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**FINANCIAL MARKET IMPLICATIONS OF MARKETING ACTIONS
AND THE DISCLOSURE OF MARKETING INFORMATION**

SUNGKYUN MOON

SINGAPORE MANAGEMENT UNIVERSITY
2019

**FINANCIAL MARKET IMPLICATIONS OF MARKETING ACTIONS
AND THE DISCLOSURE OF MARKETING INFORMATION**

by
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Submitted to Lee Kong Chian School of Business in partial fulfillment of the requirements for
the Degree of Doctor of Philosophy in Business (Marketing)

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Sungkyun Moon

ABSTRACT

Examining the relationship between a firm's marketing actions and its financial performance is widely viewed as critical for the marketing discipline. Not surprisingly, a number of studies have empirically examined the relationship and established the positive effects of firms' marketing actions on firm performance. Little, however, is known about the impact of disclosures of marketing actions by publicly listed firms on the key stakeholders in financial markets. In addition, extant literature on marketing and finance interface has paid less attention to seek for conditions under which marketing actions are more effective and relevant to creating firm value. This dissertation consists of two essays that examine a specific marketing action, advertising spending. In *Essay 1*, I explore the effects of disclosure of advertising spending on analyst and investor uncertainty about future earnings. In *Essay 2*, I identify the firm's financial conditions and market environments where the levels of advertising spending are more (or less) relevant for firm value creation. To address concerns related to potential endogeneity of both disclosure and levels of advertising spending, I propose an instrumentation strategy that draws upon insights from economic geography and auditor norms. Empirical tests show that the instruments are both relevant and valid. Importantly, results provide robust support for the proposed hypotheses in both *Essay 1* and *Essay 2*.

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ACKNOWLEDGEMENTS

During the journey in pursuit of the Ph.D., there were a lot of tough and harsh moments that I could not have overcome without my companions. Without their helps and supports, I could not have made this achievement. First of all, I would like to thank my parents, *In-Woo Moon* and *Chun-Lye Park*. In addition to their dedicated supports, they have always listened to me and respected my decision on every single step in my life. I also want to thank my lovely sisters, *Hye-Jin* and *Hye-Kyung*, and my cousin, *Seongdo*. My life in the Ph.D. program would have been much tougher if he has not been there with me in Singapore. It was really fortunate that I met my advisor, *Kapil*. There is no doubt that he is not only an outstanding scholar and teacher, but also a great mentor who generously spends a lot of his time on the meetings and discussions with me. Whenever I had doubts and concerns on my research, career choices, and job talks, he has encouraged and supported me. Without him, I could not have taken any single step forward during my Ph.D. journey. I owe *Anirban* a big thank you for his support and help in many moments in pursuit of the Ph.D. and during my job market. Also, I would like to thank my other committee members: *Jin K. Han*, *Srinivas K. Reddy*, and *Rajdeep Grewal*. I really appreciate all their suggestions and feedbacks. Since I joined the Ph.D. program, there have always been *the marketing faculty* who have had their doors open for me. I appreciate their great supports and helps. I want to thank *Leon Gim* and *Yee Heng* who shared their ideas and thoughts, and discuss with me things about research, life, and sometimes random things. I owe special thanks to *Jingi*, who helped me tremendously whenever I had questions regarding data collection issues and methods in finance, *other Ph.D. colleagues* in SMU who have been good friends, and *the administrative staff* of SMU who have helped me a lot in university paperwork and other administrative issues.

CHAPTER 1. General Introduction

Examining the relationship between a firm's marketing actions and its financial performance is widely viewed as critical for the marketing discipline. Not surprisingly, a number of studies have empirically examined the relationship and established the positive effects of firms' marketing actions on firm performance. Little, however, is known about the impact of disclosures of marketing actions by publicly listed firms on the key stakeholders in financial markets. In addition, extant literature on marketing and finance interface has paid less attention to explore conditions under which marketing actions are more effective and relevant to creating firm value. This dissertation consists of two essays that examine a specific marketing action, advertising spending. In *Essay 1*, I explore the effects of disclosure of advertising spending on analyst and investor uncertainty about future earnings. In *Essay 2*, I identify the firm's financial conditions and market environments where the levels of advertising spending are more (or less) relevant for firm value creation. To address concerns related to potential endogeneity of both disclosure and levels of advertising spending, I propose an instrumentation strategy that draws upon insights from economic geography and auditor norms. Empirical tests show that the instruments are both relevant and valid. Importantly, results provide robust support for the proposed hypotheses in both *Essay 1* and *Essay 2*.

1.1. Outline of the Dissertation

The first essay of this dissertation, “*The Effects of the Disclosure of Advertising Spending on Investors’ and Analysts’ Uncertainty*”, examines whether the disclosure of a firm’s advertising spending in its annual reports can help investors and analysts predict the firm’s future performance. Chapter 2 of this dissertation provides detailed discussion on this issue and financial market implications of the disclosure of advertising spending. The second essay of this dissertation, “*Advertising and Firm Value: The Role of Financial and Market Relevance*”, examines the contingency effects of advertising on firm value and identifies financial and market conditions under which advertising is more (or less) relevant for firm value creation.

1.2. Contribution of the Dissertation

This dissertation contributes to marketing literature by examining the effects of marketing actions and the disclosure of marketing information through the financial market perspective that has high managerial relevance and policy implications. Specifically, the first essay provides the first empirical examination of the effects of the disclosure of advertising spending on investors’ and analysts’ uncertainty. It is responsive to calls by Marketing Science Institute (see Mizik and Nissim 2011) and Marketing Accountability Standard Board (see Stewart and Gugel 2016) to examine the consequences of disclosure of marketing metrics. The second essay examines the effect of advertising spending on firm value and explores firm and market level contingency effects. By doing so, the second essay identifies relevant firm financial conditions and market environments, and provides managerial implications. Importantly, for the identification of the proposed effects in both essays, I apply the instrumentation strategy to address the potential endogeneity concerns related to disclosure of advertising spending and the level of advertising

spending. Specifically, I develop and propose instruments alternative to those (e.g., the lag of advertising or the average of advertising spending of peer firms in the same industry) frequently used in extant literature in marketing. Accordingly, this dissertation contributes to marketing literature by proposing alternative instruments that can mitigate the critiques by Rossi (2014) and Angrist (2014) and potentially be used in other contexts.

CHAPTER 2. The Effects of the Disclosure of Advertising Spending on Investors' and Analysts' Uncertainty

2.1. Introduction

Whereas a large body of academic research suggests that advertising spending has a positive effect on firm performance (e.g., Joshi and Hanssens 2010; Rust, Lemon, and Zeithaml 2004; Sridhar et al. 2016; McAlister et al. 2016), most publicly listed firms do not disclose this metric in their annual reports (see Figure 1). Under the current regulatory guidelines, firms can make the judgement on whether advertising is “material” and then disclose their advertising spending in their annual reports (SEC 1994). However, this judgement may not be essentially related with investors' and analysts' benefits. For example, in 2016, Apple stopped disclosing advertising spending in its annual reports, and investors and analysts bemoaned this decision. In particular, “analysts at Wells Fargo pointed out in a recent research note, that’s a shame as it was useful to track Apple’s advertising expense, and its ad spend as a percentage of revenue, over time.” (O’Reilly 2016).

Interestingly, recent studies call for mandatory disclosure of advertising spending by publicly listed firms (e.g., Chakravarty and Grewal 2011; Luo and de Jong 2012) given that disclosure of advertising spending is beneficial for investors and analysts. However, little research systematically examines the potential benefits of disclosure of advertising spending for investors and analysts. Hence, this study presents the first systematic empirical examination of the impact of disclosure of advertising spending on the uncertainty faced by investors and analysts about the future earnings of a firm, and provides direct implications for the Securities and Exchange Commission (SEC) and Financial Accounting Standards Board (FASB). In addition, integrating theories of disclosures in accounting with literature in marketing, this study

proposes and tests a contingency framework, and presents a nuanced picture about the conditions under which disclosure of advertising spending is likely to be more (or less) useful for analysts and investors.

2.2. Conceptual Framework

2.2.1. Disclosure of Advertising Spending

Under the current regulatory regime, firms have to disclose their advertising spending in their financial statements only if they consider advertising spending to be *material* information for investors (Heitzman, Wasley, and Zimmerman 2010). The SEC (1999, p. 2-4) explains that “materiality concerns the significance of an item to users of a registrant’s financial statements. A matter is ‘material’ if there is a substantial likelihood that a reasonable person would consider it important” (McAlister et al. 2016, p. 210). The null hypothesis in the current regulatory regime is that only those firms for which advertising spending is (not) material information for investors do (not) disclose advertising spending. As such, *ceteris paribus*, there should not be a significant difference in the investors’ and analysts’ understanding or uncertainty about the future financial performance of firms that disclose their advertising spending and those that do not.

Interestingly, most of the current literature examines the antecedents of advertising spending disclosure such as potential valuation benefits (e.g., Simpson 2008), proprietary costs (e.g., Heitzman, Wasley, and Zimmerman 2010) and political costs (e.g., Legoria 2005). Little attention, however, is directed towards examining the consequences of a firm’s decision to disclose its advertising spending. Uncertainty faced by investors is an important consideration for capital market participants because higher investor uncertainty results in higher costs of capital for the firm (e.g., Bhattacharya et al. 2012; Bloomfield and Fischer 2011; Dhaliwal et al.

2011). Analysts' uncertainty is also important because, as capital market intermediaries, analysts improve market efficiency through information collection and dissemination (see Francis and Soffer 1997; Simpson 2010).

In focusing on both investors' and analysts' uncertainty, this study follows a large body of literature in accounting that examines the consequences of regulatory policies such as Regulation Fair Disclosure (e.g., Bailey et al. 2003; Heflin, Subramanyam, and Zhang 2003), mandatory adoption of International Financial Reporting Standard (e.g., Byard, Li, and Yu 2011), and Jump Start Our Business Startups Act (e.g., Barth, Landsman, and Taylor 2017); and those of firm disclosures such as forward-looking discussions (e.g., Muslu et al. 2014). Importantly, a focus on investors' and analysts' uncertainty allows this study to assess whether disclosures about marketing metrics such as advertising spending “provide useful information to investors and other users of financial reports”, a central concern for regulatory bodies such as SEC and FASB.¹

2.2.2. Disclosure of Advertising, and Investors' and Analysts' Uncertainty

Disclosure of material information by firms provides richer information environment for investors and analysts and increases the predictability of firms' future earnings, i.e., lowers the uncertainty faced by investors and analysts (Healy and Palepu 2001). A large body of empirical studies in marketing, accounting, and economics view advertising spending as information that is likely to be valuable for investors (for a comprehensive review of this literature, see Edeling and Fischer 2016). Specifically, prior research shows that information about advertising spending of a firm is likely to allow investors and analysts to assess a firm's competitive viability (Joshi and

¹ <http://www.fasb.org/facts/>

Hanssens 2010), evaluate its investments in intangible assets (Ellis, Fee, and Thomas 2012; Lev 2001; McAlister, Srinivasan, and Kim 2007), and even make an informed appraisal of its brand equity (Bagwell 2007). Taken together, the vast body of literature across disciplines strongly suggests that information about the advertising spending is likely to increase investors' and analysts' understanding of a firm's future financial performance, and therefore reduce the uncertainty about it. Therefore, the author posits that the disclosure of advertising spending is likely to lower the uncertainty faced by investors and analysts. Formally,

H1a: Disclosure of advertising spending lowers investors' uncertainty.

H1b: Disclosure of advertising spending lowers analysts' uncertainty.

2.2.3. Contingency Framework: Information Relevance

The effectiveness of information provided by a firm depends on the extent to which investors and analysts consider this information to be relevant in understanding the future financial performance of the firm (e.g., Groening, Mittal, and Zhang 2016; Healy and Palepu 2001). Prior research shows that both firm- and industry-specific conditions are likely to determine the relevance of firm disclosures (e.g., Barth, Landsman, and Taylor 2017; Dhaliwal et al. 2011; Enache and Srivastava 2017). Accordingly, this study explores both firm and industry conditions that are likely to moderate the impact of disclosure of advertising spending on investors' and analysts' uncertainty.

Advertising Spending Disclosure and Financial Health of a Firm

Research in accounting shows that if the financial health of a firm is poor, then investors are less likely to pay attention to its disclosures (e.g., Collins, Pincus, and Xie 1999; Hayn 1995). For example, investors are less likely to take into account disclosures by loss-making firms because

they deem disclosures by such firms to be less credible (Frost 1997; Gu and Li 2007). Consistent with this view, this study proposes that the disclosure of advertising spending is likely to have a weaker impact on investors' and analysts' uncertainty for firms that are financially weak.

Drawing on prior literature in marketing and accounting, I consider cash flows the key indicator of firm financial health (e.g., Defond and Hung 2003; Kumar and Krishnan 2008; Vorhies, Morgan, and Autry 2009).

A firm's cash flows are closely tracked by investors, analysts, and regulators because they are widely viewed as an indicator of a firm's financial health (Srinivasan and Hanssens 2009; Vorhies, Morgan, and Autry 2009). A firm with poor cash flows faces concerns about its ability to continue to fund its current operations or even pursue growth opportunities (Kumar and Krishnan 2008). In addition, firms with poor cash flows are more likely to have higher cost of capital and are more likely to face cuts in capital investment (e.g., Campbell, Dhaliwal, and Schwartz 2012). Prior work in accounting shows that under such circumstances, when the firm is facing concerns about its financial health, investors and analysts are less likely to pay attention to disclosures made by the firm (e.g., Hayn 1995; Collins, Pincus, and Xie 1999). Therefore, the author expects that the impact of disclosure of advertising spending on investors' and analysts' uncertainty is likely to be weaker for firms with lower cash flows. Formally,

H2a: The negative effect of disclosure of advertising spending on investors' uncertainty is weaker for firms with lower cash flows.

H2b: The negative effect of disclosure of advertising spending on analysts' uncertainty is weaker for firms with lower cash flows.

Advertising Spending Disclosure and Intangible Assets

Some firms are characterized by a high level of intangible assets (e.g., brand equity and customer relationship) whereas other firms are more dependent on tangible assets (e.g., plants and

equipment). In contrast to tangible assets, intangible assets such as brand equity are difficult to value and rarely appear on the financial statement of a firm (Lev 2018; Slotegraaf, Moorman, and Inman 2003). In addition, there are relatively higher levels of information asymmetry between investors and managers in firms characterized by high levels of intangible assets (Beyer et al. 2010; Lev 2001). Due to this information asymmetry, firms that have greater dependence on intangible assets hire a research firm to publish analysts' reports on the firms themselves (Kirk 2011).

