The Capital Market Implications

of

Product Market Advertising

by

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Abstract

Marketing actions have impacts on both consumer behaviour in the primary product market and *investor behaviour in the capital market*. The main objective of this thesis is to investigate the multi-faceted implications of a specific market action, advertising, in the capital market via three empirical studies. The first study examines the impact of advertising on stock price informativeness. The second study explores how advertising influences a firm's aggressiveness in its tax planning and reporting activities. The third empirical study, summing up all lines of arguments, investigates if higher advertising is ultimately associated with higher firm value as captured by Tobin's Q.

In the first essay, I develop and test the hypothesis that advertising positively affects a firm's stock price informativeness. Theories suggest that advertising potentially increases firm visibility, expands investor recognition thereby reducing information cost in a crowded capital market (Merton, 1987). Additionally, advertising also plays a signalling role, alleviating the information asymmetry problem and resulting in a more transparent information environment (Chemmanur and Yan, 2009). These benefits together translate into greater incentives for collection of and trading on private information, leading to more informative stock prices. I find consistent empirical evidence of a positive relation between advertising and stock price informativeness. Further, such advertising-induced informational benefit is more pronounced for firms that are subject to more information asymmetry. These findings are robust to the inclusion of other known determinants of price informativeness, the choice of the measure of price informativeness, different model specifications and endogeneity concerns.

The second empirical study examines whether a firm's investment in product market advertising affects the aggressiveness of its tax planning and reporting activities and presents

empirical evidence of less tax aggressiveness for firms that are more advertising-intensive. This is consistent with the contention that investment in advertising creates reputational assets which deter the firm from engaging in aggressive tax activities as potential audit and detection may be detrimental to the firm's 'brand' and reputation. Alternatively, advertising acts to enhance the firm's visibility and enriches its information environment, which attenuates the possibility of extreme tax aggressiveness as such activities arguably "demand complexity and obfuscation to prevent detection" (Desai and Dhamapala, 2008). I find this negative association between a firm's product market advertising and its tax aggressiveness holds across multiple measures of tax avoidance, after the inclusion of various control variables and after controlling for endogeneity of advertising expenditures. Probing further, I find that the effect of advertising in restraining corporate tax avoidance is magnified for firms that have more valuable brands or have a more limited information environment, indicating that either of the channels described above, might be driving the advertising - tax aggressiveness empirical relation.

Whether the findings of the previous chapter matter for firm value is the ultimate test. The third empirical study seeks to answer this question by bringing the dual roles of advertising in the primary product market and the capital market together to shed light on whether higher advertising is associated with greater firm value. Theories suggest that advertising potentially enhances market assessment of firm value through two main effects, namely the customer effect and the investor effect (Srivastava *et al.*, 1998; Merton, 1987). In the primary product market, advertising builds up stronger brands, which ultimately command larger and faster cash inflows while reducing associated cash flow volatility for the firm. In the capital market, advertising, as an information proxy, enriches the firm's information environment by expanding investor recognition, raising investor demand and stock liquidity and lowering information asymmetry. This advertising-induced informational benefit could translate into lower cost of equity, and ultimately higher firm value. Employing a sample of Compustat firms spanning the period

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1972-2012, I show that advertising positively lifts firm value as measured by next period's Tobin's Q; the advertising-induced value improvement is both statistically and economically significant. I further demonstrate that higher firm values in advertising-intensive firms are driven by a reduction in the cost of equity capital rather than an improvement in operating profitability. The results suggest that researchers and managers should consider the valuation impact of marketing activities via their effect on investors in capital markets.

Taking the findings from the three empirical chapters together, the thesis provides comprehensive evidence of the multi-faceted impacts of advertising, which extend beyond the traditional product market into the capital market. Advertising spending significantly affects investor behaviour, enriches the firm's information environment and brings about a number of capital market benefits for the firm, including greater stock price informativeness (essay 1), a lower propensity for tax avoidance (essay 2) and ultimately higher valuation (essay 3).

This thesis contains no material which has been accepted for award of any other degree or diploma in an university or other institution and affirms that to the best of the author's knowledge, this thesis contains no material previously published or written by another person, except where due reference has been made in the text of the thesis.

Thi Ngoc Diep Amanda Nguyen

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1.1   Background

"If I lost all of my factories and trucks but kept the name Coca-Cola, I could rebuild my business. If I lost my name, the business would collapse".

Don Keogh, CEO, Coca-Cola

"A man who stops advertising to save money is like a man who stops a clock to save time."

Henry Ford

The above two quotes, from two outstanding figures of the business world, immediately suggest the power of advertising and its impact on firm value. Don Keogh, Coca Cola CEO from 1981 to 1993, a period of unprecedented growth for the company, muses on the irreplaceable importance of brand as the most crucial business asset, more than any bricks and mortar. Henry Ford speaks wittingly of how advertising is an integral part of any successful business – giving up on advertising to save money is just as futile as stopping the watch to save time. Both elucidate the significance of brands and advertising for a business. One of the most important way for corporates to build strong brands is through advertising efforts. This thesis aims to explore the multi-faceted impacts of advertising on the firm by investigating the capital market implications of advertising.

Having been long established as an economic and marketing construct, advertising has slowly made its way into other academic research territories including but not limited to industrial organisation, management, accounting and finance. The importance for a more well-

rounded understanding of the impacts of marketing actions in general, and advertising specifically, is further heightened against the backdrop of an unavoidable transition of the global economy into a knowledge-based new economy.

During the last two decades we have progressively moved into a knowledge-based fast-changing, technology intensive economy in which investments in human resources, information technology, research and development, and advertising have become essential in order to strengthen the firm's competitive position and ensure its future viability. As Goldfinger (1997) states, the source of economic value and wealth is no longer the production of material goods but the creation and manipulation of intangible assets. In this landscape, firms feel a growing need to make investments in intangibles, that in most cases are not reflected in the balance sheet but on which the future success of the company is largely based. The emergence of the "new economy" has forced policy makers, corporate managers, and investors to rethink the way they make decisions, manage investments, and value companies. Though what exactly is "new" about the new economy might remain controversial, one important feature is obvious: intangible factors are playing an increasingly dominant role in wealth creation (Lev, 2001).

"A growing share of economic activity today consists of exchanges of ideas, information, expertise, and services. Corporate profitability is often driven more by organizational capabilities than by control over physical resources, and even the value of physical goods is often due to such intangibles as technical innovations embodied in the products, brand appeal, creative presentation, or artistic content."

Baruch Lev (2001, p.1)

Is the concept of 'intangibles' new and borne out of the "new economy"? The answer is no, intangibles are in fact centuries old. Lev (2001) argues that the recent surge in intangibles is due to the unique combination of two related economic forces: intensified business

competition, brought on by the globalization and deregulation of markets, and the advent of information technologies, most recently exemplified by the Internet. These two fundamental developments have dramatically changed the structure of the corporations and, "in today's 'new economy' have catapulted intangibles into the role of the major value driver of business" (Lev, 2001, p.9).

By March 2001, only $1 of every $6 of market value was represented on company balance sheets; while the remaining $5 represents what some argue to be intangible assets (Lev, 2001). McKinsey & Co. recently analysed consumer companies in the Fortune 250 and found roughly half of their market value was tied to intangible asset values, such as brands (Court and Loch, 1999). These figures speak for the increasing significance of intangibles for businesses.

While intangibles encompass a broad concept, this thesis focuses on the brand-related and reputation-related intangibles. In so doing, this study concentrates on one particular variable of interest: advertising. By its very nature, advertising is an integrated and prominent feature of modern life. Advertising reaches consumers through their TV sets, radios, newspapers, magazines, mailboxes, computers and many more touchpoints. Not surprisingly, the associated advertising expenditures are huge, estimated at the aggregate level to represent about 5% of annual GDP in the U.S. economy (Arkolakis, 2010).[1]

Advertising aims to strengthen a firm's intangible capital, such as brand equity or customer loyalty. As White and Miles (1996) state, one objective of advertising is to increase the stock of an organization's intangible assets. If research and development is the engine for fuelling innovation capacity and generating knowledge-based assets that allow firms to develop

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[1] For example, Advertising Age (2005) reports that, in 2003 in the U.S., General Motors spent $3.43 billion to advertise its cars and trucks; Procter and Gamble devoted $3.32 billion to the advertisement of its detergents and cosmetics; and Pfizer incurred a $2.84 billion dollar advertising expense for its drugs (Bagwell, 2007).

either superior products or production techniques, product market advertising serves as the lifeblood for brand equity creation for a firm.

A body of marketing and management literature has advocated that accumulated advertising efforts translate into intangible assets in the form of product brand equity as well as corporate brand value. Braithwaite (1928) is one of the first researchers to make the point that advertising can have long-lasting reputational effects. According to this persuasive view of advertising, the direct effect of advertising is that brand loyalty is created and the demand for the advertised product becomes less elastic. Advertising thus results in greater market power since it reinforces the experience that consumers have with established products enhancing brand loyalty and exacerbating the differential advertising costs that await new entrants. Advertising creates stronger brand, one that can sustain and raise high positive brand equity over time, maintaining customer loyalty and successfully defending the brand against competitive encroachment (Aaker, 1996). Increased brand equity also increases price premiums (Ailawadi *et al.*, 2003) and lowers price sensitivities (Kaul and Wittink, 1995). Advertising has multiple roles in that it is not only used by firms to create awareness among customers for their products and services, but also as a tool to build a strong image for brands by dramatizing and presenting their products and services in such a way as to attract customers' attention. The power of advertising in building strong brands has been proposed by both marketing practitioners and academics (Aaker, 1991, 1996, among others).

The literature on advertising is rich and encompasses an array of disciplines. On the one hand, people involved in marketing activities, for instance, are concerned about the role of advertising in increasing sales or market share and, ultimately, the profitability of the firm. Economists, on the other hand, are interested in addressing the issues of the effect of advertising on competition, prices, concentration, profits and consumption among other economic aspects of advertising. Similarly, in addition to the economic effects of advertising, policy makers and

consumers are also interested in the social implications of advertising. In general, whether advertising is excessive and wasteful or whether it is informative or persuasive, whether advertising's benefits exceed its cost for instance, are extensively debated. Similarly, there has been controversy regarding the accounting treatment of advertising outlays and the debate continues as to whether advertising does actually buy intangible assets for firms.

Within the marketing and finance literature, traditionally, researchers have focused on investigating the customer response effects of advertising, defined as the impact of marketing activities on sales or profit (Comanor and Wilson, 1967; Abdel-Khalik, 1975; Dekimpe and Hanssens, 1995; Lev and Sougiannis, 1996). More recently, there has been surging interest in studying the relationship between product market advertising and a number of financial market metrics as researchers i) recognize the inherent inadequacies and shortfalls in models that relate advertising to only sales and profitability, and ii) aim to test the value relevance of advertising. [2] Despite growing interest, empirical evidence on the capital market implications of advertising remains relatively scarce. [3] In response to this deficiency, this thesis aims to review the theoretical underpinning for the financial market impacts of advertising, and to empirically investigate these relations.

The decision to concentrate on the financial implications of advertising is motivated by the importance of advertising in corporate strategy and the unique nature of advertising expenditure. Advertising has long been argued to be a powerful tool to boost sales and create

[2] Doyle (2000) provides a theoretical discussion of the value relevance of marketing. Hanssens *et al.* (2009) and Roland *et al.* (2004) summarize the pressing need to connect marketing activities and firm value and describe some initial frameworks for such linkages. Providing empirical verifications, Rao *et al.* (2004) study the relation between branding strategy and market value; McAlister *et al.* (2006) consider the advertising – systematic risk association; Joshi and Hanssens (2009) look at short-term and long-term valuation effect of advertising. In the finance area, Grullon *et al.* (2004) connect advertising with firm breadth of ownership and liquidity.

[3] Empirical evidence on the advertising – firm value linkage remains scant. Additionally, some studies restrict analysis to certain industries. For example, Srinivasan *et al.* (2008) limit their study to automobile industry while Joshi and Hanssens (2009) explore only personal computer manufacturing firms. In the finance literature, Grullon *et al.* (2004) study the impact of advertising on breadth of ownership and liquidity. They provide no direct tests of the reduction in cost of capital and increase in firm value.

competitive advantage in the primary product market (Comanor and Wilson, 1967; Dekimpe and Hanssens, 1995; Lev and Sougiannis, 1996). However, whether the effects of advertising are long-lasting and have implications in the capital market remains an open question. Firms spend significant and increasing proportions of their budget on advertising and the effectiveness of such spending has come under close scrutiny by shareholders. In response to the marketing community's call for financial market participants to adopt an investment perspective on advertising expenditure (Hanssens *et al.*, 2009), the capital market demands robust evidence of the value of advertising being measured meaningfully in financial terms. This thesis aims to evaluate the implications of advertising in the capital market, hence addressing the pressing need for a better understanding of how advertising creates financial value. This research responds to the relative scarcity of research in this domain.

This thesis investigates three issues related to the capital market implications of advertising. First, it examines whether a firm's advertising expenditure affects the characteristics of the information environment surrounding the stock and induces more rapid incorporation of firm-specific information into the stock price. The central argument is that advertising, beyond its traditional role in the primary product market, has implications in the capital market via its informational role. By its very nature, acting as an information factor, advertising can positively augment the firm's information environment through enhancing investor awareness, raising investor demand, and boosting stock liquidity (Merton, 1987; Grullon *et al.*, 2004). *Ceteris paribus*, stocks of firms with more intensive advertising activities receive greater attention from investors, have a lower cost of information acquisition, and have a lower cost to trade. In a market where investors are resource constrained, these lower information costs would in turn promote more information collection and pave the way for more intensive informed trading (Grossman and Stiglitz, 1980). This arguably triggers a more efficient flow of information into stock price (Roll, 1988). As such, higher advertising-intensive

stocks should be associated with stock prices that are more in line with their fundamentals, or more informative prices.

Second, the thesis aims to establish an empirical relation between advertising and a firm's propensity to engage in tax avoidance. The tax authority represents one of the most significant claimants to the cash flows of a corporation.[4] As a result, it is reasonable to expect that shareholders and managers have incentives to engage in tax planning activities as tax planning can increase expected future cash flows that can then be redeployed to other business activities. Nevertheless, tax aggressive activities do not always lead to firm value maximization as being tax aggressive also entails significant costs, which encompass direct tax costs and indirect non-tax costs. In the second empirical chapter, I study the implications of non-tax cost considerations for advertising-intensive firms which arise from the context that these firms possess greater reputational assets and a better information environment. Building on the cost-benefit trade-off of tax avoidance activities, this study extends the tax aggressiveness literature by examining whether firms that spend more heavily on advertising are less likely to engage in excessive tax avoidance.

Third, the thesis examines whether a firm's advertising expenditure significantly impacts its market value and the underlying mechanism(s) through which such market value improvement comes into effect. It seeks to answer whether any increase in value originates from a cash-flow enhancing effect or materializes by virtue of a reduction in the firm's cost of capital. Specifically, advertising affects firm value through the operative mechanisms in two markets, namely the customer effect in the product market and the investor effect in the capital market. In the product market channel, higher advertising leads to favourable product market

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[4] In fact, as noted by Desai and Dharmapala (2006), the state can be seen as the largest claimant on pre-tax corporate cash flows. The US statutory corporate tax rate is currently 35% at the federal level. If we include state and local taxes, corporate tax rates would average 40% of pre-tax income.

outcomes which bring about faster, larger and safer cash inflows for the firm (Srivastava *et al.*, 1998). In the capital market channel, advertising works as an information source that expands investors' awareness and familiarity with the firm, thereby boosting investor demand and increasing stock liquidity (Merton, 1987; Grullon *et al.*, 2004).[5] Collectively, the dynamic effects of better operating cash flow performance and lower cost of capital, offer strong support for the proposition that firms that spend more on advertising have higher market value.

1.2   Theoretical Motivation

My empirical investigation of the capital market implications of advertising is built upon one main theoretical backbone, Merton (1987)'s model of market equilibrium under incomplete information. I discuss Merton (1987)'s model here and present the formulation of the three research questions of this thesis.

Merton (1987) sets up a two-stage model of capital market equilibrium under the condition of incomplete information, where each investor knows only about a subset of the entire universe of available securities. If relatively few investors are cognizant of a particular security, the market can only reach equilibrium when these investors take large undiversified positions in the security. These investors in turn demand higher expected returns to compensate them for the increased idiosyncratic risk associated with their positions. Merton (1987) refers to the number of investors who know about a security as the degree of 'investor recognition' for that security. The prior argument implies that a higher degree of investor recognition will likely widen the investor base for a firm. Such expansion of shareholder base will, all else being equal, lower the expected returns on firms stocks (their costs of equity capital) and increase stock liquidity.

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[5] In the capital market, advertising potentially acts as an information proxy that expands investor cognizance of the firm's stock, raising demand for the stock. The resulting large shareholder base lowers the required rate of return on the stock, all else being equal (Merton, 1987; Kyle, 1989). Lower information asymmetry and greater liquidity are also factored into a lower cost of capital for the firm (Chemmanur and Yan, 2009; Grullon *et al.*, 2004).

Extant literature captures investor recognition by variables such as firm size, firm age, exchange listing, analyst coverage and voluntary disclosure. This study proposes advertising as another potential proxy for the level of investor attention and recognition and posits that advertising expands investor recognition, reduces information acquisition cost and enhances firm transparency. Huberman (2001, p.659) finds that investors are more likely to hold shares of local firms that they are aware of, and concludes that "people invest in the familiar while often ignoring the principles of portfolio theory." Since advertising is one of the main instruments available to marketing managers to increase awareness and recognition, the study adopts the informational view of advertising and examines its role in attracting investor attention.

The first essay focuses on the capital market impact of advertising on investor behaviour. Merton's (1987) model of incomplete information, discussed above, implies that given that innumerable small investors are time and resource constrained to fully search for and appraise all available stocks, stocks of higher advertising firms should stand out from the crowd and more readily capture investor recognition. As a result, advertising can impact investor recognition and effectively play a role in shaping the stock's information environment. Furthermore, advertising can also act as a signalling mechanism and help to reduce information asymmetry between firm insiders and outside investors (Chemmanur and Yan, 2009). I therefore expect that more advertising-intensive stocks are associated with an improved information environment characterized by higher visibility, better recognition and attention and lower information asymmetry.

Having established that advertising serves to expand investor awareness and improves the information environment surrounding the stock, the next linkage is between such improved information environment and a more informative stock price. A more visible firm may attract a pool of investors who make decisions in part based on their familiarity with the stock (Grullon

et al., 2004; Frieder and Subramanyam, 2005). These investors are best described as uninformed liquidity traders. The larger base of uninformed traders, coupled with lower search costs and a more transparent information environment surrounding the stock make the cost of collecting firm-specific private information effectively lower while the incentives of doing so higher (Grossman, 1976; Grossman and Stiglitz, 1980). Following the Grossman and Stiglitz (1980) cost-of-information setting, I posit that more advertising-intensive stocks are characterized by an improvement in the cost–benefit trade-off for information-based trading. More informed trading results in a more rapid and complete capitalisation of private information into stock prices, keeping stock prices more in line with fundamentals, resulting in better stock price informativeness or efficiency.

The above discussion leads to the first research question in my thesis.

Research Question 1: Is greater product market advertising associated with greater level of stock price informativeness?

The second essay investigates the empirical relation between a firm's advertising and its tax avoidance activities. This relation is theoretically motivated by a cost and benefit analysis of tax aggressiveness and how advertising, through its reputation building role and its informational role, impacts these costs and benefits considerations.

Taxes constitute a significant part of corporate operating costs, providing incentives for managers to invest in tax avoidance activities in order to lower their taxes. Mills *et al.* (1998) estimate that firms generate $4 of tax savings for each $1 invested in tax planning. On the benefit side, tax avoidance can help firms in reducing their cash outflows, but it also involves costs of procuring tax advice and implementing a tax strategy (Chen *et al.*, 2010). Tax avoidance may also lead to significant future cash outflows in the form of penalties, in the event that firms engage in aggressive tax avoidance are identified by the IRS. Besides these tax-related costs, other non-tax costs can also be paramount. An IRS audit may not only result in

monetary penalties but could also take a toll on the firm's reputation and trigger consumer backlashes when the firm is viewed as a poor corporate citizen due to tax evasion. These reputational costs might be overwhelming, especially given the dominant negative public view of corporate tax avoidance in recent years.[6]

Successful implementation of tax avoidance strategies require firms to obscure underlying transactions (Desai and Dharmapala, 2006; Kim, Li and Zhang, 2011).[7] The purposeful concealment can have a negative impact on the firm's information environment because it impedes information flow and adversely affects market evaluation of a firm's performance and prospects. Such obfuscation increases firm specific risk and adversely affects the firm's information environment by magnifying agency costs and information asymmetry. Information environment impairment and subsequent higher firm specific risk thus imposes another non-tax cost for tax aggressive activities.

The above discussion implies that since the combined costs, which include costs directly related to tax planning activities, additional compliance costs, and non-tax costs, may outweigh the tax benefits to shareholders, tax avoidance activities can potentially reduce after-tax firm value. Firm managers need to consider the entirety of the marginal costs and marginal benefits

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[6] A recent example of a firm being identified as a tax avoider is Starbucks in the United Kingdom. A Reuters' article in October 2012 emphasized that while Starbucks reported no profit for tax purposes in the U.K., the company was simultaneously communicating to analysts and investors that U.K. operations were profitable and should serve as an example for the U.S. This has led Starbucks to become the target of widespread protests. In a speech at the World Economic Forum, Britain's Prime Minister David Cameron publically reprimanded Starbucks for their extensive tax avoidance, asserting that the public "has had enough" tax avoidance.

[7] Anecdotal evidence lends strong support for the proposition that tax avoidance induces complexity of transactions in aggressive tax planning corporations. The case of Enron whose bankruptcy initiated a Congressional inquiry into its failure is well worth mentioning. In evaluating Enron's aggressive tax avoidance policy, the Joint Committee on Taxation makes the following remark:

"Enron also excelled at making complexity an ally. Many transactions used exceedingly complicated structures and were designed to provide tax benefits significantly into the future. For any person attempting to review the transaction, there would be no easy way to understand its terms or purpose. Rather, a reviewer would be required to parse details from a series of deal documents, make assumptions about the parties' intent in future years, and only then apply technical rules to the transaction to test the legitimacy. In short, Enron had the incentive and the ability to engage in unusually complicated transactions to preclude meaningful review."

of tax planning activities when determining the desired level of tax aggressiveness. In this context, advertising, through its brand and reputation building role in the product market, and its informational role in the capital market, has an ex-ante expected connection to the consideration of the costs and benefits of tax avoidance decisions.

There is important empirical evidence that advertising generates value-enhancing brand equity over time (Simon and Sullivan, 1993; Barth *et al.*, 1998, Madden *et al.*, 2006).[8] Accumulated advertising efforts endow the firm with a greater stock of intangible assets, including greater brand equity and stronger customer satisfaction. These intangible assets can be collectively referred to as the corporate's reputational assets. I expect that advertising-intensive firms possess greater corporate reputational assets. With more at stake, advertising-intensive firms have stronger incentives to protect the product brand equity and relatedly corporate reputation from being impaired.[9] I therefore expect that, *ceteris paribus*, managers of advertising-intensive firms might have greater incentives to forgo tax planning opportunities in order to protect valuable corporate reputation.

I next turn to consider the informational role of advertising. As discussed above, low-visibility firms carry large incomplete information premiums (Merton, 1987). In a crowded financial market, advertising activities are one important channel that the firm can use to potentially boost firm visibility, enhance greater investor awareness and capture more investor attention. Further, advertising-rich firms are followed more closely by financial analysts who also expend greater efforts in their analysis of these firms (Barth *et al.*, 2001), leading to a richer information environment. Prior research also demonstrates the signalling role of advertising, which extends well beyond the traditional product market and impacts the capital market

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[8] For example, Barth *et al.* (1998) find that brand value estimates of Financial World's annual brand evaluation survey are significantly and positively related to stock prices and returns and that brand value estimates represent valuation-relevant in formation beyond operating margin, market share, and earnings forecast.
[9] Dawar and Pillutla (2000) argue that brand equity is fragile because it is predicated on consumers' beliefs and as such, can be prone to sudden and significant shifts.

(Chemmanur and Yan, 2009). This signalling role of advertising, in effect, reduces information asymmetry and related adverse selection costs faced by potential investors. Taken together, greater advertising leads to a more enriched information environment characterized by higher visibility and transparency and lower information asymmetry. If tax aggressiveness activities, due to their complex and obfuscatory nature, disrupt the flow of information and adversely affect a firm's information environment, we expect to see tax avoidance thriving under an opaque information environment. Consequently, we would arguably anticipate a smaller extent of tax avoidance activities for advertising-intensive firms, which, *ceteris paribus*, possess a more transparent information environment characterized by greater visibility and lower information asymmetry between firm managers and outside investors.

Predicated on the interplay of the above two channels, I formulate the second research question in my thesis. To the extent that advertising (i) provides managers with a motive to undertake less aggressive tax planning due to the increased corporate reputation at risk and (ii) leads to a more transparent information environment less conducive for tax avoidance, I hypothesize that advertising intensive firms are less aggressive in their tax planning and reporting activities.

Research Question 2: Are advertising intensive firms associated with less tax avoidance?

The third empirical study rounds the thesis out and looks at the combined dual effects of advertising in both the traditional product marketplace and the capital market. In the primary product market, Srivastava *et al.* (1998) propose that marketing is tasked with developing and managing market-based assets, which are defined as "*assets that arise from the commingling of the firms with entities in its external environment*" (Srivastava *et al.*, p.2, 1998). These assets act as the crucial bridge to transform the firm's marketing efforts into shareholder values. For example, through past advertising and promotion efforts, the firm successfully develops an

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understanding about customer tastes, needs and their propensity to respond to certain firm's offers and actions. These customer-based assets can be leveraged by the firm to generate a range of superior and desired product market responses. These include faster market penetration in terms of trials, referrals and adoptions through more responsive advertising and promotions (Keller, 1993), more successful product line extensions (Keller and Aaker, 1992), up-selling and cross-selling (Kamakura *et al*., 2003), increasing price premiums (Ailawadi *et al.*, 2003), lowering price sensitivities (Kaul and Wittink, 1995), commanding greater market shares (Boulding *et al.*, 1994), lowering sales and services costs through greater customer loyalty (Reichheld, 1996), and insulating the firm from competitive sales promotions (Blattberg *et al.*, 1995). These favourable product market responses, in turn, translate into higher firm value via four key drivers: accelerating the timing of cash flows, increasing the level of cash flows, reducing volatility and vulnerability of cash flows and increasing the residual value of the firm (Srivastava *et al.*, 1998). If more advertising-intensive firms systematically earn better and less volatile cash flows, participants in the financial markets are expected to impound these effects into their valuation of the firm (Minton and Schrand, 1999; Francis *et al.*, 2004; Verdi, 2006).

Beyond the product market, advertising spills over into the capital market, acting as an information factor in this market. Under Merton's (1987) framework, firm's advertising, including product-only advertising that is not intended to target investors, as well as corporate advertising designed to inform investors about the firm, acts as one of the sources of information. *Ceteris paribus*, a more advertising-intensive firm enjoys a richer information environment that stimulates greater investor cognizance and expands the size of its investor base, which effectively reduces the cost of capital and increases firm value.

From the discussion of the two models above, there are strong *a priori* theoretical reasons to conjecture that greater advertising positively affects firm performance. In the product market, higher advertising spending builds brand assets in the form of positive brand equity and

customer satisfaction which in turn generate a myriad of favourable product market outcomes. These desirable product market outcomes ultimately transform into enhanced and accelerated cash flows for the firm with less volatility and variability (Srivastava *et al.*, 1998). [10] Better and safer operating cash flows should result in a lower cost of equity financing and higher firm valuation (Minton and Schrand, 1999; Francis *et al.*, 2004; Verdi, 2006). Next, extending beyond the primary product market, advertising also positively influences participants in the capital market by raising their awareness and familiarity with the firm, providing more information about the firm and signalling its financial well-being (Frieder and Subramanyam, 2005; Grullon *et al.*, 2004). Consequently, firms that spend more on advertising face lower information asymmetry, have an expanded shareholder base and improved stock liquidity (Merton, 1987; Chemmanur and Yan, 2009; Grullon *et al.*, 2004). These factors are priced into a lower cost of equity and thus greater market value for the advertising firm.

Research Question 3: Are higher advertising expenditures significantly associated with higher firm values?

1.3 Findings and Contributions

By studying the capital market implications of advertising, this thesis is positioned at the interface of the finance and marketing research disciplines and makes contributions to both fields of literature.

Using a large sample of non-financial Compustat firms spanning the period 1972-2012, this thesis documents important empirical results. In the first essay, the core empirical result is a significant positive association between a firm's advertising expenditure and the level of firm specific information being impounded into stock prices, or stock price informativeness, as measured by idiosyncratic volatility. The results offer an interpretation consistent with the

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[10] Srivastava *et al.* (1998) propose four key drivers through which market-based assets can generate shareholder value: i) cash flows are accelerated, ii) cash flows are increased, iii) risk associated with cash flows are reduced, and iv) residual value of the business is enhanced.

conjecture that advertising efforts by a firm augment the firm's information environment, making the firm more salient to the investor community and inducing more intensive private information collection and trading. As a result, stock prices are more revealing, or more informative, for firms with greater advertising. In the second essay, I find that firms that spend more on advertising exhibit significantly lower tax aggressiveness, as demonstrated by their higher effective tax rates and lower book-tax differences. This is consistent with my key prediction: advertising-intensive firms, when considering the trade-off between costs and benefits that arise from aggressive tax planning activities, have a smaller tendency to engage in such practices due to their concerns for reputational damage. It could also be the case that such advertising-intensive firms enjoy a more transparent information environment which deters aggressive tax activities as these activities are essentially characterized by complexity and obfuscation (Desai and Dharmapala, 2004, 2006). Moreover, the effect of advertising on corporate tax avoidance is economically significant. My result using the GAAP effective tax rate (GETR) as a measure of tax aggressiveness indicates that, on average, a one standard deviation increase in advertising expenditure is accompanied by a 0.48% increase in GETR, which represents an average increase of $1.2 million in taxes. The final empirical study provides consistent evidence that advertising positively affects future firm valuation, with a reduction in the cost of capital for the advertising firm as the underlying driver that gives rise to such value-enhancement.

The findings across the three essays are robust to various methodological approaches, such as alternative variable definitions and measurements, alternative model specifications and controlling for endogeneity in choosing advertising spending.

The three research questions explored in this study are theoretically motivated by an informational view of advertising in the capital market beyond the traditional view of the role of advertising in building stronger brand equity and creating reputation assets. In a crowded

market where investors are resource constrained and cannot be equally informed about all investments, engaging in advertising activities can be one mechanism for the firm to gain greater visibility and attention and increase investor demand. Advertising-intensive firms, all else being equal, are rewarded with a lower cost of raising equity capital and ultimately greater firm value. Such advertising-induced improvement in the firm's information environment creates stronger incentives for private informed trading, leading to more informative stock prices for advertising-intensive firms, all else being equal. Finally, the findings consistently support the contention that in a competitive market where corporates compete for reputational status, the advertising-induced reputational asset is valuable and concerns for reputation damage would effectively restrain the firm from engaging in extreme tax planning activities. Through its informational role, advertising also enriches the firm's information environment by promoting transparency and alleviating information asymmetry, deterring aggressive tax practices.

At the empirical level, the first essay on the association between advertising and stock price informativeness makes contributions to at least three strands in the literature. First, it adds new insights to the burgeoning stream of research on the financial market implications of advertising (Barth *et al.*, 2001; Grullon *et al.*, 2004; Chemmanur and Yan, 2009). Second, it extends the body of research that investigates the determinants of stock price informativeness and its implications on corporate activities and decisions (Piotroski and Roulstone, 2004; Brockman and Yan, 2008; Marhfor *et al.*, 2010; Foucault and Gehrig, 2008). This study extends this line of research by demonstrating that advertising, as an informational proxy, systematically improves the information environment surrounding a stock and leads to more informationally efficient pricing. Third, the research contributes to the growing strand of literature that explores the characteristics and alternative interpretations of idiosyncratic volatility. Adopting the view that advertising proxies for investor recognition and plays a

signalling role in the capital market, this thesis provides new evidence that corroborates the informational interpretation of idiosyncratic volatility.

Findings from the second empirical study also contribute to the existing literature along several dimensions. Capitalizing on both the reputation-building and the informational role of advertising in the capital market, I add to the literature by showing that greater advertising leads to a smaller extent of extreme tax planning activities. Second, by showing the impact of advertising on tax aggressiveness, the second essay extends the tax avoidance literature, in particular, the strand of literature that examines the determinants of corporate tax avoidance (*e.g.*, Gupta and Newberry, 1997; Wilson, 2009; Lisowsky, 2010; Chen *et al.,* 2010; Armstrong, Blouin and Larcker, 2012). Despite previous efforts to shed light on this topic, the drivers of a corporate's incentives to engage in aggressive tax planning activities are largely unknown. My results show that the non-tax costs arising from potential reputation damage and the political impacts of being labelled a "poor corporate citizen" can have a significant impact on advertising-intensive firms' tax management activities.

The third study contributes to research in the marketing – finance interface by expanding our knowledge of how investors impound the effects of firm's marketing activities, represented by its advertising, into their market valuation. This is the first study that seeks to identify the underlying mechanisms, whether through operating profitability improvement or cost of capital reduction, that trigger higher value associated with advertising. Using advertising as an information proxy that expands investor awareness, this study provides evidence of how the impact of advertising is factored into the cost of equity capital. The study also adds to the unresolved debate in accounting and finance research with regard to the pricing of information risks (Botosan, 1997; Botosan and Plumpee, 2002; Botosan *et al.*, 2004; Easley and O'Hara, 2004; Lambert *et al.*, 2006). The thesis furthers this line of research by establishing that

advertising expenditure might also constitute part of the information-risk factors that affect investor recognition and demand and plays a role in determining the expected return on equity.

1.4   Overview of Thesis

The remainder of this thesis is organized as follows. Chapter 2 presents the first empirical study, which investigates whether advertising is positively associated with greater stock price informativeness. Chapter 3 provides empirical evidence on whether firms that spend more on advertising have a lower tendency to engage in tax avoidance. Chapter 4 examines whether advertising intensive firms are associated with greater value. Chapter 5 presents the summary and conclusion of the thesis. It also discusses the implications of the findings and provides directions for future research.

2. Product Market Advertising and Stock Price Informativeness

"Doing business without advertising is like winking at a girl in the dark. You know what you are doing, but nobody else does"

Steuart Henderson Britt

2.1 Introduction

This empirical chapter examines whether a firm's advertising expenditure affects the characteristics of the information environment surrounding the stock and induces more rapid incorporation of firm-specific information into the stock price. The central argument is that advertising, beyond its traditional role in the primary product market, has implications in the capital market via its informational role. Viewed in the Merton (1987) sense as a proxy for investor recognition, advertising can positively augment the firm's information environment through enhancing investor awareness, raising investor demand, and boosting stock liquidity (Merton, 1987; Grullon *et al.*, 2004). *Ceteris paribus*, stocks of firms with more intensive advertising activities should receive greater attention from investors, have a lower cost of information acquisition, and have a lower cost to trade. To the extent that investors, due to limited resources, cannot be equally privately informed about all stocks, a lower cost of obtaining private information should promote more information collection and pave the way for more intensive informed trading (Grossman and Stiglitz, 1980). This arguably triggers a more efficient flow of information into the stock price (Roll, 1988). As such, higher advertising-intensive stocks should be associated with stock prices that are more in line with their fundamentals, or more informative prices.

On the conceptual level, this research is built upon two cornerstones: how advertising is linked to an improved information environment and how such an information environment promotes more informative pricing. In the first line of argument, Merton (1987) models market

equilibrium under incomplete information and contends that better investor recognition is correlated with a lower cost of capital and higher firm value. Given that innumerable small investors are time and resource constrained to fully search for and appraise all available stocks, stocks of firms with greater advertising should stand out from the crowd and more readily capture investor recognition. Furthermore, advertising can also act as a signalling mechanism and help to reduce information asymmetry between firm insiders and outside investors (Chemmanur and Yan, 2009). I therefore expect that more advertising-intensive stocks are associated with an improved information environment characterized by higher visibility, better recognition and attention and lower information asymmetry.

If we argue that advertising serves to expand investor awareness and improves the information environment surrounding the stock, the next linkage is between this improved information environment and a more informative stock price. A more visible firm may attract a pool of investors who make decisions in part based on their familiarity with the stock (Grullon *et al.*, 2004; Frieder and Subramanyam, 2005). These investors can be best described as uninformed liquidity traders. The larger base of uninformed traders, coupled with lower search costs and a more transparent information environment surrounding the stock make the cost of collecting firm-specific private information lower while the incentives of doing so higher (Grossman, 1976; Grossman and Stiglitz, 1980). Following the Grossman and Stiglitz (1980) cost-of-information setting, I posit that more advertising-intensive stocks are characterized by an improvement in the cost–benefit trade-off for information-based trading. The expected result of such intensive informed trading is more rapid and complete capitalisation of private information into stock prices, keeping stock prices more in line with fundamentals. This equates to better stock price informativeness or efficiency. This essay aims to empirically test the joint prediction of these two theoretical arguments, specifically investigating whether product market advertising induces an information environment conducive to informative stock prices.

The choice of a theoretically sound and empirically robust measure of stock price informativeness is essential to this study. My primary measure of stock price informativeness is firm-specific return variation (alternatively, idiosyncratic volatility), as first formally suggested by Roll (1988) and further developed by Morck *et al.* (2000). While price-relevant public information is directly and instantaneously impounded into stock prices, private information is incorporated into stock prices through the process of informed trading, resulting in idiosyncratic volatility. Empirical evidence from prior research corroborates this informational interpretation of idiosyncratic volatility both at the country- and firm-level. Morck *et al.* (2000) find evidence of lower stock return synchronicity (or higher firm-specific return variation) in developed countries, suggesting that stronger property rights in these markets encourage more intensive informed trading activity based on private information. At the firm level, evidence points towards firm-specific stock return variation improving capital allocation efficiency (Durnev *et al.*, 2004) and better predicting current and future earnings (Durnev *et al.*, 2003). The use of idiosyncratic volatility as a summary measure for price informativeness is, however, not uncontested. The information content of idiosyncratic volatility and whether it captures more information in stock prices, or merely reflects noise trading (see, for example, Ashbaugh-Skaife *et al.,* 2006; Dasgupta *et al.*, 2010) is still subject to intensive debate. Under this setting, my analysis is a joint test of the hypothesis that advertising improves price informativeness as captured by idiosyncratic volatility and that idiosyncratic volatility in essence embodies the flow of private information into stock prices. I further confirm my findings using a zero-return metric as an alternative measure of the relative amount of information reflected in stock prices (Lesmond *et al.*, 1999; Ashbaugh-Skaife *et al.*, 2006).

Whether to advertise or not is a firm choice and is thus very likely to be endogenous. I conduct several additional tests to address this empirical challenge. First, I use as explanatory

variable lagged advertising expenditure to rule out reverse causality from price informativeness to advertising to some extent. Second, I conduct a random-effects and firm fixed-effects regression. To the extent that firm-level characteristics are constant over time, the firm fixed-effects regression can partially address the concern that advertising expenditure and price informativeness are jointly determined by variables not included in the regressions. Finally, I employ a two-stage least squares (2SLS) simultaneous regression, where advertising outlays are endogenously determined.

To test whether advertising induces greater stock price informativeness as opposed to the reverse, I also study the change in the idiosyncratic volatility following a change in the firm's product market advertising spending. This test provides a more robust and direct verification that changes in price informativeness, as measured by idiosyncratic volatility, are attributable to changes in the firm's advertising expenditure.

This empirical chapter documents a significant positive association between a firm's product market advertising and idiosyncratic volatility as a measure of stock price informativeness, while controlling for other known determinants of stock price informativeness including profitability, firm size, firm age, market-to-book ratio, leverage and the effects of dividend payments, diversification and mergers and acquisitions. The positive relation remains robust after considering endogeneity, using alternative measures of stock price informativeness including the zero-return metric (Ashbaugh-Skaife *et al.*, 2006), adopting alternative regression techniques and employing a change specification. This result offers an interpretation consistent with my main conjecture. Advertising efforts by a firm augment the firm's information environment, making the firm more salient to the investor community and inducing more intensive private information collection and trading. As a result, there is a significant and positive linkage between a firm's advertising and its stock price informativeness. Additionally, I show that the impact of advertising on improving stock price informativeness is more

profound among firms that suffer more from information asymmetry. This latter finding further substantiates the informational role of advertising, which is the central theme in this essay.

At the empirical level, findings from this study make significant contributions to at least three strands in the literature. First, the study adds new insights to the burgeoning stream of research on the financial market implications of advertising. Second, it extends the body of research that investigates the determinants of stock price informativeness and its implications on corporate activities and decisions. Finally, the chapter offers new insights to the stream of literature that examines characteristics of idiosyncratic volatility.

Previous research traditionally analyses the financial implications of advertising through its status as an intangible asset. For example, Barth *et al.* (2001) find firms richer in intangible assets, as reflected by larger research and development and advertising expenditures, are followed more extensively by financial analysts. More recent authors attempt to explore advertising from a more novel perspective by using it as an information proxy. Grullon *et al.* (2004) are the first to address the capital market implications of advertising expenditure from an informational perspective. Using advertising to proxy for overall visibility, the authors find that firms with greater advertising expenditures have a wider shareholder base and increased stock liquidity. Chemmanur and Yan (2009) argue that in the presence of information asymmetry, product market advertising can signal the true value of a firm's projects to potential stock market investors and can thus be employed as a substitute for underpricing in the event of equity offerings. In this context, advertising acts to reduce the information asymmetry and improve the information environment surrounding the stock. Huang and Wei (2012) measure investor recognition using the firm's advertising intensity and find consistent evidence that greater advertising intensity is associated with lower implied cost of capital. Building on the informational role of advertising in the capital market, the study adds to the literature by

showing that advertising is linked to an enhancement in the stock's information environment and leads to an improvement in stock price informativeness.

Second, this chapter contributes new insights to the body of empirical literature that examines the determinants of, and analyses the implications for corporate activities of stock price informativeness. Several papers have attempted to identify cross-sectional factors that are significantly associated with the informativeness of stock price. These include, for example, institutional and block ownership (Piotroski and Roulstone, 2004; Brockman and Yan, 2008); analyst coverage (Marhfor *et al.*, 2010); and stock exchange cross-listing (Foucault and Gehrig, 2008). Other researchers study different aspects of corporate governance and disclosure policy as factors that significantly affect a firm's information environment and improve the ability of stock prices to fully and timely incorporate value-relevant information. These include quality of corporate governance (Yu, 2011), openness to the market for corporate control as captured by the number of antitakeover provisions (Ferreira and Laux, 2007), voluntary corporate disclosure (Oswald and Zarowin, 2007; Haggard *et al.*, 2008) and transparency of financial reports (Hutton *et al.,* 2009). Another strand of research deals with the implications of the information content of a more efficient stock price for corporate decisions. Informative stock prices improve the economic efficiency of corporate investments in the US (Durnev *et al.*, 2004) and the efficiency of capital allocation across 65 countries (Wurgler, 2000). Chen *et al.* (2007) find results in support of the view that firm managers learn from the private information in the stock price about their own firms' fundamentals and incorporate this information into corporate investment decisions. Fresard (2011) extends this finding by showing that managers use information embedded in their firms' stock prices when deciding on corporate cash savings. This research extends and complements the list of price informativeness determinants by showing that product market advertising, as an information proxy, systematically improves the information environment surrounding a stock and effectively promotes a more active collection

and impounding of private information into stock prices, leading to a more informationally efficient market.

Third, the research contributes to the growing strand of literature that explores characteristics and alternative interpretations of idiosyncratic volatility. One view holds that firm-specific return variation captures the flow of private information being impounded into stock prices through the trading process of informed investors (Roll, 1988; Morck *et al.*, 2000; Jin and Myer, 2006). A stock whose return exhibits less co-movement with the market has more informative pricing as its price captures a greater degree of firm-specific information. In contrast, others associate idiosyncratic volatility with less informative pricing, arguing that it reflects the impacts of noise trading or impediments to informed trades. Alternatively, other researchers relate idiosyncratic volatility to risks that result in future uncertainty. Adopting the view that advertising proxies for investor recognition and plays a signalling role in the capital market, the study provides new evidence that corroborates the informational interpretation of idiosyncratic volatility.

The chapter proceeds as follows. In Section 3 I present the theoretical framework to motivate the relation between product market advertising and stock price informativeness and summarize the extant related empirical evidence. Section 4 discusses testable hypotheses. Section 5 describes the data, variable construction and methodology. Section 6 presents my core empirical results on the relation between advertising and the information in the stock price. In Section 7 I perform robustness checks. Section 8 concludes.

2.2 Theoretical Background and Related Empirical Evidence

2.2.1 Theoretical Background

My current research rests primarily on the interplay of two theoretical frameworks. The first set of models discusses market equilibrium under incomplete information, with the implication that advertising can proxy for investor recognition and effectively play a role in

shaping the stock's information environment. The second theoretical underpinning links characteristics of that information environment to the efficiency of stock prices.

