend to respond in accordance with expected probabilities, i.e. 10% per firm. The Chi square calculation for table I indicates a value of 732.8. For n - 1 = 9 degrees of freedom at alpha level of .025 the table value of Chi square is 19.02. *Since the calculated value (732.8) is larger than the table value (19.02), the conclusion is that the survey result was unlikely to occur by chance alone.* That is, the chi-square tests shows that the much higher frequency of selection of "high advertising" firms by

participants compared to "low advertising" was unlikely to be by chance. The hypothesis that participants would select a higher number of leading advertising companies is accepted and we conclude that "advertising"does play a role. Investor selection and firm visibility through advertising appear related.

For table II our hypothesis was that survey participants would tend to select "brand-linked" name firms more frequently than "non-brand-linked" name firms. The Chi square calculation for table II indicates a value of 6211.9. For n - 1 = 9 degrees of freedom at an alpha level of .025, the table value of chi square is 19.02. Again, the conclusions shows that the survey values are unlikely to have occurred by chance alone. Table II demonstrates that participants will select "brand-linked"name firms more frequently than "non-brand-linked"name firms. Our hypothesis is accepted and we conclude that "brand-link"is significant in influencing investor decision making.

For table III our hypothesis was that survey participants would tend to select "Coca Cola". The chi square calculation for table III indicates a value of 329.6. For n - 1 = 1 degree of freedom at an alpha level of .025 the table value of Chi-square is 5.02. Thus, again the survey result was unlikely to

occur by chance. (Cha..ce here represents 250 selections or 50%.) The very much higher selection of "Coca Cola" as a potential investment demonstrates that *"brand-linked" highly familiar advertised firms are more likely to be selected than less advertised, less familiar , ns.*

SECTION 8

FUTURE RESEARCH

INTRODUCTION

Product advertising's influence on investor stock purchasing was measured by relating advertising expenditures to mean returns. Product advertising was divided into "brand-linked"and "non-brand-linked"categories. A third category of advertising called "corporate advertising" has grown dramatically over the past decade. Corporate advertising targets the firm's investors directly, through paid for advertising (not oriented at product sales), or public relations campaigns. Through corporate advertising, the firm attempts to convince investors to buy its stock by making them aware of its strengths. Garbett (39) has described corporate advertising as "that advertising done for the direct benefit of the corporation rather than for its products or services." Examining the role of corporate advertising and its impact on the firm's investor base and market value would be a valuable extension to the material presented in this study. Additionally, it would provide us with the tools necessary for a comparative evaluation of product and corporate advertising effectiveness.

CORPORATE ADVERTISING AND FIRM MARKET VALUE

We suggest exploring effects of corporate advertising as a future research study. A new study would examine the effects corporate advertising has on the firm's investor base and its market value.

Merton (33) suggested that under certain conditions an increase in the size of the firm's investor base benefits current stockholders. The same article suggests that firms should use corporate advertising in order to secure additional investments by making them aware of the firm's characteristics.

Merton concludes "that the market value of a firm will always be lower with incomplete information, and the smaller the investor base, the larger the difference." Incomplete information, as Merton uses the term, could be represented by lower levels of corporate advertising. Fewer investors would be exposed to firm characteristics. The investor base would be smaller. Increased levels of corporate advertising would result in a larger investor base and higher market value.

Future research would examine the relationship between the firm's market value and the amount of firm corporate advertising. The hypothesis would be, that firms doing a lot of corporate advertising would reach more

investors, generate larger investor bases, and accordingly have higher market values. Conversely, low corporate advertising should be correlated with smaller investor bases and accordingly lower market values.

AN EVENT STUDY USING CORPORATE ADVERTISING

Another future research study could explore the immediate impact of corporate advertisements. We could select a set of firms that had positive earnings and used corporate advertising to convey the earnings to investors as a reason to buy their stock. An event study would then be made, examining the firm's market value before and after exposure to the public of corporate advertisements. We would measure impact of those corporate advertisements on security buyer behavior. These studies would add to the picture of advertising's impact on security pricing provided in this study.

ADVERTISING AND RISK REDUCTION

(informative versus persuasive)

From the survey we conducted we found out that people perceived stocks of firms that advertised highly as less risky, and they chose to purchase those securities more than stocks of companies that they never heard of.

Informative factors in advertisements may reduce investor search costs, thus lowering variances and covariances leading to greater investment in securities, or on the other hand persuasive elements in advertisements may result in restructuring investor's choice criteria, and increasing their perceived instrumentality for securities related to product advertisements. Future research should investigate whether investor's change their risk estimates due to information that is relayed to them through informative advertisements, or whether investor's risk perspectives are influenced by persuasive advertisements that are independent of any informational content.