Indeed, intangible assets internally created within a firm are expensed on the income statement and are rarely recognized as assets on the balance sheets (Peters and Taylor 2017). In addition, even in the income statement, investments in intangibles are generally aggregated within selling, general, and administrative expense (SG&A) which includes more than 20 items. As such, it is very difficult for investors to know the extent to which the firm spends on intangible assets. For example, investors and analysts may not know whether the brand value of a firm is maintained, improved, or discounted (Lev 2018).

Therefore, it is more challenging for investors and analysts to evaluate the value of firms characterized by a high level of intangible assets than those by tangible assets. In this context, it is likely that investors and analysts need more information to predict the future cash flows of a firm with higher levels of intangible assets and advertising spending information reported by firms thus is more relevant. Formally,

H3a: The negative effect of disclosure of advertising spending on investors' uncertainty is stronger for firms with higher levels of intangible assets.

H3b: The negative effect of disclosure of advertising spending on analysts' uncertainty is stronger for firms with higher levels of intangible assets.

The Moderating Role of Disclosure Externality

Disclosure by a firm is likely to be more relevant if the firm is operating under conditions where investors and analysts need more information to evaluate its future performance (e.g., Shroff, White, and Zhang 2013). Given that firms operate in different industries, investors and analysts face heterogeneous information environment because demands on relevant information about firms are different in each industry. Thus, industry conditions are likely to determine information environment for investors and analysts.

Research in accounting finds that information disclosure by a firm has impacts on peer firms' stock prices, stock liquidity, and investment decisions (e.g., Foster 1981; Bushee and Leuz 2005; Badertscher, Shroff, and White 2013). Consistent with these findings, the recent empirical study by Shroff, Verdi, and Yost (2017) examines the effect of information disclosures by peer firms in the industry and finds those information disclosures have an impact on a firm's cost of capital. This finding suggests that disclosures of information by peer firms have spillover effects on investors and help reduce information asymmetry between the focal firm and investors (i.e., disclosure externality). Shroff, Verdi, and Yost (2017) also find the effect of information disclosures by peer firms is stronger (weaker) when less (more) information about the focal firm is available in financial markets. This suggests that investors and analysts take advantage of information disclosed by peer firms in the industry to forecast a firm's future cash flows.

Drawing on the theory of disclosure externality (e.g., Dye 1990; Admati and Pfleiderer 2000), this study proposes advertising spending disclosures by peer firms in the industry are likely to influence information environment for a firm and thus affect the relevance of disclosure of advertising spending of the firm.

In an industry in which disclosures of advertising spending by peer firms are prevalent, it is likely that investors and analysts can use advertising spending information of peer firms in the industry to infer the focal firm's advertising spending. The more peer firms disclose advertising spending, the less investors and analysts need information about the firm's advertising spending. As such, advertising spending information disclosed by the firm is less relevant and the information effectiveness becomes weaker. Formally,

H4a: The negative effect of disclosure of advertising spending on investors' uncertainty is weaker for firms in industries where advertising spending disclosures by peer firms are prevalent.

H4b: The negative effect of disclosure of advertising spending on analysts' uncertainty is weaker for firms in industries where advertising spending disclosures by peer firms are prevalent.

2.3. Data and Measures

2.3.1. Data

To test the proposed hypotheses, this study uses data on firms' accounting information from COMPUSTAT. In 1994, SEC issued Financial Reporting Release No. 44 (FRR 44) and changed the regulation for the disclosure of advertising spending. Therefore, this study focuses on the data after fiscal year 1995 to ensure that the sample is within a single regulatory regime.

Following prior literature, the study excludes financial and insurance firms, and firms in the regulated utilities industry (e.g., Badertscher, Shroff, and White 2013; Minnis 2011). To capture investors' uncertainty reflected in idiosyncratic risk, i.e., stock return volatility that is not explained by standard risk factors (Fama and French 1993; Carhart 1997), I use stock price information from Center for Research in Stock Prices (CRSP). I obtain information related with analysts' earnings forecasts from the Institutional Brokers' Estimate System (I/B/E/S) to measure analysts' uncertainty. I use stock price information from CRSP and collect Fama and French risk

factors from Kenneth R. French's library to estimate a firm's idiosyncratic risk.² Following standard practice in finance and accounting, this study excludes stocks whose price is less than \$5 at the end of a fiscal year in estimating models because they are illiquid and their inclusion in the sample can lead to biased results (e.g., Ball, Kothari, Shanken 1995; Kim and Qi 2010; Sadka and Scherbina 2007). In addition, this study focuses on U.S. based firms that are geographically located in states except Alaska and Hawaii and their annual sales are greater than \$250 million. Merging the data from different sources results in 2,523 firms and 20,237 firm-year observations from fiscal year 1995 to 2016.

2.3.2. Measures

Investors' and analysts' uncertainty. I measure investors' uncertainty by idiosyncratic risk of a firm, i.e., stock return volatility that is not explained by standard risk factors (e.g., Han, Mittal, and Zhang 2017). To measure idiosyncratic risk of a firm, I use Fama and French (1993) three-factor model augmented by Carhart (1997)'s momentum factor. Specifically, I use Equation 1 to estimate idiosyncratic risk of firm i :

$$(1) \quad (R_{id} - R_{fd}) = \alpha_i + \beta_{mi} \times (R_{md} - R_{fd}) + \beta_{si} \times SMB_d + \beta_{hi} \times HML_d + \beta_{ui} \times UMD_d + \varepsilon_{id},$$

where R_{id} = daily return on stock of firm i on day d , R_{fd} = daily risk-free return on day d , R_{md} = daily return on a value-weighted market portfolio on day d , SMB_d = Fama-French size portfolio on day d , HML_d = Fama-French market-to-book ratio portfolio on day d , and UMD_d = the momentum factor on day d . To isolate the impact of disclosure of advertising spending in a firm's annual report, I estimate Equation 1 for each firm and each fiscal year by using daily stock

² http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

returns during the period between the day of the release of a firm's annual report and the day before the release of its annual report in the following year. Idiosyncratic risk is measured by the standard deviation of the residuals from Equation 1 (see Han, Mittal, and Zhang 2017).

Analysts' uncertainty is measured by using the average of the standard deviation of analysts' earnings forecasts in each month (e.g., Chen, Miao, and Shevlin 2015; Petacchi 2015). To isolate the impact of disclosure of advertising spending in a firm's annual report, I apply the same approach used to measure investors' uncertainty and measure analysts' uncertainty during the period between the day of the release of a firm's annual report and the day before the release of its annual report in the following year (e.g., Bayer, Tuli, and Skiera 2017).³

Disclosure of advertising spending. I measure disclosure of advertising spending as a binary variable that is equal to one if a firm discloses advertising spending in its annual report or zero otherwise. Consistent with McAlister et al. (2016), I code disclosure of advertising spending as 1 if the item of "xad" in COMPUSTAT is not missing or as 0 otherwise (for a similar practice in accounting literature, see Chen, Miao, and Shevlin 2015; Simpson 2008).

Cash flows. Following prior literature, I measure cash flows of a firm by using its net operating cash flows scaled by total assets (Grewal, Chandrashekar, and Citrin 2010; Gruca and Rego 2005).

Intangible assets. To measure intangible assets of a firm, I follow literature in accounting and calculate the ratio of tangible assets to total assets by using net property, plant, and equipment as tangible assets (e.g., Alissa et al. 2013; Cheng, Dhaliwal, and Zhang 2013). Then, I subtract the ratio from 1 to measure intangible assets such that higher values indicate the higher ratio of intangible to total assets (e.g., Tuli, Bharadwaj, and Kohli 2010).

³ I log transform this measure (i.e., the natural log of one plus analysts' uncertainty) to account for its skewness in the distribution. The substantive results do not change without log transformation.

Disclosures of advertising spending by peer firms. To measure disclosures of advertising spending by peer firms in the industry, I use the proportion of peer firms in the industry that disclose advertising spending (Shi, Grewal, and Sridhar 2019).

Control variables. To isolate the impact of disclosure of advertising spending on investors' and analysts' uncertainty, this study follows prior literature and includes a comprehensive set of control variables. Table 1 outlines the variables, measures, data sources, and supporting literature for the use of these measures. Table 2 shows the descriptive statistics and correlations between the variables used in models. All continuous variables are winsorized at 1% to rule out the influence of outliers.

2.4. Empirical Strategy

2.4.1. Model Specification

To test the proposed hypotheses, this study needs to take into account several econometric considerations. First, although models include a comprehensive set of firm and industry control variables (see Table 1), the models need to account for the potential effect of firm-level time-invariant unobservable factors. As such, the models include firm-specific fixed effects. Second, in order to take into account unobservable year effects, the models include year-specific fixed effects, resulting in the following models for investors' and analysts' uncertainty:

$$(2) \quad IU_{i,j,t} = \beta_{0i} + \beta_1 AD_{i,j,t-1} \\ + \beta_2 AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1} + \beta_3 AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1} \\ + \beta_4 AD_{i,j,t-1} \times \text{Peer Disclosure}_{i,j,t-1} + \Delta' \text{Controls}_{i,j,t-1} + \sum_{k=1}^{K-1} \gamma_k \text{Year}_t + \varepsilon_{i,j,t}$$

where $IU_{i,j,t}$ is investors' uncertainty for firm i in industry j in fiscal year t ; $AD_{i,j,t-1}$ is disclosure of advertising spending by a firm; $\mathbf{Controls}_{i,j,t-1}$ represents the vector of control variables outlined in Table 1; β_{0i} is the firm-specific intercept; and $\varepsilon_{i,j,t}$ is the random error term.

$$(3) \quad AU_{i,j,t} = \delta_{0i} + \delta_1 AD_{i,j,t-1} \\ + \delta_2 AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1} + \delta_3 AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1} \\ + \delta_4 AD_{i,j,t-1} \times \text{Peer Disclosure}_{i,j,t-1} + \mathbf{\Lambda}' \mathbf{Controls}_{i,j,t-1} + \sum_{k=1}^{K-1} \lambda_k \text{Year}_t + \zeta_{i,j,t}$$

where $AU_{i,j,t}$ is analysts' uncertainty for firm i in industry j in fiscal year t ; δ_{0i} is the firm-specific intercept; and $\zeta_{i,j,t}$ is the random error term. To facilitate the interpretation of parameter estimates, this study mean-centers all continuous variables included in the models.

2.4.2. Addressing Endogeneity: Two Stage Residual Inclusion

Although the models include a comprehensive set of control variables, it is possible to argue that a firm's decision to disclose its advertising spending is not exogenous and, in fact, is correlated with time varying unobservable factors (e.g., Nagar, Nanda, and Wysocki 2003; Simpson 2008). Therefore, without accounting for the potential endogeneity of advertising disclosure, models are likely to yield biased estimates. Accordingly, following recent research in marketing (e.g., Danaher et al. 2015) and economics (e.g., Terza, Basu, and Rathouz 2008), this study adopts the two stage residual inclusion (2SRI) approach to take into account the potential endogeneity of disclosure of advertising spending. Specifically, in the first stage I estimates the following probit model:

$$(4) \quad \Pr(AD_{i,j,t-1} = 1) \\ = \Phi(\alpha_0 + \alpha_1 \text{Geographic Peer Disclosure}_{i,j,t-1} + \alpha_2 \text{Auditor Peer Disclosure}_{i,j,t-1} \\ + \mathbf{\Omega}' \mathbf{Controls}_{i,j,t-1} + \sum_{k=1}^{K-1} \theta_k \text{Year}_{t-1}),$$

where Geographic Peer Disclosure $_{i,j,t-1}$ is the proportion of non-industry geographic peers, other than firm i , disclosing advertising spending in their annual reports in industry j at fiscal year $t-1$; Auditor Peer Disclosure $_{i,j,t-1}$ is the proportion of non-industry auditor peers, other than firm i , disclosing advertising spending in their annual reports.

Identification of the 2SRI approach requires inclusion of variables that are correlated with the endogenous variable but are uncorrelated with the error term, i.e., exclusion restriction (Wooldridge 2010). To identify the effects of disclosure of advertising spending, I apply the instrumentation strategy and propose two instruments that drive the disclosure of advertising spending but are uncorrelated with time varying and firm-specific unobservable factors related with the disclosure.

First, I propose as an instrument the proportion of geographic peers that disclose advertising spending. Geographic peers are defined as firms, other than a focal firm, whose headquarters are in the same or neighboring states as the focal firm's headquarter is.

Given the regulatory ambiguity about the disclosure of advertising spending, and the uncertainty related to the associated competitive costs of doing so, I expect that managers are likely to be uncertain about the decision to disclose advertising spending in their annual reports. As such, I argue that one avenue for addressing this uncertainty is by mimetic isomorphism, that is, "the process of imitation in which managers engage when dealing with uncertainty about the relationship between means and ends" (Husted, Jamali, and Saffar 2016, p. 2053; also see Greve 1998). Consistent with mimetic isomorphism, I propose that a firm's decision to disclose its advertising spending is likely to be a function of the extent to which its geographic peers disclose their advertising spending.

Behaviors of geographical peers establish the institutional norms and legitimacy to firm actions, and therefore increase their adoption by firms (see Greve 2002). As more and more geographical peers adopt a practice, the practice is likely to become an accepted norm and attain cognitive legitimacy (see Sine, Haveman, and Tolbert 2005). Indeed, recent research shows that geographical proximity is likely to have a significant impact on a firm's probability of making voluntary disclosures of management forecasts (Matsumoto, Serfling, and Shaikh 2018) and stock option plans to employees (Kedia and Rajgopal 2009). Accordingly, I expect that the higher the proportion of geographical peers of a firm that disclose their advertising spending, the greater will be the probability that a firm discloses its advertising spending.

Importantly, I argue that the disclosure behaviors of geographical peers are unlikely to have any effect on investors' and analysts' evaluation of a firm's future cash flows after taking into account the control variables used in the current study. A potential caveat is that there could be significant overlap between the geographic and industry peers, and therefore tracking the advertising spending disclosures of geographic peers could provide investors with information about a firm's advertising spending. To address this issue, I follow Matsumoto, Serfling, and Shaikh (2018) and focus on the geographic peers that are not in the same industry as the focal firm. As such, it is highly unlikely that the disclosures of advertising spending by non-industry geographic peers are correlated with time varying firm-specific unobservable factors related with firm decision to disclose advertising spending.

Second, I also propose as the additional instrument the proportion of auditor peers that disclose advertising spending. Auditor peers are defined as firms, other than a focal firm, whose auditor is the same as that of a focal firm.

Accounting research has established that firms rely on auditors to make accounting decisions and auditors are involved in the process of corporate disclosure decisions (e.g., Acito, Burks, and Johnson 2009; Heitzman, Wasley, Zimmerman 2010; Kwak, Ro, and Suk 2012). When firms decide to disclose information, they usually consult with the auditor and determine the materiality of information (Heitzman, Wasley, Zimmerman 2010).