I define stock price informativeness as the timely and accurate incorporation of value-relevant information, resulting in prices that closely track firms' fundamentals. By definition, public information is embedded into stock prices as soon as it is revealed. On the other hand, private information can only find its way into market prices through the trading process of informed investors who expend resources to collect costly private information (Grossman and Stiglitz, 1980; Kyle, 1985). Grossman and Stiglitz (1980) introduce a model in which traders invest in a risk-free asset and a single risky asset and make decisions whether or not to acquire costly private information about the fundamental value of the risky asset. To these informed traders, different stocks present varying costs of private information production and thus provide differing incentives for information collection. With costly information acquisition, prices cannot perfectly reflect all relevant information because this would eliminate returns to those who undertake costly information gathering. Traders will continue to acquire costly private information so long as the *ex-ante* expected returns from collecting information and trading on it exceed the expected costs of doing so. The key prediction from this cost-benefit trade-off framework is that as the cost of private information decreases, informed trading becomes more intensive as informed market participants continue to reveal their private information about stocks by trading in a timely manner. The more rapid incorporation of private information into stock price leads to "a more informative price system" and hence more efficient equity markets (Grossman and Stiglitz, 1980; p.399).

Kelly (2007) extends the arguments in Grossman and Stiglitz (1980) and proposes that informational efficiency can be summarized by the characteristics of the information environment surrounding the stocks. A higher level of investor attention, a lower cost of

information acquisition, a lower cost of trade and greater liquidity are all indicative of a higher quality information environment that essentially leads to informationally efficient pricing.

The next theoretical cornerstone addresses how advertising is linked to an improved information environment that facilitates greater informativeness in the stock price. Traditionally, advertising has been studied intensively in the marketing literature as a key driver of firms' sales growth, earnings and profitability in the product market by enhancing, accelerating and stabilizing firms' cash flows (Srivastava *et al.*, 1998). A more novel way of looking at the financial implications of a firm's advertising is to unveil its effect from an informational perspective. Merton (1987) develops a model that incorporates incomplete investor recognition of stocks and analyses capital market equilibrium under this setting. He shows that those firms that are relatively more visible and familiar with investors (*i.e.*, better investor recognition) should provide lower expected return and exhibit higher liquidity. Traditionally, investor recognition has been proxied by variables such as firm size, firm age, exchange listing, analyst coverage and voluntary disclosure. I propose advertising as another potential proxy for the level of investor attention and recognition. To the extent that advertising expands investor recognition, reduces information acquisition cost and enhances firm transparency, I predict that higher advertising leads to more active firm-specific information collecting activities and more intensive informed trading. This reflects a more informationally efficient stock price.

Following the theoretical work of Grossman and Stiglitz (1980), to the extent that capturing attention constitutes part of a security's cost of private information, in this cost-of-information setting, I posit that more advertising-intensive stocks should be more salient to the investing community and have lower costs of obtaining information about those firms. This, in turn, leads to an improvement in the cost–benefit trade-off for information-based trading. The result of such intensive informed trading is expected to be more rapid and complete capitalisation of private information into stock prices, or more stock price informativeness.

I present a graphical summary of the relation between product market advertising, as an information proxy, and stock price informativeness in the below chart.

Figure 1: Advertising and stock price informativeness – Theoretical Connections
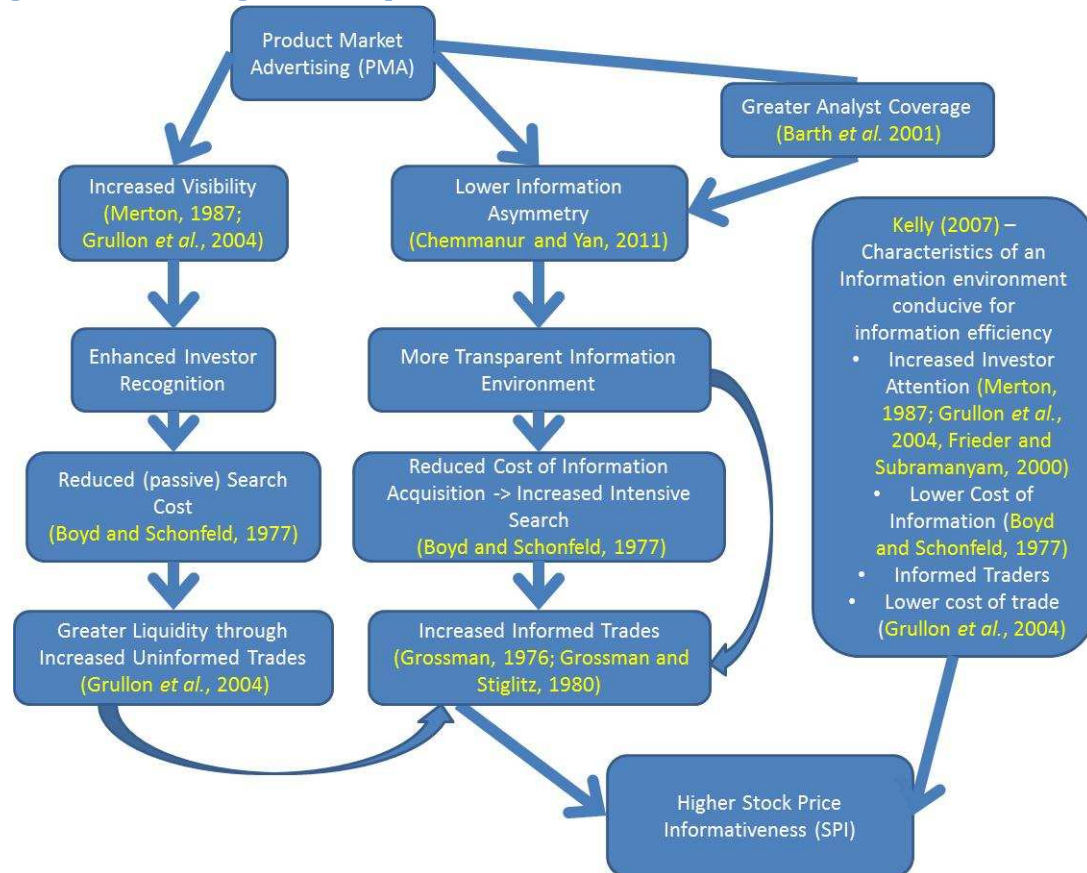
2.2.2 Related Empirical Evidence

Empirically, this study is connected to three strands of literature: the financial implications of advertising, the determinants and consequences on corporate decisions of stock price informativeness, and the literature on the information content of idiosyncratic volatility. I provide a brief review of these literature streams next.

2.2.2.1 Financial Implications of Advertising

In recent years, research in finance has paid growing attention to investigating the capital market implications of cross-discipline constructs. Advertising, coming from the field of marketing, is one variable that garners considerable research efforts. Barth *et al.* (2001) document more extensive analyst following and effort for intangible-intensive firms. Other

studies adopt an informational perspective when analysing advertising. Grullon *et al.* (2004) find that firms with larger advertising expenditures are associated with greater visibility and attention, resulting in a wider shareholder base and increased stock liquidity. Chemmanur and Yan (2009) show that, by acting as a signal to outside investors about the true values of the firm's projects, advertising reduces the information asymmetry and improves the information environment surrounding the stock. Huang and Wei (2012) measure investor recognition with the firm's advertising intensity and find consistent evidence that greater advertising intensity is associated with lower implied cost of capital. Expanding this line of enquiry, I examine the effect of advertising on enriching the stock's information environment and ultimately improving stock price informativeness.

2.2.2.2 Determinants and Implications of Stock Price Informativeness

A growing stream of research deals with the cross-sectional determinants of price informativeness. Arguing that blockholders have an informational advantage over diffuse shareholders in terms of the information quality and acquisition cost, Brockman and Yan (2009) find that greater block ownership leads to greater probability of informed trading and greater idiosyncratic volatility. Along similar lines, Piotroski and Roulstone (2004) examine the impacts of trades by financial analysts, institutional investors and insiders on the relative amount of firm-specific, industry-wide and market-wide information impounded into stock prices. They find results consistent with each party's relative informational advantage; whereby insider block transactions improve the flow of firm-specific information into individual stock prices, while analyst activities lead to greater price synchronization due to the embedding of industry- and market-wide information into the stock price. Chan and Hameed (2006), using an international dataset, also find that stock return synchronicity with the market is positively correlated with analyst coverage, providing more evidence supporting the fact that security analysts increase the amount of market level information in prices. Others examine corporate

governance characteristics as determining factors in the cross-section of stock price informativeness. Ferreira and Laux (2007) find that firms with more openness to the market for corporate control (proxied by having fewer antitakeover provisions) display higher levels of idiosyncratic risk, trading activity, private information flow, and information about future earnings in stock prices. More recently, Yu (2011) investigates the cross-country relationship between firm-level corporate governance and stock price informativeness and finds that stock price informativeness increases with the quality of a firm's corporate governance, more strongly so for firms in countries with better institutional environments. Haggard *et al.* (2008), using analyst evaluation of firm disclosure policy, find supporting evidence that the effectiveness of firm disclosure policy increases the amount of firm-specific information contained in stock returns. Fernandes and Ferreira (2008) show that a country's first-time enforcement of insider trading laws improves the transparency of the information environment and enhances stock price informativeness in developed markets. Other researchers find that financial statement transparency, cross-listing and board gender diversity are other significant determinants of stock price informativeness (Hutton *et al.*, 2009; Foucault and Gehrig, 2008; Gul *et al.*, 2011).

Another body of research explores the potential impacts that informative stock prices have on corporate decisions and strategies. The basic contention is that informed stock prices aggregate private signals and convey meaningful messages to management about the quality of their decisions. In a cross-country study, Wurgler (2000) finds evidence that more informative price systems in developed markets lead to more efficient capital allocation, suggesting that informative prices provide useful signals and facilitate investors and managers to better distinguish good and bad investments through more accurate measures of Q. Durnev *et al.* (2004) demonstrate a positive correlation between the efficiency of capital budgeting, and the magnitude of firm-specific return variation, as a proxy for the informativeness of stock prices across industries. Other researchers show that more informative stock prices have a significant

impact on corporate investment and cash savings decisions (Chen *et al.*, 2007; Fresard, 2011). Finally, Ferreira *et al.* (2011) find evidence of a negative relation between stock price informativeness and corporate board independence and conclude that stock market monitoring acts as substitute for board monitoring as alternative governance mechanisms.

2.2.2.3 Information content of idiosyncratic volatility

The majority of studies on stock price informativeness rely on idiosyncratic volatility, or firm-specific return variation, as a measure of the rate of private information flow into stock prices. The literature, however, also provides alternative interpretations of the information content of idiosyncratic volatility. In contrast to the argument that higher idiosyncratic volatility indicates a larger extent of private information-based trading, others contend that such a measure captures noise trading and thus, less informative pricing (Kelly, 2005; Ashbaugh-Skaife *et al.*, 2006; Dasgupta *et al.*, 2010). On another side of the debate, several authors make the case that idiosyncratic volatility is a manifestation of risk; consequently, higher volatility equates to higher future uncertainty. These risk-based interpretations are built on Pastor and Veronesi's (2003) framework where investors learn about a firm's average profitability over time. Idiosyncratic volatility increases with uncertainty about a firm's average profitability because (firm-specific) learning uncertainty is only weakly correlated with the (economy-wide) stochastic discount factor. As a result, all learning uncertainty is transmitted to returns in the form of idiosyncratic shocks. Attempting to reconcile the contradicting views on the information content of idiosyncratic volatility, Lee and Liu (2006) theoretically and empirically show that there is a U-shaped relationship between non-synchronicity and price informativeness. They find that firms with low informativeness, which are usually opaque in terms of costly information generation for outsiders, have a negative relationship between stock price informativeness and idiosyncratic volatility. However, for firms that are rich in informativeness, which are usually transparent firms, the relationship is positive. By establishing a linkage between advertising as an information proxy and a firm's stock price informativeness measured

by idiosyncratic volatility, this chapter contributes new evidence towards the informational interpretation of idiosyncratic volatility.

2.3   Research Question and Hypotheses Development

In this section, I recap the key arguments that flow from my review of the theoretical framework and related empirical evidence to formulate my testable hypotheses for the chapter.

Kelly (2007, p.10) contends that the quality of the information environment can be characterized through measures of transactions costs, liquidity, cost of information, and investor attention. She posits:

"Stocks with greater information efficiency in pricing should be those that: receive the attention of many informed investors; have a low cost of information acquisition; have a low cost to trade, including both explicit costs (e.g., bid-ask spread) and implicit costs (e.g., price pressure as the result of illiquidity); and be liquid. In short, the stocks should be in an environment where it is likely that the ex-ante expected returns from collecting information and trading on it are higher than the expected costs of doing so."

I reason that product market advertising, directly and indirectly, exerts effects on all four components which constitute a stock's information environment. First, product market advertising, by making the firm more visible in both the primary product market and the capital market, acts as a proxy for investor attention and recognition (Merton, 1987; Grullon *et al.*, 2004; Frieder and Subramanyam, 2005). Next, advertising-intensive firms should be associated with a lower cost of information acquisition. By making the firm more visible to the investing community, advertising clearly reduces search costs for traders. Further, advertising-rich firms are followed more closely by financial analysts who also expend greater efforts in their analysis for these firms (Barth *et al.*, 2001). Analysts make their reports known to a range of investors;

the accessibility of these reports lowers the cost of information acquisition for the companies that they cover.

In an early study, Schonfeld and Boyd (1977) argue that advertising can theoretically affect investors' decisions through a number of avenues. First, advertising may have an impact on information search costs and search behaviour. By making the firm stand out from the crowd in the investor's mindset, advertising effectively reduces the cost of passive search for investors. They further argue that an investor's preferences for holding a given stock or even the decision-making criteria might be modified by the degree of familiarity with the stocks. This behavioural bias that causes investors to tilt towards branded names and visible stocks (typically stocks of firms that spend more on advertising) and shy away from less visible stocks is also documented by later studies in finance (Huberman, 2000; Frieder and Subramanyam, 2005; Grullon *et al.*, 2004). Arguably, those investors who choose to buy a firm's stock based (at least partly) on their degree of familiarity with the firm rely on public sources of information such as advertising. Such investors are best characterized as uninformed traders. Using this line of argument, I contend that advertising would lead to enhanced visibility of the firm among the investing community, which in turn reduces passive search costs. All else being equal, such greater firm recognition is expected to result in an increase in the number of uninformed traders buying the firm's stock and greater liquidity from their trades.

Besides making investors more readily cognizant of the security (which reduces one component of the total information acquisition cost), through its catalytic role, advertising could further stimulate more extensive search (Schonfeld and Boyd, 1977). At any given time, speculators with limited resources cannot be equally privately informed about every firm and thus must decide to produce information about some firms and not others. Under this context, the lower information acquisition cost and the extensive search process triggered by advertising should be linked to a greater pool of informed traders spending resources on obtaining firm-

specific private information. The relatively large number of liquidity traders in advertising-intensive stocks provides yet another incentive for informed traders to participate as it increases the marginal benefit of collecting and trading on private firm-specific information for informed investors. The models of Grossman (1976) and Grossman and Stiglitz (1980) suggest that information incorporation requires not only informed traders but also uninformed traders who camouflage the trades of the informed. I contend that advertising-intensive stocks are associated with both a high level of informed and uninformed trades. As a result, they have an information environment conducive to rapid impounding of private information into stock prices, consistent with informationally efficient pricing.

The preceding discussion motivates the testable hypotheses for this essay.

> *(H1)* Firms with higher advertising expenditure are more likely to be associated with higher informativeness of stock prices, *ceteris paribus*.

Further, prior research also demonstrates the signalling role of advertising which extends well beyond the traditional product market and impacts the capital market. Chemmanur and Yan (2009) present a setting where advertising plays a dual signalling role. First, advertising signals quality to the product market, thereby allowing consumers to price the firms' products correctly in equilibrium. Second, advertising can, as a substitute for underpricing and under-financing, signal the true value of a firms' projects to potential stock market investors, thereby allowing them to price the firms' stocks correctly in equilibrium. This signalling role of advertising, in effect, reduces the information asymmetry and related adverse selection costs faced by potential investors. An advertising-induced lower asymmetric information environment with greater transparency would breed more information-driven trades because investors would be more certain about realizing the benefits from spending resources on obtaining private firm-specific information (Morck *et al.,* 2000; Jin and Myers, 2006). This indicates a more active flow of information being capitalized into prices through the trading

process of informed investors. Based on this discussion, I conjecture that the impact of advertising in improving information transparency and, in effect, enhancing stock price informativeness, is magnified for firms that are subject to more information asymmetry. I state the second hypothesis.

(H2) The impact of advertising on stock price informativeness is larger for firms that suffer from greater information asymmetry, *ceteris paribus*.

2.4 Data and Methodology

2.4.1 Data

Data for this study is drawn from the Center for Research in Stock Prices (CRSP) database and S&P COMPUSTAT. My initial sample includes all non-utilities (SIC code between 4900 and 4999) and non-financial (SIC code between 6000 and 6999) companies with non-missing advertising expenditures from Compustat over the sample period of 1972-2012. With the purpose of the chapter being testing the impact of firms' advertising expenditures on stock price informativeness, I include in my sample only observations that have data available (non-missing values) on advertising.[11]

I then further remove observations with missing control variables and merge with the annual idiosyncratic volatility, estimated using daily returns from CRSP database. This procedure results in a final sample of 62,501 firm-years. The number of sample firms varies over time; on average, there are 1,562 firms, with a minimum of 775 firms in 1973 and a maximum of 2,009 firms in 2006. Variables definitions and summary statistics are given in Table 2.1 and Table 2.2, respectively.

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[11] Inclusion of only observations with non-missing advertising expenditures greatly reduces my sample size. However, we cannot distinguish firms that do not report their advertising expenses from those that have zero advertising. Koh and Reeb (2012) investigate a similar issue of missing R&D data and document that firms with missing R&D data from Compustat appear to purposely opt for non-disclosure of R&D data. To date, there has been no equivalent study on this issue for missing advertising data.

2.4.2 Measuring stock price informativeness

My central measure of stock price informativeness is idiosyncratic volatility, or firm-specific return variation (French and Roll, 1986; Roll, 1988; Morck *et al.*, 2000; Durnev *et al.*, 2004; Ferreira and Laux, 2007; Jin and Myers, 2006). Essentially, idiosyncratic volatility measures the firm-specific component of stock returns after controlling for market and industry factors and, in my current setting, reflects the capitalization rate of firm-specific information into stock prices through informed trading. With the idea that an individual stock moves independently of the market if informed traders possess firm-specific information, idiosyncratic volatility increases when the stock return is less correlated with market and industry returns, in other words, displaying less comovement with the market (French & Roll, 1986; Roll, 1988).

To quantify this measure, I estimate the Fama and French (1992) three-factor model

$$r_{it} = \alpha_i + \beta_{1i}RM_t + \beta_{2i}SMB_t + \beta_{3i}HML_t + e_{it} ,   (1)$$

using daily return data, where r_{it} is the return of stock i on day t in excess of the risk-free rate, RM_t is the value-weighted excess market return, SMB_t is the small-minus-big size factor return, HML_t is the high-minus-low book-to-market factor return. For each firm-year, idiosyncratic volatility is estimated by the sum (across all days and all months) of the variance of the daily residuals from the above regression. The conventional interpretation of the residual from equation (1) is that after removing the return effects due to systematic factors, the remaining return volatility is due to idiosyncratic, firm-specific events.

As a robustness check, I also compute idiosyncratic volatility by regressing stock returns on the value-weighted and equal-weighted market index returns.

$$r_{i,t} = \alpha_i + \beta_i r_{m,t} + \varepsilon_{i,t},   (2)$$

where $r_{i,t}$ is the daily excess stock return for firm i and $r_{m,t}$ is the daily excess return of the market portfolio, where I use the Capital Asset Pricing Model (CAPM) as the model of market

equilibrium. Estimation of idiosyncratic volatility for these two market models is analogous to that for the three-factor model.

Alternatively, following prior literature, I also measure price informativeness by a logistic transformation of the ratio $(1 - R_{i,t}^2)/R_{i,t}^2$. From idiosyncratic volatility, I compute each stock's relative idiosyncratic volatility as the ratio of idiosyncratic volatility to total volatility, $\frac{\sigma_{i,e,t}^2}{\sigma_{i,t}^2}$, for each firm-year t.[12] This ratio reflects the proportion of volatility that is not explained by systematic components and equals $\left(1 - R_{i,t}^2\right)$ from the above regression. Since $(1 - R_{i,t}^2)$ is skewed (Durnev *et al.*, 2004), I measure idiosyncratic volatility by logistic transformation of the ratio $(1 - R_{i,t}^2)/R_{i,t}^2$. Formally, idiosyncratic volatility $\psi_{i,t}$ is defined as:

$$\psi_{i,t} = Ln\left(\frac{1-R_{i,t}^2}{R_{i,t}^2}\right) = Ln(\frac{\sigma_{i,e,t}^2}{\sigma_{i,t}^2 - \sigma_{i,e,t}^2}), \quad (3)$$

This transformation maps $1 - R_{i,t}^2 \in [0,1]$ to $\psi_{i,t} \in \Re$. The variable ψ measures firm-specific stock return variation relative to market-wide variation or lack of synchronicity with the market.

2.4.3 Summary Statistics and Correlation Matrix

Table 2.2 reports descriptive statistics of the key variables in this study. To control for the effects of outliers, I winsorize all variables at the 1% and 99% percentiles. In the sample, the main dependent variable, idiosyncratic volatility, ranges from 0.098% to 14.394% with a mean of 1.626%, a median of 0.841% and a standard deviation of 2.279%. Table 2.2 also shows that yearly mean (median) value of advertising intensity, defined as the ratio of advertising

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[12] The rationale for scaling idiosyncratic volatility by the total returns variation is that firms in certain industries are more prone to market-wide shocks than others, and firm-specific events may also be more intense. Furthermore, this adjustment allows for comparability of my results to other studies, such as Durnev *et al.* (2004) and Ferreira and Laux (2007).

expenditures over sales revenues, is 0.029 (0.015). Other summary statistics indicate that my sample firms have an average return on equity of 0.011, market-to-book ratio of 2.195 and leverage of 0.164. Further, the mean size and age of these firms are 4.716 and 2.871. These statistics are largely comparable to those in other studies (Ferreira and Laux, 2007; Gul *et al.*, 2011).

[Insert Table 2.2 about here]

Table 2.3 presents the correlation matrix, which shows the pairwise relationships between the variables. Pearson correlations are reported above the diagonal and Spearman correlations are reported below the diagonal. Specifically, the Pearson (coefficient = 0.098) and Spearman (coefficient = 0.033) correlations between idiosyncratic volatility and advertising intensity are significantly positive at the 1% level. This is consistent with my conjecture that advertising has a positive association with price informativeness as measured by idiosyncratic volatility. However, as these correlations are obtained without controlling for other firm characteristics, I do not attempt to draw a conclusion about causal relationship from here but leave detailed investigation to the subsequent multivariate regression analysis.

[Insert Table 2.3 about here]

2.4.4 Regression specifications

The preceding section conjectures that on average firms with higher product market advertising have greater stock price informativeness as captured by larger idiosyncratic volatility. I empirically test for this association by estimating the following regression equation with the dependent variable being idiosyncratic volatility. This hypothesis is tested by the resulting coefficient, β_1. It is expected to be positive and significant if Hypothesis (H1) is supported.

$$IVOL_{i,t} = \alpha + \beta_1 ADV_{i,t-1} + \gamma_1 ROE_{i,t-1} + \gamma_2 VROE_{i,t-1} + \gamma_3 LEV_{i,t-1} + \gamma_4 MB_{i,t-1} +$$

$$\gamma_5 LNMVE_{i,t-1} + \gamma_6 DD_{i,t-1} + \gamma_7 LNAGE_{i,t-1} + \gamma_8 DIVER_{i,t-1} + \gamma_9 MERGER_{i,t-1} +$$

$$\gamma_{10} CUMRET_{i,t-1} + \sum Industry\ dummies + \sum Year\ dummies + \varepsilon_{i,t}\ , \qquad (4)$$

where i and t denote the indexes for firm and year, respectively. The regression is conducted using pooled ordinary least squares (OLS), with the t-statistics computed using standard errors robust to both clustering at the firm level and heteroskedasticity.

I control for a number of variables that prior literature shows to be determinants of idiosyncratic volatility. These include profitability (measured by ROE), profit volatility (VROE), leverage (LEV), market-to-book ratio (M/B), firm size measured by market capitalization (LNMVE), a dividend paying dummy (DD), firm age (LNAGE), an internal diversification dummy (DIVER) and a merger dummy (MERGER). Definitions of these variables appear in Table 2.1.

2.5   Empirical Results

2.5.1 Main Results

In this section, I examine the cross-sectional advertising – price informativeness relation in a multivariate regression framework where I simultaneously control for multiple variables that potentially affect idiosyncratic volatility. Table 2.4 presents the results of several ordinary least squares (OLS) panel regressions where the dependent variable is the annual idiosyncratic volatility measured from the Fama-French three-factor model. My explanatory variable of interest is advertising, measured in a number of ways following prior literature. All regressions (except in column 1) include industry (based on two-digit SIC) and year dummy variables. Inclusions of year-fixed effects and industry fixed effects control for inter-temporal and industry variation. All reported t-statistics are adjusted for heteroskedasticity and within-firm correlation using clustered standard errors.

The primary interest is whether advertising plays a significant role in determining stock price informativeness. Column 1 presents the result of OLS regression of IVOL on advertising

intensity without any control variables. There is strong evidence of a positive and statistically significant relation. The coefficient on advertising is 5.085, with a *t*-statistic of 8.570. This result is consistent with my main hypothesis (H1) that firms that spend more on advertising are associated with a greater level of stock price informativeness.

Column 2-5 display results of OLS panel regressions of IVOL on alternative advertising measures controlling for firm characteristics which are known determinants of stock price informativeness. The results do not change qualitatively. The advertising coefficients are positive and significant at the 1% level across these different specifications, the values ranging from 0.136 (where natural logarithm of absolute advertising expenditure is used as the main explanatory variable) to 2.904 (where advertising-over-sales is used), with associated *t*-statistics of 4.218 to 11.390. Overall, I find that the firm's advertising expenditure displays a significant positive relation with idiosyncratic volatility after controlling for other well-known determinants of stock price informativeness, corroborating earlier findings from the portfolio analysis. This finding is consistent with the main conjecture: firms that spend more on advertising have an improved information environment characterized by lower information asymmetry and more incentives for private informed trading, leading to more informative stock prices.

With respect to other control variables, I find results that are mostly consistent with prior literature (Feirreira and Laux, 2007; Gul *et al.*, 2011). Smaller and younger firms that have lower profitability, more volatility in their return on equity, lower market-to-book ratio and higher past stock price performance have more informative stock prices. I do not find any significant relation between price informativeness and leverage and whether the firm operates in more than one segment or is involved in mergers and acquisitions.

The effect of advertising on price informativeness is positive and statistically significant across different specifications of the baseline model and also displays economic significance. Using the specification in Column 2, a one standard deviation increase in advertising boosts the informativeness of stock price by approximately 0.12 percentage points when other variables are set to their respective averages. This can be considered economically important when compared relative to the mean value of the measure of stock price informativeness, idiosyncratic volatility in my sample. Advertising's impact on stock price informativeness also displays economic significance when compared with the effects of other important price informativeness determinants in the same regression model.[13]

[Insert Table 2.4 about here]

In summary, results from the baseline multivariate regressions display strong evidence in support of a statistically and economically significant positive relation between a firm's advertising expenditure and its stock price informativeness. This relation is robust to the inclusion of industry and year-fixed effects and various variables that are likely to correlate with idiosyncratic volatility. Consistent with my prediction, firms that spend more on advertising have a more transparent information environment conducive for private information collection and trading, leading to more revealing stock prices.

2.5.2 Additional Analysis: Is the impact of advertising on price informativeness more pronounced for firms that are subject more to information asymmetry?

I next explore the impact of advertising on stock price informativeness given different degrees of a firm's information asymmetry. Contending that advertising reduces information asymmetry between firm insiders and outside investors, I predict that firms that are subject to

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[13] There are seven variables that are significant determinants of stock price informativeness using model (2) in Table 2.4. Out of these seven significant regressors, advertising has the third largest impact on stock price informativeness given its one standard deviation change.

a greater degree of information asymmetry should have the impact of advertising on their price informativeness magnified. I look for evidence of a more pronounced effect of advertising on improving the firm's information environment and subsequently the informational efficiency of the stock price by including in the baseline regression interaction terms between advertising and different proxies for the firm's information asymmetry. Table 2.5 displays findings from this analysis. Consistent with the notion that advertising matters more to price informativeness for firms that are subject to greater information asymmetry, results in column 1-3 show that the coefficients on the interaction variables are negative and statistically significant at the 1% level. The coefficient on ADV*AGE (ADV*SIZE, ADV*NUMANAL) is -1.917 (-0.848, -0.187) with a *t*-stat of -3.731 (-5.336, -4.065), indicating that firms that are subject to a greater degree of information asymmetry (proxied for by being smaller firms, younger firms and firms that do not have analyst coverage) experience a greater impact of advertising on improving stock price informativeness. [14] The results also show that younger firms, smaller firms have more informative stock prices, consistent with the baseline regression. Greater analyst coverage also has an augmenting effect on the stock's information environment, as demonstrated by the positive and significant coefficient on NUMANAL. These results lend support to hypothesis (H2): the impact of advertising on improving stock price informativeness is greater for firms that are subject to greater information asymmetry.

[Insert Table 2.5 about here]

2.6 Robustness

In this section I run additional tests to check the robustness of the main results. I first present results using alternative measures of price informativeness employing a Fama MacBeth (1973) regression approach. I then show findings from a change-in-variable analysis. In the

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[14] A quick diagnostics test for multicollinearity between advertising and the moderating information asymmetry variables (Age, Size and NumAnal) yields a Variance Inflation Factor (VIF) of 7.5. Since the VIF value is less than 10, as a rule of thumb, multicollinearity is not a major concern.

final subsection I address endogeneity concerns using firm fixed and random effects methods and a two-stage least squares technique.

2.6.1 Alternative Measures of Stock Price Informativeness

I address the question of whether the empirical relation between advertising and stock price informativeness is sensitive to how price informativeness is measured. In my main analysis, I use idiosyncratic volatility, calculated as the variance of the residual terms from the Fama-French three factor model using daily returns, as a measure of stock price informativeness.

Table 2.6 shows the results of alternative price informativeness measures. In columns (1) and (2), following Gul *et al.* (2011), I estimate idiosyncratic volatility using the variance of residuals from the market models using two different indices (value-weighted and equally-weighted) to generate different measures of idiosyncratic volatility. I obtain similar results to those in the baseline specification. Columns (3) to (8) show results for regressions using a log transformation of idiosyncratic volatility and standard deviation of residual terms respectively. Across these alternative formats of the idiosyncratic volatility measure, I document results strictly similar to those obtained in the baseline specification. I find that the coefficients on advertising are consistently positive and statistically significant at 1% level. Thus, firms that are more advertising-intensive have more informative stock prices, controlling for other price informativeness determinants. In untabulated results, I obtain idiosyncratic volatility using monthly returns instead of daily returns to address the potential bias induced by thin trading and findings remain qualitatively similar.

Next, I compute a logistic transformation of $(1-R^2)$ from the Fama-French three-factor regression, or non-synchronicity of stock returns as a measure of price informativeness. This firm-specific return variation using the R^2 measure is widely used in the literature starting with Morck *et al.* (2000). I observe more mixed findings using the R^2-based measure. However, I

still find a positive and significant relation between advertising and stock price informativeness in two out of three R^2-based measures of stock price non-synchronicity.

Finally, I use the zero-return metric as an alternative measure of the relative amount of firm-specific information in stock prices. I define the zero-return metric as the number of zero-return trading days over the fiscal year divided by the total trading days in the firm's fiscal year, where zero-return days are those in which the price of the stock does not change compared to the price of the previous trading day. Ashbaugh-Skaife *et al.* (2006) argue that this measure is more useful in capturing the information environment across firms than the synchronicity-based measures. In this manner, I expect higher advertising to lower the value of the zero-return metric, all else being equal. Consistent with this notion, as shown in the last column of Table 2.6, I find a negative association between advertising expenditure and the percentage of zero-return days.

Taken together, the empirical evidence presented in this chapter shows that advertising has a significantly positive impact on price informativeness, a result which is robust to different measures of informativeness. This strongly corroborates the informational role of advertising. In a crowded financial market, advertising boosts firm's salience, reducing information search costs, attracting greater attention and information collection. These benefits contribute to enriching the firm's information environment with informed trading and informative stock prices.

[Insert Table 2.6 about here]

2.6.2 Fama-MacBeth (1973) Regression

To mitigate concerns about cross-sectional correlation in the data, I estimate the models for each of the 31 years in my sample. Employing the procedure of Fama and MacBeth (1973), I report the mean of the yearly coefficient estimates and evaluate statistical significance using Newey-West time-series standard errors of the estimates in Table 2.7. The analysis shows

results consistent with my baseline specification: advertising has a significant and positive effect on price informativeness measured by alternative approaches. The coefficient estimate on advertising is positive and statistically significant at the 1% level for all but one regression specification. The coefficients also demonstrate economic significance. Collectively, I conclude that my results are robust to employing the Fama-MacBeth (1973) regression approach that corrects for potential cross-sectional correlation.

[Insert Table 2.7 about here]

2.6.3 Change-in-variable Analysis

In this section, I examine the robustness of the results obtained in the previous section by investigating the changes in variables as opposed to the levels of variables. To do this, I regress the annual change in different measures of stock price informativeness on the annual change in the firm's advertising expenditure after controlling for annual changes in the same set of control variables. Table 2.8 presents the change-in-variables regression results for four models. For three out of four models, I document a positive and significant relation between advertising and stock price informativeness. The estimated coefficient on ADV ranges from 0.019 (IVOLSD) to 2.167 (IVOL) and is statistically significant (*t*-stat ranging from 5.089 to 6.562). When log transformation of R^2 measure is used to capture price informativeness, the coefficient estimate on advertising turns negative albeit insignificant.

[Insert Table 2.8 about here]

2.6.4 Endogeneity

Endogeneity of one of the most critical and pervasive issues that researchers face in empirical corporate finance is endogeneity. Endogeneity, loosely defined as "a correlation between the explanatory variables and the error term in a regression", results in biased and inconsistent parameter estimates which can then jeopardise reliable statistical inferences

(Roberts and Whited, 2005, p.493). The most common sources of endogeneity include omitted variables, simultaneity and measurement error.[15,16,17]

It is possible that product market advertising and stock price informativeness are endogeneously determined. The employment of one-period-lagged explanatory variables in my main analysis and the additional change model used could address the concern of reverse causality. To formally tackle endogeneity, I also conduct some additional test procedures.

First, there might be unobservable firm characteristics that drive stock price informativeness but are not captured by the current control variables. These characteristics lead to the error terms being correlated with the explanatory variables, which violate the OLS assumptions and make OLS estimates biased. To address this omitted variable problem, I adopt random-effect panel and fixed-effect panel regression techniques estimated using generalized least squares (GLS). In principle, firm fixed effects can be used as an endogeneity control if the unobservable characteristics correlated with advertising and price informativeness are time-invariant. Table 2.9 reports findings from both fixed-effect (in columns 1-2) and random-effect regression (in columns 3-4). The results show that there is still strong evidence of a positive relation between advertising and price informativeness. In Column 1, the estimate of the advertising coefficient is 3.417 with a significant t-stat of 4.578; while in Column 3, under the random effects regression, the estimated coefficient of advertising is 4.385 with a significant t-stat of 7.854. In sum, similar to the baseline results, an increase in advertising intensity leads to

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[15] Omitted variables refer to those variables that should be included in the vector of explanatory variables, but for various reasons are not. This problem is particularly severe in corporate finance where many factors relevant for corporate behaviours are unobservable to econometricians.

[16] Simultaneity bias occurs when the dependent variable y and one or more of the explanatory variables x(s) are determined in equilibrium so that it can plausibly be argued that the causality can go either way.

[17] Empirical studies in corporate finance use proxies for unobservable or difficult to quantify variables. Any discrepancy between the true variable of interest and the proxy gives rise to measurement error.

an enhancement in stock price informativeness, all else being equal. I conclude that the results are robust to the inclusion of firm random and fixed effects.

[Insert Table 2.9 about here]

Next, I also adopt an instrumental variable estimation and re-estimate the model using 2SLS approach. Two-stage least squares methods allow us to address the omitted variables and reverse causality issues simultaneously. An appropriate instrument for the endogenous regress is a variable that satisfies two conditions, namely the relevance and exclusion condition. The first condition requires that the partial correlation between the instrument and the endogenous variable not be zero. The exclusion restriction implies that the only role that the instrument plays in influencing the outcome is through its effect on the endogenous variable. Unfortunately, in empirical finance research, good instruments are notoriously hard and rare to find.

To implement this, I need instruments for advertising: a variable that is correlated with firm's advertising expenditure but uncorrelated with firm's stock price informativeness except in an indirect manner through other independent variables. I use firm's lagged advertising and industry average advertising as instruments in my analysis. Though arguably not the best instrument, the use of lagged advertising can be justified as below.

The use of lagged endogenous variables as instruments has become widely popular in corporate finance empirical research. The economic justification for this stems primarily from estimation of investment Euler equations using firm-level panel data (Whited, 1992, Bond and Meghir, 1994).[18] Hansen and Singleton (1982) argue that an assumption of rational expectation underpins the estimation of any Euler equation that is applicable to any intertemporal decision.

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[18] Roberts and Whited (2013, p.524) provide an excellent summary of the intuition behind this equation:

"Intuitively, an investment Euler equation can be derived from a perturbation argument that states that the marginal cost of investing today is equal, at an optimum, to the expected discounted cost of delaying investment until tomorrow. This latter cost includes the opportunity cost of the foregone marginal product of capital as well as any direct costs."

This enables the empirical researcher to replace the inherently unobservable expected cost of delaying investment with the actual cost plus an expectational error. As put by Roberts and Whited (2013, p. 525), "as a general rule, what happens is equal to what one expects plus one's mistake. Further, the mistake has to be orthogonal to any information available at the time that the expectation was made; otherwise, the expectation would have been different." This justification allows lagged endogenous variables to be used as instruments to estimate the Euler equation, motivated by the argument that the regression error is an expectational error. Under the joint null hypothesis that a certain model is correct and that agents have rational expectations, lagged instruments can be argued to affect the dependent variable only via their effect on the endogenous regressors. Using lagged endogenous regressor as instrument, hence, satisfies the quick test of finding a good instrument.[19]

Table 2.10 shows results of 2SLS endogeneity tests, with the first-stage coefficient estimates displayed in Column 1 and the second-stage of two-stage least squares regression results shown in Column 2. Again, I obtain very similar results to the findings from the baseline specifications shown in Table 5. Of primary focus, the coefficient estimate on the advertising intensity variable is positive at 3.370 and statistically significant at the 1% level (t-stat $= 7.141$) in the specification with idiosyncratic volatility as the dependent variable. Similar to the baseline findings, the evidence points towards greater firm stock price informativeness for more advertising-intensive firms. Again, this analysis confirms my main hypothesis that advertising makes the firm stand out in a crowded market, strengthening investor recognition and demand, thereby reducing the information costs and improving the cost-benefit trade-off of private information collection and trading. Further, through its signalling mechanism, advertising could also attenuate the information asymmetry problem and lead to an information environment

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[19] Roberts and Whited (2013, p.520) suggest that the question one should always ask of a potential instrument is whether the instrument affects the outcome only via its effect on the endogenous regressor.

more favourable for informationally efficient pricing. In summary, the results from the 2SLS test indicate that the positive relation between advertising and price informativeness in my study does not appear to be driven by the endogeneity of advertising expenditure.

[Insert Table 2.10 about here]

2.7   Conclusion

Finance theoretical models predict a positive relationship between product market advertising and stock price informativeness. Merton (1987)'s model of market equilibrium under incomplete information makes a case for advertising acting as a proxy for investor recognition; all else being equal, greater visibility and familiarity raises stock liquidity and leads to a lower cost of capital. These advertising-induced cash flow and cost of capital effects together indicate higher values for advertising-intensive firms. Despite strong *a priori* reasons for the positive impact of advertising on stock price informativeness, no comprehensive empirical attempts have been made to investigate this topic. Filling this important gap, this essay explores whether a firm's advertising significantly enhances stock price informativeness as measured by idiosyncratic volatility.

Using a large sample of non-financial Compustat firms spanning the period 1972-2012 and a multitude of tests, this essay provides consistent and robust empirical evidence that advertising positively affects future stock price informativeness. Further, via the informational role of advertising, this effect is more pronounced among firms that suffer a higher degree of information asymmetry. My findings are robust to various methodological approaches, such as alternative advertising and price informativeness measures, different model specifications and controlling for endogeneity in choosing advertising spending. In a crowded market where investors are resource constrained and cannot be equally informed about all investments, engaging in advertising activities can be one mechanism for the firm to gain greater visibility, improving its information environment and create stronger incentives for private informed

trading. These factors all lead to more informative stock prices for advertising-intensive firms, all else being equal.

The study contributes to the research stream in the marketing – finance interface by expanding knowledge on the financial market implications of a firm's marketing activities, represented by its advertising. The research also adds a new element, the firm's advertising expenditure, to the list of determinants of stock price informativeness in the existing literature

This study is arguably the first to examine the effect of product market advertising on stock price informativeness. Taken together, the findings that this chapter unveils generate crucial first-gained insights to both academics and the large community of practitioners. Challenging the conventional notion that advertising spending falls short in its financial accountability, this essay provides evidence of the multi-faceted impacts of advertising which extend beyond the traditional product market into Wall Street where advertising spending significantly enriches the firm's information environment, inducing more private information collection and trading on such information, leading to more informative stock prices.

Table 2.1: Variable Definition

(I) Stock Price Informativeness Variables

Idiosyncratic Volatility	*IVOL*	Annualised idiosyncratic volatility estimated from the Fama-French three-factor model and two market models (value-weighted and equal-weighted) using daily stock returns
Firm-specific return variation	*PI*	Logistic transformation of $(1-R^2)$ of the Fama-French three-factor regression model and the two market models using daily stock returns
Illiquidity	*ILLI*	Average daily ratio of a stock absolute return by the dollar volume (Amihud, 2002)

(II) Advertising Variables

Advertising-to-sales	*ADV*	Natural logarithm of the ratio of (Advertising expense (XAD)/Sales (SALE))
Advertising-to-total-assets	*ADVA*	Natural logarithm of the ratio of (Advertising expense (XAD)/Book Value of Assets (AT))
Natural logarith of advertising	*LNADV*	Natural logarithm of Advertising expense (XAD).
Moving average advertising	*MADV*	Three-year moving average advertising expense (XAD)
Average industry advertising	*INDADV*	Industry average advertising where industry is defined based on two-digit SIC code

(III) Control Variables

Return on equity	*ROE*	Return on equity calculated as earnings before extraordinary items (IB) divided by book value of equity (CEQ) by the end of the prior year
Volatility of return on equity	*VROE*	Sample variance of annual ROE over the last 3 years
Leverage	*LEV*	The ratio of long-term debt (DLTT) to total assets (AT)
Market-to-book	*MB*	Market to book ratio (PRCC_F*CSHPRI/CEQ)
Size	*SIZE*	Natural log of annual market capitalization (PRCC_F*CSHPRI)
Firm age	*AGE*	Natural log of age defined as the number of years since the stock was included in the CRSP database
Dividend dummy	*DD*	Annual dividend dummy, which equals 1 if the firm pays dividend, and 0 otherwise (DVPSP_C>0)
Diversification dummy	*DIVER*	Annual dummy variable that equals 1 when a firm operates in multiple segments, and 0 otherwise
Merger dummy	*MERGER*	Dummy variable that equals 1 if Compustat item SALE_FN = 'AA', 'AB', 'AR', 'AS', 'FA', 'FB', 'FC', 'FD', 'FE', 'FF', and 0 otherwise
Cumulative returns	*CUMRET*	One-year cumulative stock returns

Table 2.2: Descriptive Statistics

This table reports the mean, standard deviation, minimum, maximum, median, 25th and 75th percentile for the main variables used in my study. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012 with non-missing advertising data. I merge the sample with the price informativeness measures generated from CRSP data. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1.

	Mean	S.D.	Min	25%	Median	75%	Max
IVOL	1.626	2.279	0.098	0.420	0.841	1.785	14.394
PI	4.774	0.963	2.984	4.077	4.655	5.345	7.661
ADV	0.029	0.043	0.000	0.007	0.015	0.032	0.293
ROE	0.011	0.651	-3.983	0.012	0.095	0.158	2.776
VROE	0.324	1.105	0.001	0.018	0.044	0.132	8.490
LEV	0.164	0.175	0.000	0.106	0.114	0.252	0.796
MB	2.195	3.030	-6.869	0.865	1.480	2.572	0.796
SIZE	4.716	2.359	-0.043	2.984	4.506	6.278	10.836
DD	0.280	0.449	0.000	0.000	0.000	1.000	1.000
AGE	2.871	0.591	1.386	2.485	2.890	3.332	3.714
DIVER	0.280	0.449	0.000	0.000	0.000	1.000	1.000
CUMRET	0.203	0.540	-1.245	-0.090	0.182	0.465	2.033
Obs.				62,501			

Table 2.3: Correlation Matrix

This table presents the correlation matrix of the main variables used in the baseline specification. Pearson correlations are reported above the main diagonal and Spearman correlations are reported below the diagonal. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012 with non-missing advertising data. I merge the sample with the price informativeness measures generated from CRSP data. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. All correlation coefficients are significant at least at the 5% level, except those with #.