SECTION 9

CONCLUSION

This study began by suggesting that security investors may be influenced in their investment decisions by product advertising. We hypothesized that advertising would affect investors in much the same way as it influences consumers to purchase products. Accordingly, firms that did a lot of advertising would become "better known", and their shares would be more highly priced in the market. Since shares of firms that advertise more become better known, and usually are more highly priced, investor returns on these shares should accordingly be lower. This led to our predicting lower returns for firms who were larger advertisers compared to firms who didn't advertise much. The results of our first test and table I proved the hypothesis that advertising was a significant factor in explaining security returns, and that security returns and advertising were inversely related. Securities of firms that advertised heavily had returns much lower than returns of firms that did not advertise much.

Our results were generated using a modified CAPM allowing for systematic risk (beta). This methodology has been traditionally used for

testing the influence of factors in addition to beta in explaining security returns. Additional evidence of the effect of differences in advertising levels was provided by test number II, table III. Since our theory was that high advertising firms would have higher priced shares than low advertising firms, we also hypothesized that zero advertisers would have higher returns than advertising firms, and results showed our hypothesis to be true in every one of the ten years of the study. Non advertising firm returns exceeded advertising firm returns by as much as 60% and by an average of 40% over the ten year period. Additionally, in order to verify whether in reality investors would react to advertising, a direct survey of investors was performed. Results showed that high advertising firms were more likely to be selected as candidates for investment than low advertising firms.

We introduced the concept of "brand-linked" advertising which is the situation which obtains when a company and its principal product are the same name. "Non-brand-linked" advertising is the situation which obtains when a company and its products do not have the same name. When investors see a "brand-linked" advertisement, they immediately connect the name of the product with the firm name which is the same. For this reason,

we hypothesized that "brand-linked" advertising would be more highly correlated with security return behavior than "non-brand-linked". Test number III, tables IV and V confirmed our hypothesis. "Brand-linked" coefficients were greater in each of the years compared, and as much as ten times greater as "non-brand-linked"advertising. The "brand-linked"*c* coefficient signs were all in conformity with the "non-brand-linked"study. The "brand-linked"subset was selected strictly on a "same brand name as firm name" basis and selection was otherwise independent of all "informational" effects observed in prior studies. By this we mean that neither P/E ratio, market value, dividend yield or any other such "informational" effect played a part in the selection of securities in the "brand-linked" set. The only factor considered was the matching of the brand product's name with the name of the firm producing it.

In order to determine if investors actually behave as we predicted an actual survey testing our concepts was performed. The survey of investors again supported the same conclusions by indicating that investors tend to choose well known "brand-linked" firms as candidates for investment more readily that "non-brand-linked" high advertisers. Every company in the

"brand-linked" set was selected for this test.

Since advertising has significant impact on security investor buying behavior, then firm changes in advertising strategy can perhaps lead to increases in firm market value. This study's finding was that stock prices of firms that advertise a lot were higher than those of low or non-advertisers in much the same way as one generally observes advertised goods are more highly priced. Table I high advertising/low returns results supports this statement as well since the observed low returns reflect the higher pricing of advertised stocks.

Advertising turns out to be a very informative tool, not only for product sales, but for influencing investors in their decision making for stock purchases as well. When firm names and product names are the same, advertising impact in explaining security behavior becomes the most prominent.

Advertising's net result is that it permits an allocation of consumers to product brands, and may also serve to allocate some potential investors to stock in a similar way as it induces product purchases. Advertising may inform a fraction of potential investors, and result in their focusing on a narrower group of securities. Investors' perceived risk of advertised stock may

differ from perceived risk of unadvertised stocks. Product advertising may have an additional effect besides just increasing sales levels. A secondary effect may result in influencing investors to buy securities in advertised firms as well, particularly securities of firms that share the same name as the product they market.

SECTION 10

APPENDIX A

BLACK, JENSEN, SCHOLES

SUMMARY OF CROSS-SECTIONAL REGRESSIONS AND THEIR T VALUES

	Total time period 1/31 to 12/65	Sub-period 1/31 to 9/39	Sub-period 10/39 to 6/48	Sub-period 7/48 to 3/57	Sub-period 4/57 to 12/65
γ_0	.0036	-.008	.0044	.008	.0102
γ_1	.0108	.0304	.0107	.0033	-.001
$\gamma_1 - R_M$	.0142	.0220	.0149	.0112	.0088
$t(\gamma_0)$	6.52	-4.45	3.20	7.40	18.89
$t(\gamma_1 - \gamma_0)$	6.53	-4.91	3.23	7.98	19.61

SECTION 11

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