Auditors have structured processes and internal rules of conducting an audit (Kothari, Ramanna, and Skinner 2010). These processes and rules characterize a particular audit style (Francis, Pinnuck, and Watanabe 2014) and may act as norms not only for auditing and but also for accounting decisions such as information disclosures. As a result, auditors tend to make financial statements to be consistent with their audit styles, and make adjustments to accounts consistently throughout their clients, which results in similar financial statements of client firms sharing the same auditor (Johnston and Zhang 2018).

There are numerous firms that are required to hire an independent auditor to audit their financial reports according to the SEC regulation. However, there is the limited number of auditors available in the market for firms and, therefore, it is natural for firms to share the same auditor regardless of industries. Given that firms usually share the same auditors and auditors influence corporate disclosure decisions, it is reasonable to expect that a firm's information disclosure can be influenced by those of firms sharing the same auditor.

Indeed, empirical studies suggest that firms sharing the same auditor show similar disclosure patterns (e.g., Brown and Knechel 2016; De Franco, Fogel-Yaari, and Li 2016; Glendening, Mauldin, and Shaw 2019). For example, a firm's MD&A section is textually similar with those of other firms audited by the same auditor (De Franco, Fogel-Yaari, and Li 2016). In addition, Glendening, Mauldin, and Shaw (2019) find that a firm is more likely to disclose the

quantitative critical accounting estimate when its auditor has multiple clients disclosing the same information. Therefore, this study proposes that disclosures of advertising spending by auditor peers have a positive effect on a focal firm's disclosure of advertising spending.

Importantly, I argue this instrument is valid and the disclosures of advertising spending by auditor peers may not affect investors' and analysts' expectation on a firm's future cash flows. One potential concern is that some of auditor peers compete with the focal firm in the same industry and thus disclosures of advertising spending by auditor peers help investors and analysts expect a firm's advertising spending. However, to mitigate this concern, this study only considers auditor peers that do not operate in the same industry as the focal firm. Therefore, it is unreasonable to expect that disclosures of non-industry auditor peers are correlated with time varying firm-specific observable factors related with the disclosure of advertising spending of the focal firm.

After estimating Equation 4, I generate the probit residual of $AD_{i,j,t-1}$, $PR_AD_{i,j,t-1}$, and include it as an additional covariate in Equation 2 and 3 to obtain the following two models:

$$(5) \quad IU_{i,j,t} = \beta_0i + \beta_1AD_{i,j,t-1} \\ + \beta_2AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1} + \beta_3AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1} \\ + \beta_4AD_{i,j,t-1} \times \text{Peer Disclosure}_{j,t-1} + \beta_5PR_AD_{i,j,t-1} \\ + \Lambda' \text{Controls}_{i,j,t-1} + \sum_{k=1}^{K-1} \gamma_k \text{Year}_t + \varepsilon_{i,j,t}$$

$$(6) \quad AU_{i,j,t} = \delta_0i + \delta_1AD_{i,j,t-1} \\ + \delta_2AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1} + \delta_3AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1} \\ + \delta_4AD_{i,j,t-1} \times \text{Peer Disclosure}_{j,t-1} + \delta_5PR_AD_{i,j,t-1} \\ + \Lambda' \text{Controls}_{i,j,t-1} + \sum_{k=1}^{K-1} \lambda_k \text{Year}_t + \zeta_{i,j,t}$$

Following Terza, Basu, and Rathouz (2008) and Petrin and Train (2010), I use 200 bootstrapping replications to calculate standard errors of coefficients in estimating Equation 5 and Equation 6

because the models include the generated term, i.e., $PR_AD_{i,j,t-1}$. In addition, I use the clustered robust standard errors at the firm level to account for the possibility that errors of observations from the same firm are correlated (e.g., Han, Mittal, and Zhang 2017; Jindal and McAlister 2015).

2.5. Results

2.5.1. Hypotheses Testing

Table 3 outlines the results of estimating the probit model, i.e., Equation 4. As expected, and in support of the proposed exclusion restrictions, disclosures of advertising spending by non-industry geographic peers, i.e., Geographic Peer Disclosure $_{i,j,t-1}$, have a significant positive impact on current disclosure ($\alpha_1 = 1.130, p < .05$). Similarly, disclosures of advertising spending by non-industry auditor peers, i.e., Auditor Peer Disclosure $_{i,j,t-1}$, have a significant positive impact on current disclosure ($\alpha_2 = 3.859, p < .001$).

Table 4 outlines the results of estimating “main effects only models” which are versions of Equation 5 and 6 without the interaction terms between $AD_{i,j,t-1}$ and the proposed moderators (see Model 1 & 3 in Table 4). Model fit statistics suggest that the proposed full models have better fit with the data.⁴ As such, in testing the proposed hypotheses, this study examines results from Model 2 and Model 4 in Table 4.

Consistent with H_{1a} and H_{1b} , this study finds that disclosure of advertising spending by firms in their annual reports has a significant negative impact on investors’ uncertainty ($\beta_1 = -.001, p < .001$) and analysts’ uncertainty ($\delta_1 = -.019, p < .001$).

⁴ By using Akaike information criteria (AIC), I compare Model 1 (AIC = -153,174.3) with Model 2 (AIC = -41,848.28), and Model 3 (AIC = -153,207) with Model 4 (AIC = -41,864.71). Consistently, adjusted R^2 suggests Model 3 (= .4285) and Model 4 (= .1123) have better fit than Model 1 (= .4275) and Model 2 (= .1115).

In support of the proposed contingency framework, this study finds that there are both firm and industry factors that moderate the effects of $AD_{i,j,t-1}$ on investors' and analysts' uncertainty. Consistent with H_{2a} and H_{2b} , this study finds that the interaction of $AD_{i,j,t-1}$ and cash flows is negative and significant for both investors' uncertainty ($\beta_2 = -.005, p < .05$) and analysts' uncertainty ($\delta_2 = -.073, p < .01$). In addition, the interaction of $AD_{i,j,t-1}$ and intangible assets is negative and significant for investors' uncertainty ($\beta_3 = -.004, p < .001$). H_{3a} , therefore, is supported. However, this study does not find empirical support for H_{3b} ($\delta_3 = -.012, n.s.$).

H_{4a} is also not supported as the interaction of $AD_{i,j,t-1}$ and peer disclosure is not significant for investors' uncertainty ($\beta_4 = .000, n.s.$). However, consistent with H_{4b} , this study does find that the interaction of $AD_{i,j,t-1}$ and peer disclosure is positive and significant for analysts' uncertainty ($\delta_4 = .025, p < .01$).

2.5.2. Robustness Analyses

This study conducts multiple sensitivity analyses to examine the robustness of the preceding results. As shown in the results of robustness checks in Table 5 and Table 6, the conclusion of the study is robust to an alternative measure for investors' uncertainty estimated from Fama and French three-factor model (Fama and French 1993), an alternative measure for analysts' uncertainty (i.e., without log transformation), an alternative industry classification (i.e., the three digit NAICS)⁵, the choice of exclusion restriction (i.e., using either Geographic Peer Disclosure $_{i,j,t-1}$ or Auditor Peer Disclosure $_{i,j,t-1}$, or using the lag of both instruments, Geographic Peer Disclosure $_{i,j,t-2}$ and Auditor Peer Disclosure $_{i,j,t-2}$), and an alternative model specification (i.e., random effects models).

⁵ Results based on the five-digit NAICS also show the consistent results.

Table 5 presents the results of the robustness checks for the effect of disclosure of advertising spending on investors' uncertainty and Table 6 shows those for the effect of disclosure of advertising spending on analysts' uncertainty.

2.6. Discussion

2.6.1. Implications for Regulators and Managers

The current study finds significant difference in the uncertainty faced by investors and analysts for firms that disclose and those that do not disclose advertising spending. Thus, the clear implication for FASB and SEC is that they need to reconsider the current regulation that allows managers to make the decision about the materiality of advertising spending for investors. By reconsidering the current regulation, FASB and SEC can address investors' and analysts' concerns that are likely to arise when firms, such as Apple, decide to stop disclosing advertising spending (O'Reilly 2016).

In addition, results of the contingency framework provide a template for managers as this study identifies specific conditions under which disclosures of advertising spending are likely to have stronger effects on lowering investors' and analysts' uncertainty. Specifically, the benefit of advertising spending disclosure is likely to be stronger for firms with higher cash flows and higher levels of intangible assets, and those in industries where disclosures of advertising spending by peer firms are scares (see Figure 2 and 3). Hence, the current study highlights that disclosure of advertising spending is more salient for managers in the contexts outlined in the contingency framework.

2.6.2. Implications for Extant Literature

This study contributes to the nascent literature on disclosure of marketing metrics (e.g., Bayer, Tuli, and Skiera 2017; Srinivasan and Sihi 2012) by identifying both firm- and industry-specific conditions under which disclosure of a specific metric, i.e., advertising spending, does (or does not) have an impact on the uncertainty faced by investors and analysts.

Results of the current study suggest a firm's financial condition to be a critical contingency for the effects of disclosure of advertising spending on both investors' and analysts' uncertainty. To facilitate the discussion of the moderating effects, this study uses the estimates from the results of Model 2 and Model 4 in Table 4 and calculates the marginal effects of disclosure of advertising spending on investors' and analysts' uncertainty across the values of each moderating variable. I use the 20th and 80th percentile of each moderating variable to calculate the marginal effects. Based on the calculated marginal effects, I draw the graph to describe the interaction effect of each moderating variable and disclosure of advertising spending on investors' and analysts' uncertainty.

Specifically, this study finds that the marginal effects of disclosure of advertising spending on investors' uncertainty and analysts' uncertainty are stronger for firms with higher cash flows. Panel A in Figure 2 shows that the effect of disclosure of advertising on investors' uncertainty monotonically decreases as cash flows of firms increase (see Figure 2, Panel A). Similarly, Panel A in Figure 3 also shows the same that the extent to which disclosure of advertising spending by firms can reduce analysts' uncertainty increases as cash flows of firms increase (see Figure 3, Panel A).

In addition, this study finds that the marginal effects of disclosure of advertising spending on investors' uncertainty are amplified for firms with higher levels of intangible assets. Panel B

in Figure 2 indicates the degree to which disclosure of advertising spending by firms increases as the levels of firms' intangible assets become higher. However, firms with higher levels of tangible assets rather than intangible assets, i.e., 20th to 30th percentile, do not have this benefit because the marginal effect of advertising spending disclosure is not significant (see Figure 2, Panel B).

Importantly, this study also finds strong support for the moderating effect of an industry condition as the marginal effect of advertising spending disclosure on analysts' uncertainty is strong for firms in industries where disclosures of advertising spending by peer firms are scarce. Panel B in Figure 3 clearly shows the pattern that disclosure of advertising spending can provide more benefits to firms in industries where peer firms rarely disclose advertising spending. In particular, the marginal effect of the disclosure of firms in industries with scarce disclosures of advertising spending by peer firms is approximately five times compared to that of firms in industries with prevalent disclosures by peer firms. (see Figure 3, Panel B).

Taken together, by identifying both firm- and industry-specific conditions under which disclosure of a specific marketing metric, i.e., advertising spending, does (or does not) have an impact on the uncertainty faced by investors and analysts, this study contributes to the nascent literature on disclosure of marketing metrics (e.g., Bayer, Tuli, and Skiera 2017).

2.7. Conclusions

Integrating literature in marketing and accounting, this essay examines the effects of disclosure of advertising spending by publicly listed firms on the uncertainty faced by investors and analysts about future earnings of a firm. In this essay, I find the empirical evidence that disclosure of advertising spending has a significant negative impact on investors' and analysts'

uncertainty about future earnings of a firm. Importantly, the results account for the potential endogeneity of disclosure of advertising spending by using alternative instruments to those frequently used in extant literature that can mitigate the critiques by Rossi (2014) and Angrist (2014). In addition, consistent with the proposed contingency framework, I find the negative effect of disclosure of advertising spending on investors' uncertainty is stronger for firms with higher cash flows and higher levels of intangible assets. Similarly, I find the negative effect of disclosure of advertising spending on analysts' uncertainty is stronger for firms with higher cash flows and weaker for firms in industries where disclosures of advertising spending by peer firms are prevalent. Taken together, this essay has direct implications for SEC and FASB and identifies specific conditions under which disclosure of advertising spending is more (or less) useful.

CHAPTER 3. Advertising and Firm Value: The Role of Financial and Market Relevance

3.1. Introduction

Senior managers, financial analysts, and investors frequently discuss the importance of tracking a firm's advertising spending. For example, Procter and Gamble spent \$8 billion on advertising in a year (Procter and Gamble 2016b) and Apple spent \$1.8 billion in 2015 (O'Reilly 2016).

Indeed, advertising is frequently discussed in firms' earnings conference calls among executives, financial analysts, and investors. During an earnings conference call, an analyst from Societe Generale asked senior managers at Diageo, "On your advertising and promotion...wanted to understand...if there are any brands that have significantly benefited or lost out as a result of that?" (Diageo 2016). Underscoring the importance of advertising, an analyst from Deutsche Bank questioned the senior management of Colgate Palmolive, "Can you talk about structurally how you view advertising?" (Colgate Palmolive 2015).

Reflecting the analysts' interest, senior managers often convey their commitment to enhance advertising. For example, Indra K. Nooyi, the CEO of PepsiCo, notes to investors that "our spending on advertising and marketing as a percentage of sales increased by 40 basis points" (PepsiCo 2017). Jon Moeller, CFO of Procter and Gamble, emphasizes the importance of advertising by noting to investors "we're expecting increases in advertising spend this year versus last" (Procter and Gamble 2016a).

Advertising spending is undoubtedly a critical marketing instrument for managers and a large body of academic research empirically examines its effects on different dimensions of financial performance such as firm value (e.g., Joshi and Hanssens 2010), stock returns (e.g., Kim and McAlister 2011; Osinga et al. 2011), and firm risk (e.g., McAlister, Srinivasan, and

Kim 2007). Surprisingly, extant literature has paid little systematic attention to identifying contingencies under which advertising spending is more relevant to creating firm value. Indeed, Edeling and Fischer (2016) meta-analyze 83 studies and find a very low mean elasticity for advertising spending to firm value. Thus, it seems to be important to understand conditions under which a firm's advertising spending is more (or less) relevant to firm value creation.

Against this background, the second essay of my dissertation seeks to make two contributions. *First*, responding to the extant literature suggesting mixed empirical evidence of the effect of advertising on firm value, this essay provides the empirical evidence of the positive link between advertising and firm value. In particular, in examining the effect of advertising on firm value, I propose an instrumentation strategy that draws upon insights from economic geography and auditor norms to address concerns related to potential endogeneity of levels of advertising spending. *Second*, I closely examine the financial market implication of advertising spending and develop arguments for the contingency effects of advertising in creating firm value. Exploration of the contingency effects, in turn, offers an opportunity to identify firm- and industry-level conditions under which advertising is more (or less) relevant to firm value, and provide the nuanced implications for marketing theory and managers.