	IVOL	ADV	ROE	VROE	LEV	MB	LNMVE	DD	LNAGE	DIVER	MERGER	CUMRET
IVOL		0.098	-0.222	0.322	0.011	-0.026	-0.370	-0.255	-0.227	-0.062	-0.033	0.215
ADV	0.033		-0.056	0.095	0.003	0.096	0.012	-0.084	-0.027	0.025	0.012	-0.019
ROE	-0.339	0.004#		-0.123	0.016	-0.255	0.015	0.102	0.111	0.022	-0.000#	0.060
VROE	0.506	0.089	-0.298		0.150	0.108	-0.147	-0.135	-0.149	-0.035	-0.016	-0.014
LEV	-0.068	0.048	0.020	0.087		-0.051	0.004#	-0.051	0.020	0.103	0.065	-0.029
MB	-0.130	0.074	0.244	0.003#	-0.136		0.245	-0.019	0.017	-0.009	0.053	0.157
SIZE	-0.436	0.039	0.303	-0.239	0.021	0.458		0.298	0.290	0.143	0.155	0.009
DD	-0.391	-0.090	0.197	-0.301	-0.004#	0.036	0.297		0.177	0.030	-0.011	-0.047
AGE	-0.275	0.047	0.196	-0.153	0.074	0.105	0.278	0.174		0.190	0.007	0.026
DIVER	-0.107	0.064	0.045	-0.001#	0.139	0.009#	0.137	0.030	0.187		0.120	0.012
MERGER	-0.021	0.027	0.019	-0.002#	0.073	0.100	0.157	-0.011	0.008	0.121		-0.014
CUMRET	0.060	-0.021	0.016	-0.022	-0.026	0.205	0.022	-0.036	0.018	0.014	-0.013#	

Table 2.4: Advertising and Price Informativeness

This table presents the results of OLS regressions of firm's advertising and control variables on idiosyncratic volatility as a measure of stock price informativeness. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. I merge the sample with the idiosyncratic volatility measures generated from CRSP. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in regressions (2) to (5) but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. The independent variables are lagged for one year in all the regressions.

Dependent Variable	Baseline regression with IVOL as dependent variable				
	(1)	(2)	(3)	(4)	(5)
ADV	**5.085**	**2.904**			
	(8.570)***	(6.830)***			
ADVA			**1.369**		
			(4.218)***		
MADV				**2.437**	
				(5.495)***	
LNADV					**0.136**
					(11.39)***
ROE		-0.548	-0.558	-0.444	-0.521
		(-16.40)***	(-16.63)***	(-13.43)***	(-15.94)***
VROE		0.326	0.331	0.437	0.317
		(15.24)***	(15.38)***	(20.48)***	(14.69)***
LEV		0.112	0.111	0.044	-0.056
		(1.076)	(1.074)	(0.425)	(-0.530)
MB		-(0.03)	-0.027	-0.06	-0.01
		(-5.357)***	(-5.238)***	(-10.30)***	(-1.976)**
SIZE		-0.329	-0.327	-0.329	-0.454
		(-33.79)***	(-33.56)***	(-33.60)***	(-29.44)***
DD		-0.167	-0.172	-0.121	-0.183
		(-5.842)***	(-6.023)***	(-4.171)***	(-6.207)***
AGE		-0.297	-0.304	-0.197	-0.339
		(-10.29)***	(-10.54)***	(-6.615)***	(-11.48)***
DIVER		-(0.05)	-0.053	0.036	-0.074
		(-1.441)	(-1.591)	(1.131)	(-2.228)**
MERGER		(0.01)	0.005	-0.049	0.011
		(0.264)	(0.196)	(-2.212)**	(0.445)
CUMRET		0.137	0.129	1.354	0.170
		(3.873)***	(3.665)***	(29.26)***	(4.733)***
Intercept	1.400	3.772	3.816	3.243	4.485
	(60.74)***	(39.18)***	(39.77)***	(32.91)***	(39.81)***
Industry FE	No	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes
Obs	62,501	62,501	52,132	43,649	49,407
Adjusted R^2	0.009	0.350	0.343	0.453	0.351

Table 2.5: Is the impact of advertising on price informativeness magnified for firms that suffer from greater information asymmetry?

This table presents the results of OLS regressions of firm's advertising and interaction terms between advertising and proxies for information asymmetry on idiosyncratic volatility as a measure of stock price informativeness. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. I merge the sample with the idiosyncratic volatility measures generated from CRSP. Analyst following is from I/B/E/S database. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. The independent variables are lagged for one year in all the regressions.

Dependent Variable	IVOL		
	(1)	(2)	(3)
ADV	**8.045**	**6.531**	**3.854**
	(5.653)***	(7.719)***	(8.183)***
ADV_AGE	**-1.917**		
	(-3.731)***		
ADV_SIZE		**-0.848**	
		(-5.336)***	
ADV_NUMANAL			**-0.187**
			(-4.065)***
NUMANAL			**0.041**
			(16.09)***
ROE	-0.473	-0.469	-0.569
	(-18.77)***	(-18.64)***	(-20.53)***
VROE	0.419	0.418	0.485
	(25.06)***	(25.08)***	(26.84)***
LEV	-0.056	-0.045	-0.235
	(-0.655)	(-0.518)	(-2.548)**
MB	-0.065	-0.063	-0.072
	(-13.65)***	(-13.37)***	(-13.51)***
SIZE	-0.352	-0.327	-0.303
	(-39.72)***	(-33.98)***	(-30.45)***
DD	-0.142	-0.140	-0.353
	(-5.299)***	(-5.181)***	(-13.79)***
AGE	-0.175	-0.232	-0.310
	(-6.585)***	(-10.05)***	(-12.77)***
DIVER	0.002	0.005	-0.048
	(0.0594)	(0.162)	(-1.648)*
MERGER	-0.025	-0.026	0.013
	(-1.180)	(-1.229)	(0.581)
CUMRET	1.260	1.260	1.051
	(34.53)***	(34.58)***	(29.95)***
Intercept	3.588	3.638	3.629
	(40.99)***	(44.30)***	(46.93)***
Industry FE	Yes	Yes	Yes

Year FE	Yes	Yes	Yes
Obs	62,501	62,501	62,501
Adjusted R^2	0.450	0.451	0.332

Table 2.6: Alternative measures of price informativeness

This table presents the results of OLS regressions of firm's advertising and control variables on alternative measures of price informativeness. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. I merge the sample with the idiosyncratic volatility measures generated from CRSP. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. The independent variables are lagged for one year in all the regressions.

Dependent Variable	Alternative measures of price informativeness											
	IVOL_VW	IVOL_EW	LNIVOL	LNIVOL_VW	LNIVOL_EW	IVOLSD	IVOLSD_VW	IVOLSD_EW	PI	PI_VW	PI_EW	ZEROS
ZZADV	**2.911**	**2.877**	**1.184**	**1.294**	**1.308**	**0.027**	**0.028**	**0.028**	**0.085**	**0.528**	**0.476**	**-14.38**
	(6.924)***	(6.893)***	(6.932)***	(7.619)***	(7.609)***	(7.477)***	(7.888)***	(7.835)***	(0.776)	(1.750)*	(1.663)*	(-1.787)*
ROE	-0.534	-0.529	-0.177	-0.175	-0.178	-0.005	-0.004	-0.004	-0.005	0.019	0.012	1.868
	(-16.15)***	(-16.12)***	(-19.44)***	(-18.93)***	(-19.15)***	(-19.18)***	(-18.97)***	(-18.97)***	(-0.661)	(1.179)	(0.769)	(4.756)***
VROE	0.321	0.317	0.111	0.111	0.113	0.003	0.003	0.003	-0.006	0.013	0.017	0.727
	(15.05)***	(14.97)***	(18.19)***	(17.74)***	(17.88)***	(17.81)***	(17.67)***	(17.63)***	(-1.211)	(1.176)	(1.606)	(2.493)**
LEV	0.067	0.058	0.176	0.155	0.139	0.002	0.002	0.002	-0.037	-0.184	-0.261	3.423
	(0.652)	(0.567)	(4.129)***	(3.554)***	(3.190)***	(2.481)**	(1.953)*	(1.754)*	(-1.373)	(-2.558)**	(-3.722)***	(1.686)*
MB	-0.028	-0.028	0.003	0.004	0.004	0	0	0	-0.001	0.011	0.008	0.716
	(-5.560)***	(-5.536)***	(1.626)	(2.108)**	(1.998)**	(-2.306)**	(-2.338)**	(-2.338)**	(-0.710)	(2.958)***	(2.171)**	(7.903)***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
SIZE	-0.358 (-36.67)***	-0.352 (-36.12)***	-0.188 (-44.02)***	-0.242 (-55.81)***	-0.231 (-52.97)***	-0.004 (-41.63)***	-0.004 (-48.51)***	-0.004 (-46.77)***	-0.011 (-4.748)***	-0.706 (-72.53)***	-0.579 (-60.44)***	-12.13 (-53.23)***
DD	-0.149 (-5.186)***	-0.145 (-5.055)***	-0.260 (-14.49)***	-0.279 (-15.27)***	-0.272 (-14.79)***	-0.003 (-11.12)***	-0.003 (-10.94)***	-0.003 (-10.61)***	-0.004 (-0.343)	0.06 (1.587)	0.102 (2.806)***	-0.346 (-0.400)
AGE	-0.286 (-10.01)***	-0.281 (-9.875)***	-0.179 (-13.10)***	-0.196 (-14.19)***	-0.189 (-13.65)***	-0.003 (-12.27)***	-0.003 (-12.44)***	-0.003 (-12.14)***	0.003 (0.352)	-0.016 (-0.644)	-0.007 (-0.280)	0.718 (1.094)
DIVER	-0.034 (-1.022)	-0.032 (-0.986)	-0.067 (-4.257)***	-0.062 (-3.954)***	-0.059 (-3.717)***	-0.001 (-2.954)***	-0.001 (-2.526)**	-0.001 (-2.425)**	0.014 (1.316)	0.056 (1.971)**	0.079 (2.899)***	-2.387 (-3.090)***
MERGER	-0.006 (-0.237)	-0.007 (-0.292)	0.029 (2.609)***	0.028 (2.445)**	0.025 (2.216)**	0 (1.486)	0 (1.049)	0 (0.914)	-0.019 (-1.496)	-0.093 (-3.791)***	-0.081 (-3.510)***	-1.735 (-3.324)***
CUMRET	0.110 (3.122)***	0.111 (3.173)***	0.087 (9.814)***	0.069 (7.650)***	0.069 (7.634)***	0.001 (5.656)***	0.001 (4.166)***	0.001 (4.222)***	0.036 (3.969)***	-0.265 (-15.63)***	-0.220 (-13.68)***	-8.868 (-25.73)***
Intercept	3.842 (39.98)***	3.781 (39.45)***	-5.887 (-136.3)***	-5.751 (-130.4)***	-5.853 (-131.0)***	0.056 (67.76)***	0.058 (69.83)***	0.057 (67.96)***	5.219 (135.6)***	6.485 (69.73)***	5.502 (60.18)***	84.03 (40.55)***
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	52,132	52,132	52,132	52,132	52,132	52,132	52,132	52,132	52,132	52,128	52,128	52,132
Adjusted R^2	0.347	0.344	0.524	0.561	0.549	0.467	0.485	0.478	0.036	0.527	0.487	0.653

Table 2.7: Fama-MacBeth (1973) regression: advertising and idiosyncratic volatility

This table presents the results of regressions of advertising on alternative measures of price informativeness using Fama MacBeth (1973) procedure. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. I merge the sample with the idiosyncratic volatility measures generated from CRSP. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are Newey-West adjusted standard errors. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. The independent variables are lagged for one year in all the regressions. .

Dependent Variables	IVOL	LNIVOL	IVOLSD	PI	PI_VW
ADV	**2.702**	**1.282**	**0.027**	**0.018**	**0.719**
	(6.047)***	(7.603)***	(7.132)***	(0.174)	(2.956)***
ROE	-0.535	-0.186	-0.005	-0.008	-0.051
	(-10.27)***	(-10.45)***	(-11.83)***	(-0.737)	(-1.300)
VROE	0.354	0.143	0.003	-0.004	-0.005
	(10.85)***	(8.548)***	(10.21)***	(-0.915)	(-0.241)
LEV	0.216	0.157	0.003	-0.046	-0.052
	(2.219)**	(2.944)***	(2.597)**	(-2.060)**	(-0.736)
MB	-0.004	0.016	0	-0.001	0.006
	(-0.427)	(3.606)***	(1.776)*	(-0.511)	(1.317)
SIZE	-0.292	-0.177	-0.003	-0.012	-0.689
	(-11.84)***	(-17.15)***	(-15.91)***	(-1.526)	(-52.67)***
DD	-0.399	-0.401	-0.006	-0.019	0.148
	(-7.732)***	(-12.33)***	(-10.12)***	(-1.196)	(4.918)***
AGE	-0.294	-0.170	-0.003	0.005	-0.046
	(-5.484)***	(-8.007)***	(-6.550)***	(0.527)	(-2.350)**
DIVER	0.125	0.013	0.001	0.019	0.044
	(2.945)***	(0.567)	(1.964)*	(1.996)*	(1.853)*
MERGER	0.063	0.07	0.001	-0.013	-0.127
	(1.895)*	(4.239)***	(3.128)***	(-0.842)	(-6.707)***
CUMRET	0.098	0.052	0.001	0.02	-0.265
	(1.130)	(1.256)	(1.087)	(1.509)	(-5.192)***
Intercept	3.661	-5.805	0.057	4.819	6.875
	(11.63)***	(-48.16)***	(20.54)***	(135.6)***	(42.73)***
Obs	52,132	52,132	52,132	52,132	52,128
Adjusted R^2	0.315	0.432	0.403	0.022	0.443

Table 2.8: Change-in-variable Analysis

This table presents results from regression models of annual change in measures of price informativeness to annual change in advertising expenditure and a set of annual change in control variables. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. I merge the sample with the idiosyncratic volatility measures generated from CRSP. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1.

Dependent Variables	IVOL	LNIVOL	IVOLSD	PI
DADV	2.167	0.755	0.019	-0.272
	(6.176)***	(5.089)***	(6.562)***	(-0.854)
DROE	-0.081	-0.031	-0.001	-0.014
	(-8.484)***	(-7.538)***	(-9.247)***	(-1.557)
DVROE	0.123	0.024	0.001	0
	(13.45)***	(6.328)***	(11.04)***	(0.00506)
DLEV	-0.148	0.06	0	-0.001
	(-2.010)**	(1.925)*	(-0.327)	(-0.0110)
DMB	-0.001	-0.001	0	-0.001
	(-0.456)	(-1.292)	(-0.822)	(-2.426)**
DSIZE	-1.355	-0.457	-0.011	-0.016
	(-97.01)***	(-77.41)***	(-98.42)***	(-1.231)
DDD	0.031	-0.042	0	0.011
	(0.752)	(-2.416)**	(-0.837)	(0.283)
DDIVER	0.203	0.064	0.002	0.009
	(7.395)***	(5.512)***	(7.736)***	(0.373)
DMERGER	0.042	0.01	0	-0.001
	(2.567)**	(1.442)	(2.097)**	(-0.535)
DCUMRET	0.903	0.242	0.007	0.01
	(90.50)***	(57.46)***	(81.84)***	(1.151)
Intercept	0.093	0.011	0.001	0.001
	(14.00)***	(3.756)***	(10.43)***	(0.0989)
Obs	52,132	52,132	52,132	52,132
Adjusted R^2	0.213	0.131	0.205	0.000

Table 2.9: Random-effect and Fixed-effect Panel Regressions

This table presents the results of regressions of advertising on alternative measures of price informativeness using random-effect and fixed-effect panel regressions. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. I merge the sample with the idiosyncratic volatility measures generated from CRSP. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. The independent variables are lagged for one year in all the regressions.

Dependent Variable	Fixed-effect		Random effect	
	IVOL	PI	IVOL	PI
ADV	**3.417**	**2.177**	**4.385**	**1.330**
	(4.578)***	(4.162)***	(7.854)***	(4.110)***
ROE	-0.276	0.009	-0.358	-0.001
	(-8.682)***	(0.517)	(-11.60)***	(-0.0412)
VROE	0.217	0.026	0.260	0.026
	(8.680)***	(1.769)*	(11.55)***	(2.181)**
LEV	0.460	0.051	0.275	-0.217
	(3.196)***	(0.443)	(2.388)**	(-2.661)***
MB	-0.009	0.014	-0.009	0.021
	(-1.693)*	(3.490)***	(-1.801)*	(5.687)***
SIZE	-0.298	-0.468	-0.287	-0.598
	(-16.76)***	(-28.89)***	(-24.27)***	(-71.60)***
DD	-0.091	-0.181	-0.330	0.08
	(-1.706)*	(-3.023)***	(-8.653)***	(2.099)**
AGE			-0.472	-0.209
			(-11.53)***	(-7.672)***
DIVER	0.031	0.094	0.037	0.05
	(0.954)	(3.208)***	(1.255)	(2.027)**
MERGER	-0.013	0.004	0.026	-0.028
	(-0.546)	(0.167)	(1.144)	(-1.228)
CUMRET	-0.355	-0.147	-0.319	-0.122
	(-14.89)***	(-9.678)***	(-13.47)***	(-8.433)***
Intercept	2.867	5.527	4.302	6.765
	(32.29)***	(70.46)***	(34.89)***	(85.33)***
Obs	52,132	52128	52,132	52,128
Overall R²	0.1683	0.3828	0.1942	0.3907

Table 2.10: Two-stage Least Squares Regression

This table presents the results of 2SLS regressions of firm's advertising on idiosyncratic volatility as a measure of stock price informativeness. Column 1 presents the first-stage regression results and column 2 presents the second-stage regression results. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 2.1. The independent variables are lagged for one year in all the regressions.

Dependent Variable	Two stage least squares	
	First stage ADV	Second stage IVOL
ADV		**3.370**
		(7.141)***
LADV	0.851	
	(91.27)***	
INDADV	0.206	
	(7.619)***	
ROE	0	-0.462
	(-0.0352)	(-15.76)***
VROE	-0.001	0.428
	(-4.056)***	(22.60)***
LEV	-0.001	0.049
	(-0.795)	(0.517)
MB	0	-0.062
	(-1.328)	(-11.80)***
SIZE	0	-0.342
	(4.132)***	(-36.79)***
DD	0	-0.123
	(0.482)	(-4.366)***
AGE	0	-0.208
	(0.357)	(-7.872)***
DIVER	0	0.017
	(-0.827)	(0.551)
MERGER	0	-0.039
	(-2.706)***	(-1.770)*
CUMRET	-0.001	1.323
	(-4.385)***	(32.61)***
Intercept	-0.003	3.597
	(-2.858)***	(13.44)***
Industry FE	Yes	Yes
Year FE	Yes	Yes
Obs	52,132	52,132
Adjusted R^2	0.815	0.452

3. Product Market Advertising and Corporate Tax Avoidance

"By aligning our corporate name with our largest brand, we will increase the visibility of the company with customers, leverage the world-famous Macy's brand name, and get more credit for our accomplishments in the marketplace".

Terry J. Lundgren, Federated's chairman, president and chief executive officer

3.1   Introduction

Taxes constitute a significant part of corporate operating costs and represent a non-discretionary expenditure imposed by the government that all profit-making firms must incur. Though legislated at a specified statutory rate,[20] a manager has the flexibility and the incentives to implement various tax planning strategies to reduce the firm's tax liability in order to benefit shareholders as the residual claimants (Mills, 1996; Mills, Erickson and Maydew, 1998). As evidence of corporate tax avoidance, research points to statistics of growing difference between book and tax income, lower reported effective tax rates and the increasing presence of firms with negligible income tax liability.[21] However, while a strategy of tax avoidance may result in less transfer from the shareholders to the tax authority and thus enhanced cash flows to the firm from its tax savings, it also entails significant costs.[22] Pursuing aggressive tax management involves explicit tax-related costs including fees paid to tax specialists, tax advice planning and procurement costs, tax penalties assessed by IRS, and additional compliance costs. Second, and

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[20] Statutory tax rates are set at 46% for 1986 and prior tax years, 40% for 1987, 34% for tax years in the period of 1988-1993, and 35% thereafter. Hence, under the current tax regime, U.S. firms may need to transfer more than one-third of pre-tax profits to the federal, state, and local governments.

[21] Yin (2009) reports that the effective tax rate for S&P 500 firms dropped from an average of 28.9% in 1995 to 24.2% in 2000. Another study reports that 32.7% of large U.S. corporations reported no tax liability in 1995 and that percentage rose to 45.3% by 2000.

[14] Tax evasion, tax noncompliance, and tax shelters are concepts related to tax avoidance and frequently used in the financial economics literature. Tax shelters refer to very complicated transactions promoted to corporations and wealthy individuals to explore tax loopholes and provide large, unintended benefits (U.S. General Accounting Office 2003). Tax evasion refers to corporate tax reporting behavior that would, if discovered, be subject to civil or criminal sanctions (Crocker and Slemrod, 2005). Tax noncompliance refers to corporate income tax that is legally owed but is not reported or paid (Slemrod, 2004). Despite these subtle differences, following prior literature, we do not attempt to differentiate these terms and use the terms tax avoidance, tax aggressiveness and extreme or aggressive tax planning and reporting interchangeably in this chapter.

perhaps more importantly, there are significant non-tax costs that accompany tax aggressive activities (Scholes *et al.*, 2005). Specifically, tax aggressiveness increases the riskiness of the firm by eroding the firm's information environment which, in turn, results in greater agency problems and information asymmetry between inside managers and outside investors. Further, it exposes the firm to possible detection risk and potential reputation damage. These combined costs could substantially offset tax savings derived from tax avoidance transactions, making the net outcome from tax avoidance value destroying for shareholders. Within this framework, firms trade off the potential gains and costs arising from tax avoidance activities and determine the level of aggressiveness of their corporate tax strategy.

In this essay, I study the implications on corporate tax avoidance for advertising-intensive firms which arise from the context that these firms possess greater reputational assets and better information environment. Building on the cost-benefit trade-off of tax avoidance activities, our study extends the tax aggressiveness literature by examining whether firms that spend more heavily on advertising are less likely to engage in excessive tax avoidance. I propose two possible channels through which advertising can exert an impact on corporate tax avoidance, namely the reputation- building channel and the information environment-enriching channel.

Firstly, firms advertise in the product market to build a strongly recognized product and corporate "name", in other words, greater product brand equity and corporate reputation (Braithwaite, 1928; Fombrun and Shanley, 1990; Aaker, 1996). Advertising expenditures represent investment in brand capital, an intangible market-based asset which, in the current competitive environment, constitutes many business sectors' most important commercial and

institutional asset (Srivastava *et al.*, 1998; Belo, 2003).[23] Advertising efforts accumulate and create stronger brand capital equity and greater reputation, which have important strategic and performance implications for firms.[24] Among these, increased advertising and the resultant brand equity allow firms to positively differentiate their goods and services from those of competitors (Kirmani and Zeithaml, 1993) and make them less easily substitutable (Kirmani and Zeithaml, 1993; Mela, Gupta, and Lehmann, 1997). Increased brand equity also increases price premiums (Ailawadi *et al.*, 2003) and lowers price sensitivities (Kaul and Wittink 1995). These advertising-induced reputational assets are especially valuable in times of economic downturns as they help buffer the firm's cash flows from down swings in consumer demand (Larkin, 2013). Summing up this line of argument, I contend that advertising-intensive firms possess greater reputational brand assets. With more reputation at stake, advertising-intensive firms are more likely to refrain from excessive tax avoidance as these activities might lead to a greater probability of a tax audit and potential penalties imposed by the IRS. The fines per se might be substantial; but what matters even more for these firms is any impairment of their long-built reputation. Arguably, the potential negative repercussions of being publically identified and labelled as a "poor corporate citizen" would induce severe consumer backlash and connote profound negative implications for the corporate name in the eyes of existing and potential investors.[25] I therefore expect that, *ceteris paribus*, managers at advertising-intensive

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[23] These expenditures, which at the aggregate level represent about 5% of annual GDP in the U.S. economy (Arkolakis, 2010), include the cost of advertising media and promotional expenses and thus are a natural form through which firms affect brand awareness.

[24] A large body of marketing literature establishes that advertising helps firm build stronger brands over time. Section 3.2.1 reviews this literature in more detail.

[25] Anecdotal evidence suggests that firms are concerned about the political impact of being labelled as tax aggressive. For example, Wal-Mart was criticized for avoiding taxes in the early 2000s. The company subsequently spent considerable effort in combating the label of a "poor corporate citizen." Addressing this point, in Wal-Mart's 2004 letter to the shareholders, Wal-Mart president and CEO Lee Scott explicitly disclosed the federal income taxes that Wal-Mart paid in 2004, amounting to $4 billion, to highlight the firm's contribution to the treasury department.

firms have greater incentives to forgo tax planning opportunities to protect valuable corporate reputation.

Secondly, in a crowded capital market, advertising plays the role of an information proxy that raises investor awareness and enhances firm visibility (Merton, 1987). Additionally, advertising can also act as a signalling mechanism and help to reduce information asymmetry between firm insiders and outside investors (Chemmanur and Yan, 2009). I therefore expect that more advertising-intensive stocks are associated with an improved information environment characterized by higher visibility, better investor recognition and attention and lower information asymmetry. Such an enriched information environment has several important implications for the firm's propensity to engage in aggressive tax planning activities. Desai and Dharmapala (2004, 2006) develop a theoretical model of the complementary relation between rent extraction and tax avoidance and point out that tax avoidance activities often comprise very complex transactions that are designed to obscure the underlying intent and to avoid detection by the tax authorities.[26] Tax saving transactions are often obscure and opaque in nature and thus are more likely to proliferate when the information environment surrounding the firm also lacks transparency. Hence I anticipate that advertising-intensive firms, having a more transparent information environment, are less likely to engage in aggressive tax management activities.

Predicated on the interplay of the above two channels, I formulate the key hypothesis in this study. To the extent that advertising (i) provides managers with a motive to undertake less aggressive tax planning due to the increased corporate reputation at risk and (ii) leads to a more transparent information environment less conducive for tax avoidance, I hypothesize that advertising intensive firms are less aggressive in their tax planning and reporting activities. I conjecture that firms that spend more on product market advertising are associated with a lesser

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[26] Examples of complicated tax transactions include contested liability acceleration strategy, cross-border dividend capture, and offshore intellectual property havens (*e.g.*, Graham and Tucker, 2006).

degree of corporate tax aggressiveness. The chapter sets out to examine this empirical advertising – tax avoidance relation.

To test this prediction, I employ multiple measures of tax aggressiveness drawn from the literature. Specifically, I use four effective tax rate measures (including GAAP effective tax rate, cash effective tax rate, long-term cash effective tax rate and forward cash effective tax rate) and three book-tax difference measures (including a total book-tax difference measure proposed by Manzon and Plesko, 2002; a permanent book-tax difference measure and a residual book-tax difference measure developed in Frank, Lynch and Rego, 2009). I expect advertising-intensive firms, being less tax aggressive, to be associated with higher effective tax rates and lower book-tax differences.

Whether to advertise or not is a firm choice and is thus very likely to be endogenous. I conduct several additional tests to address this empirical challenge. First, I use as an explanatory variable lagged advertising expenditure and conduct lead-lag analysis to help rule out reverse causality from corporate tax avoidance to advertising. Second, I estimate the model using random-effects panel regression. Finally, I employ a two-stage least squares (2SLS) simultaneous regression, where advertising outlays are endogenously determined.

Turning to my results, using a large sample comprising 36,339 firm-year observations from 1975 to 2012, I find that firms that spend more on advertising exhibit significantly lower tax aggressiveness, as demonstrated by their higher effective tax rates and lower book-tax differences. This is consistent with my key prediction: advertising-intensive firms, when considering the trade-off between costs and benefits that arise from aggressive tax planning activities, have a smaller tendency to engage in such practices due to their concerns for reputational damage. It can also be the case that such advertising-intensive firms enjoy a more transparent information environment which deters aggressive tax activities as these activities are essentially characterized by complexity and obfuscation (Desai and Dharmapala, 2004,

2006). Moreover, the effect of advertising on corporate tax avoidance is economically significant. My result using GAAP effective tax rate as measure of tax aggressiveness indicates that, on average, a one standard deviation increase in advertising expenditure is accompanied by a 0.48% increase in GETR, which represents an average increase of $1.2 million in taxes.

The core empirical result of a significant and negative association between a firm's product market advertising expenditure and corporate tax aggressiveness holds after I control for firm characteristics that are shown in prior literature to be cross-sectionally associated with my tax avoidance measures. These characteristics are: firm profitability, leverage, loss carry forward, foreign income, abnormal accruals, tangible and intangible assets, equity in earnings, firm size and firm growth as proxied by market-to-book ratio. My results are also robust to different measures of advertising expenditures and alternative model specifications including Fama-MacBeth (1973) regression, lead-lag regression and random effects panel regression. Findings from the additional endogeneity test of 2SLS regression also confirm that the negative relation between advertising and corporate tax avoidance is not driven by endogeneity in choosing advertising expenditure. Together, my results offer interpretation consistent with the main contention that advertising efforts bring about two effects: building up the firm's reputational assets and augmenting the firm's information environment. As a result, endowed with a more transparent information environment and having a greater concern for reputation damage, advertising-intensive firms are less likely to engage in extreme tax planning and reporting activities.

Probing further, I find that firms that possess more valuable consumer brands, proxied by being part of Interbrand's Best Global Brand list, and firms that suffer more from a limited information environment characterized by more opaqueness and greater information asymmetry realize an elevated impact of advertising on reducing tax aggressiveness. These supplementary findings further substantiate my main conjecture: both the concerns for

reputation impairment and the improved information environment brought about by the visibility-enhancing and information asymmetry-reducing effect of advertising might play a role in deterring advertising-intensive firms from aggressively managing their tax affairs.

At the empirical level, findings from this study contribute to the existing literature along several dimensions. First, this study adds new insights to the burgeoning stream of research on the financial market implications of advertising. Second, it extends the body of research that investigates the determinants of firms' tax reporting practices and their shareholder wealth effects.

Previous research traditionally analyses the financial implications of advertising through its status as an intangible asset. For example, Barth *et al.* (2001) find firms richer in intangible assets, as reflected by larger research and development and advertising expenditures, are followed more extensively by financial analysts. Recent papers, from a more novel perspective, attempt to explore advertising as an information proxy. Grullon *et al.* (2004) use advertising to proxy for overall visibility and find that firms with greater advertising expenditures have a wider shareholder base and increased stock liquidity. Chemmanur and Yan (2009) argue that in the presence of information asymmetry, product market advertising can signal the true value of a firm's projects to potential stock market investors and can thus be employed as a substitute for underpricing in the event of equity offerings. Huang and Wei (2012) find consistent evidence that greater advertising intensity (proxied for greater investor recognition) is associated with lower implied cost of capital. Capitalizing on both the reputation-building and the informational role of advertising in the capital market, this chapter adds to the literature by showing that greater advertising leads to a smaller extent of extreme tax planning activities.

Second, by showing the impact of advertising on tax aggressiveness, this chapter extends the tax avoidance literature, in particular the strand of literature that examines the

determinants of corporate tax avoidance (*e.g.*, Gupta and Newberry, 1997; Wilson, 2009; Lisowsky, 2010; Chen *et al.*, 2010; Armstrong *et al.*, 2012). Despite extant efforts to shed light on this topic, the drivers of a corporate's incentives to engage in aggressive tax planning activities remains largely unknown. My results show that the non-tax costs arising from potential reputation damage and political impacts of being labelled a "poor corporate citizen" can have a significant impact on advertising-intensive firms' tax management activities.

The rest of the chapter proceeds as follows. In the next section I present the theoretical framework to motivate the relation between product market advertising and corporate tax avoidance. Section 3 summarizes the extant related empirical evidence and Section 4 discusses testable hypotheses. In Section 5 I describe the data, variable construction and methodology. Section 6 presents my core empirical results on the relation between advertising and the extent of corporate tax aggressiveness. In Section 7 and 8 I perform robustness checks and additional analyses respectively. Section 9 concludes the chapter.

3.2 Theoretical Background

To illustrate the theoretical motivations underlying my hypothesis I begin by discussing the cost-benefit trade off framework of corporate tax avoidance activities. I proceed to review the reputation-building role and the informational role of advertising and conceptually connect the effects of advertising to the degree of tax aggressiveness given the above cost and benefit setting.

3.2.1 Costs and Benefits of Being Tax Aggressive

The tax authority represents one of the most significant claimants to the cash flows of a corporation.[27] Given the significance of tax costs, one might expect firms and shareholders have incentives to reduce taxes through tax aggressive activities. A reduction in the taxes paid can

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[27] In fact, as noted by Desai and Dharmapala (2006), the state can be seen as the largest claimant on pre-tax corporate cash flows. The US statutory corporate tax rate is currently 35% at the federal level. If we include state and local taxes, corporate tax rates would average 40% of pre-tax income.

be viewed as value-enhancing to a corporation's residual claimants since it represents an improvement in the amount of cash flows that is available for distribution to them. However, it is obvious that tax aggressive activities do not always lead to firm value maximization as there are potential costs to being tax aggressive. As a matter of fact, we observe astounding differences among US firms when it comes to corporate tax payments. While a large portion of US corporations pay very little tax despite having positive pre-tax income, an approximately equally large number of firms pay taxes at 35% of their pre-tax income on average, indicating that these latter firms engage in very minimal tax avoidance (Dyreng, Hanlon and Maydew, 2008). Despite the important implications of tax planning for shareholders and regulators, our understanding of the determinants of tax reporting aggressiveness is limited at best. This study fills this gap by highlighting the impact of a corporate's product market advertising on tax aggressiveness.

I first look at the benefit side of tax avoidance activities. The most obvious benefit of tax aggressiveness is greater tax savings; and a reduction in transfers from the firm to the government means enhanced cash flows to the shareholders. This might be particularly valuable as a source of internal funding for financially constrained firms as these firms are in need of cash and have difficulty in accessing external funding (Edwards *et al.*, 2013). On the cost side, an aggressive tax position entails explicit costs of procuring tax advice and implementing tax strategy. A higher level of tax avoidance increases the uncertainty about the ability of a firm to retain the savings from tax planning (Blouin *et al.*, 2012). This is because the dollars earned from tax savings can be guaranteed only to the extent that detection by the tax authority is evaded. Once they are audited and caught, companies face potential penalties imposed by the IRS and other additional compliance costs. Besides these tax-related costs, other non-tax costs can also be paramount. The potential damage of being detected and fined by the IRS is not only represented by the monetary penalties but also encompasses the reputation damage and political

impacts of being labelled a poor corporate citizen due to tax evasion. These reputational costs might be overwhelming, especially given the dominant negative public view of corporate tax avoidance in recent years.[28]

Engaging in aggressive tax planning activities demands creating considerably complex transactions and obscuring facts to mask the underlying intent in an attempt to prevent detection by the tax authorities (Desai and Dharmapala, 2006; Chen *et al.*, 2009). [29] Purposeful concealment can have a negative impact on the firm's information environment because it impedes the information flow and adversely affects market evaluation of a firm's performance and prospects. Such obfuscation increases firm specific risk and adversely affects the firm's information environment by magnifying agency costs and information asymmetry. Information environment impairment and subsequent higher firm specific risk thus imposes another non-tax cost for tax aggressive activities.

Desai and Dharmapala (2006) examine tax avoidance behaviour by taking into account the conflicts of interest that arise in a corporate setting due to the separation of ownership and control and the nature of corporate tax avoidance strategies. They note that tax avoidance

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[28] A recent example of a firm being identified as a tax avoider is Starbucks in the United Kingdom. A Reuter's article in October 2012 emphasized that while Starbucks reported no profit for tax purposes in the U.K., the company was simultaneously communicating to analysts and investors that U.K. operations were profitable and should serve as an example for the U.S. This has led Starbucks to become the target of widespread protests. In a speech at the World Economics Forum, Britain's Prime Minister David Cameron publically reprimanded Starbucks for their extensive tax avoidance, asserting that the public "has had enough" of tax avoidance.

[29] Anecdotal evidence lends strong support for the proposition that tax avoidance induces complexity of transactions in aggressive tax planning corporations. The case of Enron whose bankruptcy initiated a Congressional inquiry into its failure is well worth mentioning. In evaluating Enron's aggressive tax avoidance policy in place, the Joint Committee on Taxation makes the following remark:

"Enron also excelled at making complexity an ally. Many transactions used exceedingly complicated structures and were designed to provide tax benefits significantly into the future. For any person attempting to review the transaction, there would be no easy way to understand its terms or purpose. Rather, a reviewer would be required to parse details from a series of deal documents, make assumptions about the parties' intent in future years, and only then apply technical rules to the transaction to test the legitimacy. In short, Enron had the incentive and the ability to engage in unusually complicated transactions to preclude meaningful review."

strategies entail actions that serve to obscure facts in order to avoid detection by the tax authority. This agency perspective of tax avoidance then suggests that opportunistic managers may exploit the obfuscatory nature of tax avoidance to mask rent extractions since they are not easily detected.[30] As such, the net benefits associated with an aggressive tax avoidance strategy are questionable to the extent that it involves a complementary relation with rent extraction.

Chen *et al.* (2009) empirically evaluate the basic premise underlying the argument that tax aggressiveness can be contrary to shareholder interest in that it adversely impacts the firm's information environment. A corporation's opacity is influenced by both the quality of its financial reporting and its disclosure policy. To the extent that tax aggressiveness serves to obscure the true state of the firm, it would serve to increase information asymmetry between a corporation's managers and its external investors by limiting firm disclosure. Tax aggressiveness increases the noise in firm accounting statements, providing managers with greater opportunity to manipulate earnings without detection. Thus, the agency perspective suggests that shareholders may not always desire the firm to engage in tax avoidance. The associated agency costs, which specifically refer to the poorer information environment and potential price discounts imposed by shareholders, could substantially offset tax savings derived from tax avoidance transactions, if outside shareholders believe the obfuscatory tax transactions are accompanied by managerial rent extraction.

The above discussion implies that since the combined costs, which include costs directly related to tax planning activities, additional compliance costs, and non-tax costs, may outweigh the tax benefits to shareholders, tax avoidance activities can potentially reduce after-tax firm

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[30] Rent extraction refers to non-value maximizing activities decision makers pursue at the expense of shareholders. It ranges from theft of corporate earnings, non-arms-length related party transactions, perquisite consumption, and excessive executive compensation. It also includes earnings manipulation which temporarily inflates stock price and thus allows insiders to extract private gains.

value. In this context, firm managers will need to weigh up the marginal costs and marginal benefits of tax planning activities when determining the level of tax aggressiveness.

3.2.2 Implications of Advertising for Corporate Tax Aggressiveness
3.2.2.1 Advertising as Reputational Asset

By its very nature, advertising is an integrated and prominent feature of modern life. Advertising reaches consumers through their TV sets, radios, newspapers, magazines, mailboxes, computers and many more touchpoints. Not surprisingly, the associated advertising expenditure is huge, estimated at the aggregate level to represent about 5% of annual GDP in the U.S. economy (Arkolakis, 2010).[31]

A stream of marketing and management literature has advocated that accumulated advertising efforts translate into intangible assets in the form of product brand equity as well as corporate brand value. Braithwaite (1928) is one of the first researchers to make the point that advertising can have long-lasting reputational effects. According to this persuasive view of advertising, the direct effect of advertising is that brand loyalty is created and the demand for the advertised product becomes less elastic. Advertising thus results in greater market power since it reinforces the experience that consumers have with established products in order to enhance brand loyalty and exacerbate the differential advertising costs that await new entrants. Advertising creates stronger brand, one that can sustain and raise high positive brand equity over time, maintaining customer loyalty and successfully defending the firm against competitive encroachment (Aaker, 1996). Increased brand equity also increases price premiums (Ailawadi *et al.*, 2003) and lowers price sensitivities (Kaul and Wittink, 1995). These are, to name a few, product market benefits that stronger brand equity, as a market-based intangible asset, may command.

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[31] For example, Advertising Age (2005) reports that, in 2003 in the U.S., General Motors spent $3.43 billion to advertise its cars and trucks; Procter and Gamble devoted $3.32 billion to the advertisement of its detergents and cosmetics; and Pfizer incurred a $2.84 billion dollar advertising expense for its drugs (Bagwell, 2007).

Empirical evidence suggests that advertising generates value-enhancing brand equity over time (Simon and Sullivan, 1993; Barth *et al.*, 1998, Madden *et al.*, 2006). [32] Besides brand equity, advertising also leads to improved customer satisfaction (Luo and Homburg, 2007) and signals superior product quality (Archibald *et al.*, 1983; Kirmani and Wright, 1989). In sum, accumulated advertising efforts endow the firm with a greater stock of intangible assets, including greater brand equity and stronger customer satisfaction. In a seminal management paper, Fombrun and Shanley (1990) coin the term "reputational asset" to refer to these intangible competitive advantages. They argue that as corporate audiences routinely rely on the reputation of firms in making investment and career decisions as well as product choices, firms compete intensively in a market for reputational status. Corporate reputation may command a range of favourable consequences, for example, but not limited to, charging premium prices (Milgrom and Roberts, 1986), attracting better applicants in the job market (Stigler, 1962), and enhancing their access to capital markets (Beatty and Ritter, 1986). Most importantly, these authors document that advertising is one of the significant determinants of corporate reputational assets.

Hence, I expect that advertising-intensive firms possess greater corporate reputational assets. With more at stake, advertising-intensive firms have stronger incentives to protect the product brand equity and relatedly corporate reputation from being impaired. [33] Being involved in a tax audit breeds potentially detrimental effects on the company reputation; being caught engaging in illegal tax transactions and incurring a penalty imposed by the tax authority will further damage the firm's reputation. These heightened concerns suggest that managers at advertising-intensive firms might anticipate negative consumer and investor responses. For

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[32] For example, Barth *et al.* (1998) find that brand value estimates of Financial World's annual brand evaluation survey are significantly and positively related to stock prices and returns and that brand value estimates represent valuation-relevant information beyond operating margin, market share, and earnings forecast.

[33] Dawar and Pillutla (2000) argue that brand equity is fragile because it is predicated on consumers' beliefs and as such, can be prone to sudden and significant shifts.

example, news of tax avoidance may result in a potential backlash and even boycott from consumers or investors news of tax avoidance and thus managers factor in these expected reputational costs in determining the optimal amount of tax avoidance.

3.2.2.2 Advertising as an informational factor

I discussed earlier that one of the negative effects of tax avoidance is its adverse impact on a firm's information environment. Examining this issue, Kim, Li and Zhang (2010) find firms engaging in tax avoidance exhibit a higher likelihood of a stock price crash. They argue that their finding is consistent with tax avoidance strategies allowing firms to mask and delay the recognition of bad news. Chen *et al.* (2009) directly assess the impact of tax avoidance on firm information environment and find a positive association between tax avoidance and firm opacity.

Within this setting, I next consider the informational role of advertising. This view is theoretically motivated by the seminal paper of Merton (1987) who models market equilibrium under incomplete information. Low-visibility firms carry large incomplete information premiums. In a crowded financial market, advertising activities are one important channel that the firm can use to potentially boost a firm's visibility, enhance investor awareness and capture more investor attention. Despite the relative novelty of the view of advertising as an informational proxy, there has been considerable empirical evidence supporting this informational interpretation. Product market advertising, by making the firm more visible in both the primary product market and the capital market, expands investor attention and recognition and leads to greater investor demand as shown by larger shareholder base and greater liquidity (Grullon *et al.*, 2004; Frieder and Subramanyam, 2005). Further, advertising-rich firms are followed more closely by financial analysts who also expend greater efforts in their analysis for these firms (Barth *et al.*, 2001), leading to a richer information environment. Prior research also demonstrates the signalling role of advertising which extends well beyond

the traditional product market and impacts the capital market (Chemmanur and Yan, 2009). This signalling role of advertising, in effect, reduces the information asymmetry and related adverse selection costs faced by potential investors. Taken together, greater advertising leads to a more enriched information environment characterized by higher visibility and transparency and lower information asymmetry.

If tax aggressiveness activities, through their complex and obfuscatory nature, disrupt the flow of information and adversely affect firm's information environment, I expect to see tax avoidance thriving under an opaque information environment. Consequently, we would arguably anticipate a smaller extent of tax avoidance activities for advertising-intensive firms, which, *ceteris paribus*, possess a more transparent information environment characterized by greater visibility and lower information asymmetry between firm managers and outside investors.

3.3   Related Literature
Empirically, this study is connected to several strands of extant research. First, it is related to the growing research stream examining corporate tax avoidance.

Early research on income taxes in a corporate setting depicted these taxes as representing a form of market imperfection, which in turn influences corporate policies such as financing and dividend decisions. An underlying assumption of this view is that taxes represent an "unavoidable burden" (Desai and Dharmapala, 2006). However, more recently, both anecdotal evidence and academic research have pointed towards the fact that firms undertake considerable corporate tax avoidance activities. In light of this finding, academics have turned their attention to examining variation in tax avoidance behaviour at the individual firm level. In other words, what are the factors which influence corporate tax avoidance behaviour?

Within this literature, one line of enquiry focuses on the shareholder wealth effects of tax avoidance. Hanlon and Slemrod (2009) examine the stock market reaction to news events

about corporate tax avoidance and document a negative investor response. Frank *et al.* (2009) demonstrate that firms with aggressive financial and tax reporting contemporaneously experience higher abnormal stock returns than firms with less aggressive financial and tax reporting, which suggests that the market recognizes and rewards firms with aggressive policies. Desai and Dharmapala (2009) find a positive relation between tax avoidance and firm value only for well-governed firms. Echoing this, Wilson (2009) finds that well-governed tax sheltered firms experience significantly positive abnormal stock returns in the periods before, during and after the tax shelter activity while poorly governed tax sheltered firms experience significantly negative abnormal stock returns over the same time periods.