3.2. Conceptual Framework

3.2.1. Advertising and Firm Value

Extant research views the effect of advertising on firm value as positive (e.g., Edeling and Fischer 2016; Joshi and Hanssens 2010). One argument for the positive link between advertising and firm value is the persuasiveness of advertising. The persuasive view of advertising suggests that advertising creates intangible assets such as brand equity that generate both current and

future cash flows (see McAlister et al. 2016; Bagwell 2007). Indeed, a large body of literature in marketing supports this argument, and shows the empirical evidences that advertising translates into greater consumer awareness (Draganska and Klapper 2011) and customer retention (Datta, Fourbert, and van Heerde 2014).

Consistent to this argument, marketing literature suggests that advertising has an ability to create not only the current sales but also the expected future sales (see Srinivasan and Hanssens 2009). For example, Joshi and Hanssens (2010) theorize that advertising has a direct impact on firm value through investors' positive expectations on future sales, and they find the empirical evidence supporting the direct impact of advertising on firm value in the PC manufacturing and sporting goods industries.

Indeed, higher levels of advertising indicate the competitive viability of a firm (Joshi and Hanssens 2010), and therefore its ability to generate superior firm performance. Building on the persuasive view of advertising, I expect that advertising helps build intangible assets such as brand equity and lead to creating firm value through the conduit of brand equity. Therefore,

H₁: The higher advertising spending, the higher is firm value.

3.2.2. Contingency Approach: Financial and Market Relevance

It is important to understand conditions under which advertising is more (or less) relevant to firm value. In fact, several studies in marketing suggest understanding of the contingency effects of advertising is important. For example, McAlister et al. (2016) empirically examine the moderating role of firm strategy and find that advertising has a positive impact on the value of firms with differentiation strategy. In addition, Srinivasan, Lilien, and Sridhar (2011) suggest the effect of advertising on firm value during recessions depends on firm-specific conditions and product market profiles (e.g., B2B or B2C). These studies provide insightful implications for

understanding the contingencies of the link between advertising and firm value in terms of both firm-level and market-level conditions. However, these studies also leave an avenue for further research on the contingency effects of advertising because it is likely that there are conditions that moderate the effect of advertising on firm value in terms of firms' financial and market conditions.

Prior research suggests that, for investors, it is important to consider a firm's financial conditions in evaluating the effect of advertising on the firm's future performance (e.g., Bharadwaj, Tuli, and Bonfrer 2011). This is because, given the uncertainty about payoffs from firms' investment in marketing actions, a firm's financial conditions provide a signal to investors if the firm is able to build relevant assets and manage risks and threats involved in marketing actions (e.g., Bharadwaj, Tuli, and Bonfrer 2011; Kurt and Hulland 2013; Malshe and Agarwal 2015). Thus, by taking financial conditions into consideration, investors are able to evaluate the extent to which a firm's marketing actions are relevant. In addition, market conditions are also important to consider in predicting firm future performance. This is because market conditions such as competition and growth are likely to shape the uncertainty of the outcome derived from a firm's strategic actions and thus determine their relevance to firm value (e.g., Dess and Beard 1988; Han, Mittal, and Zhang 2017; Saboo and Grewal 2013). Accordingly, I incorporate the financial perspective and propose financial and market relevance as important contingencies.

As the mixed evidence of the effect of advertising spending on firm value suggests, the effect is not likely to be homogenous to all firms. Rather, the effect is plausibly heterogenous to firms and both the internal and external conditions of firms may determine the relevance of advertising for creating firm value. Therefore, I examine the effect of advertising on firm value through the lens of the financial and market relevance.

3.2.3. Moderating Role of Financial Relevance

Intangible assets. Firm assets are “claims to future benefits” and may suggest the potential economic rents generated by business operation (Lev 2001, p. 5). Specifically, firm assets indicate how firms generate cash flows through their recurrent operation. For example, some firms have high levels of intangible assets (e.g., brand equity) and others are more dependent on tangible assets (e.g., plants and equipment). This suggests that firms with higher intangible assets may rely more on those assets to generate cash flows whereas firms with higher tangible assets have claims to future cash flows from production facilities (Lev 2001). As such, it is likely that the extent to which a firm is dependent on its intangible assets can determine the relevance of advertising to building brand equity and the effect of advertising on firm value since advertising is a critical instrument to establish intangible assets.

It is reasonable to expect that advertising is more important and relevant for firms with higher levels of intangible assets. Since these firms have claims to future benefits driven by intangible assets such as brand equity, investment in enhancing brand equity (e.g., brand awareness and brand quality) through advertising is more likely to be relevant to generating cash flows and firm value (McAliter et al. 2016; Joshi and Hanssesn 2010). Thus, in this context, investors are more likely to expect higher relevance of advertising to firms with intangible assets and higher investors’ expectations of future cash flows of firms.

Accordingly, I argue that asset configuration of a firm matters for the effect of advertising on firm value and predict that the effect of advertising on firm value is likely to be stronger for firms with higher levels of intangible assets. Formally,

H₂: The positive effect of advertising spending on firm value is stronger for firms with higher levels of intangible assets.

Cash flows. Investors, analysts, and regulators closely track a firm's cash flows because they are widely viewed as an indicator of a firm's financial health (Srinivasan and Hanssens 2009; Vorhies, Morgan, and Autry 2009). A firm with poor cash flows may suffer from the inability to continue to fund its current operations or even pursue growth opportunities (Kumar and Krishnan 2008). In addition, firms with poor cash flows are more likely to face cuts in capital investment (e.g., Campbell, Dhaliwal, and Schwartz 2012).

Firm ability to maintain or enhance its advertising is an important consideration for investors because it serves as an assurance that they can expect the firm performance to be sustainable. A firm with higher cash flows is likely to have greater resources to maintain the investments required to sustain its market-based assets and capabilities (Katsikeas et al. 2016). Without the ability to do so, investors are not certain about the expectation of a firm's future cash flows generated by advertising through the conduit of brand equity. As such, the effect of advertising on firm value is likely to be stronger for firms with higher cash flows. Formally,

H₃: The positive effect of advertising on firm value is stronger for firms with higher cash flows.

Financial leverage. A firm's financial leverage indicates the extent to which it relies on debt to obtain financial resources. Firms with high leverage are likely to suffer from financial constraints because they need to pay interests and the principal amount of the debt. Higher financial leverage increases the probability of financial distress and even concerns about a firm's survival (Kurt and Hulland 2013; Malshe and Agarwal 2015). Indeed, Cookson (2017) finds that firms with high leverage are more exposed to external threats as they have limited financial resources to respond to them. The financial constraints of high leverage can also have spillover on firms' operations and result in more frequent and severe product recalls (see Kini, Shenoy,

and Subramaniam, 2017). Taken together, firms with high leverage are likely to be viewed as being in precarious financial health, a condition in which investors are less likely to expect advertising to be relevant because investors may cast doubt on the resources (and/or ability) available to firms with higher financial leverage to maintain and enhance levels of advertising and thus brand equity. Therefore, I predict:

H4: The positive effect of advertising on firm value is weaker for firms with higher financial leverage.

3.2.4. Moderating Role of Market Relevance

A firm's advertising is likely to be more relevant if the firm is operating under conditions which a firm's advertising better translates into brand equity. Given that firms operate in different industries, they face heterogeneous environment because competitive dynamics and resource munificence differ in each industry. Thus, market environments are likely to determine the relevance of advertising and affect investors' expectations of a firm's future cash flows.

Dess and Beard (1984) suggest environmental complexity and munificence shape the levels of uncertainty about the outcome of managerial decisions and then determine the relevance of the decisions to specific contexts. Competitive intensity reflects the extent to which market is complex and market growth indicates the degree of resource munificence in markets (e.g., Messersmith et al. 2014). In addition, due to competitive interference, the market environment is less likely to be conducive for a firm's advertising to translate into brand equity and firm value when peer firms in an industry spend higher levels of advertising spending. As such, I propose peer advertising, competitive intensity, and industry growth as important contingencies for the effect of advertising on firm value.

Peer advertising. It is common that firms competitively adjust their advertising spending to maintain their brand awareness and defeat other firms in brand competition. If a firm increases its level of advertising spending, then other firms also increase their advertising spending levels to compete with the firm in consumers' mind shares (Danaher, Bonfrer, and Dhar 2008; Edeling and Fischer 2016). In this context, it is likely that the extent to which peer firms in the same industry spend on advertising influences the relevance to the effect of advertising on firm value. Indeed, extant literature suggests understanding of competitive aspects of advertising is important, and a number of studies in the examination of advertising effect on firm performance measure advertising as its share of voice (e.g., Frennea, Han, and Mittal 2018; McAlister et al. 2016; Steenkamp and Fang 2011).

When the levels of peer firms' advertising are higher, the competition in advertising is likely to be higher. As such, due to competitive interference, it may be uncertain that a firm's investment in advertising can translate into firm value through the conduit of brand equity (e.g., Burke and Srull 1988; Danaher, Bonfrer, and Dhar 2008). Therefore, I argue that the effect of advertising on brand equity and thereby firm value can be weakened when the levels of peer firms' advertising spending are higher in the industry. Formally,

H5: The positive effect of advertising on firm value is weaker for firms in industries where the level of peer advertising is higher.

Competitive intensity. In a highly competitive industry, it is likely that there are a larger number of firms with a variety of offerings for consumers. As such, in highly competitive industries, consumers' choices on firm offerings are plenty, and it is more likely that consumers can easily switch over products and services (Jaworski and Kohli 1993). Greater number of competitors combined with more choices for consumers can make for more complex competitive

dynamics (e.g., Messersmith et al. 2014). Given the same level of advertising and higher competition in the industry, it seems to be more difficult for a firm to translate its advertising into brand equity and firm performance. This is because consumers have numerous choices for products and can easily be distracted by other firms' products with marketing efforts. Thus, it is likely that the effect of advertising on a firm's brand equity and firm value is weaker for firms in more competitive industries. Therefore, I expect:

H₆: The positive effect of advertising on firm value is weaker for firms in industries with higher competitive intensity.

Industry Growth. High growth rate in an industry means that more resources and opportunities are available for firms in that industry (e.g., Brauer and Wiersema 2012). The availability of resources and opportunities, therefore, is likely to provide more conducive environment for firms to build their brand equity through advertising in such industries. This is because risks of failure become lower because of greater availability of resources (see Baum and Wally 2003), and consumer demand is likely to constantly increase. In this context of industries with higher growth, investors are likely to expect the advertising is of high relevance to firm value creation and the effect of advertising on firm value becomes stronger. Therefore,

H₇: The positive effect of advertising on firm value is stronger for firms in industries with higher industry growth.

3.3. Data and Measures

3.3.1. Data

I obtain accounting-related information from the COMPUSTAT annual database, stock prices from the Center for Research in Security Prices (CRSP). In 1994, Securities and Exchange Commission (SEC) clarified the disclosure standard for advertising via Financial Reporting Release No. 44 (FRR44). Therefore, to ensure that the sample represents a single regulatory

paradigm, this study focuses on the data after fiscal year 1995 and uses data of firms from 1995 to 2016. Following precedence in finance and accounting literature, the study excludes financial and insurance firms, and firms from the regulated utilities industry (e.g., Badertscher, Shroff, and White 2013; Minnis 2011). This study follows standard practice in finance and accounting and excludes stocks whose price is less than \$5 at the end of a fiscal year in estimating models because they are illiquid and their inclusion in the sample can lead to biased results (e.g., Ball, Kothari, Shanken 1995; Kim and Qi 2010; Sadka and Scherbina 2007). In addition, this study focuses on U.S. based firms that are geographically located in states except Alaska and Hawaii and their annual sales are greater than 250 million dollars. After merging the data from different sources, the sample consists of 11,096 observations of 1,566 firms over 22 fiscal years from 1995 to 2016.

3.3.2. Measures

Firm value. Consistent with prior research, this study uses Tobin's q to measure firm value (e.g., McAlister et al. 2016; Sridhar et al. 2016; Chung and Pruitt 1994). Specifically,

$$(1) \quad \text{Firm Value (FV)}_{i,j,t} = \text{Tobin's } q_{i,j,t} \\ = \frac{\text{Market Value of Equity}_{i,j,t} + \text{Preferred Stock}_{i,j,t} + \text{Debt}_{i,j,t}}{\text{Total Assets}_{i,j,t}},$$

where Market Value of Equity $_{i,j,t}$ = the number of common shares outstanding \times share price at the end of fiscal year; Preferred Stock $_{i,j,t}$ = liquidating value of preferred stock; and Debt $_{i,j,t}$ = [(short-term liabilities – short-term assets) + long-term debt]; Total Assets $_{i,j,t}$ = the book value of total firm assets for firm i in industry j in fiscal year t .

Advertising. Following prior literature (e.g., Frieder and Subrahmanyam 2005; Joshi and Hanssens 2010; Mathur and Mathur 2000), this study measures a firm's advertising by the natural log of a firm's annual advertising expenditure reported in its financial report.

Intangible assets. To measure intangible assets of a firm, I follow literature in accounting, and calculate the ratio of tangible assets to total assets by using net property, plant, and equipment as tangible assets (e.g., Alissa et al. 2013; Cheng, Dhaliwal, and Zhang 2013). Then, I subtract the ratio from 1 to measure intangible assets such that higher values indicate the higher ratio of intangible to total assets (e.g., Tuli, Bharadwaj, and Kohli 2010).

Cash flows. Following prior literature, this study measures cash flows of a firm by using its net operating cash flows scaled by total assets (Grewal, Chandrashekar, and Citrin 2010; Gruca and Rego 2005).

Leverage. This study measures a firm's financial leverage by the ratio of total long-term debt to equity, where equity is the market value of a firm's equity (e.g., Malshe and Agarwal 2015).

Peer Advertising. Peer advertising is measured by the average of advertising expenditure of peer firms in an industry based on the six-digit North American Industry Classification System (NAICS6).

Competitive intensity. This study uses the Herfindahl-Hirschmann index (HHI) to measure competitive intensity in an industry. I subtract HHI from 1 so that higher values of the variable represent higher competitive intensity (e.g., Deb, David, and O'Brien 2017; Fang, Lee, and Yang 2015).

Industry growth. I measure industry growth by the natural log of sales of an industry in the current fiscal year less natural log of sales of an industry in the prior year (e.g., Dotzel, Shankar, and Berry 2013).