More germane to this study is the strand of literature that provides insights into why some firms avoid more tax than others.[34] Earlier research looks at several firm-level characteristics as potential determinants of tax avoidance. For example, Gupta and Newberry (1997) find that size, capital structure, asset mix and profitability are related to GAAP effective tax rates. In addition, firms accused of using tax shelters are found to have more foreign operations, subsidiaries in tax havens and prior-year effective tax rates, greater litigation losses and less leverage (Wilson, 2009; Lisowsky, 2010). Later studies examine the impacts of corporate governance characteristics, particularly executives' incentives for tax aggressiveness. Slemrod (2004) develops the idea that shareholders select the level of tax aggressiveness by linking tax manager compensation with effective tax rates or stock price. Consistent with the agency cost view of tax aggressiveness, Desai and Dharmapala (2006) find that high powered incentives, in the form of managerial incentive compensation, have a negative impact on tax aggressiveness. While theory suggests an ambiguous relation,[35] their evidence speaks to the

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[34] For a review of the literature see for example Shackelford and Shevlin (2001) and Hanlon and Heitzman (2010).
[35] A naïve view of tax avoidance would suggest that since incentive compensation aligns the interest of managers and shareholders, managers will be tax aggressive in that it benefits the manager's principal, i.e. firm equity holders. However, tax avoidance activities also allow for greater rent extraction since they contribute to firm opacity. Given the complementary relation, incentive compensation can serve to discourage tax avoidance activities.

fact that greater alignment of managerial shareholder interest limits rent extraction by discouraging tax avoidance. However, Desai and Dhamarpala (2006) find this negative relation is pronounced strictly for firms with weak governance structures in place.[36] Armstrong *et al.* (2012) find empirical evidence that the incentive compensation of the tax director exhibits a strong negative relationship with the GAAP effective tax rate. Robinson *et al.* (2010) attempt to measure tax manager incentives by determining whether the tax department is viewed as a profit centre. In addition, studies investigate whether ownership structures, corporate culture and individual managers influence a firm's level of tax aggressiveness. Research in this vein includes Chen *et al.* (2010) who document that family firms avoid fewer taxes than non-family firms. They argue that family firms' long-term concentrated holders have a longer horizon and may be more sensitive to the total costs of avoidance arising from reputation effects and suspicions of diversion from minority shareholders. Frank *et al.* (2009) find evidence of a positive relationship between aggressive financial and tax reporting which is consistent with a generally aggressive corporate tone and culture. Khurana and Moser (2010) find a positive (negative) association between short term institutional ownership (long term institutional ownership) and corporate tax avoidance. Other external factors are also found to be related to firms' tax saving behaviours. In particular, Cheng *et al.* (2012) find firms increase their tax avoidance after hedge fund intervention. McGuire *et al.* (2012) find that firms purchasing tax services from their external audit firm engage in greater tax avoidance when their external audit firm is a tax expert. This study attempts to provide new understandings to this literature by demonstrating that advertising is another significant determinant of the aggressiveness of firms' tax reporting practices.

This essay is also closely connected to the burgeoning literature that investigates the capital market implications of advertising. Barth *et al.* (2001) document more extensive analyst

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[36] Rent extraction is easier in these firms and consequently incentive compensation has a bigger impact in discouraging tax avoidance.

following and greater analyst effort for firms with significant intangible assets. Other studies adopt an informational perspective when analysing advertising in a financial market context. Grullon *et al.* (2004) find that firms with larger advertising expenditures are associated with greater visibility and attention, resulting in a wider shareholder base and increased stock liquidity. Chemmanur and Yan (2009) show that, by acting as a signal to outside investors about the true values of the firm's projects, advertising reduces the information asymmetry and improves the information environment surrounding the stock. Larkin (2013) documents that stronger brand perception reduces overall firm riskiness and provides additional net debt capacity as measured by higher leverage and lower cash holdings. Expanding this line of enquiry,[37] in a framework of advertising building reputational assets and enriching the stock's information environment, I examine the effect of firm's advertising investment on the extent of aggressive tax planning activities adopted by the firm.

3.4 Research Question and Hypotheses Development

I define tax avoidance broadly as all actions taken by managers to manage downward their cash income tax liabilities.[38] In this section, I recap the key arguments that flow from the previous review of the theoretical framework and related empirical evidence to formulate the testable hypotheses for the chapter.

This study examines the impact of a firm's level of advertising expenditure on its tax avoidance behaviour. In a setting where corporate decision makers determine tax aggressiveness by weighing up the potential costs and benefits, I predict that advertising-intensive firms are less likely to engage in aggressive tax avoidance due to two reasons. First, advertising-intensive firms are more likely to have built up substantial brand equity and

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[37] See other papers that adopt an informational interpretation of advertising in the capital market, for example Frieder and Subramanyam, 2005; Huang and Wei, 2012; Nejadmalayeri *et al.*, 2013.

[38] This definition is consistent with prior research and originates primarily from Dyreng *et al.* (2008). It encompasses both legal planning strategies in full compliance with tax laws and more aggressive strategies resulting from aggressive interpretations of ambiguous areas within the law.

corporate reputation. Firms with food reputation face higher potential costs of tax aggressive activities resulting from being detected and penalized and falling victim to the subsequent reputation damage. This proposition is based on the assumption that managers believe that negative news of tax avoidance is costly to the firm. In line with this argument, Graham, Hanlon, Shevlin and Shroff (2014) demonstrate that more than half of executives surveyed believe that tax avoidance could trigger negative media attention and two-thirds of the executives claim to avoid tax planning strategies because of the potential for reputational harm.[39] Dyreng *et al.* (2014) note that public scrutiny of tax avoidance can be costly if it leads to tax enforcement actions, shareholder penalties, customer boycotts, or political backlash. With managers incorporating the expected impact of these negative consumer and investor responses into their decision on the optimal level of tax avoidance, I conjecture that advertising-intensive firms, having the greatest exposure to reputational damage, will engage in less tax avoidance.

Second, advertising-intensive firms are associated with a more transparent information environment which deters tax planning activities since these activities essentially rely on an opaque environment to mask the underlying intents (Desai and Dharmapala, 2006). This second channel also leads to a prediction of advertising-intensive firms being less tax aggressive than their non-advertising-intensive counterparts.

The preceding discussion motivates the testable hypotheses for this chapter.

> *(H3)* Firms with higher advertising expenditure are more likely to be associated with less tax aggressiveness, *ceteris paribus.*

A finding of smaller tax aggressiveness in advertising-intensive firms is consistent with managers' concerns regarding the non-tax cost implications of IRS detection and penalty, with

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[39] Similarly, Klassen, Lisowsky, and Mescall (2013) survey 219 multinational corporation tax executives and document that 42.1 percent of respondents rate reputational cost of losing a transfer pricing related dispute as a "major cost or concern to the company."

subsequent reputation impairment outweighing the benefits of tax aggressiveness. Such a finding would also lend support to the view that advertising leads to an enriched information environment that effectively dampens extreme tax avoidance activities which, *ceteris paribus*, would thrive under an opaque information environment due to the obfuscating nature of these tax planning transactions.

I probe the tax avoidance - advertising association a bit deeper. I argue that if the reputational effect is deterring managers at advertising-intensive firms from engaging in extreme tax planning practices, then this effect should be stronger for firms for which reputations matter most. Managers of firms with valuable brands have stronger grounds to believe that their firms are more likely to be under close media scrutiny because they are most familiar to the public.[40] As such, managers of firms with more valuable brands will take more precaution in protecting these brands from impairment, because detection of involvement in tax avoidance could result in consumer backlash and boycotts.[41] From this discussion, I posit that firms with the most valuable consumer brands have the most reputation to protect, and therefore face the highest expected reputational costs of tax avoidance. I state the next hypothesis as follows.

> *(H4)* The impact of advertising on corporate tax avoidance is larger for firms with more valuable brands, *ceteris paribus*.

Alternatively, if the role of advertising as an information factor drives the negative association between advertising and corporate tax avoidance, we should expect to see systematic variations in the impact of advertising on restraining firms from engaging in extreme

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[40] Some empirical evidence exists that support this contention. For example, Fiss and Zajac (2006) find highly visible firms invest more in corporate social responsibility because they face more diverse stakeholder demands and are more prone to crises.
[41] Firms with valuable consumer brands are at higher risks of boycotts that can have significant negative consequences for firm value (Ernst & Young 2014).

tax aggressiveness between firms that are subject to different degrees of information environment opacity. I state the final hypothesis as follows.

(H5) The impact of advertising on corporate tax avoidance is larger for firms that have a more opaque information environment, *ceteris paribus*.

3.5   Sample and Research Design

3.5.1 Data

The data used in this study is obtained from Compustat fundamental annual files and covers the period of 1975-2012. My initial sample consists of all the firms in Compustat over the sample period. I exclude firms in the utility and financial industries (*i.e.*, firms with SIC codes 4900-4999 and 6000-6999), because regulatory requirements on these firms could affect both their financial and tax reporting behaviours. I drop observations without sufficient data to construct the tax avoidance measures and those with missing advertising data.[42] I further drop observations which do not have complete information to calculate control variables in the baseline model. Last, I winsorize all variables at both the 1st and 99th percentiles to mitigate the effect of outliers on my tests. These sample selection procedures result in a final sample of 36,379 firm-year observations with non-missing values for the variables for the baseline model estimation.

3.5.2 Measuring Tax Aggressiveness

Consistent with extant literature, I define tax avoidance broadly as the reduction of explicit taxes per dollar of pre-tax accounting earnings (Dyreng *et al.*, 2010; Hanlon and Heitzman, 2010).[43] Under this broad definition, tax avoidance represents a continuum of tax

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[42] Firms with zero or negative taxable income are presumed to have less incentive to engage in tax sheltering activity (Desai and Dharmapala, 2006). In untabulated robustness test, I restrict the sample to firm-years for which inferred taxable income (Compustat item 63) is positive and obtain similar results to the findings reported in this chapter. To deal with firms with missing advertising data, instead of dropping all firm-year observations with missing advertising data, I set missing advertising variable to zero and results also remain qualitatively similar.

[43] It is worth noting that there is no universally accepted definition of tax avoidance in the accounting literature. For example, while Rego (2003) defines tax avoidance as using tax-planning methods to legally reduce income

planning strategies, encompassing perfectly legal activities (*e.g.*, municipal bond investments) to more aggressive transactions that fall into the more debatable areas (*e.g.*, abusive tax shelters).

Given the efforts undertaken to obscure such activities, tax avoidance is difficult to capture empirically. Hanlon and Heitzman (2010), in their review of tax research, analyse various measures of tax avoidance and conclude that none seems to encompass the aggregate level of tax aggressiveness of a particular firm. As a result, Hanlon and Heitzman (2010) urge researchers to be careful in choosing the appropriate measure of tax avoidance for their particular research question.

To ensure robustness of the results and allow for comparability with prior studies, I use seven measures of tax aggressiveness in my baseline analysis and robustness checks. Prior research does not rely on one single measure of tax avoidance because each measure has its limitations. Therefore, the use of multiple measures of tax avoidance allows us to capitalise on the strengths of each measure. Below I discuss each measure in turn. Detailed definitions of these variables are provided in Table 3.1.

3.5.2.1 Effective Tax Rate Measures

GAAP effective tax rate (GETR)

The first measure I use is the GAAP effective tax rate (GETR), calculated as follows

$$GETR_{i,t} = \frac{TXT_{i,t}}{PI_{i,t}}, \quad (1)$$

where TXT denotes firm i's total tax expenses and PI is firm i's pre-tax income. A higher value of GETR suggests that the firm is paying a larger portion of its pre-tax book profits to tax

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tax payments, Desai and Dharmaplala (2006) view tax avoidance as identical to abusive tax shelters. I opt for a broadly defined view of tax avoidance in this essay, not aiming to distinguish legitimate tax planning transactions from those that are not.

authorities, hence is less aggressive in avoiding income taxes than firms with a lower GETR.[44]

This measure has been widely employed in prior research (Dyreng *et al.*, 2008; Armstrong *et al.*, 2012 and Cheng e*t al.*, 2012). Particularly, Armstrong *et al.* (2012) examine the association between various metrics of tax avoidance and tax directors' incentives and find evidence that GETR is a more informative measure of tax director actions compared to other tax avoidance measures. Specifically in my current research setting, GETR, being easily accessible and identifiable even by those without specialised financial expertise and widely reported in the media, is particularly useful in capturing the effect of advertising through the reputational channel. However, GETR is a product of both tax avoidance activities and financial accounting rules; and because income tax expense is an accrual-based expense, it can potentially be manipulated to affect after-tax earnings. To address this limitation, I employ alternative measures of tax aggressiveness.

Cash effective tax rate (CETR)

My second measure of tax avoidance is the firm's cash effective tax rate following Dyreng *et al.* (2008), estimated as follows.

$$CETR_{i,t} = \frac{TXPD_{i,t} + TXBCO_{i,t} + TXBCOF_{i,t}}{PI_{i,t}}, \quad (2)$$

where the denominator is the sum of taxes paid in cash (TXPD) and tax benefits of stock options (TXBCO + TXBCOF). Similar to GETR, a higher value of CETR indicates more taxes paid or less aggressive tax planning activities.

This measure is motivated by Dyreng *et al.* (2008) and is potentially a better measure than GETR because it captures firms' short term tax avoidance activities more effectively. By

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[44] Consistent with prior literature (*e.g.*, Chen *et al.*, 2010), in untabulated tests, I restrict GETR to fall in the interval [0, 1] and obtain similar results. As another robustness test, I follow Edwards *et al.* (2013), and reset GETR and CETR at negative one to allow for refunds (i.e., negative cash taxes paid in the numerator). Again, our results are qualitatively similar.

taking only cash taxes paid into calculation, this measure avoids the overstatement of current

tax expense due to accounting for the income tax benefits of employee stock options during the

pre SFAS-123R sample period [45] (Dyreng *et al.*, 2008). Furthermore, cash taxes paid are also

free from possible accrual manipulation used to manage after-tax earnings.[46] The traditional

effective tax rate includes tax contingencies associated with uncertain tax positions taken on

tax returns and may understate a firm's tax aggressiveness. In contrast, tax reserves have no

impact on the cash effective tax rate, which could more accurately reflect a firm's tax avoidance

on a tax-return basis. (Hanlon and Heitzman, 2010). However, CETR also contains some

measurement errors. For instance, it does not control for nondiscretionary items (*e.g.*,

depreciable and amortizable assets and stock option deductions) that cause book-tax differences;

as a result, it may overstate tax aggressiveness for certain firms. Effective tax rates vary with

firms' profitability: more profitable firms are expected to pay higher taxes. Thus in all measures

of effective tax rates I scale taxes paid by pre-tax book income to reflect this relation.

Long-run cash effective tax rate (LCETR)

Over short periods of time such as one year, the cash effective tax rate is slightly

distorted due to the impact of estimated tax payments for future years, tax refunds for prior

years and settlements with tax authorities. To counter this shortcoming, I employ the firm's

three-year average cash effective tax rate as measured by Dyreng *et al.* (2008) as a third measure

of tax aggressiveness.[47] A firm's three year cash effective tax rate is calculated as follows.

$$LCETR_{i,t} = \frac{\sum_{t=0}^{-2} TXPD_{i,t}}{\sum_{t=0}^{-2} PI_{i,t}}, \qquad (3)$$

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[45] Before SFAS-123R, firms could deduct stock options expense for tax purposes and record that as paid-in capital.
[46] GETR, as an accrual-base effective tax rate, excludes potential tax savings resulting from tax avoidance activities that create temporary book-tax differences (*e.g.*, accelerating expense deduction and delaying revenue recognition). On the other hand, the cash effective tax rate reflects tax savings from tax planning strategies that create both temporary and permanent book-tax differences.
[47] Results remain qualitatively similar when I use a five-year rather than a three-year horizon.

Essentially, LCETR is the sum of taxes paid in cash over the last three years divided by the sum of pre-tax income over the same period. A higher value of LCETR indicates less aggressive tax avoidance.

Forward cash effective tax rate (FCETR)

FCETR is defined as the sum of leading three years of cash taxes paid scaled by the sum of pre-tax income over the same period.

$$FCETR_{i,t} = \frac{\sum_{t=1}^{3} TXPD_{i,t}}{\sum_{t=1}^{3} PI_{i,t}}, \qquad (4)$$

I compute FCETR as a fourth measure in order to examine persistence of tax avoidance strategies (Dyreng *et al.*, 2008). This measure also avoids year-to-year volatility in annual ETR, and indicates whether firms are able to keep lower tax rates over a longer period of time. Similar to all of the above measures of effective tax rates, I infer that firms with higher (lower) forward effective tax rates are relatively less (more) tax aggressive.

3.5.2.2 Book-tax Differences Measures

As an alternative to using effective tax rates to measure tax avoidance, I now turn to focus on the differences between the GAAP book income (reported in a corporation's financial statements to its shareholders and the SEC) and the taxable income (reported in its tax returns to the IRS). I refer to this measure as book-tax difference (BTD). BTD arises when there is a reduction in taxable income with no concomitant reduction in book income. While the book income, measured as the U.S. domestic income, is readily available from Compustat, firms' tax returns are confidential and are not directly available and thus taxable incomes have to be estimated. Operationally, I capture tax aggressiveness with three book-tax difference measures that have been widely used in the literature: the Manzon and Plesko (2002) total book-tax

difference, a permanent book-tax difference and a residual book-tax difference measure advanced by Frank *et al.* (2009).

My next measure of tax avoidance, based on the work of Manzon and Plesko (2002), estimates each firm's total book-tax differences as the difference between a firm's pre-tax book income and taxable income for the current year. The total book-tax difference (BTD) is calculated as follows:

$$BTD_{i,t} = \frac{PI_{i,t} - \dfrac{TXFED + TXFO}{Statutory\ Corporate\ Tax\ rate}}{Total\ Assets_{i,t-1}}, \qquad (5)$$

Specifically, BTD is calculated as the firm's pre-tax book income (PI) less an estimate of taxable income grossed-up by the statutory corporate tax rate. I estimate taxable income by adding current federal tax expense (TXFED) and current foreign tax expense (TXFO) and then dividing it by the highest marginal U.S. Corporate statutory tax rate (STR). I then scale my measure of total book-tax difference by beginning total assets. Mills (1998) suggests that large book-tax differences are more likely to be audited by the IRS and have larger proposed audit adjustments. Furthermore, Wilson (2009) finds that firms involved in actual tax shelters generally have larger book-tax differences during active tax shelter years. These findings suggest that large book-tax differences signal tax aggressiveness. However, there are limitations on the use of book-tax differences as a measure of tax avoidance. Book tax differences may be a result of earnings management. In addition, individual firm characteristics such as large depreciation deductions may increase book-tax differences without reflecting aggressive tax strategies.

To mitigate the measurement error contained in total book-tax differences attributable to earnings management, I construct a fifth measure of tax avoidance which measures a firm's yearly permanent book-tax differences (PERMDIFF) as follows.

$PERMDIFF_{i,t}$

$$= \frac{\left[\left(PI_{i,t} - \frac{TXFED + TXFO}{Statutory\ Corporate\ Tax\ rate}\right) - \frac{TXDI}{Statutory\ Corporate\ Tax\ rate}\right]}{Total\ Assets_{i,t-1}}, (6)$$

Permanent book-tax differences are calculated as total book tax differences, defined above, less temporary book-tax differences for firm *i* in year *t*. Firms with higher (lower) yearly levels of permanent book-tax differences are considered to be involved in more (less) tax avoidance. Prior research (Rego, 2003; Weisbach, 2002; Shevlin, 2002) suggests that the ideal tax shelter or tax avoidance investments create a permanent rather than a temporary book-tax difference. Wilson (2009) finds that a majority of tax shelter cases resulted in permanent book-tax differences. As a result, a measure of permanent book-tax differences may be a better proxy for tax aggressiveness than a measure of overall book-tax differences.

My final measure of tax avoidance is a measure of discretionary permanent book-tax differences as originally calculated by Frank *et al.* (2009). Given that some permanent book-tax difference arises normally in a firm's operations, I follow Frank *et al.* (2009) to extract the discretionary component of permanent book-tax difference and use it to proxy for the firm's tax aggressiveness. This measure, DTAX, is calculated by regressing permanent book-tax differences on nondiscretionary items that are associated with permanent book-tax differences (*e.g.*, intangible assets) but are likely unrelated to tax reporting aggressiveness. The variable DTAX is the residual term from the regression equation below:

$PERMDIFF_{i,t} = \alpha_0 + \alpha_1 INTANG_{i,t} + \alpha_2 UNCON_{i,t} + \alpha_3 MI_{i,t} + \alpha_4 CSTE_{i,t} +$

$\alpha_5 CHGNOL_{i,t} + \alpha_6 LAGPERMDIFF_{i,t} + \varepsilon_{i,t}, \qquad (7)$

where $PERMDIFF$ is defined as above, INTANG is goodwill, UNCON is income reported under the equity method, MI is income attributable to minority interest, CSTE is current state income tax expense, CHNGNOL is the change in the NOL from the prior year to the current

year and LAGPERMDIFF is the one-year lagged PERMDIFF. I estimate equation (7) above by two-digit SIC code and fiscal year where all variables are scaled by beginning-of-year total assets. The residual of this regression is expected to be largely free of earnings management or at least accrual management. Similar to the other two book-tax gap measures, larger positive error terms imply higher levels of discretionary book-tax differences and therefore higher firm tax avoidance.

3.5.3   Research Design

The main hypothesis conjectures that firms with higher product market advertising are less tax aggressive on average. I empirically test for this association by estimating the following regression equation with the dependent variable being measures of corporate tax avoidance.

$$TaxAgg_{i,t} = \alpha + \beta_1 ADV_{i,t} + \gamma_1 ROA_{i,t} + \gamma_2 STDROA_{i,t} + \gamma_3 PPE_{i,t} + \gamma_4 POSGDWL_{i,t} +$$
$$\gamma_5 SIZE_{i,t} + \gamma_6 NOL_{i,t} + \gamma_7 NEWINV_{i,t} + \gamma_8 MB_{i,t} + \gamma_9 LEV_{i,t} + \gamma_{10} INTANG_{i,t} +$$
$$\gamma_{11} CASH_{i,t} + \gamma_{12} EQINC_{i,t} + \gamma_{13} DNOL_{i,t} + \gamma_{14} DFI_{i,t} + \gamma_{15} + \sum Industry\ dummies +$$
$$\sum Year\ dummies + \varepsilon_{i,t}, \qquad (8)$$

where i and t denote the indexes for firm and year, respectively. $TaxAgg$ represents the seven measures of tax avoidance discussed in the previous section. Higher values of effective tax rates measures (which include GETR, CETR, LCETR and FCETR) and lower values of book-tax difference measures (which include BTD, PERMDIFF and DTAX) indicate less tax aggressiveness. ADV is the test variable of interest. We expect advertising-intensive firms to engage in less tax avoidance. Hence we expect a positive value of coefficient β_1 in tests where effective tax rates measures are used and a negative value of β_1 for tests where book-tax difference measures are employed to capture tax aggressiveness. I estimate the regression using the OLS method and include year and industry dummies to control for industry and year fixed

effects. The *t*-statistics are computed using standard errors adjusted for heteroskedasticity (White, 1980) and robust to clustering at the firm level (Petersen, 2009).

In addition to my test variable, ADV, I include a list of control variables in my regression model. Consistent with prior literature, I control for firm characteristics that are known determinants of tax aggressiveness (*e.g.*, Manzon and Plesko, 2002; Mills, 1998; Rego, 2003; Dyreng *et al.*, 2008; Frank *et al.*, 2009). The first set of control variables (ROA, STDROA, LEV, NOL, DNOL and DFI) captures firms' profitability, leverage and foreign operations. I control for firm profitability (proxied by return on assets ROA measured as net income over total assets) as more profitable firms tend to have higher effective tax rates. I control for leverage (LEV) to capture the extent of the tax shield on debt. Firms reporting losses or having tax-loss carry forward are expected to have lower effective tax rates. Therefore, I include a dummy variable which indicates whether the firm reported losses in a particular year (NOL), and employ a variable to control for change in net loss carry-forward (DNOL). Rego (2003) finds that multinational firms with more extensive foreign operations have lower worldwide tax rates. Therefore, I include foreign income to control for differences in international planning opportunities (DFI). Consistent with Armstrong *et al.* (2012), I control for the effect of mergers and acquisitions by including the change in goodwill (POSGDWL).

The second set of control variables (PPE, NEWINV, INTANG and EQINC) captures differences in book and tax reporting that can affect my tax aggressiveness measures. Since investment often leads to book-tax differences because of the differences in tax and accounting rules (*e.g.*, accelerated depreciation methods), I control for new investment INV. I include PPE as a proxy for tax planning opportunity. Governments often use tax policy to stimulate economic investment, especially during economic downturns. Consistent with legislated tax shields, capital-intensive firms have lower tax burdens (Gupta and Newberry, 1997) and higher book-tax differences (Mills and Newberry, 2001; Wilson, 2009; Lisowsky, 2010). I include

intangible assets (INTANG) and equity in earnings (EQINC) in my regressions to control for the differential book and tax treatments of intangible assets and consolidated earnings accounted for using the equity method. Following McGuire *et al.* (2012), I employ CASH as an additional control variable to control for cash holding. Lastly, I control for firm size and growth (proxied by market-to-book ratio). Large firms are likely to be more sophisticated and can structure complex tax-reduction transactions with the best tax advisors (Mills *et al.*, 1998; Hanlon *et al.*, 2007). On the other hand, large, mature firms would have fewer tax shields and hence higher ETRs as their capital investment slows. Growth firms often have substantial tax deferral opportunities and also often rely heavily on stock-based compensation, both of which result in lower measures of effective tax rates.

3.6   Results

3.6.1 Descriptive Statistics

Table 3.2 reports the industry membership of all sample firm-years by Fama and French (1997) 48-industry classifications.

[Insert Table 3.2 about here]

Column (1) reports number and percentage of firm-years from each particular industry in the full sample. There are 29 different industries which have more than 1 percent firm-year observations. Retail represents the highest industry membership accounting for 12.27 percent (4,464 observations) of the sample followed by business services and electronic equipment with 9.18 and 5.79 percent (3,341 and 2,108 observations) respectively. Columns (2) and (3) show mean advertising intensity and mean GAAP effective tax rate for each industry. The GAAP effective tax rate is highest in printing and publishing on average (36.2%) and lowest in business services (18%). As for advertising expenditures, consistent with common perception, the consumer goods industry has the highest spending on advertising (0.08), followed by pharmaceutical products and recreation

(0.077 and 0.06 respectively) while machinery and petroleum and natural gas have minimal spending on advertising (0.016 and 0.01 respectively).

Table 3.3 reports descriptive statistics for the tax avoidance, advertising, and control variables used in this study. Similar to evidence documented in prior studies (*e.g.*, Dyreng *et al.*, 2008), my effective tax rates measures (GETR, CETR and LCETR) are substantially lower than the statutory rate of 35%. In the sample, GETR has a mean of 26.9%, CETR has a mean of 19.4% while the mean value for LCETR is 20.8%. Table 3.3 also shows that the mean (median) value of advertising intensity, defined as the ratio of advertising expenditures over sales revenues, is 0.035 (0.018). Other summary statistics indicate that my sample firms have an average return on asset of 5%, market-to-book ratio of 2.297, leverage of 17.4% and size of 4.694. The frequency of reporting net loss carry forwards is 32.4%. These statistics are largely comparable to those in other studies (Dyreng *et al.*, 2010; Armstrong *et al.*, 2012). Statistics for the full sample indicate the lowest number of firms with non-missing advertising data and GETR as a measure of tax aggressiveness occurs in 1995 (382 firms) and the highest number of firms (1,222 firms) in 2010. The highest (lowest) mean GETR of 41.2% (16.8%) occur in 1976 (2008). There is some evidence pointing towards a lower GETR over time, indicating that firms are becoming more aggressive in their tax planning strategies.

[Insert Table 3.3 about here]

In Table 3.4 I report the correlation matrix, which shows the pairwise correlations between the variables. Pearson correlations are reported above the diagonal and Spearman correlations are reported below the diagonal. Specifically, the Pearson (coefficient = 0.040) and Spearman (coefficient = 0.026) correlations between tax avoidance as captured by GETR and advertising intensity are significantly positive at the 1% level. This is consistent with my hypothesis that advertising-intensive firms pay more taxes, in other words, are less tax

aggressive. However, as these correlations are obtained without controlling for other firm characteristics, I do not attempt to draw a conclusion about the relationship between advertising and tax avoidance from here but leave detailed investigation to the subsequent multivariate regression analysis. GAAP effective tax rate is also positively correlated with return on assets, PPE assets, firm size, new investments, leverage, and equity income in earnings; while negatively correlated with ROA volatility, change in goodwill, net loss carry forward, change in loss carry forward, market-to-book ratio, intangible assets, cash holdings, and foreign income dummy.

[Insert Table 3.4 about here]

3.6.2 Main Results

In this section, I examine the cross-sectional advertising – tax avoidance relation in a multivariate regression framework where I can control for multiple firm characteristics that potentially affect corporate tax aggressiveness. Table 3.5 presents the results of ordinary least squares (OLS) regressions where the dependent variable is the GAAP effective tax rate. My explanatory variable of interest is advertising intensity, measured as advertising expenditure scaled by sales, following prior literature (Lev and Sougiannis, 1996; McAlister *et al.*, 2007; Luo and Homburg, 2007; Chemmanur and Yan, 2009). Column (1) presents results where GETR is regressed on advertising intensity and a range of control variables and column (2) shows the full baseline model which incorporates industry (based on two-digit SIC) and year dummy variables to control for inter-temporal and industry variation. All reported *t*-statistics are adjusted for heteroskedasticity and within-firm correlation using clustered standard errors.

The primary interest is whether advertising plays a significant role in determining corporate tax avoidance. Across the two specifications of the baseline model, there is strong evidence of a positive and statistically significant relation between advertising and GAAP effective tax rate. The advertising coefficients are positive and significant at the 1% level in

both specifications with values of 0.038 (in model 1) and 0.030 (in model 2) and associated *t*-stats of 3.532 and 3.136. The effect of advertising on tax aggressiveness also displays economic significance. Using the specification in Column 2, a one standard deviation increase in advertising expenditure is accompanied by a 0.38% increase in GETR, which represents an average increase of $1.2 million in taxes.[48] On the aggregate level (for my sample), for the year 2010, firms paid $1.46 billion more in taxes for a one standard deviation increase in advertising expenditure. To put things in perspective, the uncollected tax revenue is estimated to be $7.5 billion for year 2007 reported by Boynton, Defilippes and Reum (2011). These figures indicate that the relation between tax avoidance and advertising is economically significant.

The result indicates that advertising-intensive firms exhibit a lower level of tax aggressiveness as reflected by higher amount of taxes paid. This suggests that concern about reputation damage dominates advertising-intensive firms' decisions on tax aggressiveness: these firms, with more reputation at stake, engage in fewer tax planning transactions and are willing to forgo tax benefits to avoid the associated costs of the potential penalty imposed by the IRS and the subsequent reputation damage. The finding of a negative association between advertising intensity and tax avoidance is also consistent with an informational interpretation of advertising in which advertising enhances the information environment surrounding the firm and deters extreme tax aggressive transactions. Tax avoidance activities often rely on an opaque information environment in which considerably complex transactions are purposefully created to mask the underlying intentions in order to minimize detection risk (Desai and Dharmapala, 2006). Taken together, the baseline test confirms my central hypothesis (H3) that *ceteris*

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[48] For one standard deviation increase in advertising expenditure, estimated increase in GERTR is 0.38 percent (coefficient of ADV (0.030) multiplied by standard deviation of ADV (0.127)) that leads to tax savings of $1.2 million (0.0038 × mean pre-tax income 316.79).

*paribu*s, advertising-intensive firms are less likely to engage in extreme tax planning and reporting activities.

In line with prior studies, I document several significant relationships between GETR and the control variables. Consistent with Chen *et al.* (2010) and Armstrong *et al.* (2012), I find that GETR is positively associated with profitability as measured by return on assets (ROA) and firm size (SIZE). GETR is negatively associated with leverage (LEV) as documented widely in the literature (Chen *et al.*, 2010; Hoopes *et al.*, 2012; and McGuire *et al.*, 2012). GETR is also negatively associated with volatility of profitability (STDROA), equity in earnings (EQINC), cash holdings (CASH), growth (MB), net loss carry forward (NOL) and foreign income (DFI). These are largely in line with expectations and results in prior studies.

[Insert Table 3.5 about here]

3.7 Robustness

In this section I run additional tests to check the robustness of the main results. I first present results using alternative measures of tax avoidance and advertising. The third subsection provides evidence that the main result is robust to different model specifications, including a year-by-year Fama MacBeth (1973) regression; a lead-lag test, and a random-effects panel regression. In the final subsection I address endogeneity concerns using a two-stage least squares technique.

3.7.1 Alternative Measures of Tax Aggressiveness

Here I address the question of whether the empirical relation between advertising and corporate tax avoidance is sensitive to the measure of tax aggressiveness. The preceding discussion has detailed the alternative measures of effective tax rates and book-tax differences, outlining each measure's strengths and weaknesses. As no single measure is unequivocally accepted, this sensitivity check is crucial in evaluating the robustness of the advertising – tax aggressiveness relation.

Table 3.6 shows the results of regressions of alternative tax avoidance measures on the test variable, advertising, and the same set of control variables. Panel A presents results for alternative measures of effective tax rates, with cash effective tax rate (CETR) reported in column (1), long-run cash effective tax rate (LCETR) in column (2) and forward three-year cash effective tax rate in column (3). Across these alternative formats of effective tax rate measures, I document results strictly similar to those obtained in the baseline specification. I find that the coefficients on advertising are consistently positive and statistically significant at 1% level. Thus, firms that are more advertising-intensive are more likely to pay more taxes; in other word, are less tax aggressive.

Panel B of Table 3.6 presents results for alternative measures of tax avoidance based on book-tax differences. Contrary to the previous measures of effective tax rates, we expect a negative association between advertising intensity and book-tax differences as proxies for corporate tax avoidance. Specifically, I employ the following book-tax differences measures: total book-tax difference in column (1), permanent book-tax difference in column 2 and a discretionary permanent book-tax difference following Frank *et al.* (2009). Again, I document results that strongly corroborate my main findings. In two out of three specifications, the coefficient on advertising is negative and significant, indicating that more advertising-intensive firms exhibit smaller book-tax differences which provides evidence of their less aggressive tax planning activities. The results in this section provide further support to my earlier findings by showing that advertising is related to a different set of measures which attempt to capture tax avoidance through levels of book-tax differences. Once again, this finding re-iterates the contention that advertising-intensive firms, possessing a more transparent information environment and having a greater concern about the potential damage of their reputational assets that might result from a tax audit and penalty, are less likely to engage in extreme tax management strategies. To sum up, this section shows that my central empirical result that

advertising is associated with a smaller degree of corporate tax aggressiveness holds with different measures of tax avoidance which have been employed in extant literature.

[Insert Table 3.6 about here]

3.7.2 Alternative Measures of Advertising

The extant literature on the capital market implications of advertising expenditure employs a number of alternative measures of advertising. In this section, I repeat the main analysis using additional formats of advertising measures. Table 3.7 displays results of GAAP effective tax rate regressions on different measures of advertising expenditure as the main explanatory variables. These measures include advertising scaled by total assets, and the natural logarithm of advertising expenses. Findings remain qualitatively similar: there is a negative and highly significant relation between advertising spending and corporate tax avoidance. With the exception of total book-tax differences (BTD) in a regression where LNADV is used as the test variable, the coefficients on the alternative advertising measures are all positive and significant when effective tax rates are employed and negative and significant when I run regressions on book-tax differences. This means that greater advertising intensity is associated with a smaller degree of corporate tax aggressiveness. The inferences also remain consistent. With advertising linked with greater reputational assets which in turn increase the marginal costs of being caught in a tax audit and subject to tax authority penalty as measured by reputation impairment, advertising-intensive firms are likely to exhibit less tax avoidance. Alternatively, within an informational interpretation of advertising, my findings indicate that firm's spending on advertising fosters a more transparent information environment which dampens the tendency to engage in extreme tax aggressive strategies.

[Insert Table 3.7 about here]

3.7.3 Alternative Model Specifications

3.7.3.1 Fama-MacBeth (1973) Regression

To mitigate concerns about cross-sectional correlation in the data, I estimate the models for each of the 38 years in my sample. Employing the procedure of Fama and MacBeth (1973), I report the mean of the yearly coefficient estimates and evaluate statistical significance using Newey-West time-series standard errors of the estimates in Table 3.8 panel A. With the exception of the regression using CETR as the dependent variable, the analysis shows results consistent with my baseline specification: advertising has a significant and negative effect on corporate tax avoidance. That is, more advertising-intensive firms engage in less extreme tax planning activities. I conclude that my results are robust to the employment of Fama-MacBeth (1973) regression approach that corrects for potential cross-sectional correlation.

3.7.3.2 Lead-lag Analysis

In this section, I address the potential reverse causality problem by performing lead-lag analysis where I use one-year lagged independent variables in the regression. When the advertising intensity measure is lagged to measures of tax avoidance, the reverse causality is mitigated to some extent. The results are presented in Table 3.8 panel B. The coefficients of lagged advertising are positive (negative) and significant in all regressions where effective tax rates (book-tax differences) are used to capture tax aggressiveness.

[Insert Table 3.8 about here]

3.7.3.3 Fixed and Random-effects Panel Regression

There might be unobservable firm characteristics that drive corporate tax avoidance but are not captured by the current control variables. These characteristics lead to the error terms being correlated with the explanatory variables, which violate the OLS assumptions and make OLS estimates biased. To address this omitted variable problem, I adopt a fixed-effect and random-effects panel regression technique estimated using generalized least squares (GLS). Results are reported in Table 3.9 panel A and B. The results show that there is still strong

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evidence of a negative relation between advertising intensity and corporate tax avoidance when random effects panel regression is used, while the fixed effects model yields insignificant results but are still reported here for completeness. Similar to the baseline results, an increase in advertising intensity leads to a decrease in the level of extreme tax planning activities, all else being equal. I conclude that the results are robust to the inclusion of firm random effects.

[Insert Table 3.9 about here]

3.7.4 Endogeneity

Endogeneity is a common problem faced in empirical corporate finance research. It is possible that product market advertising and tax aggressiveness are endogeneously determined. To formally tackle endogeneity, I adopt an instrumental variable estimation and re-estimate the model using 2SLS approach. Two-stage least squares method allows us to address the omitted variables and reverse causality issues simultaneously. To implement this, I need an instrument for advertising: a variable that is correlated with firm's advertising expenditure but uncorrelated with a firm's tax avoidance except in an indirect manner through other independent variables. I use the firm's lagged advertising and average advertising among the firm's industry peers using two-digit SIC codes as instruments in my analysis.[49] Table 3.10 shows results of 2SLS endogeneity tests, with the first-stage coefficient estimates displayed in Column 1 and the second-stage of two-stage least squares regression results shown in Column 2-4. Again, I obtain very similar results to the findings from the baseline specifications shown in Table 3.5. Of primary focus, the coefficient estimate on the advertising intensity variable is positive (negative) and statistically significant at the 1% level (t-stat = 7.141) in most of the specifications where effective tax rates (book-tax differences) are used as tax avoidance measures. Similar to the baseline findings, the evidence points towards less extreme tax avoidance for more advertising-intensive firms. Again, this analysis confirms my main hypothesis that advertising-intensive

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[49] The choice of these instruments are discussed and justified in Chapter 2.

firms, with greater stocks of reputational assets, have more at risk and hence are less likely to engage in tax aggressiveness as the potential costs of being detected and the subsequent reputation damage may be prohibitively large. Further, through its informational role, advertising could also lead to a more transparent information environment less conducive to extreme tax planning activities. In summary, the results from the 2SLS test indicate that the positive relation between advertising and tax aggressiveness in this study does not appear to be driven by the endogeneity of advertising expenditure.

[Insert Table 3.10 about here]

3.8   Additional Analysis

In this section, I provide additional results to substantiate the prediction that advertising-intensive firms have the propensity to engage in less tax avoidance and attempt to examine the underlying channel that drives the advertising-tax aggressiveness empirical relation.

First I explore the impact of advertising on corporate tax avoidance given different degrees of quality of the firm's information environment. Contending that advertising enriches the firm's information environment through improving its visibility and transparency and reducing information asymmetry, I predict that firms that are subject to a greater degree of opacity (and information asymmetry) should have the impact of advertising on their tax aggressiveness magnified. To proxy for corporate opacity and information asymmetry, I follow the literature and use the percentage of institutional holding. Specifically, IHTP5 is calculated as the number of shares held by the top 5 institutional investors divided by the total number of shares outstanding. It has been widely shown in extant literature that institutional investors are more informed than individual investors; as a result, their presence enhances the firm's information environment and reduces the information asymmetry between insiders and other outside investors.[50] I look for evidence of a more pronounced effect of advertising on reducing

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[50] See, for example, El-Gazzar (1998), Bartov *et al.* (2000), Jiambalvo *et al.* (2002), Amihud and Li (2006), and Boehmer and Kelley (2009).

tax avoidance by including in the baseline regression an interaction term between advertising and a proxy for the firm's information environment.

Table 3.11 displays findings from this analysis. Overall I find some evidence of the information enriching role of advertising as shown in the greater impact on tax avoidance for firms that have smaller institutional holding. The coefficient on ADV*IHTP5 has the expected sign and is significant in two out of the three regression specifications. Firms that are subject to a greater degree of information asymmetry (proxied for by having a smaller percentage of institutional ownership) experience a greater impact of advertising on reducing tax avoidance, as shown by greater GETR and smaller book-tax difference. This provides some general support for my hypothesis (H5) which argues for advertising impacting corporate tax aggressiveness through the information channel.

[Insert Table 3.11 about here]

Next I turn to investigate the veracity of the reputational role of advertising in deterring extreme tax aggressiveness. I first need to identify firms for whom reputation matters most and as a result, face highest ex-ante reputational costs that provide even stronger incentives for managers to forgo tax planning opportunities. I test for this reputation effect using Interbrand's brand valuation, a more direct measure of brand value that has been previously employed in both the marketing and finance literature.[51] It is easily recognized that advertising is just one of many inputs that firms use to affect consumer perception of a product, together with promotions, public relations, special events, and other tools of strategic brand management mix (Aaker, 1996). Consequently, brand valuation measures the outcome of all the cumulative efforts to market the product, as well as additional factors, such as the fit between consumer preferences and product characteristics. Being included in the annual top 100 best brands therefore will be

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[51] Studies that make use of Interbrand's brand valuation include Simon and Sullivan (1993), Barth *et al.* (1998).

a better proxy for greater reputation. I compare the tax avoidance behaviour of the Interbrand firms to a set of control firms that are matched on industry, size and profitability.[52] Table 3.12 below displays the results for my matched sample analysis.

[Insert Table 3.12 about here]

Consistent with my prediction, I find firms with at least one valuable brand, Interbrand firms, have significantly higher effective tax rates then their matched control firms. Interbrands firms have a GETR which is 1.6 percentage points higher and a CETR which is 2.8 percentage points higher than the control firms. These results lend support to hypothesis (H4) which posits that Interbrand firms, having greater reputational assets to protect, are engaging in significantly less tax avoidance than their peer firms. I conclude that concerns for reputational impairment once being detected as tax avoider at least partially drives the decision of managers to conduct extreme tax planning and reporting transactions.

3.9   Conclusion

Despite the important of understanding the drivers of corporate tax aggressiveness, the empirical literature on tax avoidance is limited at best. Extending this literature, this essay explores whether advertising-intensive firms are less likely to engage in extreme tax planning activities.

Using a large sample of Compustat firms spanning the period 1975-2012 and a multitude of tests, this essay provides consistent and robust empirical evidence that advertising reduces the tendency of firms to engage in tax avoidance. Further, I find that this reduction is more pronounced among firms that suffer from a higher degree of opacity and information

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[52] To implement this matching procedure, each year, for each sample Interbrand firm I identify four matching firms that are in the same 2-digit SIC code and are closest in size (measured by market value of equity) to each sample firm, with two matching firms larger than the sample firm and two matching firms smaller than the sample firm. Out of these four firms, I then select the firm that is the closest in profitability (measured by ROA) to the Interbrand firm.

asymmetry. My findings are robust to various methodological approaches, such as alternative advertising and tax aggressiveness measures, different model specifications and controlling for endogeneity in choosing advertising spending. The findings consistently support the contention that in a competitive market where corporates compete for reputational status, the advertising-induced reputational asset is valuable and concerns for reputation damage effectively restrain the firm from engaging in extreme tax planning activities. Further, advertising also enriches the firm's information environment by promoting transparency and alleviating information asymmetry, deterring aggressive tax practices.

This chapter also contributes to the research stream in the marketing - finance interface by expanding our knowledge of the financial market implications of a firm's advertising. The research contributes towards a better understanding of the potential determinants of firms' tax reporting practices. To the best of my knowledge, this study is the first to examine the effect of product market advertising on tax aggressiveness. Advertising spending significantly strengthens the firm's reputational asset and enriches the firm's information environment, leading to less extreme tax aggressiveness.