Control variables. In addition to independent variables, this study follows prior literature focusing on firm value and incorporates additional control variables. The control variables include firm age, firm size, and liquidity. Consistent with prior literature in marketing and finance, I measure firm age by the number of years since the date of the stock listing on the stock market (e.g., McAlister, Srinivasan, and Kim 2007).⁶ I log transform firm age to account for its skewness in the distribution (Dotzel, Shankar, and Berry 2013; Heely, Matusik, and Jain 2007). In addition, I measure firm size by the natural log of total assets (e.g., Rego, Billett, and Morgan 2009; McAlister et al. 2016) and liquidity by the ratio of current assets to current liabilities (e.g., McAlister et al. 2016; Frennea, Han, and Mittal 2018).

Table 7 shows the descriptive statistics and correlations between the variables used in the empirical model. All continuous variables are winsorized at 1% to rule out the influence of outliers.

3.4. Empirical Strategy

3.4.1. Model Specification

The data used in this study feature a panel structure: multiple firms over multiple years are observed. The data structure allows this study to account for several important econometric issues. First, to account for the possibility that errors of observations from the same firm are correlated and heteroscedasticity in the error term, the model uses clustered robust standard

⁶ As is the common practice in finance, I use the date in which the stock first appears in CRSP as the listing date for the stock (e.g., John, Knyazeva, and Knyazeva 2011; Zhang 2006).

errors at the firm level (e.g., Han, Mittal, and Zhang 2017; Jindal and McAlister 2015). Second, to account for the potential effect of firm-level time-invariant unobservable factors, the model includes firm fixed-effects. Third, to account for unobservable factors related with years, the model includes year fixed-effects. Taken together, for firm i in industry j at fiscal year t , Equation 2 outlines the focal model of interest in this study to test the hypotheses:

$$(2) \quad FV_{i,j,t} = \beta_{0i} + \beta_1 \text{Advertising}_{i,j,t} \\ + \beta_2 \text{Advertising}_{i,j,t} \times \text{Intangible Assets}_{i,j,t} + \beta_3 \text{Advertising}_{i,j,t} \times \text{Cash Flows}_{i,j,t} \\ + \beta_4 \text{Advertising}_{i,j,t} \times \text{Leverage}_{i,j,t} + \beta_5 \text{Advertising}_{i,j,t} \times \text{Peer Advertising}_{i,j,t} \\ + \beta_6 \text{Advertising}_{i,j,t} \times \text{Competitive Intensity}_{j,t} + \beta_7 \text{Advertising}_{i,j,t} \times \text{Industry Growth}_{j,t} \\ + \Theta' \text{Controls}_{i,j,t} + \sum_{k=1}^{K-1} \gamma_k \text{Year}_t + \varepsilon_{i,j,t},$$

where FV is firm value measured by Tobin's q ; β_{0i} is the firm-specific intercept, $\text{Controls}_{i,j,t}$ is the vector of control variables; $\varepsilon_{i,j,t}$ is a random error term for firm i in industry j in fiscal year t . To facilitate the interpretation of parameter estimates, this study mean-centers the continuous variables.

3.4.2. Endogeneity Concerns

Selection bias. The focal variable of this study is advertising which requires annual advertising expenditure information, and the model includes firms that have advertising expenditure information in their financial reports. As such, the model, in turn, is likely to face a selection bias.

Therefore, following Han, Mittal, and Zhang (2017), this study uses the econometric approach proposed by Heckman (1979) to account for the potential selection bias. Specifically, I estimate a probit model on the complete data (all firms in COMPUSTAT and CRSP from 1995 to 2016). The dependent variable of the probit model is the disclosure of advertising expenditure

(i.e., AD Disclosure_{i,j,t}) by firm i in industry j in fiscal year t . I code AD Disclosure_{i,j,t} as 1 if a firm has the corresponding advertising expenditure information in its financial report, and 0 otherwise. I estimate the following model:

$$\begin{aligned}
 (3) \quad & \Pr(\text{AD Disclosure}_{i,j,t} = 1) \\
 & = \Phi(\Delta'Z_{i,j,t}) \\
 & = \Phi(\alpha_0 + \alpha_1\text{Geographic Peer Disclosure}_{i,j,t} + \alpha_2\text{Auditor Peer Disclosure}_{i,j,t} \\
 & \quad + \alpha_3\text{Peer Disclosure}_{i,j,t} + \Omega'\text{Controls}_{i,j,t} + \sum_{k=1}^{K-1} \lambda_k \text{Year}_t),
 \end{aligned}$$

where Geographic Peer Disclosure_{i,j,t} is the proportion of non-industry geographic peers that disclose advertising spending; Auditor Peer Disclosure_{i,j,t} is the proportion of non-industry auditor peers that disclose advertising spending; Peer Disclosure_{i,j,t} is the proportion of industry peers that disclose advertising spending for firm i in industry j in fiscal year t . The probit model includes all independent and control variables used in Equation 2 other than variables using advertising expenditure.

In addition, the model uses three exclusion restrictions. *First*, as an exclusion restriction, I propose Geographic Peer Disclosure_{i,j,t}, i.e., the proportion of geographic peers that disclose advertising expenditure in their financial reports. In this study, I define geographic peers as firms whose headquarters are located in the same or neighboring states as a focal firm's headquarter is. Mimetic isomorphism suggests that managers are likely to engage in the process of imitation when dealing with the uncertainty (Husted, Jamali, and Saffar 2016; Greve 1998). Given the regulatory ambiguity about the disclosure of advertising spending and the uncertainty related to the associated competitive costs of the disclosure, a firm's decision on disclosure of advertising spending is likely to be correlated with the patterns of advertising spending disclosures by geographic peers. In addition, disclosures of geographic peers may establish the institutional

norms and legitimacy to firm actions such as information disclosure and thus increase their adoption by firms (see Greve 2002). Accordingly, consistent with the empirical studies (e.g., Husted, Jamali, and Saffar 2016; Matsumoto, Serfling, and Shaikh 2018; Kedia and Rajgopal 2009), I expect that a firm is more likely to disclose advertising spending if more geographic peers disclose advertising spending.

Importantly, I argue that Geographic Peer Disclosure_{i,j,t} is valid. A potential concern is that there could be the significant proportion of firms that are included in both geographic peers and industry peers, and disclosures of those firms may be correlated with firm-specific time varying unobservable factors related with the focal firm's disclosure. To address this concern, I follow Matsumoto, Serfling, and Shaikh (2018) and exclude industry peers in constructing geographic peers. Therefore, it is plausible to expect that the disclosures of advertising spending by non-industry geographic peers are unlikely to be correlated with time varying firm-specific unobservable factors related with the focal firm's disclosure (see *Essay 1* for further discussion, p. 16-17).

Second, I include, Auditor Peer Disclosure_{i,j,t}, i.e., the proportion of auditor peers that disclose advertising spending, as another exclusion restriction. I define auditor peers as peer firms audited by the same auditor as that of a focal firm. I believe that, as exclusion restriction, Auditor Peer Disclosure_{i,j,t} is relevant and valid. A large body of literature in accounting has established that firms' auditors not only implement auditing but also participate in the process of corporate disclosure decisions (e.g., Acito, Burks, and Johnson 2009; Heitzman, Wasley, Zimmerman 2010; Kwak, Ro, and Suk 2012). In addition, auditors have standardized processes and rules of conducting an audit (Kothari, Ramanna, and Skinner 2010) which determine a particular audit style (Francis, Pinnuck, and Watanabe 2014). Indeed, the auditor style is

reflected in similar financial statements of client firms sharing the same auditor (Johnston and Zhang 2018), and empirical studies show that firms audited by the same auditor have similar disclosure patterns (e.g., Brown and Knechel 2016; De Franco, Fogel-Yaari, and Li 2016; Glendening, Mauldin, and Shaw 2019). As such, I propose that advertising spending disclosures of auditor peers are correlated with the focal firm's disclosure of advertising spending.

However, Auditor Peer Disclosure $_{i,j,t}$ is not likely to affect a focal firm's value. It is possible that some of auditor peers operate in the same industry and thus their disclosures of advertising spending may have an impact on a focal firm's value. To address this issue, I exclude industry peers in constructing Auditor Peer Disclosure $_{i,j,t}$ and only consider non-industry auditor peers. Therefore, it is highly unlikely that disclosures of advertising spending by non-industry auditor peers are correlated with firm-specific time varying unobservable factors related with the disclosure of advertising spending (see *Essay 1* for further discussion, p.18-19).

Third, I also incorporate Peer Disclosure $_{i,j,t}$, i.e., the proportion of peer firms that disclose advertising expenditure, in the model as the additional exclusion restriction. Importantly, I argue that Peer Disclosure $_{i,j,t}$ is a relevant and valid exclusion restriction. A firm's discretionary disclosure can be correlated with those of peer firms in an industry because the firm and peer firms face similar market conditions which might potentially affect firms' disclosure behaviors. Specifically, firm managers are likely to incorporate the industry norms when they make decisions on disclosures (Brown, Gordon, and Wermers 2006; Ellis, Fee, and Thomas 2012). However, the peer firms' disclosures may not affect the value of the focal firm because it is less likely that a large number of peer firms "collectively" take an action – information disclosure in this case – towards the focal firm (Germann, Ebbes, and Grewal 2015, p. 9). Finally, from estimates of Equation 3, I calculate the inverse Mills ratio as given in Equation 4:

$$(4) \quad \text{Inverse Mills Ratio}_{i,j,t} = \phi(\hat{\Delta}'Z_{i,j,t}) / \Phi(\hat{\Delta}'Z_{i,j,t}),$$

where ϕ is a normal density function and Φ is a cumulative normal distribution function. To account for the inverse Mills ratio being a generated regressor, model estimation uses bootstrapping with 200 replications to compute standard errors.

Endogeneity. It is reasonable to argue that marketing actions are endogenous to firm performance because marketing actions such as advertising are strategically planned and implemented by managers and may be influenced by time varying unobservable factors. For example, managers may decide to spend increased budget on advertising if the firm performance is expected to decline (e.g., Datta, Foubert, and Van Heerde 2015). To account for the potential concerns on the endogeneity of advertising, this study follows recent research in marketing and applies control function approach (e.g., Sridhar et al. 2016; Han, Mittal, and Zhang 2017; Petrin and Train 2010). Specifically, I estimate the following first stage auxiliary regression model, Equation 5:

$$(5) \quad \text{Advertising}_{i,j,t} = \gamma_{0i} + \gamma_1 \text{Geographic Peer Advertising}_{i,j,t} + \gamma_2 \text{Auditor Peer Advertising}_{i,j,t} \\ + \Theta' \mathbf{Controls}_{i,j,t} + \sum_{k=1}^{K-1} \delta_k \text{Year}_t + \zeta_{i,j,t},$$

where $\text{Geographic Peer Advertising}_{i,j,t}$ is the natural log of the average of advertising spending of non-industry geographic peers; $\text{Auditor Peer Advertising}_{i,j,t}$ is the natural log of the average of advertising spending of non-industry auditor peers; γ_{0i} is the firm-specific intercept, $\mathbf{Controls}_{i,j,t}$ is the vector of control variables; $\zeta_{i,j,t}$ is a random error term for firm i in the industry j in fiscal year t .

The identification of control function approach requires exclusion restrictions (Petrin and Train 2010). As such, to identify the effect of advertising on firm value, I propose two exclusion

restrictions that are valid and relevant. Specifically, two exclusion restrictions include the average level of advertising spending of geographic peers that are similar in size but do not operate in the same industry and the average level of advertising spending of auditor peers that are similar in size but do not operate in the same industry. I log transform the exclusion restrictions to be consistent with the measure of the focal firm's advertising.

Firms are likely to mimic the behaviors of other firms that are similar to them in terms of various attributes such as size, profitability, operating performance, diversification, growth options etc. (e.g., Shi, Grewal, and Sridhar 2019; Albuquerque 2009). Among various firm attributes, size seems to be the most important firm attribute that explains the similarity of firms because firm size is related with other firm attributes, e.g., operating performance, diversification, and growth options (Albuquerque 2009; Collins, Kothari, and Rayburn 1987; Hart 1962). For example, larger firms tend to have more business segments and higher operating performance. As a result, firms with similar size may be exposed to similar shocks, and thus firms are more likely to follow behaviors of firms that are similar to them in terms of size. Indeed, advertising has a positive effect on sales, and advertising decision can also be based on sales targets. Therefore, I expect that when a firm determines the levels of advertising spending, the firm is likely to benchmark firms that are similar to the firm in terms of sales.

Beyond similarity, research also shows how firm decisions such as CSR engagement and provisions of options to executives are likely to be determined by the practices of non-industry geographic peers (see Husted, Jamali, and Saffar 2016; Kedia and Rajgopal 2009; Dougal, Parsons, and Titman 2015). This is because, in different geographic areas, there are different local stakeholders (e.g., consumers, investors, and regulators etc.) who evaluate firms with different logics and standards driven by local culture, traditions, or regulations (Zhao et al.

2017). As such, there may be local norms that are shared by firms in the geographic area.

Determining advertising budget is a strategic decision and involves some degree of uncertainty.

Thus, to manage the uncertainty, it is possible for firms to follow local norms that may act as legitimation in determining the levels of advertising spending.

In addition, research in accounting suggests that information can be transmitted from a firm to others through shared auditors (e.g., Lim et al. 2018; Dhaliwal et al. 2016). Auditors have “an opportunity to discuss strategic initiatives with their clients including, among others, the acquisition or disposition of assets” (Dhaliwal et al. 2016, p. 49). This is because they gather information about a client firm during an audit and communicate with senior management. Therefore, to manage the uncertainty involved in the decision on advertising spending, managers may use information gathered from the auditor about advertising spending of auditor peers – defined as other client firms that hire the same audit firm. Given that advertising spending is confidential information, it is reasonable to expect information transmission through auditors occurs among non-industry auditor peers. This is because auditors are unlikely to share the confidential information of a client firm with firms competing with the firm in the same industry. In addition, due to the confidentiality, transmission of the information on advertising spending may occur in a form of general information such as the approximate average of advertising spending of client firms. Synthesizing these two bodies of literature, I argue that a firm’s advertising spending is likely to be significantly influenced by non-industry geographic and auditor peers that have similar size with the size of a focal firm.

More importantly, I argue the instruments of advertising spending based on geographic and auditor peers are unlikely to have an impact on firm value of the firm. One might raise a concern on instrument validity because some geographic and auditor peers are within the same

industry in which a focal firm competes with its peers. However, I exclude firms that are in the same industry as a focal firm in the construction of both geographic and auditor peers. Thus, it is unlikely that the average of advertising spending of non-industry geographic and auditor peers is correlated with the time-varying unobservable factors that influence the levels of advertising spending of the firm.

To make sure a firm has enough peers to benchmark advertising, I focus on firms that have at least two non-industry geographic peers and non-industry auditor peers within the same sales decile. Taken together, this study incorporates Inverse Mills Ratio $_{i,j,t}$ based on Equation 4 and Control Function $_{i,j,t}$ generated from Equation 5 into the focal model and I estimate the following model to test the proposed hypotheses:

$$\begin{aligned}
 (6) \quad FV_{i,j,t} = & \beta_0i + \beta_1\text{Advertising}_{i,j,t} \\
 & + \beta_2\text{Advertising}_{i,j,t} \times \text{Intangible Assets}_{i,j,t} + \beta_3\text{Advertising}_{i,j,t} \times \text{Cash Flows}_{i,j,t} \\
 & + \beta_4\text{Advertising}_{i,j,t} \times \text{Leverage}_{i,j,t} + \beta_5\text{Advertising}_{i,j,t} \times \text{Peer Advertising}_{i,j,t} \\
 & + \beta_6\text{Advertising}_{i,j,t} \times \text{Competitive Intensity}_{j,t} + \beta_7\text{Advertising}_{i,j,t} \times \text{Industry Growth}_{j,t} \\
 & + \beta_8\text{Inverse Mills Ratio}_{i,j,t} + \beta_9\text{Control Function}_{i,j,t} \\
 & + \Theta'\text{Controls}_{i,j,t} + \sum_{k=1}^{K-1} \phi_k \text{Year}_t + \eta_{i,j,t},
 \end{aligned}$$

where FV is firm value measured by Tobin's q; β_0i is the firm-specific intercept, $\text{Controls}_{i,j,t}$ is the vector of control variables; $\eta_{i,j,t}$ is a random error term for firm i in the industry j in fiscal year t . To account for Inverse Mills Ratio $_{i,j,t}$ and Control Function $_{i,j,t}$ being generated, I use 200 bootstrapping replications to calculate standard errors of the estimates.

3.5. Results

3.5.1. Hypotheses Testing

Table 8 outlines the results of estimating the selection model, i.e., Equation 3. As expected, and in support of the proposed exclusion restrictions, disclosures of advertising spending by non-industry geographic peers, i.e., Geographic Peer Disclosure $_{i,j,t-1}$, have a significant positive impact on current disclosure ($\alpha_1 = 1.734, p < .001$). Similarly, disclosures of advertising spending by non-industry auditor peers, i.e., Auditor Peer Disclosure $_{i,j,t-1}$, have a significant positive impact on current disclosure ($\alpha_2 = 2.904, p < .001$), and disclosure of advertising spending by industry peers, i.e., Peer Disclosure $_{i,j,t-1}$, have a significant positive impact on current disclosure ($\alpha_3 = 2.097, p < .001$).

In addition, Table 9 outlines the results of estimating the first stage auxiliary regression model, i.e., Equation 5. Consistent to the expectation, the results support the proposed exclusion restrictions. The average of advertising spending of non-industry geographic peers, i.e., Geographic Peer Advertising $_{i,j,t}$, has a significant positive effect on the focal firm's level of advertising spending ($\gamma_1 = .048, p < .05$). Similarly, the average of advertising spending of non-industry auditor peers, i.e., Auditor Peer Disclosure $_{i,j,t-1}$, has a significant positive effect on the focal firm's level of advertising spending ($\gamma_2 = .066, p < .01$). These results suggest that both geographic peers' and auditor peers' advertising are the significant drivers of the firm's advertising spending level.

Table 10 outlines the results of estimating "main effect model" which is the version of Equation 6 without the interaction terms between Advertising $_{i,j,t}$ and the proposed moderators (see Model 1 in Table 4). Model fit statistics suggest that the proposed full model has better fit

with the data.⁷ As such, in testing the proposed hypotheses, this study examines results from Model 2 in Table 10.

Importantly, the significant effects of both Inverse Mills Ratio_{i,j,t} and Control Function_{i,j,t} suggest the corrections for both selection bias of disclosure of advertising spending and the endogeneity of advertising spending are required.

Consistent with H₁, this study finds that advertising spending by firms has a significant positive impact on firm value ($\beta_1 = .757, p < .001$). In support of the proposed contingency framework, this study finds that there are both firm and industry factors that moderate the effects of Advertising_{i,j,t} on firm value. Consistent with H₂, this study finds that the interaction of Advertising_{i,j,t} and intangible assets is positive and significant for firm value ($\beta_2 = .145, p < .05$). In addition, the interaction of Advertising_{i,j,t} and cash flows is positive and significant ($\beta_3 = .576, p < .001$). H₃, therefore, is supported. However, this study does not find support for H₄ ($\beta_4 = .044, p < .001$). The effect is significant but in fact I find the direction of the empirical result is opposite to the proposed hypothesis. I discuss this result in detail in the discussion section.

Consistent with H₅, the interaction of Advertising_{i,j,t} is negative and marginally significant ($\beta_4 = -.011, p < .10$). However, I do not find empirical supports for H₆ ($\beta_6 = -.052, n.s.$) and H₇ ($\beta_7 = .040, n.s.$) as both the interaction terms are not significant though the directions of the effects are consistent with the proposed hypotheses.

2.5.2. Robustness Analyses

This study conducts multiple sensitivity analyses to examine the robustness of the preceding results. As shown in the results of robustness checks in Table 11, the conclusion of the study is

⁷ By using adjusted R², I compare Model 1 (adjusted R² = .1931) with Model 2 (adjusted R² = .1983).

robust to an alternative industry classification (i.e., the five digit NAICS), the choice of exclusion restriction (i.e., using either Geographic Peer Advertising $_{i,j,t}$ or Auditor Peer Advertising $_{i,j,t}$), and different samples with the alternative minimum number of both non-industry geographic peers and auditor peers. Table 11 presents the results of the robustness checks for the effect of advertising on firm value.

3.6. Discussion

This study builds on and integrates literature in marketing, finance, and accounting to examine the impact of advertising on firm value. I find that a firm's advertising contributes to creating firm value through the conduit of brand equity. In addition, I also find both firm and industry conditions that are more relevant for advertising to contribute the creation of firm value. This study has implications for both marketing theory and managers.

3.6.1. Implications for Marketing Theory

The study presents the theoretical and empirical examination of the impact of advertising on firm value measured by Tobin's q . The study, therefore, is responsive to extant research on advertising and firm value by providing the further examination of the link between advertising and firm value (Conchar, Crask, and Zinkhan 2005). In addition, a key contribution of the study is that it identifies the relevant conditions for the observed effect of advertising on firm value, both at the firm and the industry level through the lens of the financial and market relevance. To facilitate the discussion of the contingency effects, I use the estimates from the results of Model 2 in Table 10 and calculate the marginal effects of advertising on firm value across the values of each moderating variable. I use the 10th and 90th percentile of each moderating variable to

calculate the marginal effects. Based on the calculated marginal effects, I draw the graph to describe the interaction effect of each moderating variable and advertising on firm value.

As shown in Panel A in Figure 4, the positive impact of advertising on firm value is stronger for firms that rely more on intangible assets to generate cash flows. This finding is consistent with the proposed argument that the impact of advertising on firm value can be driven by the conduit of brand equity. Importantly, by identifying intangible assets as a relevant condition for the effects of advertising on firm value, the study suggests that scholars should consider the moderating effects of asset configuration when evaluating investors' evaluation of other marketing actions.

Consistent with the proposed hypothesis, I find that the positive impact of advertising on firm value is stronger for firms with higher cash flows. (see Figure 4, Panel B). In fact, for firms with higher cash flows, advertising does have a significant and stronger effect on firm value. This suggests that high levels of advertising play an important role in creating firm value especially when a firm has the resources and ability to maintain and enhance its advertising. Indeed, consistent with the finding of this study, Bharadwaj, Tuli, and Bonfrer (2011) find the firm's profitability is an important moderating condition that shapes the effect of brand quality on shareholder wealth.

In addition, it is important to note that this study finds the moderating role of peer firms' advertising spending. As shown in Figure 4, the marginal effect of advertising on firm value decreases as levels of advertising spending by industry peers increase. Extant literature empirically examines the harmful effects of advertising from other firms and brands on consumer mind metrics and product market metrics (e.g., Burke and Srull 1988; Danaher, Bonfrer, and Dhar 2008). Building on those prior studies, this study provides the empirical

evidence that the effect of advertising on firm value is weakened when peer firms spend a lot on advertising and the average of their spending levels is higher.

The study, therefore, brings to the fore the importance of considering the competitive relevance in examining the relationship between marketing actions and investors' expectation about a firm's cash flows. As such, future studies can build on our finding and examine the value of other marketing actions such as new product introductions through the competitive relevance perspective.

It is important to discuss that this study finds the effect of advertising on firm value is stronger for firms with higher levels of financial leverage, which is the opposite to the proposed hypothesis. One possible explanation for this opposite significant and robust effect is that perhaps advertising, rather than financial leverage, moderates the negative effect of financial leverage on firm value. This suggests that advertising may mitigate the negative effect of financial leverage on firm value.

3.6.2. Implications for Managers

The current study finds the significant and positive impact of advertising on firm value. Thus, the clear implication for managers is that advertising is a critical driver of the investors' expectation about a firm's cash flows.

More importantly, results of the contingency framework provide a template for managers as this study identifies specific conditions under which advertising is likely to have stronger effects on firm value creation. Specifically, the benefit of advertising spending is likely to be stronger for firms that are more dependent on intangible assets to generate cash flows, firms with higher cash flows, and those in industries where the average level of advertising spending by

industry peers is low (see Figure 4). Hence, the current study highlights that advertising spending is more relevant for firms in the contexts outlined in the contingency framework.

3.7. Conclusions

Integrating literature in marketing, finance, and accounting, this essay examines the impact of advertising on firm value. In this essay, I find the empirical evidence that a firm's advertising has a positive and significant impact on firm value. Importantly, the empirical model accounts for the potential endogeneity of advertising spending by using alternative instruments to those frequently used in extant literature and mitigates the critiques by Rossi (2014) and Angrist (2014). In addition, drawing on contingency approach based on financial and market relevance, I develop the conceptual framework for the contingency effects of advertising on firm value. Consistent with the proposed contingency framework, I empirically find that the positive effect of advertising spending is stronger for firms with higher levels of intangible assets and with higher cash flows, and weaker for firms in industries where the average advertising spending of peer firms is higher. Taken together, this essay has implications for marketing scholars and managers and identifies specific conditions under which advertising is more (or less) relevant to firm value creation.

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TABLE 1
MEASURES, DATA SOURCES, AND SUPPORTING LITERATURE FOR CONROL VARIABLES

<i>Variable</i>	<i>Measure</i>	<i>Data Source</i>	<i>Supporting Literature</i>
Analyst Following _{i,j,t-1}	Natural log of the number of analysts reporting earnings forecasts of a firm between the day of the release of the firm's annual report and the day before the release of the firm's annual report in the following year	I/B/E/S	Lehavy, Li, and Merkley (2011); Lang and Lundholm (1996)
Disclosure Quality _{i,j,t-1}	The level of disaggregation of the financial report of a firm	COMPUSTAT	Chen, Miao, and Shevlin (2015)
SG&A _{i,j,t-1}	Selling, general, and administrative expense, scaled by total assets	COMPUSTAT	Ptok, Jindal, and Reinartz (2018)
Firm Size _{i,j,t-1}	Natural log of total assets	COMPUSTAT	Rego, Billett, and Morgan (2009)
Leverage _{i,j,t-1}	Total long-term debt, scaled by total assets	COMPUSTAT	Li and Yang (2016); McAlister et al. (2016)
Liquidity _{i,j,t-1}	Ratio of current assets to current liabilities	COMPUSTAT	McAlister, Srinivasan, and Kim (2007)
Competitive Intensity _{j,t-1}	The Herfindahl-Hirschmann index (i.e., the sum of the squares of firms' market shares in an industry) subtracted from 1	COMPUSTAT	Deb, David, and O'Brien (2017); Fang, Lee, and Yang (2015)
Industry Growth _{j,t-1}	Natural log of sales of an industry in the current fiscal year less natural log of sales of an industry in the prior year	COMPUSTAT	Dotzel, Shankar, and Berry (2013)
Demand Uncertainty _{j,t-1}	The standard deviation of 5-year industry sales, scaled by the average of 5-year industry sales.	COMPUSTAT	Fang, Palmatier, and Steenkamp (2008)

TABLE 2
DESCRIPTIVE STATISTICS AND CORRELATION MATRIX

Variable	n	Mean	SD	Min	Max	Correlation														
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Investors' Uncertainty _{i,j,t}	20,237	0.021	0.010	0.008	0.129	1.000														
2. Analysts' Uncertainty _{i,j,t}	20,237	0.110	0.169	0.000	1.637	.106	1.000													
3. AD _{i,j,t-1}	20,237	0.408	0.491	0.000	1.000	-.027	-.063	1.000												
4. Cash Flows _{i,j,t-1}	20,237	0.111	0.075	-0.690	0.354	-.151	-.042	.077	1.000											
5. Intangible Assets _{i,j,t-1}	20,237	0.709	0.224	0.084	1.000	<i>-.002</i>	-.209	.120	-.153	1.000										
6. Peer Disclosure _{i,j,t-1}	20,237	0.371	0.318	0.000	1.000	-.051	-.100	.467	.081	.136	1.000									
7. Analyst Following _{i,j,t-1}	20,237	2.385	0.787	0.000	3.689	-.181	.082	.094	.185	-.112	.060	1.000								
8. Disclosure Quality _{i,j,t-1}	20,237	0.681	0.111	0.196	0.868	-.260	<i>.004</i>	.250	.056	.341	.321	.053	1.000							
9. SG&A _{i,j,t-1}	20,237	0.250	0.201	0.009	1.674	.139	-.181	.320	.143	.282	.343	-.113	.068	1.000						
10. Firm Size _{i,j,t-1}	20,237	7.433	1.427	3.346	11.483	-.361	.169	.051	<i>.002</i>	-.138	.021	.637	.087	-.303	1.000					
11. Leverage _{i,j,t-1}	20,237	0.206	0.180	0.000	0.864	.029	.145	-.057	-.188	-.302	-.064	.016	-.175	-.289	.198	1.000				
12. Liquidity _{i,j,t-1}	20,237	2.223	1.460	0.178	22.955	.054	-.055	<i>.009</i>	<i>-.011</i>	.299	-.042	-.074	.184	.025	-.260	-.233	1.000			
13. Competitive Intensity _{j,t-1}	20,237	0.684	0.216	0.000	0.969	.056	.054	<i>.002</i>	.079	-.085	-.086	.188	-.024	-.030	.042	<i>.006</i>	.053	1.000		
14. Industry Growth _{i,j,t-1}	20,237	0.062	0.181	-0.771	0.886	.037	-.028	-.040	<i>.001</i>	.018	-.056	<i>-.004</i>	-.110	<i>-.002</i>	-.038	-.032	-.014	<i>.012</i>	1.000	
15. Demand Uncertainty _{j,t-1}	20,237	0.181	0.131	0.029	0.965	.202	.046	-.151	-.031	-.062	-.197	-.084	-.205	-.091	-.130	<i>-.013</i>	<i>.007</i>	-.073	.290	1.000

Notes: a. I winsorize all continuous variables at 1% to rule out the influence of outliers.

b. Correlations in bold are significant at $p < .05$ (two-tailed) and in italic are significant at $p < .10$ (two-tailed).

c. SD = standard deviation; AD_{i,j,t-1} is disclosure of advertising spending and SG&A_{i,j,t-1} is selling, general, and administrative expense, scaled by total assets for firm i in industry j at fiscal year $t-1$.

d. n = the number of firm-year observations.