Table 3.1: Variable Definition

(I) Tax Aggressiveness Variables

GAAP effective tax rate	GETR	Income taxes (TXT) scaled by pretax income (PI).
Cash effective tax rate	CETR	Taxes paid in cash (TXPD) plus tax benefits of stock options (TXBCO+TXBCOF) scaled by pretax income (PI).
Long-run cash effective tax rate	LCETR	Sum of taxes paid in cash (TXPD) over the last three years scaled by the sum of pretax income (PI) over the same period.
Permanent book-tax difference	PERMDIFFA	Permanent book-tax difference defined following Frank et al (2009) by subtracting temporary book-tax differences from the total book-tax differences for firm I in year t.
Residual book-tax difference	DTAX	The residual from regression of book-tax difference on firm total accruals, estimated following Desai and Dharmapala (2006). Regression is performed cross-sectionally for each year and 2-digit SIC code.

(II) Advertising Variables

Advertising-to-sales	ADV	Advertising expense (XAD) divide by sales (SALE).
Advertising-to-total-assets	ADVA	Advertising expense (XAD) scaled by total assets (AT).
Natural logarithm of advertising	LNADV	Natural logarithm of Advertising expense (XAD).
Average industry advertising	INDADV	Industry average advertising where industry is defined based on two-digit SIC code.

(III) Control Variables

Cash holdings	CASH	Cash and cash equivalents (CHE) scaled by lagged total assets (AT).
Change in goodwill	POSGDWL	Change in goodwill (GDWL) scaled by lagged total assets (AT). Value is set to zero if it is negative.
Change in loss carry forward	DNOL_AT	Change in net operating loss carry forwards (TLCF) over year t scaled by lagged total assets (AT).
Equity income in earnings	EQINC	Equity income in earnings (ESUB) scaled by lagged total assets (AT).
Firm size	SIZE	Log of market value of equity (PRCC_FxCSHO).
Foreign income dummy	DFI	An indicator variable set equal to 1 for firm observations reporting foreign income (PIFO) in year t and zero otherwise.
Intangible assets	INTANG	Intangible assets scaled by lagged total assets (AT).
Leverage	LEV	Long term debt (DLTT) scaled by total assets (AT).
Loss carry forward dummy	NOL	An indicator variable that equals one if net operating loss carry forwards (TLCF) is positive for year t-1.
Market-to-book	MB	Market value of equity (PRCC_FxCSHO) divided by book value of equity (CEQ).
New Investments	NEWINV	New investment, calculated as (XRD+CAPX+AQC-SPPE-DPC) scaled by lagged total assets (AT).
PPE assets	PPE	Net property, plant and equipment (PPENT) scaled by lagged total assets (AT).

ROA volatility	STDROA	Standard deviation of ROA over the past five years.
Return on assets	ROA	Pre-tax income (PI) divided by lagged total assets.

Table 3.2: Industry Distribution

This table reports the industry distribution of my sample, which consists of 36,379 firm-year observations covering the period 1975-2012. Column (1) shows percentage of firm-years from a particular industry out of the total sample. Column (2) shows mean adverting expenditures scaled by sales for each industry. Column (3) shows mean GAAP effective tax rates for an industry.

Fama and French (1997) Industry Name	Full sample (%)	Mean ADV	Mean GETR
Food Products	1,145 (3.15)	0.037	0.339
Recreation	819 (2.25)	0.06	0.277
Entertainment	825 (2.27)	0.043	0.294
Printing and Publishing	516 (1.42)	0.046	0.362
Consumer Goods	1,514 (4.16)	0.08	0.303
Apparel	1,114 (3.06)	0.035	0.329
Medical Equipment	1,129 (3.10)	0.027	0.204
Pharmaceutical Products	1,369 (3.76)	0.077	0.202
Chemicals	555 (1.53)	0.034	0.305
Rubber and Plastic Products	402 (1.11)	0.024	0.331
Construction Materials	884 (2.43)	0.019	0.321
Construction	467 (1.28)	0.019	0.29
Machinery	1,505 (4.14)	0.016	0.303
Electrical Equipment	711 (1.95)	0.021	0.267
Automobiles and Trucks	597 (1.64)	0.022	0.28
Petroleum and Natural Gas	416 (1.14)	0.01	0.249
Communication	1,334 (3.67)	0.032	0.232
Personal Services	517 (1.42)	0.058	0.287
Business Services	3,341 (9.18)	0.041	0.18
Computers	1,884 (5.18)	0.021	0.199
Electronic Equipment	2,108 (5.79)	0.022	0.209
Measuring and Control Equipment	1,085 (2.98)	0.019	0.256
Business Supplies	510 (1.40)	0.024	0.319
Transportation	591 (1.62)	0.019	0.245
Wholesale	1,080 (2.97)	0.022	0.285
Retail	4,464 (12.27)	0.035	0.331
Restaurants, Hotels, Motels	1,527 (4.20)	0.034	0.259
Real Estate	455 (1.25)	0.039	0.242
Trading	799 (2.20)	0.056	0.269
Others*	2716 (7.47)		
Total	36,379 (100)	0.035	0.273

* Other industries include those industries that have less than 1 percent of total sample observations

Table 3.3: Descriptive Statistics

Panel A: Descriptive statistics for the sample firms

	Mean	S.D.	Min	25%	Median	75%	Max
GETR	0.273	0.293	-1.171	0.103	0.356	0.430	1.124
CETR	0.197	0.465	-1.736	0.000	0.182	0.353	2.563
LCETR	0.209	0.523	-2.222	0.000	0.238	0.367	2.820
PERMDIFF	-0.030	0.151	-1.080	-0.015	0.009	0.026	0.240
DTAX	0.012	0.109	-0.452	-0.016	0.008	0.043	0.505
ADV	0.035	0.127	-0.089	0.009	0.018	0.037	12.500
ROA	0.050	0.194	-0.983	-0.011	0.069	0.149	0.548
STDROA	0.096	0.120	0.001	0.029	0.057	0.113	0.721
PPE	0.302	0.237	0.003	0.122	0.246	0.416	1.113
POSGDWL	0.010	0.042	0.000	0.000	0.000	0.000	0.308
SIZE	4.603	2.380	-0.042	2.809	4.384	6.218	10.745
NOL	0.313	0.464	0.000	0.000	0.000	1.000	1.000
NEWINV	0.070	0.127	-0.144	-0.002	0.036	0.105	0.809
MB	2.278	3.291	-7.408	0.856	1.511	2.695	22.087
LEV	0.174	0.179	0.000	0.013	0.132	0.272	0.798
INTANG	182.348	805.664	0.000	0.000	0.524	21.501	7068.000
CASH	0.170	0.216	0.001	0.030	0.087	0.227	1.508
EQINC	0.001	0.005	-0.020	0.000	0.000	0.000	0.031
DNOL_AT	0.021	0.123	-0.298	0.000	0.000	0.000	0.803
DFI	0.245	0.430	0.000	0.000	0.000	0.000	1.000
Obs.				34,578			

Panel B: Summary Statistics of the sample firms by year

Year	ADV		GETR		Number of firms with non-missing advertising expenditure & tax aggressiveness measure
	Mean	Median	Mean	Median	
1975	0.024	0.014	0.402	0.465	930
1976	0.025	0.016	0.412	0.468	1,073
1977	0.026	0.016	0.411	0.463	1,101
1978	0.026	0.015	0.399	0.452	1,112
1979	0.026	0.015	0.371	0.432	1,107
1980	0.032	0.018	0.364	0.426	1,007
1981	0.029	0.019	0.355	0.416	944
1982	0.031	0.020	0.334	0.400	940

Year					
1983	0.033	0.021	0.333	0.409	965
1984	0.038	0.022	0.296	0.379	983
1985	0.035	0.021	0.309	0.388	1,008
1986	0.037	0.021	0.319	0.403	1,098
1987	0.039	0.021	0.287	0.383	1,103
1988	0.036	0.021	0.265	0.339	1,114
1989	0.037	0.020	0.250	0.328	1,163
1990	0.043	0.021	0.241	0.320	1,181
1991	0.035	0.020	0.231	0.318	1,150
1992	0.035	0.022	0.243	0.333	1,082
1993	0.038	0.021	0.243	0.329	1,056
1994	0.053	0.025	0.266	0.349	522
1995	0.060	0.031	0.264	0.354	382
1996	0.057	0.032	0.269	0.354	462
1997	0.048	0.028	0.233	0.344	544
1998	0.048	0.026	0.240	0.350	630
1999	0.063	0.027	0.246	0.350	642
2000	0.049	0.025	0.245	0.344	731
2001	0.043	0.022	0.230	0.320	748
2002	0.034	0.019	0.195	0.299	884
2003	0.033	0.016	0.204	0.308	958
2004	0.033	0.016	0.185	0.304	1,022
2005	0.030	0.013	0.205	0.314	1,053
2006	0.034	0.013	0.189	0.305	1,106
2007	0.033	0.013	0.207	0.310	1,151
2008	0.029	0.013	0.168	0.250	1,187

| 2009 | 0.037 | 0.011 | 0.196 | 0.283 | 1,217 |
| 2010 | 0.032 | 0.011 | 0.194 | 0.273 | 1,222 |

Table 3.4: Correlation Matrix

This table presents the correlation matrix of the main variables used in the baseline specification. Pearson correlations are reported above the main diagonal and Spearman correlations are reported below the diagonal. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1975-2012. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1. All correlation coefficients are significant at least at the 5% level, except those with #.

	GETR	ADV	ROA	STDROA	PPE	POSGDWL	SIZE	NOL	NEWINV	MB	LEV	INTANG	CASH	EQINC	DNOL_AT	DFI
GETR		0.040	0.476	-0.240	0.174	-0.087	0.061	-0.299	0.014	-0.057	0.038	-0.071	-0.059	0.063	-0.199	-0.116
ADV	-0.026		0.020	0.021	0.003	-0.040	0.055	-0.040	-0.058	0.052	0.010#	0.028	-0.003#	-0.009#	0.031	-0.022
ROA	0.356	-0.106		-0.211	0.182	0.027	0.326	-0.329	0.217	0.312	-0.156	0.022	0.190	0.123	-0.277	0.006#
STDROA	-0.194	0.107	-0.301		-0.224	-0.242	-0.222	0.189	0.048	0.090	-0.193	-0.113	0.200	-0.142	0.082	0.001#
PPE	-0.068	-0.043	0.138	-0.192		-0.043	0.078	-0.152	0.210	-0.010	0.310	-0.025	-0.233	0.028	-0.066	-0.176
POSGDWL	-0.051	-0.001#	-0.024	0.066	-0.043		0.129	0.070	0.303	0.055	0.011	0.132	0.069	-0.018	0.049	0.112
SIZE	0.093	0.000#	0.287	-0.148	0.078	0.129		-0.056	0.132	0.246	-0.004#	0.423	0.135	0.120	-0.100	0.387
NOL	-0.243	0.012	-0.300	0.165	-0.152	0.070	-0.056		-0.004#	0.043	0.068	0.046	0.046	-0.058	0.308	0.136
NEWINV	-0.020	0.035	0.037	0.103	0.21	0.303	0.132	-0.004		0.161	-0.019	0.001#	0.240	-0.009#	0.063	0.083
MB	-0.049	0.018	0.046	0.135	-0.010	0.055	0.246	0.043	0.161		-0.057	0.059	0.206	-0.006#	0.062	0.080
LEV	-0.018	-0.007#	-0.134	-0.117	0.310	0.011	-0.004#	0.068	-0.019	-0.057		0.080	-0.303	0.007#	0.004#	-0.085
INTANG	0.003#	0.002#	0.035	-0.085	-0.025	0.132	0.422	0.046	-0.001	0.059	0.080		-0.055	0.057	-0.023	0.219
CASH	-0.081	0.053	0.074	0.256	-0.233	0.069	0.135	0.046	0.240	0.206	-0.303	-0.055		-0.053	0.059	0.090
EQINC	0.032	-0.025	0.107	-0.088	0.028	-0.018	0.120	-0.058	-0.009	-0.006	0.007#	0.057	-0.053		-0.044	0.013
DNOL_AT	-0.170	0.080	-0.418	0.194	-0.066	0.049	-0.010	0.308	0.063	0.062	0.004#	-0.023	0.060	-0.044		-0.020
DFI	-0.066	-0.014	0.030	-0.015	-0.176	0.117	0.387	0.136	0.083	0.080	-0.085	0.219	0.090	0.013	-0.020	

Table 3.5: Relation between Advertising and Tax Aggressiveness

This table presents the results of OLS regressions of firm's advertising and control variables on GAAP-effective tax rate as measure of corporate tax aggressiveness. Our sample consists of firms with non-missing advertising data in the Compustat database over the period 1975-2010. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included where indicated but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

Dependent Variable	Baseline regression with GETR as dependent variable	
	(1)	(2)
ADV	0.038	0.030
	(3.532)***	(3.136)***
ROA	0.463	0.371
	(45.03)***	(36.486)***
STDROA	-0.136	-0.096
	(-7.694)***	(-5.592)***
PPE	0.009	0.012
	(0.893)	(1.002)
POSGDWL	-0.158	-0.001
	(-3.285)***	(-0.018)
SIZE	0.005	0.015
	(4.498)***	(11.580)***
NOL	-0.082	-0.064
	(-16.22)***	(-12.964)***
NEWINV	0.006	-0.021
	(0.361)	(-1.294)
MB	-0.004	-0.003
	(-6.461)***	(-5.754)***
LEV	-0.010	-0.025

	(-0.791)	(-1.968)**
INTANG	-3.02e-06	0.000
	(-1.107)	(0.068)
CASH	-0.106	-0.062
	(-10.88)***	(-6.374)***
EQINC	-1.192	-1.871
	(-3.180)***	(-5.013)***
DNOL_AT	0.041	0.004
	(2.541)**	(0.243)
DFI	-0.039	-0.012
	(-7.087)***	(-2.059)**
Intercept	0.300	0.340
	(50.13)***	(39.642)***
Industry Fixed Effects	No	Yes
Year Fixed Effects	No	Yes
Observations	34,551	34,551
Adjusted R^2	0.165	0.198

Table 3.6: Alternative measures of tax aggressiveness

This table presents the results of OLS regressions of firm's advertising and control variables on alternative measures of corporate tax aggressiveness. Our sample consists of firms with non-missing advertising data in the Compustat database over the period 1975-2012. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included where indicated but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

	Panel A: Effective tax rates measures			Panel B: Book-tax differences measures		
Dependent Variable	CETR	LCETR	FCETR	BTD	PERMDIFFA	DTAX
ADV	0.022	0.056	0.034	-0.030	-0.032	-0.004
	(2.048)**	(2.398)**	(2.386)**	(-3.678)***	(-3.922)***	(-0.224)
ROA	0.376	0.377	0.441	0.643	0.603	0.281
	(21.139)***	(14.041)***	(15.135)***	(47.000)***	(42.641)***	(20.731)***
STDROA	-0.112	-0.120	-0.047	-0.091	-0.101	0.014
	(-3.382)***	(-2.742)***	(-0.925)	(-7.916)***	(-8.234)***	(0.993)
PPE	-0.017	-0.013	-0.016	0.017	-0.002	0.016
	(-0.734)	(-0.472)	(-0.510)	(3.265)***	(-0.279)	(2.651)***
POSGDWL	-0.028	-0.023	0.038	0.052	0.044	-0.060
	(-0.401)	(-0.318)	(0.359)	(2.339)**	(1.463)	(-1.557)
SIZE	0.021	0.020	0.018	-0.004	-0.003	-0.002
	(8.138)***	(6.938)***	(5.301)***	(-6.554)***	(-5.818)***	(-2.937)***
NOL	-0.072	-0.071	-0.055	0.029	0.024	0.025
	(-8.525)***	(-6.829)***	(-4.967)***	(14.107)***	(11.235)***	(10.414)***
NEWINV	-0.008	0.048	-0.066	-0.040	-0.057	-0.073
	(-0.251)	(1.278)	(-1.207)	(-4.202)***	(-5.665)***	(-6.073)***
MB	-0.004	-0.006	-0.004	-0.002	-0.002	-0.002
	(-4.672)***	(-5.275)***	(-2.897)***	(-6.445)***	(-5.929)***	(-3.578)***
LEV	-0.046	-0.063	-0.033	0.046	0.051	0.054

	(-1.999)**	(-2.272)**	(-1.085)	(6.809)***	(7.859)***	(7.759)***
INTANG	-0.000	-0.000	-0.000	0.000	0.000	-0.000
	(-0.885)	(-1.262)	(-1.205)	(1.618)	(2.540)**	(-2.720)***
CASH	-0.056	-0.104	-0.076	-0.039	-0.028	-0.008
	(-3.289)***	(-4.822)***	(-3.226)***	(-7.053)***	(-4.769)***	(-1.186)
EQINC	0.545	0.328	1.877	0.712	0.458	-0.818
	(0.767)	(0.331)	(1.786)*	(4.469)***	(2.393)**	(-4.461)***
DNOL_AT	0.105	0.042	0.103	-0.182	-0.203	0.308
	(4.647)***	(1.512)	(3.016)***	(-15.345)***	(-14.596)***	(17.551)***
DFI	-0.001	-0.002	-0.008	0.004	0.005	0.011
	(-0.152)	(-0.151)	(-0.590)	(1.364)	(1.885)*	(3.501)***
Intercept	0.166	0.201	0.184	-0.054	-0.053	-0.038
	(4.022)***	(4.112)***	(3.224)***	(-15.647)***	(-15.058)***	(-10.309)***
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,222	16,539	13,745	17,005	16,459	16,459
Adjusted R^2	0.06	0.045	0.04	0.812	0.768	0.171

Table 3.7: Alternative measures of advertising

This table presents the results of OLS regressions of alternative measures of firm's advertising and control variables on different measures of corporate tax aggressiveness. My sample consists of firms with non-missing advertising data in the Compustat database over the period 1975-2012. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included where indicated but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

Dependent Variable	Measures of tax aggressiveness					
	GETR	CETR	BTD	GETR	CETR	BTD
LNADV	0.006	0.005	-0.000			
	(4.029)***	(2.182)**	(-0.563)			
ADVA				0.052	0.006	-0.084
				(2.235)**	(2.266)**	(-4.412)***
ROA	0.377	0.372	0.610	0.370	0.380	0.650
	(35.960)***	(21.031)***	(43.227)***	(36.295)***	(20.968)***	(48.101)***
STDROA	-0.098	-0.112	-0.100	-0.102	-0.113	-0.091
	(-5.562)***	(-3.380)***	(-8.268)***	(-5.863)***	(-3.372)***	(-7.937)***
PPE	0.016	-0.016	-0.002	0.014	-0.018	0.016
	(1.307)	(-0.709)	(-0.369)	(1.146)	(-0.792)	(3.133)***
POSGDWL	-0.011	-0.030	0.045	-0.015	-0.025	0.053
	(-0.229)	(-0.429)	(1.490)	(-0.322)	(-0.356)	(2.389)**
SIZE	0.010	0.021	-0.004	0.015	0.016	-0.004
	(5.542)***	(8.226)***	(-6.288)***	(11.745)***	(4.896)***	(-7.061)***
NOL	-0.060	-0.072	0.025	-0.060	-0.072	0.030
	(-12.338)***	(-8.519)***	(11.403)***	(-12.366)***	(-8.472)***	(14.203)***
NEWINV	-0.010	-0.006	-0.062	-0.019	0.000	-0.045
	(-0.589)	(-0.200)	(-6.074)***	(-1.161)	(0.006)	(-4.699)***
MB	-0.002	-0.004	-0.002	-0.003	-0.004	-0.002
	(-4.520)***	(-4.659)***	(-5.927)***	(-5.585)***	(-4.159)***	(-6.507)***
LEV	-0.031	-0.046	0.049	-0.024	-0.049	0.043
	(-2.415)**	(-1.990)**	(7.551)***	(-1.932)*	(-2.113)**	(6.479)***
INTANG	-0.000	-0.000	0.000	-0.000	-0.000	0.000
	(-0.802)	(-0.895)	(2.478)**	(-0.321)	(-1.155)	(1.546)
CASH	-0.062	-0.055	-0.030	-0.055	-0.066	-0.041

	(-6.152)***	(-3.235)***	(-5.075)***	(-5.465)***	(-6.832)***	(-7.399)***
EQINC	-1.763	0.537	0.469	-1.706	0.496	0.718
	(-4.698)***	(0.757)	(2.469)**	(-4.618)***	(0.698)	(4.551)***
DNOL_AT	0.007	0.106	-0.203	0.006	0.112	-0.181
	(0.466)	(4.686)***	(-14.649)***	(0.428)	(4.887)***	(-15.397)***
DFI	-0.013	-0.002	0.006	-0.013	-0.003	0.004
	(-2.262)**	(-0.177)	(2.119)**	(-2.171)**	(-0.350)	(1.622)
Intercept	0.355	0.190	-0.050	0.337	0.204	-0.051
	(38.412)***	(6.890)***	(-13.509)***	(38.918)***	(7.213)***	(-13.739)***
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,839	20,812	16,480	36,366	19,097	17,027
Adjusted R^2	0.19	0.06	0.771	0.191	0.061	0.815

Table 3.8: Alternative model specifications: Fama-MacBeth (1973) regression and lead-lag regression

This table presents the results of regressions of advertising on alternative measures of corporate tax aggressinvess using Fama MacBeth (1973) procedure (panel A) and lead-lag analysis (panel B). My sample consists of firms with non-missing advertising data in the Compustat database over the period 1975-2012. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are adjusted for heteroskedasticity and clustering at the firm level (in the Fama-MacBeth regression I use Newey-West adjusted standard errors). *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

Dependent Variables	Panel A: Fama-MacBeth (1973) regression			Panel B: Lead-lag regression		
	GETR	CETR	BTD	GETR	CETR	BTD
ADV	0.048	0.051	-0.061			
	(2.691)**	(1.009)	(-5.023)***			
LADV				0.037	0.022	-0.030
				(3.256)***	(1.757)*	(-4.351)***
ROA	0.379	0.393	0.571	0.378	0.391	0.635
	(29.648)***	(19.216)***	(26.925)***	(30.977)***	(18.949)***	(41.457)***
STDROA	-0.120	-0.152	-0.080	-0.120	-0.130	-0.098
	(-5.902)***	(-4.005)***	(-5.564)***	(-5.520)***	(-3.023)***	(-7.072)***
PPE	-0.014	-0.038	0.009	0.023	-0.015	0.002
	(-1.516)	(-1.810)*	(2.544)**	(1.656)*	(-0.603)	(0.269)
POSGDWL	0.038	-0.005	-0.031	0.010	-0.048	0.039
	(1.093)	(-0.088)	(-1.248)	(0.171)	(-0.594)	(1.122)
SIZE	0.016	0.020	-0.003	0.015	0.020	-0.004
	(10.969)***	(9.503)***	(-6.714)***	(9.981)***	(6.935)***	(-5.599)***
NOL	-0.067	-0.077	0.026	-0.062	-0.071	0.023
	(-11.328)***	(-7.740)***	(12.040)***	(-11.352)***	(-7.596)***	(10.146)***
NEWINV	-0.044	0.011	-0.041	-0.031	-0.019	-0.053
	(-2.465)**	(0.419)	(-4.256)***	(-1.646)*	(-0.531)	(-4.750)***
MB	-0.004	-0.005	-0.002	-0.003	-0.004	-0.002
	(-7.353)***	(-4.135)***	(-4.965)***	(-4.528)***	(-3.927)***	(-4.890)***
LEV	-0.023	-0.074	0.043	-0.020	-0.047	0.046
	(-2.094)**	(-3.642)***	(8.266)***	(-1.394)	(-1.826)*	(6.581)***
INTANG	-0.000	-0.000	0.000	-0.000	-0.000	0.000
	(-0.115)	(-0.362)	(0.926)	(-0.363)	(-1.234)	(3.229)***
CASH	-0.063	-0.074	-0.029	-0.056	-0.047	-0.031
	(-6.176)***	(-4.435)***	(-4.685)***	(-4.825)***	(-2.417)**	(-4.555)***
EQINC	-1.561	0.666	0.276	-2.028	0.044	0.373
	(-4.219)***	(0.791)	(1.650)	(-5.019)***	(0.057)	(1.808)*
DNOL_AT	-0.036	0.118	-0.249	0.008	0.110	-0.208
	(-1.024)	(3.353)***	(-10.630)***	(0.434)	(4.299)***	(-12.807)***
DFI	-0.020	-0.000	0.002	-0.015	0.002	0.004
	(-2.323)**	(-0.047)	(1.214)	(-2.299)**	(0.211)	(1.361)

Intercept	0.241	0.165	-0.042	0.150	0.110	-0.025
	(15.666)***	(12.100)***	(-14.565)***	(10.945)***	(5.023)***	(-4.184)***
Observations	34,551	19,222	17,005	27,900	15,987	13,802
Adjusted R^2	0.173	0.074	0.791	0.186	0.058	0.802

Table 3.9: Advertising and Tax Aggressiveness: Random-effect and Fixed-effect Panel Regressions

This table presents the results of regressions of advertising on alternative measures of corporate tax aggressiveness using fixed-effect (Panel A) and random-effect panel regressions (Panel B). My sample consists of firms with non-missing advertising data in the Compustat database over the period 1975-2012. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

Dependent Variable	Fixed-effect			Random effect		
	GETR	CETR	BTD	GETR	CETR	BT
ADV	0.012	0.007	-0.010	0.027	0.036	-0.
	(1.544)	(1.044)	(-1.315)	(2.887)***	(3.276)***	(-2.4
ROA	0.320	0.386	0.621	0.422	0.420	0.6
	(21.547)***	(13.796)***	(42.052)***	(43.014)***	(25.330)***	(50.5
STDROA	-0.061	-0.121	-0.002	-0.118	-0.127	-0.
	(-2.259)**	(-2.155)**	(-0.141)	(-6.935)***	(-3.901)***	(-4.85
PPE	0.069	0.041	-0.014	0.025	-0.030	-0.
	(3.179)***	(0.858)	(-1.437)	(2.519)**	(-1.712)*	(-0.
POSGDWL	-0.033	-0.160	0.018	-0.107	-0.084	0.0
	(-0.635)	(-1.896)*	(0.576)	(-2.274)**	(-1.200)	(1.
SIZE	0.004	0.008	0.001	0.004	0.014	-0.
	(1.850)*	(1.414)	(1.214)	(4.153)***	(6.041)***	(-1.
NOL	-0.062	-0.075	0.017	-0.078	-0.082	0.0
	(-9.509)***	(-5.585)***	(6.058)***	(-16.013)***	(-9.938)***	(10.72
NEWINV	-0.001	0.077	-0.063	0.005	0.024	-0.
	(-0.056)	(1.769)*	(-5.826)***	(0.352)	(0.803)	(-7.76
MB	-0.001	-0.004	-0.002	-0.003	-0.004	-0.
	(-2.019)**	(-2.884)***	(-4.229)***	(-5.299)***	(-3.916)***	(-4.70
LEV	-0.034	0.003	0.054	-0.012	-0.042	0.0
	(-1.721)*	(0.068)	(6.439)***	(-0.973)	(-1.872)*	(8.54
INTANG	-0.000	0.000	0.000	-0.000	-0.000	0.0
	(-1.294)	(0.150)	(1.137)	(-1.067)	(-1.140)	(1.7
CASH	0.001	-0.028	-0.046	-0.075	-0.094	-0.
	(0.114)	(-1.029)	(-5.820)***	(-7.961)***	(-5.678)***	(-5.88
EQINC	-1.477	-0.299	-0.020	-1.102	0.616	0.
	(-2.758)***	(-0.252)	(-0.087)	(-2.763)***	(0.885)	(0.
DNOL_AT	-0.024	0.076	-0.130	0.018	0.109	-0.
	(-1.254)	(2.794)***	(-9.533)***	(1.081)	(4.880)***	(-12.5
DFI	-0.044	-0.009	0.010	-0.041	-0.003	0.0
	(-5.627)***	(-0.503)	(2.877)***	(-7.730)***	(-0.313)	(3.66
Intercept	0.264	0.179	-0.068	0.287	0.186	-0.
	(22.747)***	(5.751)***	(-11.998)***	(48.682)***	(14.730)***	(-20.0
Observations	34,551	19,222	16,459	34,551	19,222	16,

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Adjusted R-squared	0.045	0.017	0.615	0.157	0.052	0.7

Table 3.10: Two-stage Least Squares Regression

This table presents the results of 2SLS regressions of firm's advertising on alternative measures of corporate tax aggressiveness. Column 1 presents the first-stage regression results and column 2-4 present the second-stage regression results. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

Dependent Variable	Two stage least squares			
	First stage	Second stage		
	ADV	GETR	CETR	BTD
ADV		0.071	0.047	-0.0884
		(2.570)**	(1.278)	(-7.903)***
LADV	0.470			
	(3.039)***			
INDADV	0.787			
	(2.433)**			
ROA	-0.049	0.382	0.395	0.583
	(-2.263)**	(30.95)***	(18.74)***	(36.12)***
STDROA	0.050	-0.124	-0.133	-0.106
	(1.416)	(-5.647)***	(-3.075)***	(-6.930)***
PPE	-0.016	0.024	-0.014	-0.001
	(-1.579)	(1.762)*	(-0.580)	(-0.206)
POSGDWL	-0.064	0.015	-0.044	0.030
	(-1.723)*	(0.275)	(-0.544)	(0.860)
SIZE	0.003	0.015	0.020	-0.003
	(1.656)*	(9.847)***	(6.864)***	(-4.762)***
NOL	-0.005	-0.062	-0.071	0.022
	(-2.011)**	(-11.28)***	(-7.577)***	(9.518)***
NEWINV	0.028	-0.034	-0.021	-0.049
	(1.172)	(-1.784)*	(-0.595)	(-4.354)***
MB	-0.001	-0.003	-0.004	-0.002
	(-1.031)	(-4.456)***	(-3.920)***	(-5.174)***
LEV	0.003	-0.020	-0.047	0.048
	(0.353)	(-1.383)	(-1.840)*	(6.892)***
INTANG	0.000	0.000	0.000	0.000
	(-0.247)	(-0.352)	(-1.230)	(3.113)***
CASH	0.016	-0.057	-0.049	-0.031
	(1.689)*	(-4.899)***	(-2.480)**	(-4.456)***

EQINC	-0.270	-1.993	0.080	0.294
	(-0.846)	(-4.929)***	(0.103)	(1.375)
DNOL_AT	0.024	0.006	0.109	-0.202
	(0.712)	(0.311)	(4.235)***	(-12.27)***
DFI	-0.005	-0.015	0.003	0.003
	(-1.581)	(-2.249)**	(0.244)	(1.182)
Intercept	-0.022	0.114	0.140	-0.004
	(-1.431)	(2.109)**	(1.572)	(-0.324)
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	27,890	27,887	15,892	13,794
Adjusted R^2	0.200	0.186	0.058	0.796

Table 3.11: Testing the information role of advertising in affecting tax aggressiveness

This table presents the results of OLS regressions of firm's advertising and interaction terms between advertising and institutional holding as proxy for information asymmetry on alternative measures of tax aggressiveness. I use the percentage of top 5 institutional holding to proxy for the firm's information environment. My initial sample consists of firms with non-missing advertising data in the Compustat database over the period 1972-2012. Institutional ownership data is retrieved from Thomson Financial's CDA Spectrum database. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. All the variables are winsorized at both the 1st and 99th percentiles. Definitions of the variables are provided in Table 3.1.

Dependent Variables	GETR	CETR	BTD
ADV	0.066	0.039	-0.046
	(4.86)***	(1.80)*	(-5.00)***
ADV_IHTP5	-6.13e-10	-1.52e-10	4.15e-10
	(-2.64)***	(-0.40)	(3.51)***
IHTP5	-1.58e-10	-2.07e-10	0
	(-3.59)***	(-3.57)***	(0.14)
ROA	0.368	0.391	0.670
	(29.37)***	(20.18)***	(41.52)***
STDROA	-0.105	-0.116	-0.077
	(-5.34)***	(-3.22)***	(-5.69)***
PPE	0.027	-0.011	0.014
	(1.87)*	(-0.45)	(2.13)**
POSGDWL	-0.003	-0.015	0.035
	(-0.06)	(-0.21)	(1.36)
SIZE	0.017	0.021	-0.004
	(10.44)***	(8.13)***	(-5.79)***
NOL	-0.060	-0.063	0.032
	(-10.55)***	(-7.48)***	(12.22)***
NEWINV	-0.029	-0.019	-0.037
	(-1.47)	(-0.57)	(-3.10)***
MB	-0.003	-0.004	-0.002
	(-4.27)***	(-4.72)***	(-5.52)***
LEV	-0.021	-0.052	0.033
	(-1.40)	(-2.30)**	(4.02)***
INTANG	2.58e-06	-1.56e-06	1.79e-06
	(0.84)	(-0.32)	(1.26)
CASH	-0.078	-0.063	-0.035
	(-6.72)***	(-3.60)***	(-5.78)***

EQINC	-1.574	0.338	0.649
	(-3.26)***	(0.46)	(3.22)***
DNOL_AT	0.015	0.107	-0.150
	(0.83)	(4.52)***	(-12.21)***
DFI	-0.010	-0.002	0.004
	(-1.56)	(-0.18)	(1.44)
Intercept	0.141	0.096	-0.054
	(8.16)***	(4.25)***	(-6.50)***
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	25,245	18,214	11,038
Adjusted R^2	0.161	0.062	0.814

Table 3.12: Testing the reputation effect of advertising using Interbrand measures

This table reports the results of OLS regressions of firm's advertising, an Interbrand indicator variable and control variables on GAAP-effective tax rate and cash effective tax rate as measures of corporate tax aggressiveness for a matched set of firms. Interbrand is an indicator variable set equal to 1 for those firms that own brands in the Interbrand's Best Global Brand list; and 0 for the control firms. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included where indicated but the coefficients are not reported. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level. Definitions of the variables are provided in Table 3.1.

Dependent Variable	GETR	CETR
ADV	0.026	0.007
	(2.663)***	(1.044)
INTERBRAND	0.016	0.028
	(1.79)*	(2.28)***
ROA	0.320	0.386
	(21.547)***	(13.796)***
STDROA	-0.061	-0.121
	(-2.259)**	(-2.155)**
PPE	0.069	0.041
	(3.179)***	(0.858)
POSGDWL	-0.033	-0.160
	(-0.635)	(-1.896)*
SIZE	0.004	0.008
	(1.850)*	(1.414)
NOL	-0.062	-0.075
	(-9.509)***	(-5.585)***
NEWINV	-0.001	0.077
	(-0.056)	(1.769)*
MB	-0.001	-0.004
	(-2.019)**	(-2.884)***
LEV	-0.034	0.003
	(-1.721)*	(0.068)
INTANG	-0.000	0.000
	(-1.294)	(0.150)
CASH	0.001	-0.028
	(0.114)	(-1.029)
EQINC	-1.477	-0.299
	(-2.758)***	(-0.252)
DNOL_AT	-0.024	0.076
	(-1.254)	(2.794)***
DFI	-0.044	-0.009
	(-5.627)***	(-0.503)

Intercept	0.264	0.179
	(22.747)***	(5.751)***
Industry Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	4,417	4,417
Adjusted R^2	0.165	0.119

4. Product Market Advertising and Firm Value – Disentangling the Effect

4.1 Introduction

This essay examines whether a firm's advertising expenditure significantly impacts its market value and the underlying mechanism(s) through which such market value improvement comes into effect. It seeks to answer the question of whether any increase in value originates from a cash-flow enhancing effect or materializes by virtue of a reduction in the firm's cost of capital. Specifically, advertising affects firm value through the operative mechanisms in two markets, namely the customer effect in the product market and the investor effect in the capital market. In the product market channel, higher advertising leads to favourable product market outcomes which bring about faster, larger and safer cash inflows for the firm (Srivastava *et al.*, 1998). In the capital market channel, advertising works as an information source that expands investors' awareness and familiarity with the firm, thereby boosting investor demand and increasing stock liquidity (Merton, 1987; Grullon *et al.*, 2004).[53] Additionally, through a signalling mechanism, advertising also augments the firm's information environment by alleviating the information asymmetry problem and lowering the associated adverse selection costs (Chemmanur and Yan, 2009). These capital market effects together imply a lower cost of capital for advertising-intensive firms. Collectively, these dynamic effects, better operating cash flow performance and lower cost of capital, offer strong support for the chapter's main proposition: firms that spend more on advertising have higher market value.

If research and development is the engine for fuelling innovation capacity and generating knowledge-based assets that allow firms to develop either superior products or

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[53] In the capital market, advertising potentially acts as an information proxy that expands investor cognizance of the firm's stock, raising demand for the stock. The resulting large shareholder base lowers the required rate of return on the stock, all else being equal (Merton, 1987; Kyle, 1989). Lower information asymmetry and greater liquidity are also factored into a lower cost of capital for the firm (Chemmanur and Yan, 2009; Grullon *et al.*, 2004).

production techniques, product market advertising serves as the lifeblood for brand equity creation for a firm. Traditionally, researchers have focused on investigating the customer response effects of advertising, defined as the impact of marketing activities on sales or profit (Comanor and Wilson, 1967; Abdel-Khalik, 1975; Dekimpe and Hanssens, 1995; Lev and Sougiannis, 1996; Sougiannis, 1994). More recently, there has been surging interest in studying the relationship between product market advertising and a number of financial market metrics as researchers i) recognize the inherent inadequacies and shortfalls in models that relate advertising to sales and profitability, and ii) aim to prove the value relevance of advertising.[54] Despite growing interest, empirical evidence on the relation between advertising and firm value remains relatively dormant.[55] In response to this deficiency, the third essay of this thesis aims to review the theoretical ground for the advertising - firm value relation, and empirically investigates this relation.

There are strong *a priori* theoretical reasons to conjecture that higher advertising positively affects firm performance. First, existing marketing literature has largely postulated that higher advertising spending builds brand assets in the forms of positive brand equity and customer satisfaction which in turn generate a myriad of favourable product market outcomes. Firms with stronger brands enjoy faster market penetration in terms of trials, referrals and adoptions through more responsive advertising and promotions (Keller, 1993). Stronger brands result in more successful product line extensions (Keller and Aaker, 1992), up-selling and cross-

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[54] Doyle (2000) provides a theoretical discussion of the value relevance of marketing. Hanssens *et al.* (2009) and Roland *et al.* (2004) summarize the pressing need to connect marketing activities and firm value and describe some initial framework for such linkage. Providing empirical verifications, Rao *et al.* (2004) study the relation between branding strategy and market value; McAlister *et al.* (2007) consider advertising – systematic risk association; Joshi and Hanssens (2009) look at short-term and long-term valuation effects of advertising. In the finance area, Grullon *et al.* (2004) connect advertising with firm breadth of ownership and liquidity.

[55] Empirical evidence on the advertising – firm value linkage remains scant. Additionally, some authors restrict their analyses to certain industries. For example, Srinivasan *et al.* (2008) limit their study to automobile industry while Joshi and Hanssens (2009) explore only personal computer manufacturing firms. In the finance area, Grullon *et al.* (2004) study the impact of advertising on breadth of ownership and liquidity. They provide no direct tests of the reduction in cost of capital and increase in firm value.

selling (Kamakura *et al.*, 2003). Firms with stronger brands have higher price premiums (Ailawadi *et al.*, 2003) and command greater market shares (Boulding *et al.*, 1994). In addition they have lower sales and services costs through greater customer loyalty (Reichheld, 1996). Further, an advertising-intensive firm's cash flow is more likely to be guarded against fluctuations in market movements and customer sentiments as stronger brands are associated with lowering price sensitivities (Kaul and Wittink, 1995) and greater insulation from competitive sales promotions (Blattberg *et al.*, 1995). These desirable product market outcomes ultimately transform into enhanced and accelerated cash flows for the firm with less volatility and variability (Srivastava *et al.*, 1998).[56] Better and safer operating cash flows should result in a lower cost of equity financing and higher firm valuation (Minton and Schrand, 1999; Francis *et al.*, 2004; Verdi, 2006). Next, extending beyond the primary product market, advertising also positively influences participants in the capital market by raising their awareness and familiarity with the firm, providing more information about the firm and signalling its financial well-being (Frieder and Subramanyam, 2005; Grullon *et al.*, 2004). Advertising-intensive firms are also associated with greater analyst coverage and analyst effort (Barth *et al.*, 2001). Consequently, firms that spend more on advertising face lower information asymmetry, have an expanded shareholder base and improved stock liquidity (Merton, 1987; Chemmanur and Yan, 2009; Grullon *et al.*, 2004; Chang *et al.*, 2006). These factors are priced into a lower cost of equity and thus greater market value for the advertising firm.

The above discussion of the multiple effects of advertising on firm performance frames the central research question in this essay. Are higher advertising expenditures significantly associated with higher firm values? Employing a sample of non-financial Compustat firms covering the period 1972 – 2012, I provide empirical evidence for the research question by

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[56] Srivastava *et al.* (1998) propose four key drivers through which market-based assets can generate shareholder value: i) cash flows are accelerated, ii) cash flows are increased, iii) risk associated with cash flows are reduced, and iv) residual value of the business is enhanced.

testing the hypothesis that firms that spend more in advertising have higher market value as measured by Tobin's Q. Further, I propose a new measure that captures the advertising efficiency of a firm and test whether this measure is positively related to Tobin's Q. Essentially, this measure focuses on how effectively a firm uses its advertising budget to generate incremental sales. I conjecture that firms that are more efficient in generating sales with each dollar spent on advertising are likely to be priced higher by the market. Next, following Fang *et al.* (2009), I decompose the Q measure into three components and examine whether the advertising-induced firm value enhancement effect is attributed to an improvement in operating cash flow (measured by the operating return-on-assets) or triggered by a lower cost of equity capital (measured by operating income-to-price ratio), or a combination of both.

I perform tests using regression analysis after controlling for other firm characteristics that have been shown to be determinants of Tobin's Q. The first set of regression models employs advertising intensity as the explanatory variable of interest, while the second set investigates the impact of advertising efficiency in a multivariate framework. Consistent with my theoretical proposition, I show that firms with higher advertising intensity and better advertising efficiency have better future performance as measured by Tobin's Q ratio. This result is robust to various model specifications, inclusion of control variables and inclusion of industry and year fixed effects. In tests where I decompose the Q measure into its three components, I find consistent evidence that higher firm performance is driven by a lower income-to-price ratio as a measure of the firm's cost of capital. An additional test shows further that such cost-of-capital reduction impact is more pronounced for firms that are subject to a greater degree of information asymmetry, suggesting that more opaque firms reap more benefits from advertising because it incrementally improves their information flow. My results do not show support for operating-performance-based explanations. Advertising does not seem to improve firm performance through its effect on operating profitability. I urge caution in

interpreting this negative association, as I attribute it to a mechanical negative relationship where operating profit is calculated by subtracting various expenses including advertising expense.

To verify the robustness of my results, I undertake a number of sensitivity analyses, and find that all results remain similar when alternative measures of a firm's advertising are employed or when I correct for cross-sectional correlations in the data using the regression approach of Fama-MacBeth (1973). Further, a firm's decision to advertise, as a firm choice variable, is likely to be endogeneous. I conduct several additional tests to mitigate endogeneity concerns. First, I attempt to rule out reverse causality (instead of advertising positively affecting Q, the reverse might be true: firms that have higher Q may have more funds to spend on advertising) by using lagged advertising expenditure as an explanatory variable in all specifications. Second, to address the potential impact on OLS estimates of omitted variables, I employ fixed-effect panel regression techniques.[57] However, possibilities of inertia where advertising budgets and R&D budgets are set fixed as a percentage of sales or management being forward looking and anticipating the impact of next period's Tobin's Q in setting the current period advertising budget, do exist. To formally tackle this endogeneity problem, I adopt an instrumental variable approach using a 2-Stage Least Squares (2SLS) method. I use two-period-lagged advertising as the instrument. The predicted value of advertising obtained from the first stage regression is then used as an explanatory variable in the second stage firm value regression. Overall, my empirical findings remain robust when I address endogeneity concerns using these approaches.

The decision to concentrate on the financial implications of advertising is motivated by the importance of advertising in corporate strategy and the unique nature of advertising

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[57] There may be unobservable firm characteristics that might drive firm's Tobin's Q but are not captured by the existing controls. Woodridge (2002) argues that such omitted variables make the error term correlated with the explanatory variables, causing the OLS estimates to be biased and/or inconsistent.

expenditure. Advertising has long been argued as a powerful tool to boost sales and create competitive advantage in the primary product market (Comanor and Wilson, 1967; Dekimpe and Hanssens, 1995; Lev and Sougiannis, 1996). However, whether the effects of advertising are long-lasting and have implications in the capital market remains an open question. Firms spend a significant and increasing portion of budget on advertising and the effectiveness of such spending has come under close scrutiny by shareholders. In response to the marketing community's call for financial market participants to adopt an investment perspective of advertising expenditure (Gupta *et al.*, 2004; Hanssens *et al.*, 2009), the capital market demands robust evidence of the value of advertising being measured meaningfully in financial terms. This essay aims to evaluate the impact of advertising on firm value and its components, and hence addresses the pressing need for a more transparent understanding of how advertising creates financial value, and responds to the relative scarcity of research in this domain.