TABLE 3
RESULTS OF FIRST STAGE PROBIT MODEL

<i>Dependent Variable = AD_{i,j,t-1}</i>		
<i>Independent Variables</i>	<i>Coeff.</i>	<i>SE</i>
Geographic Peer Disclosure _{i,j,t-1}	1.130	.520**
Auditor Peer Disclosure _{i,j,t-1}	3.859	.566****
Cash Flows _{i,j,t-1}	.040	.296
Intangible Assets _{i,j,t-1}	-.104	.153
Peer Disclosure _{i,j,t-1}	1.651	.102****
Analyst Following _{i,j,t-1}	.063	.042
Disclosure Quality _{i,j,t-1}	2.490	.391****
SG&A _{i,j,t-1}	1.895	.180****
Firm Size _{i,j,t-1}	.094	.029***
Leverage _{i,j,t-1}	.435	.147***
Liquidity _{i,j,t-1}	.026	.018
Competitive Intensity _{j,t-1}	.216	.141
Industry Growth _{j,t-1}	.005	.061
Demand Uncertainty _{j,t-1}	-.314	.160*
Intercept	.507	.152***
Year Fixed Effects	Yes	
Number of Firm-Year Observations (Number of Firms)	20,237 (2,523)	
Wald χ^2 (df)	868.56 (35)****	
Log Pseudolikelihood	-10,312.64	

Notes:

- a. $AD_{i,j,t-1}$ = disclosure of advertising spending for firm i in industry j at fiscal year $t-1$.
- b. Geographic Peer Disclosure_{i,j,t-1} = the proportion of non-industry geographic peer firms that disclose advertising spending; Auditor Peer Disclosure_{i,j,t-1} = the proportion of non-industry auditor peer firms that disclose advertising spending; Peer Disclosure_{i,j,t-1} = the proportion of peer firms in an industry that disclose advertising spending in their annual reports for firm i in industry j at fiscal year $t-1$.
- c. SE = standard error; SG&A = selling, general, and administrative expense, scaled by total asset.
- d. I use the clustered robust standard errors of the estimates at the firm level.
- e. I mean center all continuous variables.
- f. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (two-tailed).

TABLE 4
THE EFFECTS OF DISCLOSURE OF ADVERTISING SPENDING ON INVESTORS' AND ANALYSTS' UNCERTAINTY

Variable	<i>DV = Investors' Uncertainty_{i,j,t}</i>				<i>DV = Analysts' Uncertainty_{i,j,t}</i>					
	<i>Model 1: Main Effect Model</i>		<i>Model 2: Full Model</i>		<i>Model 3: Main Effect Model</i>		<i>Model 4: Full Model</i>			
	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>		
$AD_{i,j,t-1}$	-0.001	.000****	-0.001	.000***	<i>H1a: Supported</i>	-0.019	.005****	-0.019	.005****	<i>H1b: Supported</i>
$AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1}$			-0.005	.002**	<i>H2a: Supported</i>			-0.073	.026***	<i>H2b: Supported</i>
$AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1}$			-0.004	.001****	<i>H3a: Supported</i>			-0.012	.019	<i>H3b: Not Supported</i>
$AD_{i,j,t-1} \times \text{Peer Disclosure}_{j,t-1}$			.000	.001	<i>H4a: Not Supported</i>			.025	.008****	<i>H4b: Supported</i>
Cash Flows _{i,j,t-1}	-0.012	.001****	-0.010	.001****		.010	.015	.040	.020**	
Intangible Assets _{i,j,t-1}	-0.002	.001**	-0.001	.001		-0.048	.017***	-0.043	.017**	
Peer Disclosure _{j,t-1}	.000	.000	.000	.000		-0.011	.006*	-0.023	.007***	
Analyst Following _{i,j,t-1}	.000	.000***	.000	.000****		.001	.003	.001	.003	
Disclosure Quality _{i,j,t-1}	-0.004	.001***	-0.004	.001***		-0.065	.018****	-0.062	.018****	
SG&A _{i,j,t-1}	.006	.001****	.006	.001****		.086	.012****	.086	.013****	
Firm Size _{i,j,t-1}	-0.001	.000****	-0.001	.000****		.047	.003****	.047	.003****	
Leverage _{i,j,t-1}	.006	.001****	.006	.001****		.015	.011	.015	.010	
Liquidity _{i,j,t-1}	.000	.000****	.000	.000****		.002	.001**	.002	.001**	
Competitive Intensity _{j,t-1}	-0.001	.001	-0.001	.001		.001	.010	.001	.009	
Industry Growth _{i,j,t-1}	-0.001	.000****	-0.002	.000****		-0.002	.004	-0.002	.004	
Demand Uncertainty _{j,t-1}	.004	.001****	.004	.001****		.038	.009****	.037	.008****	
PR_AD _{i,j,t-1}	.000	.000	.000	.000		.002	.005	.002	.005	
Intercept	-0.002	.000****	-0.002	.000****		-0.017	.006***	-0.018	.006***	
Firm Fixed Effects	Yes		Yes			Yes		Yes		
Year Fixed Effects	Yes		Yes			Yes		Yes		
Number of Observations	20,237		20,237			20,237		20,237		
(Number of Firms)	(2,523)		(2,523)			(2,523)		(2,523)		
Wald χ^2 (df)	11,459.97 (35)****		14,729.11 (38)****			2,276.10 (35)****		2,318.38 (38)****		

Notes: a. DV = dependent variable; SE = standard error; $AD_{i,j,t-1}$ is disclosure of advertising spending for firm i in industry j at fiscal year $t-1$.

b. SG&A is selling, general and administrative expense, scaled by total assets; $PR_AD_{i,j,t-1}$ is the probit residual of $AD_{i,j,t-1}$.

c. I use the clustered robust standard errors of estimates at the firm level and use 200 bootstrapping replications to calculate the standard errors.

d. I mean center all continuous variables; e. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (two-tailed).

TABLE 5
ROBUSTNESS ANALYSES FOR INVESTORS' UNCERTAINTY (IU)

$DV = IU_{i,j,t}$	Model 2: Full Model	Model 5: Alternative DV from FF3	Model 6: Geographic Peers	Model 7: Auditor Peers	Model 8: Lag of Instruments	Model 9: Random Effects	Model 10: NAICS3
<i>Variable</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
$AD_{i,j,t-1}$	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***	-.001***
$AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1}$	-.005**	-.005***	-.005**	-.005***	-.005***	-.005***	-.006***
$AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1}$	-.004****	-.004****	-.004****	-.004****	-.004****	-.003***	-.003****
$AD_{i,j,t-1} \times \text{Peer Disclosure}_{j,t-1}$	.000	.000	.000	.000	.000	.000	.000
Cash Flows $_{i,j,t-1}$	-.010****	-.010****	-.010****	-.010****	-.010****	-.013****	-.011****
Intangible Assets $_{i,j,t-1}$	-.001	-.001	-.001	-.001	-.001	.000	-.002**
Peer Disclosure $_{j,t-1}$	.000	.000	.000	.000	.000	.000	-.007****
Analyst Following $_{i,j,t-1}$	.000***	.000**	.000***	.000****	.000****	.000	-.001****
Disclosure Quality $_{i,j,t-1}$	-.004***	-.003***	-.004***	-.004***	-.004***	-.004****	-.002**
SG&A $_{i,j,t-1}$	.006****	.006****	.006****	.006****	.006****	.005****	.006****
Firm Size $_{i,j,t-1}$	-.001****	-.001****	-.001****	-.001****	-.001****	-.002****	-.001****
Leverage $_{i,j,t-1}$	.006****	.006****	.006****	.006****	.006****	.005****	.006****
Liquidity $_{i,j,t-1}$	.000****	.000****	.000****	.000****	.000****	.000***	.000****
Competitive Intensity $_{j,t-1}$	-.001	-.001	-.001	-.001	-.001*	.002****	-.003**
Industry Growth $_{i,j,t-1}$	-.002****	-.001****	-.002****	-.002****	-.001****	-.001****	-.003****
Demand Uncertainty $_{j,t-1}$	.004****	.004****	.004****	.004****	.004****	.005****	.005****
PR_AD $_{i,j,t-1}$	.000	.000	.000*	.000	.000*	.001**	.000
Intercept	-.002****	-.002****	-.002****	-.002****	-.002****	-.002****	-.003****
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations (Number of Firms)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	22,425 (2,716)
Wald χ^2	14,729.11	15,743.30	13,425.44	10,716.20	13,950.80	16,453.02	12,955.87
(df)	(38)****	(38)****	(38)****	(38)****	(38)****	(38)****	(38)****

Notes: a. DV = dependent variable; FF3 = Fama and French three-factor model; NAICS3 = three-digit North American Industry Classification System; $AD_{i,j,t-1}$ is disclosure of advertising spending for firm i in industry j at fiscal year $t-1$; SG&A is selling, general and administrative expense, scaled by total assets; PR_AD $_{i,j,t-1}$ is the probit residual of $AD_{i,j,t-1}$; To generate PR_AD $_{i,j,t-1}$; Geographic Peer Disclosure $_{i,j,t-1}$ is used for Model 6, Auditor Peer Disclosure $_{i,j,t-1}$ for Model 7, and Geographic Peer Disclosure $_{i,j,t-2}$, and Auditor Peer Disclosure $_{i,j,t-2}$ for Model 8.

c. I use the clustered robust standard errors of the estimates at the firm level and use 200 bootstrapping replications to calculate the standard errors.

d. I mean center all continuous variables; * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (one-tailed for Model 5-Model 10 and two-tailed for Model 2).

TABLE 6
ROBUSTNESS ANALYSES FOR ANALYSTS' UNCERTAINTY (AU)

$DV = AU_{i,j,t}$	Model 4: Full Model	Model 11: Without Log Transformation	Model 12: Geographic Peers	Model 13: Auditor Peers	Model 14: Lag of Instruments	Model 15: Random Effects	Model 16: NAICS3
<i>Variable</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
$AD_{i,j,t-1}$	-.019****	-.037****	-.018****	-.019****	-.019****	-.019****	-.019****
$AD_{i,j,t-1} \times \text{Cash Flows}_{i,j,t-1}$	-.073***	-.106****	-.073***	-.073***	-.073***	-.078***	-.063***
$AD_{i,j,t-1} \times \text{Intangible Assets}_{i,j,t-1}$	-.012	.026	-.012	-.012	-.012	.010	.000
$AD_{i,j,t-1} \times \text{Peer Disclosure}_{j,t-1}$	.025****	.045****	.025****	.025****	.025****	.023****	.027****
Cash Flows $_{i,j,t-1}$	.040**	.073**	.039**	.040**	.040**	.020	.030*
Intangible Assets $_{i,j,t-1}$	-.043**	-.072**	-.043***	-.043***	-.043**	-.089****	-.078****
Peer Disclosure $_{j,t-1}$	-.023***	-.039****	-.024****	-.023****	-.023***	-.032****	-.083****
Analyst Following $_{i,j,t-1}$	.001	-.004	.001	.001	.001	-.001	.002
Disclosure Quality $_{i,j,t-1}$	-.062****	-.083****	-.064****	-.063****	-.062****	-.093****	-.045**
SG&A $_{i,j,t-1}$	.086****	.131****	.085****	.086****	.086****	.035****	.089****
Firm Size $_{i,j,t-1}$	.047****	.063****	.047****	.047****	.047****	.034****	.047****
Leverage $_{i,j,t-1}$	.015	.030*	.015*	.015*	.015*	.024****	.018**
Liquidity $_{i,j,t-1}$	.002**	.003**	.002**	.002**	.002**	.002****	.002****
Competitive Intensity $_{j,t-1}$	.001	-.001	.001	.001	.001	.014**	.003
Industry Growth $_{i,j,t-1}$	-.002	.004	-.002	-.002	-.002	-.003	.014*
Demand Uncertainty $_{j,t-1}$	.037****	.050****	.037****	.037****	.037****	.044****	.070****
PR_AD $_{i,j,t-1}$	.002	.000	.000	.002	.002	.002	.004
Intercept	-.018***	-.018**	-.018***	-.018***	-.017***	-.016***	-.031****
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations (Number of Firms)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	20,237 (2,523)	22,425 (2,716)
Wald χ^2	2,318.38	1,329.57	2,314.61	2,508.80	2,468.27	4,421.38	2,509.31
(df)	(38)****	(38)****	(38)****	(38)****	(38)****	(38)****	(38)****

Notes: a. DV = dependent variable; NAICS3 = three-digit North American Industry Classification System; $AD_{i,j,t-1}$ is disclosure of advertising spending for firm i in industry j at fiscal year $t-1$; SG&A is selling, general and administrative expense, scaled by total assets; PR_AD $_{i,j,t-1}$ is the probit residual of $AD_{i,j,t-1}$; To generate PR_AD $_{i,j,t-1}$, Geographic Peer Disclosure $_{i,j,t-1}$ is used for Model 12, Auditor Peer Disclosure $_{i,j,t-1}$ for Model 13, and Geographic Peer Disclosure $_{i,j,t-2}$, and Auditor Peer Disclosure $_{i,j,t-2}$ for Model 14.

c. I use the clustered robust standard errors of the estimates at the firm level and use 200 bootstrapping replications to calculate the standard errors.

d. I mean center all continuous variables; * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (one-tailed for Model 11-Model 16 and two-tailed for Model 4).