By studying the association between advertising and firm value, this chapter is positioned at the interface of the finance and marketing research disciplines. This chapter makes at least four important contributions to the literature. First, the chapter adds to the advertising and firm value literature by identifying how a firm's advertising efforts impact market assessment of its value as proxied by Tobin's Q. I investigate the merits of advertising in positively influencing firm value within the theoretical framework of Srivastava *et al.* (1998), who conceptualize how brand-based assets contribute to firm value, and Merton (1987), who predicts an important role for investor cognizance in affecting the required rate of return on securities under an incomplete information setting. This analysis contributes to this literature by providing novel evidence on the direct positive linkage between advertising and future firm value. Second, this study furthers the literature by unveiling the underlying mechanism of the effect of advertising on firm value, distinguishing which channel(s) indeed gives rise to the higher value. By putting all pieces of the puzzle together, this research aims to provide a more

complete understanding of whether and how advertising affects firm valuation, both in the product and the financial market. Third, by employing a new measure of advertising effectiveness, the study extends the literature by advancing a finer-grained understanding of when advertising by some firms has a greater value enhancement effect than others. Fourth, by using advertising expenditure as an information variable that proxies for investor recognition, this research also contributes to the controversial debate in accounting and finance regarding the pricing of information risk. Prior studies have tested a large range of potential indicators of information risk, including the level and precision of public disclosure (Botosan, 1997; Botosan and Plumpee, 2002; Botosan *et al.*, 2004), proportion of public information vs. private information (Easley and O'Hara, 2004), higher quality accounting information (Lambert *et al.*, 2006), dividend taxes, leverage, initiation of corporate social responsibility reporting, options trading, and executive compensation portfolios sensitivities (Dhaliwal *et al.,* 2005, 2006, 2011; Chen *et al.*, 2011). This chapter furthers this line of research by establishing that advertising expenditure might also constitute part of the information-risk factors that affect investor recognition and demand and plays a role in determining the expected return on equity. In summary, the findings shed light on the capital market implications of advertising expenditures and complement the extant research on advertising, investor recognition and information risk.

This essay proceeds as follows. Section 2 outlines a theoretical framework for subsequent analysis, summarizes relevant extant empirical literature and the testable hypotheses. Section 3 describes data and research methodology. Section 4 presents baseline results while section 5 discusses findings from robustness and endogeneity tests. I conclude in section 6.

4.2   Theoretical Framework and Empirical Evidence

4.2.1 Theoretical Framework
The relation between advertising and firm performance has received considerable attention in recent years in the marketing literature as there is growing demand for increasing

the financial accountability for marketing spending. Early theories of advertising stress the advertising information function which explains its dynamics and behaviours. By conveying information, advertising helps consumers reduce search costs and they are thus better off (Nelson, 1974). Even when advertising conveys no direct credible information about product characteristics and qualities, advertising can still play an informative role to the product market through a signalling mechanism, thereby allowing consumers to price the firm's products correctly in equilibrium. This product market role of advertising is well established in the industrial organization literature (see, *e.g.*, Nelson, 1974; Kihlstrom and Riordan, 1984; or Milgrom and Roberts, 1986). Advertising could also favourably affect customers' attitudes and purchasing behaviour through mere exposure: people are more likely to buy an advertised product as opposed to one that is not, because they are so highly exposed to the advertised product that it becomes familiar to them (Zajonc, 1968; Kahneman and Tversky, 1982).

This chapter is built upon two theoretical backbones, the first of which is the seminal work in marketing by Srivastava *et al.* (1998) who propose that marketing is tasked with developing and managing market-based assets which are defined as "*assets that arise from the commingling of the firms with entities in its external environment*" (Srivastava *et al.*, p.2, 1998). These assets act as the crucial bridge to transform a firm's marketing efforts into shareholder value. For example, through past advertising and promotion efforts, the firm successfully develops an understanding about customers' tastes, needs and their propensity to respond to a firm's offers and actions. These customer-based assets can be leveraged by the firm to generate a vast array of superior and desired product market responses. These include faster market penetration in terms of trials, referrals and adoptions through more responsive advertising and promotions (Keller, 1993). Other effects are, more successful product line extensions (Keller and Aaker, 1992), up-selling and cross-selling (Kamakura *et al.*, 2003), increasing price premiums (Ailawadi *et al.*, 2003), lowering price sensitivities (Kaul and Wittink, 1995),

commanding greater market shares (Boulding *et al.*, 1994), lowering sales and services costs through greater customer loyalty (Reichheld, 1996), and insulating the firm from competitive sales promotions (Blattberg *et al.*, 1995). These favourable product market responses, in turn, translate into higher firm value via four key drivers: accelerating the timing of cash flows; increasing the level of cash flows; reducing volatility and vulnerability of cash flows and increasing the residual value of the firm (Srivastava *et al.*, 1998). If more advertising-intensive firms can systematically earn better and less volatile cash flows, participants in the financial markets are expected to impound these effects into their valuation of the firm (Minton and Schrand, 1999; Francis *et al.*, 2004; Verdi, 2006).

The second theoretical cornerstone is Merton's (1987) model of market equilibrium under incomplete information. Traditional asset pricing models such as the Capital Asset Pricing Model (CAPM) (Sharpe, 1964; Lintner, 1965; Black, 1972; Fama, 1991), Arbitrage Pricing Theory (APT) (Ross, 1976) and the consumption CAPM (Rubinstein, 1976; Lucas, 1978; Breeden, 1979) hold that, in equilibrium, investors are compensated only for the systematic risk component, reflected in the market risk premium. They receive no reward for holding stock with idiosyncratic risk which can be diversified away in an efficient market. However, a growing stream in the literature has challenged the underlying assumption of efficient markets and proposed alternative theories with regard to other risk factors that are priced. Merton (1987) sets up a two-stage model of capital market equilibrium under conditions of incomplete information, where each investor knows only about a subset of the entire universe of available securities. If relatively few investors are cognizant of a particular security, the market can only reach equilibrium when these investors take large undiversified positions in the security. These investors in turn demand higher expected returns to compensate them for the increased idiosyncratic risk associated with their positions. Merton (1987) refers to the number of investors who know about a security as the degree of 'investor recognition' for that

security and the prior argument implies that a higher degree of investor recognition will likely widen the investor base for a firm. Such expansion of the shareholder base will, all else being equal, lower the expected returns on the firm's stocks or in other words, the cost of equity capital and consequently increase firm value.

Under this framework, a firm's advertising, including product-only advertising not intended to target investors, as well as corporate advertising designed to inform investors about the firm, acts as one of the sources of information. *Ceteris paribus*, a more advertising-intensive firm enjoys a richer information environment that stimulates greater investor cognizance and expands the size of its investor base, which effectively reduces cost of capital and increases firm value.

4.2.2 Related Empirical Evidence

This section synthesizes the extant empirical literature relating to the financial implications of advertising expenditures. The earlier empirical evidence from the marketing literature revolves extensively around the impact of advertising on sales. Both the immediate effects of advertising on lifting current period sales as well as persistent effects beyond the current period of the advertisement are widely documented by numerous researchers including Schmalensee (1972), Dekimpe and Hanssens (1995) and Keller (2008). A second group of earlier studies relates advertising to the bottom-line accounting performance. Studies in this research stream have traditionally linked advertising to accounting-based performance measures such as return on assets, operating incomes and earnings; and most of them find that higher advertising leads to greater accounting-based firm performance.[58] As investigating the advertising-firm performance relation predicated on accounting-based measures is subject to

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[58] An early study by Comanor and Wilson (1967) concludes that advertising has a statistically and economically significant impact on profitability (measured by return on assets). Later studies have widely empirically acknowledged the significantly positive relationships between advertising and operating income (Lev and Sougiannis, 1996) and earnings (Sougiannis, 1994; Graham and Frankenberger, 2000). However, the findings to date are by no means unequivocal. Erickson and Jacobson (1992), amongst others, find no evidence that either R&D or advertising expenditures generate abnormal accounting profits.

biases,[59] there has been mounting evidence of a recent shift towards using financial market data

to study the relationship between advertising (or more generally measures of brand equity) and

market values of firms.[60] Substantial evidence shows that investors incorporate brand value

measures into their stock evaluation and stocks of firms with stronger brand equity deliver

greater returns with lower systematic risk versus benchmark stocks (Simon and Sullivan, 1993;

Barth *et al.*, 1998; Madden *et al.*, 2000). [61] Rego *et al.* (2009) examine the impact of consumer-

based brand equity (CBBE) on firm risk using data from EquiTrend and show that a firm's

CBBE lowers firm risk, and the magnitudes of the risk-reducing effects are stronger with

downside systematic risk and unsystematic risk.[62] Other studies in the marketing literature

analyse directly the effects of advertising expenditure. Morck and Yeung (1991) find a positive

impact of advertising on a firm's Tobin Q, with the effect being more significant if a firm

operates multinationally. Mizik and Jacobson (2003) document that both a firm's value creation

capability (proxied by investment in R&D) and value appropriation capability (proxied by

investment in marketing) enhance firm value. More recently, Kim and McAlister (2011) find

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[59] Given that advertising is likely to affect firm profitability beyond the current period due to its long-term nature, studies that rely on unadjusted accounting profit are easily subject to biases. Nevertheless, the advocates of the view that advertising should be treated as a long-term asset, in an attempt to adjust accounting figures for the intangible capital nature of advertising spending, have done so with somewhat arbitrary rates of amortisation (Hirschey, 1982; Hirschey and Weygandt, 1985; Hirschey and Spencer, 1992). There is substantial debate as to the reliability in the materialization of such economic benefits and the estimation of useful life.

[60] This is particularly the case in the marketing domain, there has been growing empirical evidence in response to the pressing need for a better understanding of the effects of marketing expenditure on various financial-market-based metrics and ultimately firm value (e.g., Doyle, 2000; Hanssens et al., 2009; Roland et al., 2004)

[61] Barth *et al.* (1998) find that brand value estimates of Financial World's annual brand evaluation survey are significantly and positively related to stock prices and returns and that brand value estimates represent valuation-relevant information beyond operating margin, market share, and earnings forecast.

[62] CBBE is formulated using data from Harris Interactive's EquiTrend database. Harris Interactive collects annual data from more than 20,000 U.S. consumers of more than 1000 large brands across 35 categories to measure consumers' brand knowledge and perceptions. At the brand level, the CBBE measure is a latent variable scaled to a 0–100 index and estimated using four individual-level consumer variables: Familiarity is assessed by consumer ratings of familiarity with the brand; perceived quality by the quality of the brand; purchase consideration by intentions regarding their future relationship with the brand; and distinctiveness by the differentiation of the brand. Rego *et al.* (2009) then aggregate the CBBE score for each brand to the firm level as the mean level of CBBE of all the firm's brands in the EquiTrend database.

that the positive effect of advertising on stock returns can only materialize when firms advertise beyond a certain threshold level. McAlister *et al.* (2007) examine the association between advertising, R&D and a firm's systematic risk and document a significant negative relation: higher advertising leads to lower systematic risk. Rego *et al.* (2009) extend previous findings and show the effect of advertising on reducing idiosyncratic risk is even stronger. Taken together, the collective empirical evidence in the marketing literature generally lends credence to the positive relation between various brand-related assets and actions and firm value and performance. However, the majority of marketing studies tend to employ limited sample size and data period and sometimes restrict their exploratory findings to certain industries only.[63] These disadvantages, coupled with some potential shortfalls in econometric techniques, hinder the validity and generalizability of some of these findings.

In the finance literature, this essay is connected to a growing empirical literature which investigates the impact of investor recognition and investor attention on stock performance. Most studies within this area, often termed the "visibility" or "investor recognition" literature, are theoretically motivated by Merton (1987), who suggests that an increase in the size of a firm's investor base will reduce its cost of capital. Various researchers have attempted to empirically examine which visibility attributes and indicators drive individual investment preferences, including home bias (Coval and Moskowitz, 1999; Huberman, 2001), stock exchange listing (Kadlec and McConnell, 1994), advertising intensity (Grullon *et al.*, 2004), and presentations to analysts (Francis and Soffer, 1997). Huberman (2001, p.659) summarizes this research theme by stating "Together, these phenomena provide compelling evidence that people invest in the familiar while often ignoring the principles of portfolio theory." I propose that advertising could also qualify as a proxy for investor visibility and familiarity since the

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[63] Rao *et al.* (2004) study the impact of branding strategy of 113 S&P 500 firms. Srinivasan *et al.* (2009) limit their exploration to the US automobile industry. Other studies that employ measures of brand equity valuation only deal with the limited sample that these valuations cover.

more a firm advertises, the more recognizable the firm becomes with the investor community, and the higher the probability of investors buying the firm's stocks. The research in this chapter is also closely related to a growing number of finance papers that map marketing concepts into financial theory. For example, arguing that product marketing advertising may also spill over to the financial market and increase investors' awareness of and familiarity with a firm, Grullon *et al.* (2004) find that firms with a greater level of advertising have a significantly larger number of both individual and institutional investors (with a greater impact on individual investors), lower bid-ask spreads, smaller price impacts, and greater market depth. Grullon *et al.* (2004, p.439) state that "these results suggest that the investors' degree of familiarity with a firm may affect its cost of capital and consequently its value." However they authors do not carry out a direct test on the potential association between advertising and cost of capital. Chemmanur and Yan (2009a) draw heavily on Merton's (1987) theoretical framework and study the effects of advertising on stock returns both in the short-term and in the long run. Based on the central conjecture that advertising affects the degree of investor recognition of a firm, the authors find that advertising increases a firm's visibility among investors, as measured by share trading volume and the number of financial analysts following a firm, in the contemporaneous advertising year. Their focus however is on the effects of advertising on stock returns, not firm value. In another study, Chemmanur and Yan (2009b) analyse the effect of advertising in a corporate finance setting of firms issuing IPOs and SEOs and report evidence of a smaller extent of underpricing for both IPO and SEO firms the greater the level of product market advertising. Since the underpricing of IPOs can be interpreted as the cost of raising equity capital in a firm, this presents an additional capital market channel for advertising to increase firm value via reducing the cost of raising external equity capital. Huang and Wei (2011) test the hypothesis that better investor recognition, proxied by advertising, is correlated with lower expected returns and find consistent evidence that higher advertising intensity is associated with lower

implied cost of capital, as derived from Value Line target prices and dividend forecasts. Their usage of implied cost of capital however greatly reduces the sample size due to data availability.

Researchers have increasingly shown interest in investigating the capital market implications of product market advertising. Nevertheless, a complete understanding of whether a firm's advertising campaigns translate into ultimate capital market assessment of firm value, and, more particularly, the avenues through which advertising can lift firm value is yet to be developed. This essay hence endeavours to empirically investigate the relation between advertising and firm value, and sheds further insights into the channel that drives such an association.

4.3   Hypotheses

I conjecture that firms that spend more on product market advertising have greater future value as captured by Tobin's Q. This hypothesis is based on two main legs of theoretical argument. First, through the operations in the primary product market, advertising builds stronger brand equity which generates an array of future benefits for the firm in the forms of greater, faster, safer and more predictable cash inflows. Second, in a crowded capital market where each investor cannot be perfectly informed about every firm, advertising expands firm visibility and investor recognition, leading to greater liquidity and lower cost of equity capital. Through its signalling role in the capital market, such an advertising-induced improved information environment is also characterized by lower information asymmetry between firm insiders and outside investors and reduced adverse selection costs and lower cost of capital.

Further, it would be naïve to assume that the impact of advertising on firm value is uniform across all firms despite how effectively or wastefully each firm's marketing budget is utilized. Market participants might be able to read beyond absolute marketing dollars and incorporate how well each firm's advertising budget is deployed to generate additional sales and incremental profits into their relative firm valuation. This is consistent with the resourced-

based view of the firm pioneered by Wernerfelt (1984) which views a firm as a bundle of resources and capabilities, with firms differing in their endowments of these resources and capabilities. A firm's capabilities can be viewed in an input-output framework and variations across firm performance can be attributed to differences in capabilities and improvement in a firm's capability to translate, *inter alia*, marketing inputs (such as advertising) into outputs, which will lead to higher firm value (Wernerfelt, 1984; Dutta *et al.*, 1999).[64] I therefore predict that firms that are more efficient in converting advertising and promotion investments into sales, *i.e.*, having a greater degree of advertising efficiency, create greater shareholder value over time, and are rewarded by a lower cost of equity financing. This discussion leads to my first two testable hypotheses which can be stated as follows.

> *(H6) Ceteris paribus*, the value of the firm is positively related to its advertising intensity.

> *(H7) Ceteris paribus*, the value of the firm is positively related to its advertising efficiency.

Fang *et al.* (2009), in studying the relation between liquidity and firm value, decompose firm value, measured by Tobin's Q, into three components, including operating income-to-price ratio (OIP), financial leverage and return on assets. They argue that OIP captures an investor's perception of the uncertainty of the firm's operating income and serves as an indicator of its cost of capital; while ROA measures the firm's operating performance. Following their approach, I also break down firm value into the cost of capital and cash flow components and

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[64] Dutta *et al.* (1999) measure marketing, R&D, and operational capabilities of a firm using a stochastic frontier estimation model (SFE) and find that their measure of marketing capability is significantly associated with Tobin's Q. Luo and Donthu (2006) employ a non-parametric Malmquist time-series approach to model marketing communication productivity (MCP), defined as the ratio of marketing outputs (sales level, sales growth, and corporate reputation) to marketing communication expenditures (broadcast, print, outdoor advertising and sales promotion expenditures). They find that MCP has a curvilinear inverted-U relationship with Tobin's Q and stock returns.

test their respective associations with my advertising measure. Specifically, if the cash flow effect drives the relation between firm value and advertising, there should be a positive association between operating performance and advertising intensity. This discussion leads to the following hypothesis.

(**H8**) *Ceteris paribus*, the firm's operating cash flow is positively related to its advertising intensity.

If the cost of equity capital effect at least partially drives the relationship between firm value and advertising, a negative association between the advertising intensity measure and the cost of equity capital (measured by the operating income-to-price ratio) should be observed. This discussion leads to the following hypothesis.

(**H9**) *Ceteris paribus*, the cost of equity capital is negatively related to the firm's advertising intensity.

In the next section I describe my data and the variables used in my empirical specifications.

4.4 Data

4.4.1 Sample selection
I obtain firm financial data from the Compustat fundamental annual files and monthly stock return data from the Center for Research in Securities Prices (CRSP) database. The sample consists of all the firms in the Compustat database except those in the financial industry (SIC code 6000-6999). Since comprehensive data on product market advertising is only available from 1972, I restrict the sample period to 1972-2012. With the focus of the chapter on testing the impact of firms' advertising expenditures on firm value, I include in my sample only observations that have data available (non-missing values) on advertising.[65] The final sample

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[65] Inclusion of only observations with non-missing advertising expenditures greatly reduces my sample size. However, we cannot distinguish firms that do not report their advertising expenses from those that have zero

consists of 68,142 firm-year observations after I further match it with control variables on firm characteristics.

4.4.2 Variable Construction

4.4.2.1 *Firm value*

In this chapter, I adopt Tobin's Q, defined as the ratio of the firm's market value over the replacement costs of its assets, as the measure for firm valuation. The employment of Tobin's Q is advantageous over other firm value metrics for a number of reasons. First, unlike accounting profit measures which are backward looking in nature, Tobin's Q is a long-term measure of firm economic value that is forward looking and cumulative. As it is based on capital market data and less subject to accounting conventions, it is more comparable across firms and industries. Further, it is a measure strongly grounded in economic theory (Montgomery and Wernerfelt, 1988). The reliance on Tobin's Q in this chapter also serves to connect the results reported here with the larger literature.[66] To operationalize the variable, I adopt Chung and Pruitt's (1994) approximation and calculate Tobin's Q as the market value of assets over the book value of assets, where the market value of assets is defined as the market value of equity plus the book value of assets minus the book value of equity and minus deferred taxes.

$$TBQ = \frac{MVA}{BVA} = \frac{MVE + BVA - BVE - DT}{BVA}, \qquad (1)$$

where TBQ is Tobin's Q, MVA is market value of assets, BVA is book value of assets, MVE is market value of equity, BE is book value of equity and DT is deferred taxes.

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advertising. As a robustness check, I redo the main analysis setting missing advertising expenditures equal to zero and obtain qualitatively similar results.

[66] The empirical finance literature has used Tobin's Q to study many phenomena (*e g.*, barriers and concentration (Chen *et al.*, 1989), equity ownership (McConnell and Servaes, 1990), managerial performance (Lang *et al.* 1989), dividend announcements (Lang and Litzenberger, 1989).

4.4.2.2   The components of firm value

To determine the underlying mechanism through which advertising affects firm value, I decompose Tobin's Q into three components following Fang *et al.* (2009):

$$TBQ = \frac{MVA}{BVA} = \frac{MVE}{OI} \times \frac{MVA}{MVE} \times \frac{OI}{BVA} = \frac{1}{OIP} \times \frac{1}{LEV} \times ROA \,, \qquad (2)$$

where TBQ is Tobin's Q, MVA is market value of assets, BVA is book value of assets, MVE is market value of equity, and OI is operating income after depreciation. The three constituents of Tobin's Q are the operating income-to-price ratio (OIP), defined as operating income after depreciation (OI) divided by market value of common equity (MVE); the financial leverage ratio (LEV), defined as the fraction of market value of a firm's assets (MVA) that come from equity (MVE); and the operating return on assets (ROA), defined as operating income after depreciation (OI) divided by the book value of assets (BVA).[67]

Fang *et al.* (2009) argue that OIP captures investors' perceptions of the firm's growth prospects and the riskiness of operating earnings and can be viewed as an indicator of its cost of capital. A reduction in the firm's cost of capital is reflected in a drop in this measure, as future earnings are less uncertain and will be discounted at a lower rate. ROA is widely accepted as a measure of the firm's operating performance. If advertising causes the firm's operating efficiency to improve, a rise in ROA should be observed. Studying the relationships between advertising and the decomposed components of Tobin's Q in this manner provides evidence to distinguish whether the increase in firm value is brought about by advertising augmenting the firm's operating profitability or reducing its cost of capital. Furthermore, I also expect advertising intensity to be positively related to the financial leverage measure; i.e. more advertising intensive firms have more equity financing in their capital structure. This would further provide corroborating evidence for the informational role of advertising consistent with

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[67] Following Fang *et al.* (2009), operating income after depreciation is used instead of net income to exclude the effect of financial leverage on profits.

the pecking order theory. With a better advertising-induced information environment, the adverse selection costs of equity decreases, resulting in more equity financing.

4.4.2.3   Advertising measures

Following prior research in both marketing and finance (Lev and Sougiannis, 1996; McAlister *et al.*, 2007; Luo *et al.*, 2010; Chemmanur and Yan, 2009), I define advertising intensity (*ADVS*) as the ratio of advertising expenses over sales revenue in the same year and use this variable in the main empirical analysis.

$$ADVS = \frac{ADV}{SALE}, \qquad (3)$$

Data on advertising expenditures (item 45) are obtained from Compustat. Advertising expenditure is defined as the cost of advertising media (radio, television, newspapers, periodicals *etc.*) and promotional expenses.

There are alternative approaches to the measurement of the advertising expenditure in empirical finance and marketing research. Rao *et al.* (2004) use the ratio of total advertising over total assets. Grullon *et al.* (2004), on the other hand, advocate the use of an absolute (instead of a scaled) measure, arguing that it better captures the scope of impact on investors' recognition.[68] Advertising scaled by total assets, the natural logarithm of advertising and absolute advertising expenditure are employed in robustness checks.

Advertising efficiency refers to how productively a firm's advertising budget is utilized to generate desired outcomes for the firm. These desired outcomes span across dimensions of product market terms (including superior customer loyalty, improved brand equity *etc.*) and financial terms (increased sales, better earnings etc., and ultimately improved firm value) and are expected to materialize not in a single contemporaneous time period but might take future

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[68] Grullon *et al.* (2004) argue that in 1998, General Motors' $3.7 billion advertising campaign (though only accounting for 3% of its sales) should have a bigger impact on investor visibility than Audible Inc.'s $0.3 million advertising activities (accounting for 82% of its sales).

periods to be fully realised. Given the complexity and multidimensionality of the advertising effect, previous empirical studies, including, among others, Dutta *et al.* (1999), and Luo and Donthu (2006), have attempted to gauge the effect using a number of stochastic time-series approaches which are mathematically cumbersome and hence not likely to be employed by the average investor in the market. This background motivates the finding and substantiating of a measure of marketing productivity that is easily computable from reported accounting numbers, thus readily accessible for most investors. Such measure of advertising productivity can be posited to be a better predictor of an equity holder's required rate of equity financing rather than just a simple figure of absolute advertising expense or advertising intensity.

In this chapter I follow Kim and McAlister (2011) and extend Lev and Thiagarajan's (1993) fundamental accounting-based signals to create an advertising-based signal as a measure of the effectiveness of advertising spending increase relative to sales increase. Though apparently a simplistic representation of advertising effectiveness, it can be argued to be a realistic way in which an average investor might gauge the extent to which a firm's advertising money is being spent in generating earnings. Such a measure is readily derived from available financial report figures and can be easily accessed and computed by most of the firm's stock holders.

The measure of advertising efficiency is given as follows.

$$ADVE = \Delta Advertising_{i,t} - \Delta Sales_{i,t} , \qquad (4)$$

where *ADVE* measures advertising efficiency

$$\Delta Advertising_{i,t} = (Advertising_{i,t} - \overline{Advertising_{i,t}}) / \overline{Advertising_{i,t}}$$
$$\Delta Sales_{i,t} = (Sales_{i,t} - \overline{Sales_{i,t}}) / \overline{Sales_{i,t}}$$
$$\overline{Advertising_{i,t}} = (Advertising_{i,t-1} + Advertising_{i,t-2}) / 2$$
$$\overline{Sales_{i,t}} = (Sales_{i,t-1} + Sales_{i,t-2}) / 2$$

4.4.2.4   Control variables

Following prior studies, I include a set of known determinants of Q as control variables. These include lagged sales growth, tangibility, investment ratio, firm size, R&D, leverage, firm age, stock return volatility and S&P 500 dummy. Sales growth and R&D are included to control for the firm's growth prospects following Rao *et al.* (2004). The investment ratio is a direct measure of investment opportunities actually undertaken. Firms that invest more presumably have higher growth opportunities and a higher Q (Roll *et al.*, 2009). Following Roll *et al.* (2009) who argue that size may reflect greater efficiency because it may be an outcome of a firm's discovery and exploitation of a superior technology, I also include firm size as another control variable. Age is controlled for as it may indicate that the firm is in a mature phase hence experiences fewer growth opportunities. Consistent with prior research, I expect that younger and smaller firms with faster sales growth, greater R&D, lower tangible assets, more capital and acquisition expenditures and higher stock returns have larger future firm values. Definitions of these variables are provided in Table 4.1.

4.5   Descriptive Statistics

4.5.1 Descriptive Statistics

Table 4.2 reports descriptive statistics on the key variables in our study, with Panel A displaying summary statistics for the whole sample spanning the period 1972 – 2012 and Panel B showing key statistics for Tobin's Q and advertising intensity by year. To control for the effects of outliers, I winsorize all variables at the 1% and 99% percentiles. A few important points should be mentioned. First, the percentiles of the distribution of advertising expenditures, firm age, firm size (measured by book assets), return on assets, yearly stock returns in this table show that our sample contains firms having a wide range of characteristics. In the sample, the main dependent variable, Tobin's Q ranges from 0.531 to 9.948 with a mean of 1.847, a median of 1.326 and a standard deviation of 1.532. Panel A also shows that the yearly mean (median) value of advertising intensity, defined as the ratio of advertising expenditures over sales

revenues, is 0.035 (0.018). The mean values of ROA, OIP and LEV, the three components of Tobin's Q, are 0.038, 0.047 and 0.618 respectively. Other summary statistics indicate that our sample firms have an average investment ratio of 8.45% and a R&D ratio of 9.25%, which induce a sales growth rate of 11.41%. Further, the mean size and age of these firms are 4.819 and 9.078. Last, the stock return and stock return volatility of the sample firms are 12.98% and 0.149% respectively. On average, 10.39% of the firms are members of the S&P 500 index. ADVS and RND exhibit positive skewness as their mean values are much higher than the corresponding median values. To correct for this, I include in my subsequent empirical analysis a robustness check where I employ the natural logarithm transformation of these variables.

Panel B of Table 4.2 shows the mean and median values of two main variables of interest, advertising intensity and Tobin's Q for each year in our sample period. The yearly mean (median) values of advertising-expenses-over-sales range between 0.023 in 1973-1975 (0.011 in 2009 and 2010) to 0.061 in 2000 (0.027 in 1999). The number of firms with non-missing advertising data ranges between 915 and 2,045 firms per year, with an average of 1,664 firms per year, yielding a total sample of 68,231 firm-year observations.

4.5.2 Correlation Matrix

Table 4.3 presents the correlation matrix, which shows the pairwise relationships between the variables. Pearson correlations are reported above the diagonal and Spearman correlations are reported below the diagonal. Specifically, the Pearson (coefficient = 0.179) and Spearman (coefficient = 0.106) correlations between Tobin's Q and advertising intensity are significantly positive at the 1% level. This is consistent with our conjecture that advertising has a positive association with firm value. As shown in Table 4.3, advertising intensity has significantly negative Pearson (Spearman) correlations with two Tobin's Q components, ROA and OIP, and significantly positive correlation with the remaining component, LEV. In other words, firms with higher advertising intensity tend to have higher firm value, lower operating-

income-to-price ratio (which is a measure of cost of capital), more equity financing in their capital structure and lower operating profitability. The negative correlation between advertising and return-on-assets is somewhat surprising but might be attributable to the mechanical negative relationship between the two measures – as operating profit is calculated by subtracting various expenses including advertising expenditures. Tobin's Q is also positively related with sales growth, investment ratio, R&D, stock return, stock return volatility and S&P 500 dummy, while negatively correlated with tangibility, firm size, and firm age. However, as these correlations are obtained without controlling for other firm characteristics, I do not attempt to draw a conclusion about causal relationships from this analysis but leave detailed investigation to the subsequent multivariate regression analysis.

4.6 Main Results

4.6.1 The Effect of Advertising on Firm Value: Univariate Analysis

In this subsection I present a univariate analysis of the relation between advertising and firm value as measured by Tobin's Q. Specifically, I examine if firm value increases with advertising even after controlling for firm size. I form portfolios by first partitioning the sample into quintiles based on size, with each size quintile then further partitioned into five subgroups based on contemporaneous advertising intensity. Each cell in Table 4.4 represents the equally weighted portfolio mean of Tobin's Q of quintiles double-sorted by size and advertising intensity.

The last column of Table 4.4 displays the equally weighted portfolio mean of Tobin's Q across the advertising quintiles. When controlling for firm size, Table 4.4 shows a positive relationship between advertising intensity and firm value: the larger the ratio of advertising to sale, the greater the value of Tobin's Q. For the bottom and top advertising quintiles, the average firm values are 1.784 and 2.134 respectively; the difference in mean values between the two extreme portfolios is statistically significant at the 1% level (coefficient = 0.350, t-stat=-5.710).

Of particular interest is that the average value of Tobin's Q in the largest advertising quintiles is always greater than in the smallest advertising quintiles across the size quintiles, with the differences in means between the bottom and top quintiles economically and statistically significant in 3 out of 5 size quintiles. For the bottom size quintile, Table 4.4 demonstrates that the average difference in the value of Tobin's Q between firms in the highest and lowest advertising quintile is 0.696 (*t*-stat = -4.110). For the top size quintile, the difference is 0.562 with a corresponding *t*-stat of -5.400. Both of these differences are statistically significant at the 1% level. Overall, the results of univariate portfolio analysis strongly support a positive association between a firm's advertising intensity and market assessment of firm value as measured by Tobin's Q: the greater the advertising measure, the larger is Tobin's Q, irrespective of firm size.

4.6.2 Advertising and Firm Value: Multivariate Analysis

In this section, I examine the cross-sectional relation between advertising intensity and firm value in a multivariate framework by employing regression analysis. To control for any confounding effects, I use a range of control variables which have been shown in extant literature to be important determinants of Q. The baseline specification is defined as follows:

$$TBQ_{i,t} = \alpha + \boldsymbol{\beta}.ADVS_{i,t-1} + \gamma_1.SG_{i,t-1} + \gamma_2.TANG_{i,t-1} + \gamma_3.IVR_{i,t-1} + \gamma_4.SIZE_{i,t-1} +$$

$$\gamma_5.RDS_{i,t-1} + \gamma_6.AGE_{i,t-1} + \gamma_7.RET_{i,t-1} + \gamma_8.SDRET_{i,t-1} + \gamma_9.SP500_{i,t-1} + Ind_j + \varepsilon_{i,t}$$,

(5)

where i indexes firm, t indexes year, Ind_j is an industry dummy based on two-digit SIC codes, and ε is the error term. The dependent variable is Tobin's Q (*TBQ*) and the main independent variable of interest is product marketing advertising intensity (*ADVS*). Control variables include sales growth rate (*SG*), tangibility (*TANG*), investment ratio (*IVR*), firm size (*SIZE*), R&D intensity (*RDS*), firm age (*AGE*), stock return (*RET*), stock return volatility (*SDRET*) and S&P 500 dummy (*SP500*). The regression is conducted using pooled ordinary least squares (OLS),

with the *t*-statistics computed using standard errors robust to both clustering at the firm level and heteroskedasticity. As some of our control variables may also proxy for visibility or investor recognition (for example, larger and older firms are likely to be more familiar to investors), our tests for the effect of advertising, as an information proxy, on firm value will bias our analysis against detecting any significant relation and understate its true impact.

In Table 4.5, I report results for the baseline specification which relates firm value to advertising intensity using a range of pooled regression model specifications. According to H6, we expect a positive relationship between advertising (and advertising efficiency) and firm value. Consistent with the earlier result in the univariate analysis, I find a positive association between lagged advertising intensity and Q in various specifications. The regression results in models (1) and (2), where I include only advertising intensity and advertising efficiency as explanatory variables, lend support to the roles of both advertising intensity and advertising efficiency in improving firm value. The estimated coefficient on advertising intensity is positive at 3.935 and the estimated coefficient on advertising efficiency is positive at 0.005, and both are highly significant with *t*-stats of 22.760 and 2.740 respectively. When I take into account other firm characteristics which are determinants of firm value, models (3) and (4) show that both advertising and advertising efficiency continue to have a statistically significant positive impact on Tobin's Q. Thus, the position relation between advertising and firm value is robust to the inclusion of other Q determinants. A potential concern is that advertising expenditure patterns could be industry-specific. To avoid capturing an industry effect rather than specific firm characteristics, I next include industry fixed effects in the next two specifications. Industries are defined using the Standard Industry Classification (SIC) two-digit code. Year fixed effects are also included. My analysis reveals that when I further include fixed year effects and industry fixed effects in the regression model, the estimated coefficients on advertising intensity and advertising efficiency retain their signs and statistical significance. In these two

full specifications, the estimated coefficient on advertising intensity is 1.391 (with a *t*-statistic of 5.770) and the estimated coefficient on advertising efficiency is 0.006 (with a *t*-statistic of 2.480). Model (7) encompasses both measures of advertising intensity and advertising efficiency. Here I aim to gauge the incremental impact of advertising efficiency beyond that captured by advertising intensity. Consistent with H7, I find that even after controlling for advertising intensity, how well that advertising budget is spent to bring in additional sales yields an incremental positive effect on firm value. The estimated coefficient for advertising efficiency is 0.005 and it is significant at the 5% level. This full model with the inclusion of both advertising measures, all control variables and fixed effects yields the best explanatory power with an adjusted R-square of 18.11%.

Taken together, the results in Table 4.5 strongly support a positive association between a firm's spending on advertising and firm value and the relation is consistent and robust across a broad set of model specifications. The estimated coefficients on advertising intensity are highly significant at the 1% level in all specifications, with *t*-statistics ranging between 5.33 and 22.76. For the advertising efficiency measure, the estimated coefficients are positive and significant at the 5% level in all specifications. Firms that spend more on advertising, and, additionally, utilise the advertising money in an effective manner to generate incremental sales, are generally rewarded by the financial market with a higher assessment of firm value. The impact of advertising on firm value is not only highly statistically significant at the 1% level, but also displays large economic importance. A one unit change in lagged advertising intensity leads to a change in Tobin's Q of 1.294 units. Standardized coefficients show that a one standard deviation change in advertising intensity corresponds to 0.045 standard deviation change in next period firm value.[69]

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[69] As Tobin's Q can range up to 9.9484 even after winsorization while advertising intensity lies between 0 and 1, standardized coefficients help ease comparison.

The coefficients of the control variables are largely consistent with prior research and the earlier result noted from the correlation matrix in Table 4.3. Firms with faster sales growth, greater R&D expenditures, higher investment ratio, better stock returns or that are a member of the S&P 500 index tend to have larger future firm values; while larger and older firms with more tangible assets and more volatile stock returns tend to have smaller one-period ahead firm values. S&P 500 companies have higher firm performance than non-S&P500 companies, as the S&P 500 dummy has significant positive coefficients across all specifications. This is not surprising as members of S&P500 tend to be leaders in each industry.

4.6.3 Advertising and Components of Tobin's Q: Decomposing the Firm Value Effect

To gain further insights into the underlying sources that drive the firm value enhancement effect of firm advertising, I follow Fang *et al.* (2009) and decompose Tobin's Q measure into three components: ROA, OIP and LEV. If advertising improves a firm's operating profitability by boosting the size and accelerating the timing of future cash inflows, we should expect a positive relationship between advertising measures and ROA. On the other hand, if advertising (i) insulates the firm's cash flows from volatility and vulnerability and (ii) improves the firm's information environment, enhances investor recognition, and reduces information asymmetry, these combined effects should lead to a lower cost of capital. Hence a negative relation between advertising and OIP is expected. To test these conjectures, I perform regressions similar to the Q model but with the dependent variables being the three components of Q. Regression results are presented in column (1) – (9) of Table 4.6, with inclusion of industry and year fixed effects in model (3), (6) and (9).

The results show that advertising intensity is negatively related to operating profitability and to operating income to price ratio across all specifications. In the full specifications, the estimated coefficient for advertising intensity is -0.16 (*t*-stat = -5.38) in the ROA regression

and -0.157 (*t*-stat = -3.68) in the OIP regression respectively. Both coefficients are significant at the 1% level. H7, which states that advertising intensity is positively related to operating profitability, is not supported. H8, which states that advertising intensity is negatively related to the firm's cost of equity capital as measured by the operating income-to-price ratio, is supported. The findings suggest that advertising enhances firm value through reducing the firm's cost of capital but not by improving operating performance. The failure to detect a positive association between product market advertising and operating profitability might be due to the mechanical negative relation between the two. Furthermore, advertising is also positively associated with LEV, which is defined as the fraction of equity in a firm's capital structure. In other words, firms that are more advertising-intensive tend to use more equity financing. This result is consistent with the informational role of advertising. Product market advertising enriches the firm's information environment by acting as an information factor that attenuates the information asymmetry problem and reduces adverse selection costs, thus making informationally-driven securities, such as equity, more favourable than otherwise predicted by the pecking order theory (Myers and Majluf, 1984). Since LEV is in the denominator of the decomposition equation, an increase in LEV will lead to a decrease in TBQ. Therefore, the positive relationship between advertising and Tobin's Q is not driven by its relationship with financial leverage. In sum, I do not find support for a positive relation between advertising and firm value driven by higher operating performance. Our evidence lends credence to the value-enhancement effect of advertising being driven by *advertising's impact on reducing the firm's cost of capital.*

4.7 Robustness Tests

In this section I report results of three sets of robustness tests. The first test employs alternative measures of advertising. The second test aims to mitigate concerns about cross-sectional correlation in the data by applying the Fama & MacBeth (1973) procedure. Finally,

as advertising is a firm choice variable and thus likely to be endogenously determined, I investigate the sensitivity of our results controlling for the endogenous problem between advertising and firm value.

4.7.1   Alternative Measures of Advertising

The extant literature on the capital market implications of advertising expenditure adopts a number of alternative measures of advertising. In this section, I repeat the main analysis using additional definitions of advertising. Table 4.7 displays results of regressing Tobin's Q and its three components on different measures of advertising expenditure as the main explanatory variables. These measures include advertising scaled by total assets, the natural logarithm of advertising expenses and the natural logarithm of the two scaled advertising measures. Findings from this analysis are consistent with our main results: there is a positive and highly significant relation between a firm's advertising spending and its next-period value reflected by Tobin's Q regardless of how advertising expenditure is measured. The relation between advertising and firm value components, return-on-assets and operating-income-to-price, is more sensitive to the use of alternative measures of advertising. In the ROA regression, the estimated coefficients on advertising are negative (significant at 10%) in one specification, positive (significant at 10%) in another, and insignificant in the remaining two specifications. In the OIP regression, the estimated coefficients on advertising are significantly negative in two out of four specifications, with the remaining two insignificant. Taken together, the analysis reveals that advertising-intensive firms are associated with greater one-period ahead firm value and this relation is robust to advertising expenditures being measured in different ways.

4.7.2   Fama-MacBeth (1973) Regression

To mitigate concerns about cross-sectional correlation in the data, I estimate the models for each of the 31 years in our sample. Employing the procedure of Fama and MacBeth (1973),

I report the mean of the yearly coefficient estimates and evaluate statistical significance using Newey-West time-series standard errors of the estimates in Table 4.8. The analysis shows results consistent with our baseline specification: advertising has a significant and positive effect on firm value measured by Tobin's Q with a coefficient estimate of 1.404, significant at the 1% level with a *t*-stat of 4.35. Results for components of Q also remain qualitatively unchanged: advertising seems to induce a greater future firm value by virtue of a lower cost of equity capital. The coefficient estimate of advertising intensity in the OIP regression is -0.123 with a *t*-stat of -1.98, indicating significance at the 5% level. The relation between advertising and operating income continues to be negative and significant, though the significance level of 10% is not as high as in the main specification. Overall, our results are robust to the employment of the Fama-MacBeth (1973) regression approach that corrects for potential cross-sectional correlation.

4.7.3 Endogeneity

In the main tests, I have attempted to rule out reverse causality; *i.e.*, instead of advertising positively affecting Q, the reverse might be true: firms that have higher Q may have more funds to spend on advertising, by using one-period-lagged advertising expenditure as the explanatory variable. Further, unobservable characteristics that are correlated with both advertising and firm value may be present and make coefficient estimates biased. One often-cited factor is the quality of management, which is unobservable and might be correlated with both the dependent variable and the independent variable of interest. High quality managers may tend to manage firms with larger advertising budgets. High quality managers may also result in better firm performances. As a result, advertising may be positively correlated with firm value; however, higher firm value is not due to advertising but to better managers. To address this omitted variable problem, I adopt random-effect panel and fixed-effect panel regression techniques estimated using generalized least squares (GLS). In principle, firm fixed

effects can be used as an endogeneity control if the unobservable characteristics correlated with advertising and price informativeness are constant over time. Table 4.9 and 4.10 report results from fixed effects and random effect panel regressions respectively. I find that the coefficient of advertising intensity remains positive and statistically significant in the Tobin's Q regression. The impacts of advertising on ROA, OIP and LEV also remain robust after controlling for the omitted variable problems. The relation between advertising and ROA and OIP remain negative and significant, while that between advertising and LEV remains positive and significant. In sum, similar to the baseline results, an increase in advertising intensity leads to an enhancement in future firm value. Furthermore, such a value-augmenting effect is likely to come about through a reduction in the firm's cost of capital rather than an increase in operating performance. I conclude that the results are robust to the inclusion of fixed and random effects.

Nevertheless, the possibility that management is forward looking and may anticipate the impact of next period's Tobin's Q in setting the current period advertising budget still exists. To formally tackle this endogeneity problem, I adopt an instrumental variable estimation procedure using firm's advertising over sales in period *t-2* and industry average advertising and re-estimate the model using 2SLS approach. Table 4.11 shows results of 2SLS endogeneity tests, with the first-stage coefficient estimates displayed in column 1 and the second-stage of two-stage least squares regression results shown in columns 2-5. Again, I obtain very similar results to the findings from the baseline specifications shown in Table 4.5 and Table 4.6. Of primary focus, the coefficient estimate on the advertising intensity variable is positive and statistically significant at the 1% level in the specification with Tobin's Q as the dependent variable. In regressions with the three components of Q as dependent variables, the estimated coefficients on advertising intensity are of smaller magnitudes but comparable to those in the baseline models. In other words, advertising-intensive firms have lower next-period cost of capital as captured by the operating-income-to-price ratio and rely more on equity financing.

Similar to the baseline findings, our evidence points towards greater firm performance materializing via a cost of capital reduction rather than an increase in operating profitability. This is consistent with advertising making the firm stand out in a crowded market, strengthening investor recognition and demand, and lifting stock liquidity. Further, through its signalling mechanism, advertising could also attenuate the information asymmetry problem and lead to a lower cost of equity financing for the firm. Overall, the results from our 2SLS test indicate that the positive relation between advertising and firm value in our study does not appear to be driven by the endogeneity of advertising expenditure.

4.8   Summary and Conclusion

Marketing and finance theoretical models predict a positive relationship between product market advertising and firm value. In marketing, Srivastava *et al.* (1998) propose a conceptual framework in which advertising develops brand-based assets which in turn generate a pyramid of favourable product market outcomes for the firm. Firms with stronger brands earn greater, faster and safer cash flows. In finance, Merton's (1987) model of market equilibrium under incomplete information makes a case for advertising acting as a proxy for investor recognition; all else being equal, greater visibility and familiarity raise stock liquidity and lead to a lower cost of capital. These advertising-induced cash flow and cost of capital effects together indicate higher values for advertising-intensive firms. Despite strong *a priori* reasons for the positive impact of advertising on firm value, no comprehensive empirical attempts have been made to investigate this topic. Filling this important gap, this essay explores whether a firm's advertising significantly enhances firm value as measured by the firm's Tobin's Q ratio. It further investigates how this firm value effect comes to life – whether it is operating-performance-based, cost-of-capital based, or a combination of both.

Using a large sample of non-financial Compustat firms spanning the period 1972-2012, this essay shows consistent evidence that advertising positively affects future firm performance,

with a reduction in the cost of capital for the advertising firm as the underlying driver that gives rise to such value-enhancement. Further, firms that are more effective in maximising the advertising dollars to generate additional sales reap a greater increase in market valuation. Our findings are robust to various methodological approaches, such as alternative advertising measures, alternative model specifications and controlling for endogeneity in choosing advertising spending. In a crowded market where investors are resource constrained and cannot be equally informed about all investments, engaging in advertising activities can be one mechanism for the firm to gain greater visibility and attention and increase investor demand. Advertising-intensive firms, all else being equal, can be rewarded with a lower cost of raising equity capital and ultimately greater firm value.

This chapter contributes to the research stream in the marketing - finance interface by expanding our knowledge of how investors impound the effects of a firm's marketing activities, represented by its advertising, into their market valuation. This is the first study that seeks to identify the underlying mechanisms (*i.e.*, through operating profitability improvement or cost of capital reduction) that trigger higher value associated with advertising. By providing evidence on how the impact from advertising, acting as an information proxy that expands investor awareness, is factored into the cost of equity capital, this chapter also adds to the unresolved debate in accounting and finance research with regard to the pricing of information risks.

Table 4.1: Variable Definition

Variable	Definition
Tobin's Q (TBQ)	Market Value of Assets/Book Value of Assets (AT), where Market Value of Assets is defined as Market Value of Equity (Stock Price(PRCC_F)*Shares Outstanding (CSHPRI)) plus Book Assets (AT) minus Book Equity (CEQ) minus Deferred Taxes (TXDB).
Advertising Intensity (ADVS)	Advertising expense (XAD)/ Sales (SALE)
Advertising-to-Assets (ADVA)	Advertising expense (XAD)/ Book Value of Assets (AT)
Log(Advertising) (LNADV)	Natural logarithm of Advertising expense (XAD).
Log(Advertising Intensity) (LNADVS)	Natural logarithm of the ratio of (Advertising expense (XAD)/Sales (SALE))
Log(Advertising-to-Assets) (LNADVA)	Natural logarithm of the ratio of (Advertising expense (XAD)/Book Value of Assets (AT))
Advertising Efficiency (ADVE)	Advertising efficiency measured as the percentage change in Sales (SALE) divided by the change in advertising expense (XAD), where percentage in each variable is measured as change in the current year versus the average in the previous two years
Return on Assets (ROA)	Operating Income after Depreciation (OIADP) / Book Value of Assets (AT)
Operating Income-to-Price (OIP)	Operating income after Depreciation / Market value of equity
Leverage (LEV)	Market Value of Equity / Market Value of Assets
Sales Growth (SG)	First difference of Log (Sales (SALES))
Firm Size (SIZE)	Natural logarithm of Book Value of Assets (AT)
R&D (RND)	R&D Expense (XRD) / Sales (SALE)
Tangibility (TANG)	Net Property, Plant and Equipment (PPENT) / Book Value of Assets (AT)
Investment Ratio (IVR)	(Capital Expenditure (CAPX) + Acquisition (AQC)) / Book Value of Assets (AT)
Firm Age (AGE)	Natural logarithm of the firm's CRSP Age, where CRSP Age is defined as the number of years the firm appears in the CRSP database. Data comes from CRSP monthly file.
Stock Return (RET)	One-year cumulative stock return. Data comes from CRSP monthly file.
Stock Return Volatility (SDRET)	Annualized standard deviation of monthly stock return. Data comes from CRSP monthly file.
S&P 500 Dummy (S&P500)	Dummy variable equal to one if the firm is in the S&P 500 index and zero otherwise. Data comes from Compustats Index Constituents file.

Table 4.2: Descriptive Statistics

Panel A: Descriptive statistics for the sample firms

	Mean	S.D.	5%	25%	Median	75%	95%
TBQ	1.847	1.532	0.704	0.976	1.326	2.082	4.833
ROA	0.037	0.213	-0.365	0.007	0.081	0.143	0.256
OIP	0.047	0.368	-0.453	0.009	0.088	0.175	0.446
LEV	0.618	0.250	0.159	0.429	0.656	0.832	0.954
ADVS	0.035	0.052	0.001	0.008	0.018	0.038	0.127
LNADV	0.864	2.682	-3.324	-1.091	0.710	2.705	5.633
SG	0.114	0.472	-0.387	-0.007	0.098	0.225	0.735
TANG	0.274	0.204	0.030	0.115	0.229	0.378	0.712
IVR	0.085	0.087	0.007	0.028	0.057	0.108	0.265
SIZE	4.819	2.343	1.286	3.108	4.583	6.353	9.123
RND	0.093	0.226	0.000	0.002	0.025	0.090	0.329
AGE	9.078	8.723	0.000	2.000	6.000	13.000	29.000
RET	0.130	0.588	-0.842	-0.191	0.122	0.432	1.136
SDRET	0.149	0.091	0.052	0.088	0.127	0.182	0.328
SP500	0.104	0.305	0.000	0.000	0.000	0.000	1.000
Obs.				68,142			

Panel B: Summary Statistics of the sample firms by year

Year	ADVS		TBQ		Number of firms with non-missing advertising expenditure & TBQ
	Mean	Median	Mean	Median	
1972	0.025	0.014	1.869	1.249	1,464
1973	0.023	0.014	1.327	0.934	1,786
1974	0.023	0.013	0.994	0.814	1,883
1975	0.023	0.014	1.146	0.910	1,819
1976	0.024	0.015	1.180	0.958	1,789
1977	0.025	0.015	1.162	0.977	1,733
1978	0.025	0.015	1.236	1.001	1,681
1979	0.025	0.015	1.346	1.015	1,651
1980	0.028	0.017	1.638	1.105	1,619
1981	0.033	0.019	1.558	1.091	1,637
1982	0.035	0.020	1.809	1.231	1,642
1983	0.038	0.021	2.017	1.441	1,864
1984	0.040	0.022	1.759	1.327	1,922
1985	0.040	0.022	1.946	1.406	1,892
1986	0.041	0.023	2.011	1.439	1,977
1987	0.040	0.022	1.832	1.439	2,045
1988	0.039	0.021	1.822	1.347	1,957
1989	0.037	0.020	1.893	1.383	1,850
1990	0.038	0.021	1.713	1.225	1,788
1991	0.036	0.021	2.092	1.429	1,783
1992	0.037	0.022	2.133	1.540	1,779
1993	0.036	0.021	2.208	1.655	1,853
1994	0.045	0.024	1.938	1.512	915
1995	0.049	0.026	2.082	1.597	934
1996	0.047	0.025	2.112	1.578	1,164
1997	0.049	0.025	2.170	1.640	1,301
1998	0.048	0.026	2.143	1.462	1,300
1999	0.060	0.027	2.769	1.678	1,500
2000	0.061	0.025	2.001	1.317	1,666
2001	0.042	0.020	2.027	1.423	1,693
2002	0.031	0.015	1.708	1.282	1,702
2003	0.030	0.014	2.261	1.690	1,733
2004	0.031	0.014	2.255	1.768	1,828

2005	0.031	0.013	2.268	1.746	1,830
2006	0.030	0.013	2.264	1.789	1,833
2007	0.031	0.012	2.154	1.653	1,799
2008	0.030	0.012	1.469	1.161	1,723
2009	0.028	0.011	1.763	1.392	1,658
2010	0.028	0.011	1.966	1.485	1,617
2011	0.029	0.011	1.811	1.392	1,540
2012	0.028	0.011	1.925	1.481	1,081

Table 4.3: Correlation Matrix

Number of observations used in the correlation matrix is 68,142. Variable definitions are provided in Table 4.1. Pearson correlations are reported above the main diagonal and Spearman correlations are reported below the diagonal. All correlation coefficients are significant at least at the 5% level, except those with [#].

	TBQ	OIP	ROA	LEV	ADVS	LNADVS	SG	TANG	IVR	SIZE	RND	AGE	RET	SDRET	SP500
TBQ		-0.093	-0.168	0.53218	0.179	0.125	0.155	-0.131	0.067	-0.100	0.309	-0.068	0.219	0.136	0.006
OIP	-0.348		0.619	0.021	-0.163	-0.112	0.101	0.088	0.023	0.181	-0.262	0.023	0.201	-0.310	0.060
ROA	0.196	0.660		0.075	-0.266	-0.147	0.081	0.101	0.026	0.324	-0.528	0.127	0.192	-0.396	0.110
LEV	0.700	-0.315	0.237		0.123	-0.064	0.138	-0.189	0.055	-0.071	0.241	-0.019	0.199	-0.060	0.022
ADVS	0.106	-0.086	-0.021	0.080		0.721	0.026	-0.089	0.005	-0.045	0.295	-0.049	-0.047	0.096	0.026
LNADVS	0.042	0.222	0.280	-0.091	0.449		0.010[#]	-0.013	0.025	0.008[#]	0.159	-0.038	-0.037	0.016	0.075
SG	0.255	0.101	0.244	0.239	-0.007[#]	-0.033		-0.018	0.151	0.037	-0.006	-0.104	0.083	0.020	-0.007
TANG	-0.136	0.223	0.131	-0.218	-0.013	0.163	-0.030		0.427	0.123	-0.204	-0.002[#]	-0.009[#]	-0.131	0.076
IVR	0.131	0.096	0.177	0.069	0.015	0.139	0.264	0.512		0.032	-0.036	-0.115	-0.024	-0.043	-0.005[#]
SIZE	0.033	0.215	0.259	-0.080	0.046	0.838	-0.016	0.138	0.141		-0.150	0.454	0.021	-0.361	0.388
RND	0.333	-0.449	-0.272	0.413	0.011[#]	-0.203	0.041	-0.437	-0.134	-0.080		-0.102	-0.038	0.223	-0.058
AGE	-0.021	0.037	0.072	-0.070	-0.022	0.353	-0.246	0.034	-0.097	0.402	-0.039		0.041	-0.227	0.246
RET	0.230	0.106	0.233	0.182	-0.031	0.036	0.140	0.004[#]	-0.008[#]	0.047	-0.033	0.096		0.230	0.002[#]
SDRET	0.024	-0.295	-0.363	-0.041	-0.024	-0.382	0.036	-0.176	-0.112	-0.408	0.184	-0.279	0.091		-0.180
SP500	0.054	0.092	0.145	0.009[#]	0.085	0.351	-0.045	0.106	0.057	0.354	-0.012[#]	0.200	0.010	-0.236	

Table 4.4: Univariate Analysis – The Effect of Advertising on Firm Value

Advertising quintile	Size quintile					Average values of TBQ across size quintiles
	Smallest	2	3	4	Largest	
Lowest	2.35282	1.80419	1.70421	1.58641	1.47324	1.784174
2	2.20499	1.71756	1.62985	1.62555	1.49139	1.733868
3	2.14559	1.6986	1.63474	1.66781	1.58044	1.745436
4	2.29591	1.75488	1.64447	1.63874	1.71931	1.810662
Highest	3.04921	1.99295	1.82172	1.77346	2.03506	2.13448
Difference (high-low)	0.69639	0.18876	0.11751	0.18705	0.56182	0.350306
t-stat	(-4.11)***	(-1.45)	(-1.36)	(-2.12)**	(-5.40)***	(-5.71)***

The firms are first partitioned into quintiles based on size. Within each size quintile, the firms are further sorted based on advertising intensity. The portfolios are formed annually. Equity market value is computed at the end of the previous fiscal year. Advertising intensity is measured as the ratio of advertising expense over sales revenue. The difference is computed as the average value of Tobin's Q in the largest advertising quintile minus that in the lowest advertising quintile. The significance levels of the differences are based on a two-tailed *t*-test with the sampling frequency for each cell given by the number of firms in each cell. *** (**) (*) indicates significance at the 1% (5%) (10%) level.

Table 4.5: Relation between Advertising and Firm Value

Pooled ordinary least squares (OLS) regression results for the baseline model are shown in column 1-7. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in regressions (5) to (7) but the coefficients are not reported. Coefficient estimates are shown in bold and *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variable	Baseline regression with TBQ as dependent variable						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	1.709***	1.840***	1.684***	1.735***	1.853***	1.900***	1.885***
	(226.94)	(299.19)	(49.39)	(50.74)	(11.42)	(11.35)	(11.31)
ADVS	3.935***		2.082***		1.391***		1.294***
	(22.76)		(8.87)		(5.77)		(5.33)
ADVE		0.005***		0.004		0.006**	0.005**
		(2.74)		(1.52)		(2.48)	(2.27)
SG			0.377***	0.389***	0.345***	0.352***	0.348***
			(13.21)	(13.3)	(12.81)	(12.78)	(12.63)
TANG			-1.037***	-1.062***	-0.516***	-0.541***	-0.518***
			(-22.72)	(-22.84)	(-8.87)	(-9.18)	(-8.78)
IVR			2.031***	2.013***	1.570***	1.559***	1.549***
			(15.71)	(15.22)	(12.5)	(12.19)	(12.12)
SIZE			0.004	0.005	-0.019***	-0.019***	-0.019***
			(0.75)	(1.03)	(-3.79)	(-3.84)	(-3.82)
RND			1.678***	1.811***	1.306***	1.389***	1.314***
			(23.63)	(24.78)	(18.59)	(19.19)	(18.19)
AGE			0.002**	0.001	-0.002**	-0.002**	-0.002**
			(2.01)	(1.25)	(-1.84)	(-2.22)	(-2.04)
RET			0.163***	0.148***	0.177***	0.167***	0.175***
			(9.72)	(8.8)	(11.04)	(10.35)	(10.82)
SDRET			0.268**	0.332***	-0.156	-0.128	-0.182
			(2.24)	(2.77)	(-1.36)	(-1.11)	(-1.58)
SP500			0.100***	0.118***	0.122***	0.131***	0.123***
			(3.96)	(4.58)	(4.89)	(5.17)	(4.85)
Industry FE	No	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes
Obs	63,603	62,434	38,021	37,229	38,021	37,229	37,229
Adjusted R^2	0.0182	0.0001	0.1054	0.1008	0.1812	0.1796	0.1811

Table 4.6: Relation between Advertising and Q components

Pooled ordinary least squares (OLS) regression results for models with ROA, OIP and LEV as dependent variables. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included where indicated but the coefficients are not reported. Coefficient estimates are shown in bold and their *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variable	Baseline regression with ROA, OIP and LEV as dependent variables								
	ROA			OIP			LEV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	0.056***	0.065***	-0.066***	0.068***	0.104***	-0.010***	0.602***	0.711***	0.703***
	(54.14)	(15.04)	(-3.79)	(37.68)	(13.20)	(-2.83)	(500.92)	(142.79)	(32.83)
ADVS	-0.516***	-0.155***	-0.160***	-0.578***	-0.177***	-0.157***	0.455***	0.152***	0.108***
	(-20.86)	(-5.38)	(-5.38)	(-16.73)	(-4.23)	(-3.68)	(23.97)	(6.27)	(4.64)
SG		-0.003	-0.001		0.01*	0.014**		0.040***	0.036***
		(-0.95)	(-0.31)		(1.66)	(2.43)		(11.58)	(11.7)
TANG		0.028***	-0.025***		0.158***	0.012		-0.267***	-0.106***
		(4.99)	(-3.15)		(14.33)	(0.77)		(-35.72)	(-11.74)
IVR		0.028*	0.070***		-0.198***	-0.086***		0.381***	0.268***
		(1.79)	(4.49)		(-7.04)	(-3.12)		(20.46)	(15.45)
SIZE		0.015***	0.019***		0.009***	0.018***		-0.006***	-0.009***
		(26.15)	(32.15)		(9.89)	(18.68)		(-8.58)	(-13.22)
RND		-0.273***	-0.244***		-0.179***	-0.110***		0.208***	0.124***
		(-31.71)	(-27.87)		(-17.08)	(-10.96)		(30.46)	(21.42)
AGE		-0.000**	0.000		-0.001***	0.000		0.001***	-0.000
		(-2.36)	(0.43)		(-4.94)	(0.84)		(8.19)	(-0.13)
RET		0.044***	0.038***		0.032***	0.021***		0.033***	0.038***
		(21.10)	(18.89)		(9.06)	(6)		(15.03)	(18.89)
SDRET		-0.551***	-0.438***		-0.692***	-0.449***		-0.286***	-0.357***
		(-35.74)	(-28.31)		(-23.38)	(-15.27)		(-17.78)	(-23.51)
SP500		-0.004	-0.015***		-0.001	-0.032***		0.016***	0.024***
		(-1.32)	(-5.37)		(-0.2)	(-7.08)		(4.15)	(6.48)
Industry FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Obs	67,890	40,405	40,405	65,685	39,397	39,397	63,603	38,021	38,021
Adjusted R^2	0.0162	0.2318	0.2782	0.0068	0.0825	0.1727	0.0091	0.0982	0.2602

Table 4.7: Alternative measures of advertising

Pooled ordinary least squares (OLS) regression results for models with TBQ, ROA, OIP and LEV as dependent variables and alternative measures of advertising. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and their *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variables	TBQ				ROA				OIP				LEV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Intercept	1.845***	2.022***	2.154***	2.049***	-0.043**	-0.032*	-0.046**	-0.032*	-0.100***	-0.092**	-0.111***	-0.093**	0.703***	0.693***	0.725***	0.697***
	(11.33)	(11.71)	(12.39)	(11.85)	(-2.37)	(-1.7)	(-2.43)	(-1.71)	(-2.83)	(-2.45)	(-2.95)	(-2.47)	(32.78)	(31.25)	(32.38)	(31.39)
ADVA	0.858***				-0.047**				-0.059*				0.059***			
	(5.12)				(-2.03)				(-1.69)				(2.95)			
LNADV		0.025***				0.001*				0.000				0.000		
		(3.71)				(1.65)				(0.19)				(-0.26)		
LNADVS			0.051***				-0.001				-0.004**				0.006***	
			(6.87)				(-1.51)				(-2.27)				(6.44)	
LNADVA				0.030***				0.001				0.000				0.001
				(4.38)				(1.55)				(0.03)				(0.73)
SG	0.350***	0.352***	0.352***	0.352***	-0.002	-0.002	-0.002	-0.002	0.013**	0.012**	0.012**	0.012**	0.036***	0.036***	0.036***	0.036***
	(12.99)	(12.72)	(12.74)	(12.73)	(-0.49)	(-0.52)	(-0.53)	(-0.52)	(2.32)	(2.05)	(2.05)	(2.05)	(11.84)	(11.63)	(11.64)	(11.64)
TANG	-0.526***	-0.538***	-0.525***	-0.538***	0.022***	-0.017**	-0.018**	-0.017**	0.014	0.018	0.016	0.018	-0.107***	-0.108***	-0.106***	-0.108***
	(-9.04)	(-9.11)	(-8.9)	(-9.11)	(-2.83)	(-2.18)	(-2.29)	(-2.19)	(0.89)	(1.13)	(1.04)	(1.13)	(-11.84)	(-11.84)	(-11.6)	(-11.83)
IVR	1.581***	1.555***	1.541***	1.557***	0.068***	0.068***	0.068***	0.068***	-0.087***	-0.092***	-0.091***	-0.092***	0.269***	0.263***	0.262***	0.264***
	(12.59)	(12.24)	(12.13)	(12.25)	(4.39)	(4.38)	(4.38)	(4.38)	(-3.17)	(-3.3)	(-3.27)	(-3.3)	(15.50)	(14.99)	(14.96)	(15.01)
SIZE	-0.017***	-0.039***	-0.017***	-0.014***	0.019***	0.017***	0.019***	0.019***	0.018***	0.018***	0.018***	0.018***	-0.009***	-0.008***	-0.009***	-0.008***
	(-3.57)	(-4.68)	(-3.36)	(-2.9)	(32.04)	(15.91)	(31.15)	(31.40)	(18.64)	(10.02)	(18.25)	(18.22)	(-13.11)	(-7.54)	(-12.96)	(-12.68)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
RND	1.401***	1.474***	1.411***	1.477***	-0.254***	-0.257***	-0.257***	-0.257***	-0.120***	-0.121***	-0.118***	-0.121***	0.131***	0.138***	0.132***	0.138***
	(19.82)	(19.46)	(18.78)	(19.50)	(-29.04)	(-27.52)	(-27.68)	(-27.54)	(-12.05)	(-11.74)	(-11.56)	(-11.77)	(22.87)	(22.40)	(21.51)	(22.48)
AGE	-0.002*	-0.002**	-0.002*	-0.002**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(-1.87)	(-2.26)	(-1.9)	(-2.18)	(0.44)	(0.83)	(0.66)	(0.85)	(0.88)	(0.88)	(0.72)	(0.88)	(-0.16)	(-0.45)	(-0.07)	(-0.41)
RET	0.172***	0.176***	0.180***	0.177***	0.038***	0.038***	0.038***	0.038***	0.021***	0.021***	0.020***	0.021***	0.037***	0.037***	0.038***	0.037***
	(10.78)	(10.91)	(11.15)	(10.94)	(19.18)	(19.09)	(18.95)	(19.09)	(6.19)	(5.99)	(5.87)	(5.99)	(18.72)	(18.55)	(18.90)	(18.59)
SDRET	-0.123	-0.147	-0.169	-0.148	-0.442***	-0.436***	-0.434***	-0.436***	-0.454***	-0.449***	-0.447***	-0.449***	-0.354***	-0.361***	-0.364***	-0.361***
	(-1.08)	(-1.27)	(-1.46)	(-1.28)	(-28.52)	(-27.84)	(-27.78)	(-27.84)	(-15.43)	(-15.06)	(-15)	(-15.06)	(-23.35)	(-23.55)	(-23.77)	(-23.57)
SP500	0.123***	0.117***	0.114***	0.116***	-0.016***	-0.017***	-0.016***	-0.017***	-0.032***	-0.032***	-0.031***	-0.032***	0.024***	0.024***	0.022***	0.024***
	(4.93)	(4.67)	(4.55)	(4.64)	(-5.54)	(-5.93)	(-5.67)	(-5.92)	(-7.18)	(-7.2)	(-7.03)	(-7.19)	(6.51)	(6.42)	(6.05)	(6.35)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	38,021	37,436	37,436	37,436	40,405	39,753	39,753	39,753	39,397	38,807	38,807	38,807	38,021	37,436	37,436	37,436
Adjusted R^2	0.1803	0.1816	0.1825	0.1817	0.2775	0.2712	0.2712	0.2712	0.1723	0.1705	0.1706	0.1705	0.2599	0.2631	0.264	0.2631

Table 4.8: Fama-MacBeth (1973) regression – Relation between Advertising and TBQ and components of TBQ

Fama-MacBeth (1973) regression results for models with TBQ, ROA, OIP and LEV as dependent variables. Industry fixed effects based on 2-digit SIC codes are included in all regressions but the coefficients are not reported. Coefficient estimates are shown in bold and their *t*-statistics are displayed in parentheses below. Standard errors are Newey-West standard errors. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variables	TBQ	ROA	OIP	LEV
Intercept	2.015***	-0.051	-0.051	0.664***
	(5.57)	(-1.4)	(0.92)	(20.73)
ADVS	1.404***	-0.107*	-0.123**	0.169***
	(4.35)	(-1.89)	(-1.98)	(2.74)
SG	0.372***	0.002	0.014***	0.037***
	(8.77)	(0.32)	(3.18)	(10.28)
TANG	-0.604***	-0.024***	0.011	-0.117***
	(-5.71)	(-2.84)	(0.6)	(-5.79)
IVR	1.473***	0.069***	-0.098***	0.277***
	(5.79)	(2.59)	(-3.07)	(5.97)
SIZE	-0.007	0.019***	0.018***	-0.01***
	(-0.3)	(7.46)	(8.38)	(-4.18)
RND	1.582***	-0.239***	-0.110***	0.138***
	(5.86)	(-17.33)	(-6.11)	(9.22)
AGE	-0.003	0.000	0.000	0.000
	(-0.92)	(-0.39)	(-0.66)	(0.71)
RET	0.161***	0.036***	0.021***	0.038***
	(4.66)	(10.36)	(6.33)	(10.88)
SDRET	-0.027	-0.410***	-0.423***	-0.372***
	(-0.08)	(-15.68)	(-10.84)	(-8.36)
SP500	0.164***	-0.011*	-0.029***	0.026***
	(5.01)	(-1.81)	(-4.3)	(5.51)
Industry FE	Yes	Yes	Yes	Yes
Ave Obs	41	41	41	41

Table 4.9: Fixed-effect Panel Regression – Relation between Advertising and TBQ and components of TBQ

Fixed-effect panel regression results for models with TBQ, ROA, OIP and LEV as dependent variables. Industry fixed effects based on 2-digit SIC codes are included where indicated but the coefficients are not reported. All independent variables are lagged for one period. Coefficient estimates are shown in bold and their *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variable	Fixed-effect regression with TBQ, ROA, OIP and LEV as dependent variables			
	TBQ	**ROA**	**OIP**	**LEV**
	(1)	(2)	(3)	(4)
Intercept	**1.853*****	**-0.042*****	**-0.100*****	**0.703*****
	(14.20)	(-2.66)	(-3.64)	(37.89)
ADVS	**1.391*****	**-0.161*****	**-0.157*****	**0.108*****
	(8.81)	(-8.22)	(-4.71)	(4.81)
SG	**0.345*****	**-0.001**	**0.014*****	**0.036*****
	(18.82)	(-0.49)	(3.59)	(13.64)
TANG	**-0.516*****	**-0.024*****	**0.012**	**-0.106*****
	(-8.96)	(-3.46)	(0.97)	(-12.98)
IVR	**1.570*****	**0.070*****	**-0.086*****	**0.268*****
	(14.34)	(5.18)	(-3.71)	(17.22)
SIZE	**-0.018*****	**0.019*****	**0.018*****	**-0.009*****
	(-4.13)	(35.09)	(19.36)	(-13.62)
RND	**1.306*****	**-0.244*****	**-0.110*****	**0.124*****
	(33.91)	(-51.13)	(-13.5)	(22.68)
AGE	**-0.002***	**0.000**	**0.000**	**0.000**
	(-1.66)	(0.31)	(0.79)	(-0.13)
RET	**0.177*****	**0.038*****	**0.020*****	**0.038*****
	(13.23)	(22.81)	(7.27)	(19.84)
SDRET	**-0.156**	**-0.437*****	**-0.449*****	**-0.356*****
	(-1.6)	(-36.2)	(-21.77)	(-25.62)
SP500	**0.122*****	**-0.015*****	**-0.032*****	**0.024*****
	(4.36)	(-4.42)	(-5.45)	(6.03)
Obs	38,021	38,021	39,397	38,021
Adjusted R^2	0.1836	0.2806	0.1750	0.2623

Table 4.10: Random effect Panel Regression – Relation between Advertising and TBQ and components of TBQ

Random effect panel regression results for models with TBQ, ROA, OIP and LEV as dependent variables. Industry fixed effects based on 2-digit SIC codes are included where indicated but the coefficients are not reported. All independent variables are lagged for one period. Coefficient estimates are shown in bold and their t-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variable	Random-effect regression with TBQ, ROA, OIP and LEV as dependent variables			
	TBQ	ROA	OIP	LEV
	(1)	(2)	(3)	(4)
ADVS	1.115***	-0.143***	-0.175***	0.725***
	(6.52)	(-7.65)	(-5.25)	(32.38)
SG	0.352***	-0.002	0.012 **	0.036***
	(12.74)	(-0.52)	(2.05)	(11.64)
TANG	-0.525***	-0.017**	0.016	-0.106***
	(-8.9)	(-2.19)	(1.04)	(-11.6)
IVR	1.541***	0.068***	-0.091***	0.262***
	(12.13)	(4.38)	(-3.27)	(14.96)
SIZE	-0.017***	0.019***	0.018***	-0.009***
	(-3.36)	(31.40)	(18.25)	(-12.96)
RND	1.411***	-0.257***	-0.118***	0.132***
	(18.78)	(-27.54)	(-11.56)	(21.51)
AGE	-0.002*	0.000	0.000	0.000
	(-1.9)	(0.85)	(0.72)	(-0.07)
RET	0.180***	0.038***	0.020***	0.038***
	(11.15)	(19.09)	(5.87)	(18.90)
SDRET	-0.169	-0.436***	-0.447***	-0.364***
	(-1.46)	(-27.84)	(-15)	(-23.77)
SP500	0.114***	-0.017***	-0.031***	0.022***
	(4.55)	(-5.92)	(-7.03)	(6.05)
Intercept	1.526***	-0.025***	-0.115***	0.528***
	(08.55)	(-1.89)	(-4.02)	(28.85)
Obs	38,021	38,021	39,397	38,021
Adjusted R^2	0.1725	0.3012	0.1675	0.2855

Table 4.11: Endogeneity – Two-stage Least Squares Regression

2SLS regressions results. Column 1 presents the first-stage regression results with firm average advertising in previous two years as the instrument. Column 2-5 present the second-stage regression results with TBQ, ROA, OIP, and LEV as dependent variables, respectively. Industry fixed effects based on 2-digit SIC codes and year fixed effects are included in all regressions but the coefficients are not reported. All independent variables are lagged for one period. Coefficient estimates are shown in bold and their *t*-statistics are displayed in parentheses below. Standard errors are adjusted for both heteroskedasticity and clustering at the firm level. *** (**) (*) indicates significance at 1% (5%) (10%) two-tailed level.

Dependent Variable	First-stage	Second-stage			
	ADVS	TBQ	ROA	OIP	LEV
	(1)	(2)	(3)	(4)	(5)
Intercept	-0.011	0.951	-0.862***	-2.079***	0.971***
	(-0.27)	(0.65)	(-4.61)	(-6.55)	(4.63)
LADV		1.834***	-0.190***	-0.137**	0.228***
		(6.68)	(-5.47)	(-2.32)	(5.84)
INDADV	0.546***				
	(137.37)				
SG	0.002***	0.341***	-0.002	0.013***	0.035***
	(3.20)	(18.57)	(-0.95)	(3.28)	(13.35)
TANG	-0.009***	-0.515***	-0.025***	0.011	-0.104***
	(-5.86)	(-8.92)	(-3.48)	(0.87)	(-12.62)
IVR	0.013***	1.558***	0.080***	-0.086***	0.267***
	(4.31)	(14.22)	(5.72)	(-3.63)	(17.10)
SIZE	0.000	-0.018***	0.020***	0.018***	-0.009***
	(-0.16)	(-4.02)	(34.68)	(18.51)	(-13.67)
RND	0.041***	1.277***	-0.251***	-0.112***	0.118***
	(41.03)	(31.47)	(-48.78)	(-12.84)	(20.51)
AGE	-0.000**	-0.002*	0.000	0.000	0.000
	(-2.01)	(-1.74)	(0.49)	(0.95)	(0.05)
RET	-0.004***	0.180***	0.038***	0.020***	0.038***
	(-12.66)	(13.42)	(22.54)	(6.92)	(20.06)
SDRET	0.025***	-0.182*	-0.440***	-0.450***	-0.363***
	(9.46)	(-1.85)	(-35.24)	(-21.27)	(-25.91)
SP500	0.004***	0.119***	-0.017***	-0.032***	0.023***
	(5.45)	(4.26)	(-4.8)	(-5.39)	(5.85)
Adjusted R^2	0.4372	0.18	0.2888	0.1728	0.2605

5.1   Summary

In this thesis, I investigate whether firms that spend more on advertising are able to reap rewards, beyond the traditional product market, in the capital market. In the first empirical study, I investigate whether advertising-intensive firms are associated with greater stock price informativeness. It is well documented in the literature that advertising efforts by a firm bring about an array of positive product market outcomes including stronger brand equity, greater customer satisfaction and lower cash flow volatility (Aaker, 1996; Ailawadi *et al.*, 2003; Kaul and Wittink, 1995). Looking beyond these product market benefits, this empirical study investigates the informational role that advertising plays in the capital market.

Using a large sample of non-financial Compustat firms spanning the period 1972-2012 and a multitude of tests, I find consistent evidence that advertising positively affects future stock price informativeness. Further, via the informational role of advertising, this effect is more pronounced among firms that suffer a higher degree of information asymmetry. The findings are robust to various methodological approaches, such as alternative advertising and price informativeness measures, different model specifications and after controlling for endogeneity in choosing advertising spending. The results offer strong support for an informational interpretation of advertising in the capital market. Engaging in advertising activities can be one important avenue for the firm to gain greater visibility, enhancing its information environment and providing stronger incentives for private informed trading. These factors lead to stock prices that track fundamental values more closely, that is advertising-intensive firms have more informative stock prices, all else equal.

The second empirical study explores the impact of the firm's advertising on the aggressiveness of its corporate tax strategies. I investigate whether advertising-intensive firms

are less likely to engage in extreme tax avoidance, all else being equal. This is because firms that invest more heavily in advertising have built up strong brand equity and a positive corporate image over time. With more reputational assets at stake, these firms have a stronger incentive to steer away from negative publicity that might arise as a result of aggressive tax avoidance. Additionally, the improved information environment induced by advertising further deters aggressive tax activities, which usually require an opaque environment to thrive. I find results that strongly support this empirical relation: the higher the advertising expenditure, the less likely a firm is to engage in aggressive tax avoidance. My findings also suggest that the relation between advertising and corporate tax avoidance is not sensitive to alternative measures of advertising and tax aggressiveness as well as alternative model specifications. The results also hold after I address endogeneity concerns using a 2SLS technique. Additional tests show that firms that have a stronger brand, as measured by Interbrand membership, and firms that suffer from a greater degree of information asymmetry, are even less tax aggressive. These additional findings provide further corroborating evidence for both the reputation channel and the information channel as argued above.

In the final empirical study, I examine the important question of whether the positive effects of advertising documented in the previous chapters have an effect on firm value. In other words, I ask whether a firm with higher advertising expenditure is associated with greater firm value and investigate whether the greater value is a result of improved operating profitability or a lower cost of equity capital. I find that firms that engage in more intensive advertising activities have greater valuation as measured by Tobin's Q. The results hold after I include other measures of firm value as control variables in the regression model. The results are also robust to the employment of alternative measures of advertising and regression specifications. To mitigate endogeneity concerns on the positive relation between advertising

and firm value, I conduct firm fixed/random effects panel regression and 2SLS regression. The association between greater advertising and higher firm value continues to hold in these tests.

Greater value can come about as a result of either better operating performance, or a lower cost of equity capital, or a combination of both. By decomposing the measure of Tobin's Q into its components, I attempt to disentangle the advertising-induced value-enhancing effect and address the channel through which advertising brings higher valuation. The results indicate that advertising, potentially through its role as an information proxy, increases investor's attention, boosts firm visibility and enriches the firm's information environment. These effects essentially result in lower information risk for advertising-intensive firms. Consequently, these firms are associated with a lower cost of equity capital.

Caution needs to be taken when interpreting the positive relationship between a firm's advertising expenditures and its stock price informativeness, its lower propensity to engage in extreme tax avoidance and ultimately higher value. It might be naïve to simply draw the conclusion that firms always benefit from advertising more. There can be various scenarios in which more is not always better. It might be possible that advertising is associated with low quality firms that attempt to use the advertising expenditure to mask a lack of substance to the business product. In this context, firms advertise heavily because the product is low quality and requires the extra advertising spend. It might also be the case that advertising is positive up to a certain point but that too much advertising can be detrimental to firm value as the effectiveness of marketing spend can no longer create additional sales. Not all advertising dollars are created equal. An old adage in advertising is: half the money spent on advertising is wasted; the trouble is nobody knows which half! Effective advertising that can create additional revenues over and above the advertising outlay does matter. Nejadmalayeri *et al.* (2013) find that it is the effectiveness of advertising campaigns, not the sheer size of advertising budget that matters to bond investors. Without proven effectiveness in improving revenues,

large advertising expenditures can be seen as negatively impacting a firm's ability to service debts. Their results show that firms with ineffective advertising experience reduced bond market liquidity and a higher cost of debt. Without a real positive economic impact, advertising has little or no value for bond investors.[70] For future research, a more refined measure that better captures advertising efficiency and effectiveness would prove useful.[71] Finally, managers opportunistic overspending of advertising budget that is detrimental to firm value is also another issue worth considering. Agency theory predicts that the misalignment of interests between shareholders and managers could lead to agency problems, that is, managers engage in activities for their own benefits rather than the benefits of the firm's shareholders (Jensen and Meckling, 1976). A well-documented agency problem is managerial ''empire building'', which refers to managers' tendencies to grow the firm beyond its optimal size or to maintain unutilized resources with the purpose of increasing personal utility from status, power, compensation, and prestige (Jensen, 1986; Stulz, 1990; Masulis *et al.*, 2007; Hope and Thomas, 2008). In a widely cited article, Jensen (1986) presents a "free cash flow" theory, whereby firms with high free cash flows and low investment opportunities have incentives to grow beyond their optimal size. By growing the firm, managers gain by increasing the resources under their control, increasing their prestige (Stulz, 1990), and possibly increasing their compensation (since compensation is often tied to sales growth, firm size, and diversification) (Jensen and Murphy, 1990). Spending excessively on advertising to over-promote the firm, especially when the advertising itself is not directly linked to the firm's business product, can be viewed as a subtle form of this empire-building behaviour. Chen *et al.* (2012) find strong evidence that the asymmetrical behaviour of selling, general and administrative (SG&A) costs

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[70] To this end, I have attempted to employ a scaled advertising measure (advertising intensity – which is defined as the ratio of advertising to sales) and an alternative measure of advertising efficiency in Chapter 4.

[71] There are at least two broad approaches for measuring advertising effectiveness (Lehman and Reibstein, 2006). One focuses on diagnostic marketing metrics (e.g., awareness, preference, customer satisfaction, loyalty) to fine-tune individual advertisements, and the other focuses on evaluative marketing metrics (e.g., sales, market share, profits, return on investment, cash flow, firm value).

is positively associated with managers' empire building incentives due to the agency problem.[72]
As advertising expenditure is sometimes reported as part of SG&A costs rather than as a separate item, this can be viewed as indirect evidence that agency problems also affect advertising spending as a discretionary expenditure.

To illustrate the agency cost perspective of advertising spending, the scandal at CPA Australia with the outgoing of its CEO Alex Malley in 2017 is a striking case in point. Amongst the many issues pertaining to problematic corporate governance practices that have been identified at CPA Australia, excessive spending on advertising garners significant media and practitioners' attention and criticism. CPA Australia has spent an estimated $17 million on advertising in the three years from 2014 to 2016 compared with $2.3 million spent by rival body Chartered Accountants. That spending includes CPA Australia shelling out an estimated $8 million on television advertising alone while Chartered Accountants spent nothing on TV ads in this period. The advertising spend figures are based on estimates by market research firm Nielsen and cover branded paid for media spots across mediums including television, newspapers, radio, magazines and online. It excludes event and other sponsorships and it is not clear if it covers the television show *In Conversation with Alex Malley*, a content marketing partnership with Nine Network which is estimated to cost CPA a few more millions. Accountant and CPA Australia member Neale Wallace thinks the spending on television advertising is wasted money.

"It's disappointing though not overly surprising to hear that the CPA Australia has thrown away [more than] $8 million on TV advertising. As a member-based organisation, TV

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[72] Recent research has shown that SG&A costs behave asymmetrically, that is, they increase more rapidly when demand increases than they decline when demand decreases (Anderson, Banker, and Janakiraman 2003). This phenomenon is also labelled ''cost stickiness''.

advertising is of no use and does nothing to entrench the 'brand' in the minds of the general public, who quite frankly are not our target audience."

More strikingly, most of these advertising is not designed to directly promote CPA and the services or benefits it brings to its members. The excessive marketing is primarily to build up the CEO's own 'brand'. Essentially, the many articles on the issue state that the CEO (with the approval of a compliant Board) have spent over $50 million of members' subscriptions on promoting the CEO himself – by publishing his book, 'The Naked CEO' and sponsoring his TV program, 'In Conversation with Alex Malley' – with very little promotion of, or benefit to, CPA itself and its members. CPA's 2016 annual report shows revenues (mainly from membership subscription) of $157 million and a spending of $30.5 million on "marketing, promotion and publications". A fair bit of this figure, as elaborated earlier, seems to have been spent on marketing Malley himself. Looking at an illustrative comparison makes the numbers stack up even more startlingly: in the same year, Australia's leading supermarket chain, Coles, brings in revenues of $38.2 billion and spend only $53.6 million of it on marketing. Similar anecdotal evidences are not far and few in between. These figure speak quite clearly to the fact that advertising budget, as a discretionary expenditure, can be subject to opportunistic use by managers who attempt to build up their power and prestige at the expense of the shareholders.

With those caveats kept in mind, overall, this thesis provides consistent evidence that product market advertising can exert effects well and truly beyond the traditionally documented product market. Higher advertising is positively associated with stock price informativeness and firm value; while negatively associated with corporate tax avoidance. Findings from the three empirical studies lend credible support for the informational role of advertising.

5.2   Implications

The thesis findings generate useful implications for managerial practice. Given the increasing calls for accountability of marketing initiatives, the findings that a firm's investment

in advertising is beneficial in three important ways, boosting stock price informativeness, lowering tax avoidance and ultimately enhancing firm value, are novel and useful. Marketing managers can use these findings to stress the multi-faceted roles of strong advertising programs, beyond their effects on market (sales, market shares) outcomes.

Given the dual benefits of advertising in both the primary product market and the capital market, firms must be cautious in cutting back on their advertising budgets. A reduction in a firm's advertising can have a double negative effect, impacting the firm in both markets.

I believe the findings may, to a certain extent, surprise senior management and finance executives, some of whom may view their firm's advertising programs as discretionary activities. Indeed, the empirical results from this thesis could help marketing managers raise provocative questions about whether extant allocation norms for advertising (e.g., as a fixed percentage of sales) still apply. Could marketing managers rightfully argue that some proportion of the firm's advertising budgets ought to be considered a financial expenditure aimed at lowering its cost of equity or increasing its stock price information content? I hope that the findings in this thesis serve as an impetus for an ongoing dialogue among senior management, finance executives, and marketing executives about the important 'financial' role of their firm's advertising expenditures.

For academics and practitioners, the findings indicate that advertising is a significant factor that has not been previously considered in models of stock price informativeness, tax avoidance and firm value. Challenging the conventional notion that advertising spending falls short in its financial accountability, the findings prove the multi-faceted impacts of advertising which extend beyond the traditional product market into Wall Street, where firms and investors impound the implications of advertising into their value assessment and financing decisions. This understanding is also relevant to a large group of practitioners. Firm executives, as argued above, need a more well-rounded knowledge of the role of advertising in corporate strategy.

Investors and portfolio managers, being aware of the financial implications of advertising, can make more informed choices in maximizing wealth. Policy makers, charged with the tasks of creating a legal and regulatory framework which instils confidence in capital markets, have more relevant information in deciding whether or not there needs to be more controlled reporting of value-relevant advertising expenditure.

The thesis contributes to the growing literature linking marketing metrics with financial performance. The current work complements these prior studies by showing that higher advertising expenditure is also associated with greater information content of stock price, lower propensity for tax aggressiveness and greater firm value. Combining these new findings with the extant literature extends what is known about the impacts of advertising on the firm's performance in the product market as well as the capital market. As a result, academics, managers, and investors should have a more complete picture of how advertising influences financial markets and, by implication, the value of marketing activity for the firm as a whole.

5.3   Directions for Future Research

In this study, I examine a sample of US firms that have available advertising expenditure data for the sample period of 1972 to 2012. Future research can focus on whether the findings observed in the sample of US firms can be generalized to other countries and to more recent periods.

Given the data availability constraint for publicly listed firms, I measure the firm's advertising using the aggregated, annual dollar amounts scaled by the firm's sales. Although advertising expenditure is important, especially from the perspective of senior management and finance executives, the figures represent consolidated input measures, which do not account for differences in the implementation of advertising (for example, creativity of advertising campaigns, efficiency of media planning). Disaggregated measures of a firm's advertising programs for publicly listed firms are not available. Further research that focuses

on a few industry contexts and taps into other proprietary datasets that provide disaggregated measures of various elements of advertising programs, including aspects of the programs' effectiveness, could provide a useful extension to generate actionable managerial implications regarding the effects of various elements of a firm's advertising on its capital market outcomes.

Two other current limitations of the thesis also open up pathways for improvement for future research. The first one is the limitation in treating missing advertising data. Given that reporting of advertising expenditure is voluntary in nature, a more refined and customized approach to dig deeper into whether firms that do not report advertising figures on Compustat are actually firms that do not advertise or indeed are firms that advertise but do not disclose will reveal more insights into these research questions.[73] Another caveat of the thesis is the endogeneity treatment. The current choice of instrumental variables, lagged advertising and industry average advertising, though widely common in the literature, is subject to criticism and empirical challenges. Using lagged value of endogenous regressor requires one to believe that it affects the outcome variable only via its correlation with the endogenous regressor. This type of argument is hard to fully justify. For future research, the use of a better instrument, preferably coming from institutional changes or nonfinancial variables, will improve the quality of controlling for endogeneity.[74]

It is also worth noting how much the marketing and advertising landscape has undergone significant transformation over the years; of particular interest is the dramatic shift in the recent years in respond to the introduction of social media platforms. After the internet became available to public, it was a matter of time before digital marketing became a dominant force. The term was first introduced in the 1990s but its actual usage started in the early 2000s, when the technology became more sophisticated and widely available. The internet has created

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[73] Koh and Reeb (2015) look into a similar issue in R&D data.
[74] Tobacco and pharmaceuticals industries, which both experienced some regulatory changes for advertising, are two potential candidates.

an unlimited number of opportunities for advertisers and digital marketers to promote their brands and products through a number of channels. The exponential growth of digital marketing is also supported by the technology and devices on which it can now be accessed. The introduction of social media platforms such as Facebook, Twitter, Snapchat, Instagram, LinkedIn and Google plus in the last few years has taken the marketing and advertising revolution to a completely new level. Before the advent of social media, digital marketing was not as successful as it is now because of the way social media now supports two-way communication whereas digital media did not. Different options such as to comment, like, retweet, reply, favourite, reposting and many others pave a way for the viewer to let the content curator know how they feel about it. Businesses can use this feature to collect feedback, get people's opinion within seconds and modify or change their social media strategy accordingly.

Given the fall of traditional advertising and the rise of new forms of advertising in the era of the boom in the use of social media, it would be interesting for future research to revisit the role of this new type of advertising on firm performance. Digital marketing and social media also bring a tremendous wealth of information and data that researchers can tap into to generate new insights.

In summary, I view this thesis as an important first step in establishing that advertising can have financial implications in the capital market beyond the traditional product market. I hope that the findings stimulate further work in this area.

Aaker, D. A. (1996). Measuring Brand Equity across Products and Markets. *California Management Review, 38*, 102-120.

Abdel-Khalik, A. R. (1975). Advertising Effectiveness and Accounting Policy. The Accounting Review, 50(4), 657-670.

Ailawadi, K. L., Lehmann, D. R., & Neslin, S. A. (2003). Revenue Premium as an Outcome Measure of Brand Equity. The Journal of Marketing, 67(4), 1-17.

Amihud, Y., & Kefei, L. (2006). The declining information content of dividend announcements and the effects of institutional holdings, *Journal of Financial and Quantitative Analysis, 41,* 637-660.

Anderson, M. C., R. D. Banker, R.D., R. Huang, R., and S. N. Janakiraman S.N. (2007). Cost behavior and fundamental analysis of SG&A costs. *Journal of Accounting, Auditing, and Finance*, 22(1), 1-28.

Archibald, R. B., Haulman, C. A., & Moody, C. E., Jr. (1983). Quality, Price, Advertising, and Published Quality Ratings. *Journal of Consumer Research, 9*(4), 347-356.

Arkolakis, C. (2010). Market penetration costs and the new consumers margin in international trade. *Journal of Political Economy, 118(6)*, 1261–1263.

Armstrong, C. S., Blouin, J. L. & Larcker, D. F. (2012). The incentives for tax planning. *Journal of Financial Economics, 53,* 391-411.

Ashbaugh-Skaife, H., J. Gassen, & R. LaFond (2006). Does Stock Price Synchronicity Represent Firm-Specific Information? The International Evidence. *Working paper, University of Wisconsin-Madison, Humboldt University, Massachusetts Institute of Technology*.

Austin, C. R.& Wilson, R. J. (2015). Are Reputational Costs a Determinant of Tax Avoidance? *2013 American Taxation Association Midyear Meeting: Tax Avoidance in an International Setting.*

Bagwell, K. (2007). The economic analysis of advertising. *Handbook of Industrial Organization, 3,* 1701-1884.

Barth, M. E., Clement, M. B., Foster, G., & Kasznik, R. (1998). Brand Values and Capital Market Valuation. *Review of Accounting Studies*, 3(1), 41-68.

Barth, M. E., Ron, K., & McNichols, M. F. (2001). Analyst Coverage and Intangible Assets. *Journal of Accounting Research*, 39(1), 1-34.

Bartov, E., Radhakrishnan, S. & Krinsky, I. (2000). Investor sophistication and patterns in stock returns after earnings announcements. *Accounting Review, 75*, 43-63.

Beatty, R. P. & Ritter, J. R. (1986). Investment banking, reputation, and the underpricing of initial public offerings. *Journal of Financial Economics*, 15(1-2), 213-232.

Belo, F., Xiaoji, L. & Maria, A. V. (2014). Brand capital and firm value. *Review of Economic Dynamics, 17(1)*, 150-169.

Black, F. (1972). Capital market equilibrium with restricted borrowing. *Journal of Business*, 45(3), 445-455.

Blattberg, R. C., Briesch, R., & Fox, E. J. (1995). How Promotions Work. *Marketing Science*, 14(3), G122-G132.

Blouin, J. L., Devereux, M. & Shackelford, D. A. (2012). Investment, tax uncertainty and aggressive tax avoidance. *University of Pennsylvania, Working Paper.*

Boehmer, E. and Eric K. K. (2009). Institutional investors and the informational efficiency of prices. *Review of Financial Studies, 22*, 3563-3594.

Botosan, C. A. (1997). Disclosure Level and the Cost of Equity Capital. *The Accounting Review*, 72(3), 323-349.

Botosan, C. A., & Plumlee, M. A. (2002). A Re-Examination of Disclosure Level and the Expected Cost of Equity Capital. *Journal of Accounting Research*, 40(1), 21-40.

Botosan, C. A., Plumlee, M. A., & Xie, Y. (2004). The Role of Information Precision in Determining the Cost of Equity Capital. *Review of Accounting Studies*, 9(2), 233-259.

Boulding, W., Lee, E., & Staelin, R. (1994). Mastering the Mix: Do Advertising, Promotion, and Sales Force Activities Lead to Differentiation? *Journal of Marketing Research*, 31(2), 159-172.

Boynton, C., Defilippes, L.E. and Reum, T. (2008). A first look at 2007 schedule M-3 reporting by large corporations. *Tax Notes*, 132, 689-725.

Braithwaite, D. (1928). The Economic Effects of Advertisement. *Economic Journal, 38,* 16-37.

Breeden, D.T. (1979). An intertemporal asset pricing model with stochastic consumption and investment opportunities. *Journal of Financial Economics*, 7(3), 265-296.

Brockman, P., & Yan, X. (2009). Block ownership and firm-specific information. *Journal of Banking & Finance*, 33(2), 308-316.

Chan, K., & A. Hameed (2006). Stock Price Synchronicity and Analyst Coverage in Emerging Markets. *Journal of Financial Economics*, 80, 115–47.

Chaudhuri, A., & Holbrook, M. B. (2001). The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty. *The Journal of Marketing, 65*(2), 81-93.

Chemmanur, T., & Yan, A. (2009). Product market advertising and new equity issues. *Journal of Financial Economics*, 92(1), 40-65.

Chemmanur, Thomas J. & Yan, A. (2009). Advertising, Attention, and Stock Returns. Available at SSRN: http://ssrn.com/abstract=1340605.

Cheng, C. S. A., Huang, H. H., Li, Y. & Stanfield, J. (2012). The effect of hedge fund activism on corporate tax avoidance. *The Accounting Review, 87 (5)*, 1493-1526.

Chen, S., Chen, X., Cheng, Q. & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics, 95*, 41-61.

Chen, Q., Goldstein, I., & Jiang, W. (2007). Price informativeness and investment sensitivity to stock price. *The Review of Financial Studies*, 20(3), 619-650.

Chen, Y., Huang, S., Pereira, R. & Wang, J. (2009). Corporate tax avoidance and firm opacity. *Florida International University. Working paper.*

Chen, C., Lu, H. and Sougianni, T. (2011). The Agency Problem, Corporate Governance, and the Asymmetrical Behavior of Selling, General, and Administrative Costs. *Contemporary Accounting Research*. 29, 252 - 282.

Chung, K. H., & Pruitt, S. W. (1994). A Simple Approximation of Tobin's q. *Financial Management*, 23(3), 70-74.

Comanor, W. S., & Wilson, T. A. (1967). Advertising Market Structure and Performance. *The Review of Economics and Statistics*, 49(4), 423-440.

Court, David C., Mark G. Leiter, & Lock M.A. (1999). Brand Leverage: Developing a Strong Company Brand, *McKinsey Quarterly*, 2, 100-7.

Coval, J. D., & Moskowitz, T. J. (1999). Home Bias at Home: Local Equity Preference in Domestic Portfolios. *The Journal of Finance*, 54(6), 2045-2073.

Crocker, Keith J. & Slemrod, J.. (2005). Corporate Tax Evasion with Agency Costs. *Journal of Public Economics*, 2005, 89(9-10), 1593-1610.

Dasgupta, S., Jie G. & Ning, G. (2010). Transparency, Price Informativeness, and Stock Return Synchronicity: Theory and Evidence. *Journal of Financial and Quantitative Analysis*, 45, 1189-1220.

Dawar, N., & M. Pillutla (2000). Impact of product-harm on crises on brand equity: The moderating role of consumer expectations. *Journal of Marketing Research, 37(2)*, 215-226.

Dekimpe, M. G., & Hanssens, D. M. (1995). The Persistence of Marketing Effects on Sales. *Marketing Science*, 14(1), 1-21.

Desai, M. A. & Dharmapala, D. (2004). Earnings management and corporate tax shelters. *Unpublished working paper. Harvard University.*

Desai, M. A. & Dharmapala, D. (2006). Corporate tax avoidance and high-powered incentives. *Journal of Financial Economics, 79,* 145-79.

Desai, M. A. & Dharmapala, D. (2009). Corporate tax avoidance and firm value. *Review of Economics and Statistics, 91 (3), 537-546.*

Doyle, P. (2000). Value-based marketing. *Journal of Strategic Marketing*, 8(4), 299-311.

Durnev, A., Morck, R., Yeung, B. (2004). Value-enhancing capital budgeting and firm specific stock return variation. *Journal of Finance*, 59 (1), 65–105.

Durnev, A., Morck, R., Yeung, B., Zarowin, P. (2003). Does greater firm-specific return variation mean more or less informed stock pricing? *Journal of Accounting Research*, 41 (5), 797–836.

Dutta, S., Narasimhan, O., & Rajiv, S. (1999). Success in High-Technology Markets: Is Marketing Capability Critical*? Marketing Science*, 18(4), 547-568.

Dyreng, S. D., Hanlon, M. & Maydew, E. L. (2008). Long-Run Corporate Tax Avoidance. *The Accounting Review, 83 (1)*, 61-82.

Dyreng, S. D., Hanlon, M. & Maydew, E. L. (2010). The effects of executives on corporate tax avoidance. *The Accounting Review, 85 (4),* 1163-1189.

Dyreng, S., J. Hoopes, & J. Wilde (2014). Public Pressure and Corporate Tax Behavior. *Working paper.*

Easley, D., & O'Hara, M. (2004). Information and the Cost of Capital. *The Journal of Finance*, 59(4), 1553-1583.

Edwards, A., Schwab, C & Shevlin, T. (2013). Financial constraints and the incentive for tax planning, *University of Toronto, Working Paper.*

El-Gazzar, Samir M. (1998). Predisclosure information and institutional ownership: A cross-sectional examination of market revaluations during earnings announcement periods. *Accounting Review*, *73*, 119-129.

Erickson, G., & Jacobson, R. (1992). Gaining Comparative Advantage through Discretionary Expenditures: The Returns to R&D and Advertising. *Management Science*, 38(9), 1264-1279.

Ernst & Young (2014). Bridging the divide: Highlights from the 2014 Tax risk and controversy survey.

Fama, E. F. (1991). Efficient markets: II. *The Journal of Finance*, 46(5), 1575-1617.

Fama, E. F. & French, K. R. (1992). The cross-section of expected stock returns. *The Journal of Finance*, 47(2), 427-465.

Fama, E. F. & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56.

Fama, E. F., & French, K. R. (1996). Multifactor Explanations of Asset Pricing Anomalies. *The Journal of Finance*, 51(1), 55-84.

Fama, E. F. and French, K. R. (1997). Industry costs of equity. *Journal of Finance*, 43, 153-193.

Fama, E. F., MacBeth, J. D. (1973). Risk, return, and equilibrium: empirical test. *Journal of Political Economy*, 81 (3), 607–636.

Fang, V. W., Noe, T. H., & Tice, S. (2009). Stock market liquidity and firm value. *Journal of Financial Economics*, 94(1), 150-169.

Fernandes, N., Ferreira, M.A (2008). Does International Cross-Listing Improve the Information Environment? *Journal of Financial Economics*, 88, 216–44.

Ferreira, M.A., Laux, P.A. (2007). Corporate governance, idiosyncratic volatility, and information flow. *Journal of Finance*, 62 (2), 951–989.

Ferreira, D, Ferreira M.A. & Raposo, C. C. (2011). Board structure and price informativeness. *Journal of Financial Economics*, 99(3), 523-545.

Fiss, P.C., & Zajac, E.J. (2006). The Symbolic Management of Strategic Change: Sensegiving via Framing and Decoupling. *Academy of Management Journal*, 49(6).

Fombrun, C. & Shanley, M. (1990). What's in a Name? Reputation Building and Corporate Strategy. *The Academy of Management Journal*, *33(2)*, 233-258

Foucault, T. & Gehrig, T (2008). Stock price informativeness, cross-listings, and investment decisions. *Journal of Financial Economics*, 88(1), 146-168.

Francis, J., LaFond, R., Olsson, P. M., & Schipper, K. (2004). Costs of Equity and Earnings Attributes. *The Accounting Review*, 79(4), 967-1010.

Francis, J. & Soffer, L. (1997). The relative informativeness of analysts' stock recommendations and earnings forecast revisions. *Journal of Accounting Research*, 35(2), 193-211.

Frank, M., Lynch, L. J. & Rego, S. O. (2009). Tax reporting aggressiveness and its relation to aggressive financial reporting. *The Accounting Review, 84 (2),* 467-496.

French, K. & Roll, R. (1986). Stock return variances: The arrival of information and the reaction of traders, *Journal of Financial Economics*, 25, 5–26.

Fresard, L. (2011). Cash savings and stock price informativeness. *Review of Finance*, doi:10.1093/rof/rfr004.

Frieder, L., & Subrahmanyam, A. (2005). Brand Perceptions and the Market for Common Stock. *The Journal of Financial and Quantitative Analysis*, 40(1), 57-85.

Gigler, F. (1994). Self-enforcing Voluntary Disclosures. *Journal of Accounting Research*, 32, 224 – 240.

Goldfinger, C. (1997). Intangible Economy and its Implications for Statistics and Statisticians. *International Statistical Review*, 65, 191-220.

Graham Jr, R. C., & Frankenberger, K. D. (2000). The Contribution of Changes in Advertising Expenditures to Earnings and Market Values. *Journal of Business Research*, 50(2), 149-155.

Graham, J. & Tucker, A. (2006). Tax shelters and corporate debt policy. *Journal of Financial Economics, 81*, 563–594.

Graham, J., M. Hanlon, T. Shevlin, & N. Shroff (2014). Incentives for tax planning and avoidance: Evidence from the field. *The Accounting Review, 89 (3)*, 991-1023.

Grossman, S. (1976). On the efficiency of competitive stock markets where trades have diverse information. *The Journal of Finance*, 31, 573–585.

Grossman, S., Stiglitz, J (1980). On the impossibility of informationally efficient markets. *American Economic Review*, 25, 393–408.

Grullon, G., Kanatas, G., & Weston, J. P. (2004). Advertising, Breadth of Ownership, and Liquidity. *The Review of Financial Studies*, 17(2), 439-461.

Gul, F.A., Srinidhi, B., Anthony C. Ng (2011). Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics*, 51(3), 314-338.

Gupta, S., & K. Newberry. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal study. *Journal of Accounting and Public Policy, 16(1)*, 1–34.

Haggard, K. S., X. Martin, & R. Pereira (2008). Does Voluntary Disclosure Improve Stock Price Informativeness? *Financial Management*, 37, 747–68.

Hanlon, M. & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics, 50*, 127-178.

Hanssens, D. M., Rust, R. T., & Srivastava, R. K. (2009). Marketing Strategy and Wall Street: Nailing Down Marketing's Impact. *Journal of Marketing*, 73(6), 115-118.

Hirschey, M. (1982). Intangible Capital Aspects of Advertising and R&D Expenditures. *The Journal of Industrial Economics*, 30(4), 375-390.

Hirschey, M. (1985). Market Structure and Market Value. *The Journal of Business*, 58(1), 89-98.

Hirschey, M., & Spencer, R. S. (1992). Size Effects in the Market Valuation of Fundamental Factors. *Financial Analysts Journal*, 48(2), 91-95.

Hoopes, J. L., Mescall, D. & Pittman, J. A. (2012). Do IRS audits deter corporate tax avoidance? *The Accounting Review, 87 (5),* 1603-1639.

Hope, O., and Thomas. W.B. (2008). Managerial empire building and firm disclosures. *Journal of Accounting Research*, 46(3), 591-626.

Huang, Y., & Wei, S. (2012). Advertising intensity, investor recognition, and implied cost of capital. *Review of Quantitative Finance and Accounting*, 38(3), 275-298.

Huberman, G. (2001). Familiarity Breeds Investment. *The Review of Financial Studies*, 14(3), 659-680.

Hutton, A.P., Marcus, A.J. & Tehranian, H. (2009). Opaque financial reports, R2, and crash risk. *Journal of Financial Economics*, 94(1), 67-86.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, 76(3), 323–29.

Jensen, M., and Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs, and capital structure. *Journal of Financial Economics*, 3(4), 305–60.

Jiambalvo, J., Shivaram R. & Mohan V. (2002). Institutional ownership and the extent to which stock prices reflect future earnings, *Contemporary Accounting Research, 19,* 117-145.

Jiang, G., Xu, D., Yao, T. (2009). The information content of idiosyncratic volatility. *Journal of Financial and Quantitative Analysis*, 44, 1–28.

Jin, L., Myers, S.C. (2006). R2 around the world: new theory and new tests. *Journal of Financial Economics*, 79(2), 257–292.

Joshi, A., & Hanssens, D. M. (2009). The Direct and Indirect Effects of Advertising Spending on Firm Value. *Journal of Marketing*, 74(1), 20-33.

Kadlec, G. B. and McConnell, J. J. (1994). The Effect of Market Segmentation and Illiquidity on Asset Prices: Evidence from Exchange Listings. *The Journal of Finance*, 49, 611-636.

Kahneman, D., & Tversky, A. (1982). The Psychology of Preferences. *Scientific American*, 246(1), 160-173.

Kamakura, W. A., Wedel, M., de Rosa, F., & Mazzon, J. A. (2003). Cross-selling through database marketing: a mixed data factor analyzer for data augmentation and prediction. *International Journal of Research in Marketing*, 20(1), 45-65.

Kaul, A., & Wittink, D. R. (1995). Empirical Generalizations about the Impact of Advertising on Price Sensitivity and Price. *Marketing Science*, 14(3), G151-G160.

Keller, K. L. (1993). Conceptualizing, Measuring, and Managing Customer-Based Brand Equity. *The Journal of Marketing*, 57(1), 1-22.

Keller, K. L. (2008). Strategic Brand Management: Upper Saddle River, NJ: Pearson/Prentice Hall.

Keller, K. L., & Aaker, D. A. (1992). The Effects of Sequential Introduction of Brand Extensions. *Journal of Marketing Research*, 29(1), 35-50.

Kelly, P. (2005). Information Efficiency and Firm-Specific Return Variation. *Working Paper. Arizona State University.*

Kerin, R. and Sethuraman, R. (1998). Exploring the Brand Value-Shareholder Value Nexus for Consumer Goods Companies. *Journal of The Academy of Marketing Science*, 26, 260-273.

Khurana, I., & W. Moser. (2009). Shareholder investment horizons and tax aggressiveness. *Working paper. University of Missouri.*

Kihlstrom, R. E., & Riordan, M. H. (1984). Advertising as a Signal. *Journal of Political Economy*, 92(3), 427-450.

Kim, J., Li, Y. & Zhang, L. (2011). Corporate tax avoidance and stock price crash risk: Firm-level analysis. *Journal of Financial Economics, 100*, 639-662.

Kim, M., & McAlister, L. M. (2011). Stock Market Reaction to Unexpected Growth in Marketing Expenditure: Negative for Sales Force, Contingent on Spending Level for Advertising. *Journal of Marketing*, 75(4), 68-85.

Kirmani, A., & Rao, A. R. (2000). No Pain, No Gain: A Critical Review of the Literature on Signaling Unobservable Product Quality. *The Journal of Marketing, 64*(2), 66-79.

Kirmani, A., & Zeithaml, V. (1993). Advertising, perceived quality, and brand image, In D. A. Aaker and A. L. Biel (Ed.), Brand Equity and Advertising. *Lawrence Erlbaum Associates, New Jersey*, pp 143-161.

Klassen, J. K., Lisowsky, P., & Mescall, D. (2013). Transfer Pricing: Strategies, Practices, and Tax Minimization. *SSRN Electronic Journal*. 10.2139/ssrn.2216870.

Koh, P. and Reeb D.M. (2015). Missing R&D. *Journal of Accounting and Economics*, 60(1), 73-94.

Kyle, A. S. (1989). Informed Speculation with Imperfect Competition. *The Review of Economic Studies*, 56(3), 317-355.

Lambert, R., Leuz, C., & Verrecchia, R. E. (2007). Accounting Information, Disclosure, and the Cost of Capital. *Journal of Accounting Research*, 45(2), 385-420.

Lang, L. H. P. & Litzenberger, R. H. (1989). Dividend announcements: Cash flow signalling vs. free cash flow hypothesis? *Journal of Financial Economics*, 24(1), 181-191.

Lang, L. H. P., Stulz, R., & Walkling, R. A. (1989). Managerial performance, Tobin's Q, and the gains from successful tender offers. *Journal of Financial Economics*, 24(1), 137-154.

Larkin, Y. (2013). Brand perception, cash flow stability, and financial policy. *Journal of Financial Economics, 110(1)*, 232-253.

Lee, D. W., & Liu, M. H. (2011). Does more information in stock price lead to greater or smaller idiosyncratic return volatility? *Journal of Banking and Finance*, 35(6), 1563-1580.

Leonhardt, D., February 1, 2011. "The Paradox of Corporate Taxes." *The New York Times.* Accessed: http://www.nytimes.com/2011/02/02/business/economy/02leonhardt.html?_r=1.

Lesmond, D., J. Ogden, & J. Trzcinka (1999). A New Estimate of Transaction Costs. *The Review of Financial Studies*, 12, 1113-1141.

Lev, B. (2001). Intangibles: Management, Measurement and Reporting. *Bookings Institution Press*. Available at SSRN: https://ssrn.com/abstract=254345

Lev, B., & Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics*, 21(1), 107-138.

Lev, B., & Thiagarajan, S. R. (1993). Fundamental Information Analysis. *Journal of Accounting Research*, 31(2), 190-215.

Lintner, J. (1965). The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. *Review of Economics and Statistics*, 47(1), 13-37.

Lisowsky, P. (2010). Seeking shelter: Empirically modelling tax shelters using financial statement information. *The Accounting Review, 85 (5),* 1693-1720.

Lisowsky, P., Robinson, L. A. & Schmidt, A. (2013). Do publicly disclosed tax reserves tell us about privately disclosed tax shelter activity? *Journal of Accounting Research, 51*, 583-629.

Lucas, R. (1978). Asset Prices in an Exchange Economy. *Econometrica*, 46(6), 1429-45.

Luo, X., & Homburg, C. (2007). Neglected Outcomes of Customer Satisfaction. *Journal of Marketing*, 71(2), 133-149.

Luo, X., & Donthu, N. (2006). Marketing's Credibility: A Longitudinal Investigation of Marketing Communication Productivity and Shareholder Value. *Journal of Marketing*, 70(4), 70-91.

Madden, T., Fehle, F., & Fournier, S. (2006). Brands matter: An empirical demonstration of the creation of shareholder value through branding. *Journal of the Academy of Marketing Science*, 34(2), 224-235.

Manzon G. B. & Plesko, G. A. (2002). The relation between financial and tax reporting measures of income. *Tax Law Review, 55*, 175-214.

Marhfor, A., M'Zali, B. & Charest, G. (2010). Stock price informativeness and analyst coverage. *Working paper, University of Quebec.*

Masulis, R. W., Wang, C., and Xie. F. (2007). Corporate governance and acquirer returns. *Journal of Finance*, 62(4), 1851-1889.

McAlister, L., Srinivasan, R., & Kim, M. (2006). Advertising, Research and Development, and Systematic Risk of the Firm. *Journal of Marketing*, 71(1), 35-48.

McConnell, J. J. & Servaes, H. (1990). Additional evidence on equity ownership and corporate value. *Journal of Financial Economics*, 27(2), 595-612.

McGuire, S. T., Omer, T. C. & Wang, D. (2012). Tax avoidance: Does tax-specific industry expertise make a difference? *The Accounting Review, 87 (3),* 975-1003.

Mela, C. F., Gupta, S., & Lehmann, D. R. (1997). The Long-term Impact of Promotion and Advertising. *Journal of Marketing Research*, 34(2), 248-261.

Merton, R. C. (1987). A simple model of capital market equilibrium with incomplete information. *The Journal of Finance*, 42(3), 483-510.

Milgrom, P., & Roberts, J. (1986). Price and Advertising Signals of Product Quality. *Journal of Political Economy*, 94(4), 796-821.

Mills, L. (1996). Corporate tax compliance and financial reporting. *National Tax Journal, 49*, 421-435.

Mills, L. (1998). Book-tax differences and internal revenue service adjustments. *Journal of Accounting Research, 36 (2)*, 343-356.

Mills, L., Erickson, M. & Maydew, E. (1998). Investments in tax planning. *Journal of the American Taxation Association, 20,* 1-20.

Minton, B. A., & Schrand, C. (1999). The impact of cash flow volatility on discretionary investment and the costs of debt and equity financing. *Journal of Financial Economics*, 54(3), 423-460.

Mizik, N., & Jacobson, R. (2003). Trading off between Value Creation and Value Appropriation: The Financial Implications of Shifts in Strategic Emphasis. *The Journal of Marketing*, 67(1), 63-76.

Montgomery, C. A., & Wernerfelt, B. (1988). Diversification, Ricardian Rents, and Tobin's q. *The RAND Journal of Economics*, 19(4), 623-632.

Morck, R., & Yeung, B. (1991). Why Investors Value Multinationality. *The Journal of Business*, 64(2), 165-187.

Morck, R., Yeung, B., Yu, W. (2000). The information content of stock markets: why do emerging markets have synchronous price movements? *Journal of Financial Economics*, 58, 215–260.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-221.

Nejadmalayeri, A., Mathur, I. & Singh, M. (2013). Product market advertising and corporate bonds. *Journal of Corporate Finance, 19*, 78.94.

Nelson, P. (1974). Advertising as Information. *Journal of Political Economy*, 82(4), 729-754.

Newey, W. K., & West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica*, 55(3), 703-708.

Oswald, D.R. & Zarowin, P. (2007). Capitalization of R&D and the informativeness of stock prices. *European Accounting Review*, 16(4), 703-726.

Pastor, Ľ. & Pietro, V. (2003). Stock Valuation and Learning about Profitability. *The Journal of Finance*, 58, 1749–1790.

Piotroski, J. D., & Roulstone, D.T. (2004). The influence of analysts, institutional investors, and insiders on the incorporation of market, industry, and firm-specific information into stock prices. *Accounting Review*, 79, 1119-1151.

Rao, V. R., Agarwal, M. K., & Dahlhoff, D. (2004). How Is Manifest Branding Strategy Related to the Intangible Value of a Corporation? *The Journal of Marketing*, 68(4), 126-141.

Rego, L. L., Billett, M. T., & Morgan, N. A. (2009). Consumer-Based Brand Equity and Firm Risk. *Journal of Marketing*, 73(6), 47-60.

Rego, S. O. (2003). Tax-avoidance activities of U.S. multinational corporations. *Contemporary Accounting Research, 20(4),* 805-833.

Reichheld, F. F. (1996). Learning from Customer Defections. Harvard Business Review. 74(2), 56-69.

Robinson, J., Sikes, S. & Weaver, C. (2010). Performance measurement of corporate tax departments. *The Accounting Review, 85(3)*, 1035-1064.

Roland, T. R., Ambler, T., Carpenter, G. S., Kumar, V., & Srivastava, R. K. (2004). Measuring Marketing Productivity: Current Knowledge and Future Directions. *The Journal of Marketing*, 68(4), 76-89.

Roll, R. (1988). R2. *Journal of Finance*, 25, 541–566.

Roll, R., Schwartz, E., & Subrahmanyam, A. (2009). Options trading activity and firm valuation. *Journal of Financial Economics*, 94(3), 345-360.

Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, 13(3), 341-360.

Rubinstein, M. (1976). The Valuation of Uncertain Income Streams and the Pricing of Options. *The Bell Journal of Economics, 7*(2), 407-425.

Schmalensee, R. (1972). The Economics of Advertising. *Amsterdam: North-Holland.*

Scholes, M., Wolfson, M., Erickson, M., Maydew, E., and Shevlin, T. (2005). Taxes and Business Strategy: A Planning Approach, 3rd Edition, *Pearson Prentice Hall, Upper Saddle River, NJ.*

Schonfeld, E., & Boyd, J. (1977). Corporate Advertising and Stock Prices—Is There An Impact? *Public Relations Journal*, 33, 18-20.

Shackelford, D., & T. Shevlin. (2001). Empirical tax research in accounting. *Journal of Accounting and Economics, 31,* 321-387.

Sharpe, W.F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, 19(3), 425-442.

Shevlin, T. (2002). Symposium on corporate tax shelters, Part II: Commentary: Corporate tax shelters and book-tax differences. *New York University Tax Review*, 55(427).

Simon, C. J., & Sullivan, M. W. (1993). The Measurement and Determinants of Brand Equity: A Financial Approach. *Marketing Science*, 12(1), 28-52.

Simpson, A. (2008). Voluntary Disclosure of Advertising Expenditures. *Journal of Accounting, Auditing & Finance*, 23(3), 403–436.

Slemrod, J. (2004). The economics of corporate tax selfishness. *National Tax Journal, 57,* 877–99.

Sougiannis, T. (1994). The Accounting Based Valuation of Corporate R&D. *The Accounting Review*, 69(1), 44-68.

Srinivasan, S., Pauwels, K., Silva-Risso, J., & Hanssens, D. M. (2008). Product Innovations, Advertising, and Stock Returns. *Journal of Marketing*, 73(1), 24-43.

Srivastava, R. K., Shervani, T. A., & Fahey, L. (1998). Market-Based Assets and Shareholder Value: A Framework for Analysis. *The Journal of Marketing*, 62(1), 2-18.

Stigler, G.J. (1962). Information in the Labor Market. *Journal of Political Economy*, *70(5),* 94-105.

Stulz, R. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, 26(1), 3–27.

Verdi, R. (2006). Information Environment and the Cost of Equity Capital. *Working Paper, Massachusetts Institute of Technology.*

Verrecchia, R. (1983). Discretionary Disclosure. *Journal of Accounting and Economics*, 5, 179 – 194.

Wagenhofer, A. (1990). Voluntary Disclosure with a Strategic Opponent. *Journal of Accounting and Economics*, 12, 341 – 363.

Weisbach, D. (2002). Thinking outside the boxes: A response to Professor Schlunk. *Texas Law Review,* 80 (4), 893-911.

Wernerfelt, B. (1984). A resource-based view of the firm. Strategic Management *Journal*, 5(2), 171-180.

White, J. & Miles, M. (1996). The financial implications of advertising as an investment perspective of Advertising Expenditures. *Journal of Advertising Research*, 36, 43-52.

Whited, T. & Wu, G. (2006). Financial constraints risk. *Review of Financial Studies, 19*, 531-559.

Wilson, R. J. (2009). An examination of corporate tax shelter participants. *The Accounting Review, 84(3),* 969-999.

Woolridge, J.M. (2002). Econometric Analysis of Cross Section and Panel Data. *The MIT Press.*

Wurgler, J. (2000). Financial Markets and the Allocation of Capital. *Journal of Financial Economics*, 58, 187-214.

Yin, G. K. (2009). How much tax do large public corporations pay? Estimating the effective tax rates of the S&P 500. *Virginia law review.*

Yu, J. (2011). Stock Price Informativeness and Corporate Governance: An International Study. *International Review of Finance*, 11, 477–514.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, 9(2).

Zimmerman, J. (1983). Taxes and firm size. *Journal of Accounting and Economics, 5,* 119-149

A1: Disclosure of advertising expenditures in financial statements – the case of U.S. firms

This appendix discusses in detail the accounting standards governing the reporting of advertising expenditures. There are two main issues regarding the disclosure of advertising expenses in the financial statements that carry important empirical implications for this thesis. The first issue is an ongoing debate in the accounting literature regarding the value relevance of advertising expenditure; i.e. whether reporting advertising outlays as current period expense or capitalizing them. Secondly I investigate the implications of the introduction of FFR144 in the US in 1944 that effectively made the separate disclosure of advertising expenditure a voluntary disclosure.

The Accounting treatment controversy of advertising

The potential intangible asset attribute of advertising expenditure implies that caution needs to be taken on what method of accounting treatment for this intangible expenditure is the most value-relevant. Value-relevance implies greater association of advertising with future earnings or stock returns. There are two options for the accounting treatment of advertising: treat it as an expense which goes through the income statement, or treat it as an intangible fixed asset on the balance sheet, which is amortized year by year. In the case of the US, the first practice is mandated by accounting rules (SOP 93-7) unless in exceptional circumstances.

The difficulties in accounting for advertising expenditure are mainly because of the complexity of identifying the costs associated with the particular activities, projects or achievements, and the determination of the magnitude of future benefits and the length of its useful life. Since management can anticipate current profit levels with more certainty as compared with future profitability, they would normally prefer to write off all expenditures in

the current period. As a consequence, management often seems more inclined to record all the expenditure on advertising in the current period when profit levels are known with more certainty, than risking the carrying of these costs over into future periods as capitalized costs. The firm might not have sufficient revenues in future periods to absorb amortization of these costs. Following this line of argument, advertising expenditure is generally written off in the current period.

If advertising expenditure is treated as an expense, it will, on the one hand, reduce earnings but, on the other hand, could provide tax benefits to the firm. Similarly, according to the matching principle, expenses of a period should be matched with revenues of a period. If all advertising expenditure is expensed in one period while its benefits accrue in the future periods, the matching principle of accounting will be jeopardized. Further, the immediate expensing of advertising has an impact on various measurements such as the return on equity, return on assets and other similar indicators of the financial health of the firm.

Given that the current accounting practices are very much in favour of immediately expensing instead of capitalizing, a significant amount of empirical work has been dedicated to the value-relevance of this method as opposed to possible capitalization options. Some support the notion that advertising does not generate benefits beyond the period in which this expenditure is incurred, hence an immediate expensing treatment is appropriate (e.g. see Aaker and Jacobson 1994; Bublitz and Ettredge 1989; Erickson and Jacobson 1992; Sougiannis 1994, among others). Han and Manry (2004) show that investors believe the economic benefits of advertising expenditure expire in the current period, similar to other expenses.

Mounting evidence also points towards the capitalization of advertising as a more value-relevant method. In this line of argument, researchers believe that advertising expenditure should be capitalized and amortized over their useful lives. In their view, since

investment in advertising would benefit current as well as future periods, the cost should be recorded as an intangible asset and amortized against current and future revenues. Supporting the long-lived view of advertising, Hirschey (1982) and Hirschey and Weygandt (1985) conclude that advertising is long-lived and should be capitalized and amortized over time rather than expensed when incurred. White and Miles (1996) also argue that advertising is indeed a strategic investment in the organization's stock or intangible assets, future cash flows, and market value. As an investment in an invisible asset, advertising should be subjected to the same capital budgeting analysis as any other expenditure that produces multi-period cash flows. Failure to do so is inconsistent with the financial objective of shareholder wealth optimization. Abdel-Khalik (1975, p.657) points out that choices of treating advertising as expense or capitalizing it over its useful life are significant 'because of their potential impact upon the measurement of income, earnings per share, and possibly the balance sheet'.

While there is accounting regulation available to deal with R&D expenditure (e.g., SSAP 13 in the UH, FAS 2 in the US, and IAS 38 that deals with intangible assets broadly, including R&D), there seems to be a relative lack of any regulation that specifically deals with advertising expenditure. In 1993, the American Institute of Certified Public Accountants (AICPA) issued Statement of Position (SOP) 93-7 "Reporting on Advertising Costs", which guides the disclosure of advertising expenditures by US firms. SOP 93-7 requires that generally, the costs of advertising should be expensed either in the periods in which those costs are incurred or the first time the advertising takes place. SOP 93-7 is effective for fiscal years ending after 15 June 1994.

SOP 93-7, however, allows firms to capitalize advertising expenses under the stringent exception that the advertising is "direct-response advertising". Direct advertising is important because the benefits from it are more certain than those from other types of advertising. On

these grounds US GAAP allows capitalisation of direct response advertising given that it meets two criteria:

1) Its "primary purpose is to elicit sales to customers who could be shown to have responded specifically to the advertising" and

2) "It results in probable future economic benefits".

Therefore, a firm can choose to capitalise advertising expense provided it can demonstrate from its past experience that future net revenues from customers obtained through the advertising will exceed the amount of capitalized costs. The notes to the financial statements should disclose the accounting policy for direct-response advertising, if any, and provide a description of the direct-response advertising reported as assets.

In a letter to the American Institute of Certified Public Accountants (AICPA), L.E.Turner, of the Securities Exchange Commission, explains the provisions of the SOP 93-7 in the following words, '... SOP No. 93-7 requires that companies disclose the accounting policy for reporting advertising costs, indicating whether such costs are expensed as incurred or the first time the advertising takes place. The notes to the financial statements also should disclose the accounting policy for direct-response advertising, if any, a description of the direct-response advertising reported as assets, the amount of advertising reported as assets in each balance sheet presented, and the amortization period. Disclosure of the total amount charged to advertising expense for each income statement presented and separate disclosure of any amounts representing a write-down to net realizable value should also are required....' (also, see Accounting Standards Executive Committee Statement of Position, SOP 93-7: Reporting on Advertising Costs).

Voluntary disclosure – the introduction of FFR44 in 1994

Before 1994 it is a requirement by the Securities and Exchange Commission (SEC) that industrial and commercial firms supply a Supplementary Income Statement Information schedule. Advertising expenditure is one of the items to be included in this schedule. The SEC's Financial Reporting Release No. 44 (FRR44) in 1994 effectively removes the requirement to furnish this schedule. Since advertising costs are one of the items previously referenced by it, FRR44 effectively makes separate disclosure of advertising outlays optional. The rationale behind this decision is that eliminating this requirement would result in reduced costs of reporting by public companies without loss of material information necessary to protect investors. General views from related stakeholders including registrants, accounting firms, and related professional membership associations are supportive of it on the grounds that the costs of preparing the schedules outweigh the benefits. After 1994, a significant number of firms continue to disclose advertising costs either in the income statement or in the notes to it. Other firms, including those that had consistently reported significant advertising expenses before 1994, stop disclosing.

Simpson (2008) examine the decision to disclose advertising costs after 1994 as a function of the proprietary costs and the valuation benefits of advertising, experienced by firms during the pre-1994 mandatory disclosure period. Essentially, the decision to disclose or not to disclose can be viewed as a trade-off between the costs and benefits from disclosure of advertising expenses. Disclosure of favourable information leads to improved market valuation due to reduction of information asymmetry between managers and investors (Verrecchia, 1983; Wagenhofer, 1990; Gigler, 1994). The release of information, however, may result in loss of competitive position in product markets if rival firms use the disclosed information to their strategic advantage. This results in proprietary costs of disclosure (Verrecchia, 1983). Firms, in equilibrium, weigh up the proprietary costs and the valuation benefits derived from disclosure in making the decision to disclose.

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Her results show that firms in industries where positive advertising spill-overs exist, or, in other words, face relatively higher proprietary costs of advertising, before 1994 are less likely to disclose their advertising costs separately afterwards. Accordingly, firms whose advertising outlays have a positive impact on their market value or future operating profit, or in other words, experience relatively higher net valuation benefits of advertising, before the issuance of FRR44 are more likely to disclose their advertising expenses after 1994.

For my thesis, firm observations for the years 1987 to 1993 (1994 to 2012) represent mandatory (voluntary) disclosures. It is evident that there is a large drop in the number of firms reporting non-negative advertising expense in response to the issuance of FRR44. In my sample, there are only 915 disclosing firms in 1994 compared to 1,853 firms in 1994.

Simpson (2008) argues that the pattern of disclosure behaviour could be clouded by the number of firms that list/delist and/or are included/excluded by Compustat each year. Therefore, she also specifically investigates the frequency of disclosure by firms from a fixed sample as of the year preceding FRR44. From this fixed sample, only less than one-third continue to disclose post FRR44, 6.44% of the firms are no longer included in Compustat, and the remaining 60% no longer disclose in the year immediately after the SEC change. The number of both disclosing and non-disclosing firms decreases slightly in the following years with the number of disclosers decreasing at a lower rate than that of non-disclosers. In 2003, the proportion of disclosing to non-disclosing firms from the fixed 1994 sample is approximately equal to one as opposed to almost a half in 1994. To provide further insights into the dynamics of advertising disclosure, Simpson (2008) examines the disclosure persistence of the sample of firms which reports non-zero advertising expense in the first year after the SEC change. In 1996, 83% of these firms continue to disclose, 9% change their policy to non-disclosure and 7% are no longer available on Compustat. The same pattern continues in the following years with an average of 85% of firms continuing to disclose, 5% to 7% changing their disclosure

policy (from disclosure to non-disclosure and vice versa) and the rest being excluded from Compustat. This indicates overall consistency in firms' disclosure behaviours and justifies the analysis of their incentives for voluntary disclosure/non-disclosure.

With all discussed, the important implication of this is that there may be some firms which advertise but do not disclose it or include it under a more general marketing category, rather than recognizing it separately in their financial statements. Consequently, my "Advertising" sample is a more conservative representation of firms that actually advertise. There is unfortunately no easy way to distinguish between firms that actually do not advertise (zero advertising firms) and firms that do advertise but do not report advertising expenditures.

To tackle this issue empirically, throughout the three chapters, the main tests are conducted on the sample of all firm-years for which Compustat reports non-missing advertising expense. In robustness tests, I set firms with missing advertising data to zero and obtain qualitatively similar results across all the three chapters.

Koh and Reeb (2015) discuss the parallel issue of missing R&D data in Compustat and note that, based on patent filing data, missing R&D firms appear to deliberately choose non-disclosure of R&D expenses. It is not the case that missing R&D firms are actually zero R&D firms. Their analysis of patent records reveals that every one out of ten missing R&D firms indeed file and receive patents, which is 14 times greater than zero R&D firms. Pseudo-Blank R&D firms (missing R&D firms with patent activity) demonstrate a level of innovation activity on par to the bottom 90–95% of the positive R&D population. There is no equivalent study on advertising expense and the tests in Koh and Reeb (2015) are beyond the scope of the current PhD. However, moving forward, further empirical examination into pseudo-blank advertising firms (firms that report no advertising expenditure on Compustat but actually do spend money on advertising) using some alternative proprietary data sources (for example AC Nielsen Ad Spend) could prove fruitful.

A2: Interbrand Most Valuable Brand list

A2.1 Interbrand Most Valuable Brand list

Interbrand publishes a yearly list of the world's most valued brands in the Financial Times starting in 1992 and, more recently, Business Week. The list is published in Business Week until 2009 and Interbrand assumes sole authorship in 2010. The methodology used by Interbrand to select brands into the list, a five step Economic Value Added methodology, provides perhaps the most well-known and widely used brand valuation method (Haigh and Perrier 1997).

To be included in the list, a brand must have true global presence and have established positive economic profit over the longer term. The brand must have a public profile and awareness across the major economies of the world. These requirements of global presence, established visibility and a transparency when it comes to financial results makes inclusion in the list an appropriate testing platform for my reputation hypothesis in the second empirical chapter.

Interbrand brand equity valuation estimates are recognized by auditors and tax authorities in many countries around the world. Empirical studies also link Interbrand's estimates to financial performance measures such as operating margin and market-to-book ratios (Barth, Clement, Foster, and Kaszkik 1998; Kerin and Sethuraman 1998; Parkhurst 2002). In particular, Barth et al. (1998) find Interbrand's valuation estimates to be relevant and sufficiently reliable for use in financial reporting statements.

Researchers in the finance and marketing arena also make use of some alternative brand value databases. These other brand value models mostly focus on antecedent drivers of brand value in the marketplace and not so much financial value driven. These include Total Research's *EquiTrend* (which uses 11-point scale ratings of perceived product quality)*,* Young and Rubicam's *Brand Asset Valuator* (which measures strength in terms of perceived

differentiation, relevance, knowledge, and esteem), and WPP's *BrandPyramid* (which captures strength in a hierarchy from mere presence to emotional bonding). While useful in the provision of diagnostic guidance regarding how marketing programs create or dilute brand equity, these survey-based perceptual models do not provide a quantification of the financial value of the brand.

A2.2 Merging Interbrand data with Compustat

The Interbrand Best Global Brands list is constructed annually at the brand level, so to merge it with the financial data, reported at the firm level, I manually create a bridge that links Interbrand and Compustat. Specifically, I manually search and identify the firm that owns the brand – some cases where a firm owns multiple brands are noted.

Since the data are a time-series, I identify all the changes in ownerships, such as mergers, acquisitions, and spin-offs, in the Interbrand - Compustat link, and change the brand-firm links accordingly. For example, the link of Gillette brand to the Gillette company was created, but discontinued in 2005, when the company was acquired by Procter & Gamble.

The sample period for collecting Interbrand data is 1992 to 2012. The final Interbrand sample consists of 2,350 firm-year observations.