TABLE 7
DESCRIPTIVE STATISTICS AND CORRELATION MATRIX

<i>Variable</i>	<i>n</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	Correlation													
						<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>				
1. Firm Value _{i,j,t}	11,096	1.614	1.414	-.180	12.355	1.000													
2. Advertising _{i,j,t}	11,096	3.299	2.023	-4.962	7.186	.059	1.000												
3. Intangible Assets _{i,j,t}	11,096	.742	.209	.084	1.000	.060	-.124	1.000											
4. Cash Flows _{i,j,t}	11,096	.113	.081	-.690	.354	.451	.063	-.149	1.000										
5. Leverage _{i,j,t}	11,096	.365	.763	.000	7.703	-.225	.050	-.214	-.240	1.000									
6. Peer Advertising _{i,j,t}	11,096	3.482	1.835	-2.733	6.619	.029	.372	-.108	.030	.036	1.000								
7. Competitive Intensity _{i,j,t}	11,096	.706	.202	.000	.969	.070	-.096	-.059	.044	<i>.018</i>	.135	1.000							
8. Industry Growth _{i,j,t}	11,096	.052	.162	-.771	.886	.070	-0.002	.030	-0.001	-.048	.008	.030	1.000						
9. Firm Age _{i,j,t}	11,096	2.722	.885	.693	4.263	-.100	.257	-.064	.064	-.032	.059	-.079	-.069	1.000					
10. Firm Size _{i,j,t}	11,096	7.449	1.508	3.669	11.483	.021	.687	-.058	-0.001	.105	.238	.015	<i>-.018</i>	.337	1.000				
11. Liquidity _{i,j,t-1}	11,096	2.173	1.478	.178	17.787	.082	-.297	.329	-0.010	-.163	-.132	.043	.003	-.048	-.218	1.000			

Notes: a. I winsorize all continuous variables at 1% to rule out the influence of outliers.

b. Correlations in bold are significant at $p < .05$ (two-tailed) and in italic are significant at $p < .10$ (two-tailed).

c. SD = standard deviation.

d. n = the number of firm-year observations.

TABLE 8
SELECTION MODEL RESULTS

<i>Dependent variable = AD_{i,j,t}</i>		
<i>Independent Variables</i>	<i>Coeff.</i>	<i>SE</i>
Geographic Peer Disclosure _{i,j,t}	1.734	0.433****
Auditor Peer Disclosure _{i,j,t}	2.904	0.419****
Peer Disclosure _{i,j,t}	2.097	0.080****
Intangible Assets _{i,j,t}	.501	0.113****
Cash Flows _{i,j,t}	.934	0.225****
Leverage _{i,j,t}	.014	0.024
Competitive Intensity _{j,t}	.305	0.118**
Industry Growth _{j,t}	-.100	0.049**
Firm Age _{i,j,t}	.039	0.019
Firm Size _{i,j,t}	-.023	0.026**
Liquidity _{ijt}	.002	0.014
Intercept	-2.863	0.209****
Year Fixed Effects	Yes	
Number of Observations (Number of Firms)	31,151 (3,929)	
Wald χ^2 (df)	1,146.41 (32)****	
Log Pseudolikelihood	-16,455.971	

Notes:

- a. SE = standard errors; AD_{i,j,t} is disclosure of advertising spending for firm *i* in industry *j* in fiscal year *t*.
- b. Geographic Peer Disclosure_{i,j,t} = the proportion of non-industry geographic peer firms that disclose advertising spending; Auditor Peer Disclosure_{i,j,t} = the proportion of non-industry auditor peer firms that disclose advertising spending; Peer Disclosure_{i,j,t} = the proportion of peer firms in an industry that disclose advertising spending in their annual reports for firm *i* in industry *j* at fiscal year *t*.
- c. The standard errors are clustered at the firm level; All continuous variables are mean centered.
- d. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$.

TABLE 9
RESULTS OF FIRST STAGE AUXILIARY REGRESSION MODEL

<i>Dependent Variable = Advertising_{i,j,t}</i>		
<i>Independent Variables</i>	<i>Coeff.</i>	<i>SE</i>
Geographic Peer Advertising _{i,j,t}	.048	.023**
Auditor Peer Advertising _{i,j,t}	.066	.024***
Intangible Assets _{i,j,t}	-.669	.257***
Cash Flows _{i,j,t}	.002	.144
Leverage _{i,j,t}	-.025	.015*
Peer Advertising _{i,j,t}	.039	.015**
Competitive Intensity _{j,t}	-.064	.191
Industry Growth _{j,t}	-.054	.033
Firm Age _{i,j,t}	.111	.048**
Firm Size _{i,j,t}	.612	.041***
Liquidity _{i,j,t}	-.029	.013**
Intercept	.115	.078
Firm Fixed Effects	Yes	
Year Fixed Effects	Yes	
Number of Observations (Number of Firms)	11,096 (1,566)	
F-statistics	F (42, 1,565) = 34.59****	

Notes:

a. SE = standard errors.

b. Geographic Peer Advertising_{i,j,t} is the average of advertising spending of non-industry geographic peers within the same sales decile; Auditor Peer Advertising_{i,j,t} is the average of advertising spending of non-industry auditor peers within the same sales decile; Peer Advertising_{i,j,t} is the average of advertising spending of peers in an industry for firm *i* in industry *j* at fiscal year *t*.

c. The standard errors are clustered at the firm level; All continuous variables are mean centered.

d. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (two-tailed).

TABLE 10
THE EFFECT OF ADVERTISING SPENDING ON FIRM VALUE

DV = $FV_{i,j,t}$	Model 1: Main Effect Model		Model 2: Full Model		
<i>Variable</i>	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>	
Advertising $_{i,j,t}$	.740	.216****	.757	.197****	<i>H1: Supported</i>
Advertising $_{i,j,t} \times$ Intangible Assets $_{i,j,t}$			.145	.072**	<i>H2: Supported</i>
Advertising $_{i,j,t} \times$ Cash Flows $_{i,j,t}$			.576	.112****	<i>H3: Supported</i>
Advertising $_{i,j,t} \times$ Leverage $_{i,j,t}$			.044	.008****	<i>H4: Not Supported</i>
Advertising $_{i,j,t} \times$ Peer Advertising $_{i,j,t}$			-.011	.006*	<i>H5: Supported</i>
Advertising $_{i,j,t} \times$ Competitive Intensity $_{i,j,t}$			-.052	.065	<i>H6: Not Supported</i>
Advertising $_{i,j,t} \times$ Industry Growth $_{i,j,t}$			.040	.031	<i>H7: Not Supported</i>
Intangible Asset $_{i,j,t}$	.838	.277***	.873	.260***	
Cash Flows $_{i,j,t}$	3.808	.266****	3.965	.255****	
Leverage $_{i,j,t}$	-.030	.018*	-.049	.017***	
Peer Advertising $_{i,j,t}$	-.032	.020	-.033	.020*	
Competitive Intensity $_{j,t}$	-.252	.171	-.189	.170	
Industry Growth $_{j,t}$	.281	.064****	.280	.064****	
Firm Age $_{i,j,t}$	-.469	.059****	-.473	.072****	
Firm Size $_{i,j,t}$	-.923	.153****	-.935	.139****	
Liquidity $_{i,j,t}$	.047	.017***	.048	.017***	
Inverse Mills Ratio $_{i,j,t}$	-.152	.061**	-.167	.061***	
Control Function $_{i,j,t}$	-.681	.215***	-.702	.196****	
Intercept	-.301	.104***	-.276	.108**	
Firm Fixed Effects	Yes		Yes		
Year Fixed Effects	Yes		Yes		
Number of Observations (Number of Firms)	11,096 (1,566)		11,096 (1,566)		
Wald χ^2 (df)	1,211.79 (33)****		1,517.93 (33)****		

Notes:

a. DV = dependent variable; SE = standard errors; $FV_{i,j,t}$ is firm value measured by tobin's q for firm i in industry j in fiscal year t .

b. The standard errors of the estimates are clustered at the firm level and calculated by 200 bootstrapping replications. All continuous variables are mean centered.

c. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (two-tailed).

TABLE 11
ROBUSTNESS ANALYSES

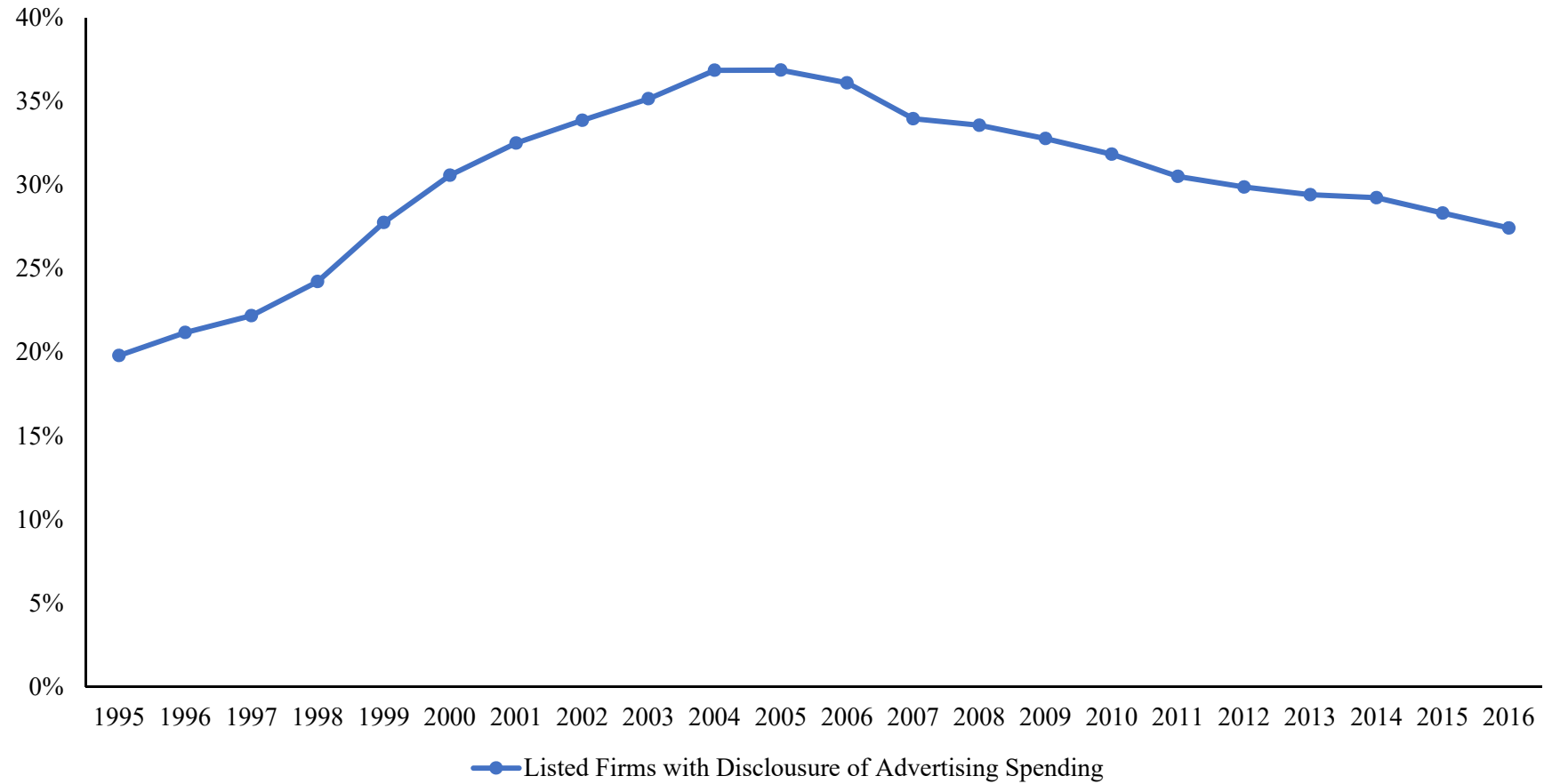
DV = FV _{i,j,t}	Model 2: Full Model	Model 3: Geographic Peer	Model 4: Auditor Peer	Model 5: Peers>2	Model 6: Peers>3	Model 7: Peers>0	Model 8: NAICS5
<i>Variable</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>	<i>Coeff.</i>
Advertising _{i,j,t}	.757****	.829***	.708***	.731****	.788****	.727****	.625***
Advertising _{i,j,t} × Intangible Assets _{i,j,t}	.145**	.146**	.144**	.149**	.158**	.148**	.117**
Advertising _{i,j,t} × Cash Flows _{i,j,t}	.576****	.575****	.576****	.580****	.610****	.571****	.580****
Advertising _{i,j,t} × Leverage _{i,j,t}	.044****	.044****	.044****	.044****	.045****	.043****	.041****
Advertising _{i,j,t} × Peer Advertising _{i,j,t}	-.011*	-.011**	-.012**	-.012**	-.011**	-.011**	-.020****
Advertising _{i,j,t} × Competitive Intensity _{i,j,t}	-.052	-.051	-.051	-.053	-.083*	-.055	-.087*
Advertising _{i,j,t} × Industry Growth _{i,j,t}	.040	.041*	.039	.040	.039*	.037	.003
Intangible Asset _{i,j,t}	.873***	.927***	.837***	.857***	.859***	.850***	.720***
Cash Flows _{i,j,t}	3.965****	3.959****	3.969****	3.983****	4.054****	3.981****	3.803****
Leverage _{i,j,t}	-.049***	-.047***	-.050***	-.051***	-.044***	-.048***	-.047***
Peer Advertising _{i,j,t}	-.033*	-.036**	-.031*	-.031**	-.035**	-.031**	-.055****
Competitive Intensity _{j,t}	-.189	-.186	-.191	-.175	-.217*	-.187	-.446***
Industry Growth _{j,t}	.280****	.284****	.277****	.279****	.278****	.277****	.294****
Firm Age _{i,j,t}	-.473****	-.482****	-.466****	-.468****	-.452****	-.470****	-.431****
Firm Size _{i,j,t}	-.935****	-.985****	-.901****	-.918****	-.947****	-.914****	-.833****
Liquidity _{i,j,t}	.048***	.050***	.046***	.048***	.048***	.046***	.045***
Inverse Mills Ratio _{i,j,t}	-.167***	-.165***	-.167***	-.169***	-.152***	-.155**	-.228****
Control Function _{i,j,t}	-.702****	-.773***	-.651***	-.674***	-.732****	-.672****	-.576***
Intercept	-.276**	-.289***	-.268***	-.269***	-.255**	-.287***	-.173**
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations (Number of Firms)	11,096 (1,566)	11,096 (1,566)	11,096 (1,566)	11,036 (1,558)	10,938 (1,550)	11,142 (1,569)	11,900 (1,668)
Wald χ^2 (df)	1,517.93 (39)****	1,188.33 (39)****	1,473.51 (39)****	1,653.89 (39)****	1,769.10 (39)****	1,470.58 (39)****	1,423.24 (39)****

Notes: a. NAICS5 indicates the five-digit North American Industry Classification System; FV_{i,j,t} is firm value measured by tobin's q for firm *i* in industry *j* in fiscal year *t*. In Model 5-Model 7, peers indicate both geographic and auditor peers.

b. The standard errors of the estimates are clustered at the firm level and calculated by 200 bootstrapping replications; All continuous variables are mean centered.

c. * $p < .10$, ** $p < .05$, *** $p < .01$, **** $p < .001$ (one-tailed for Model 3-Model 8 and two-tailed for Model 2).

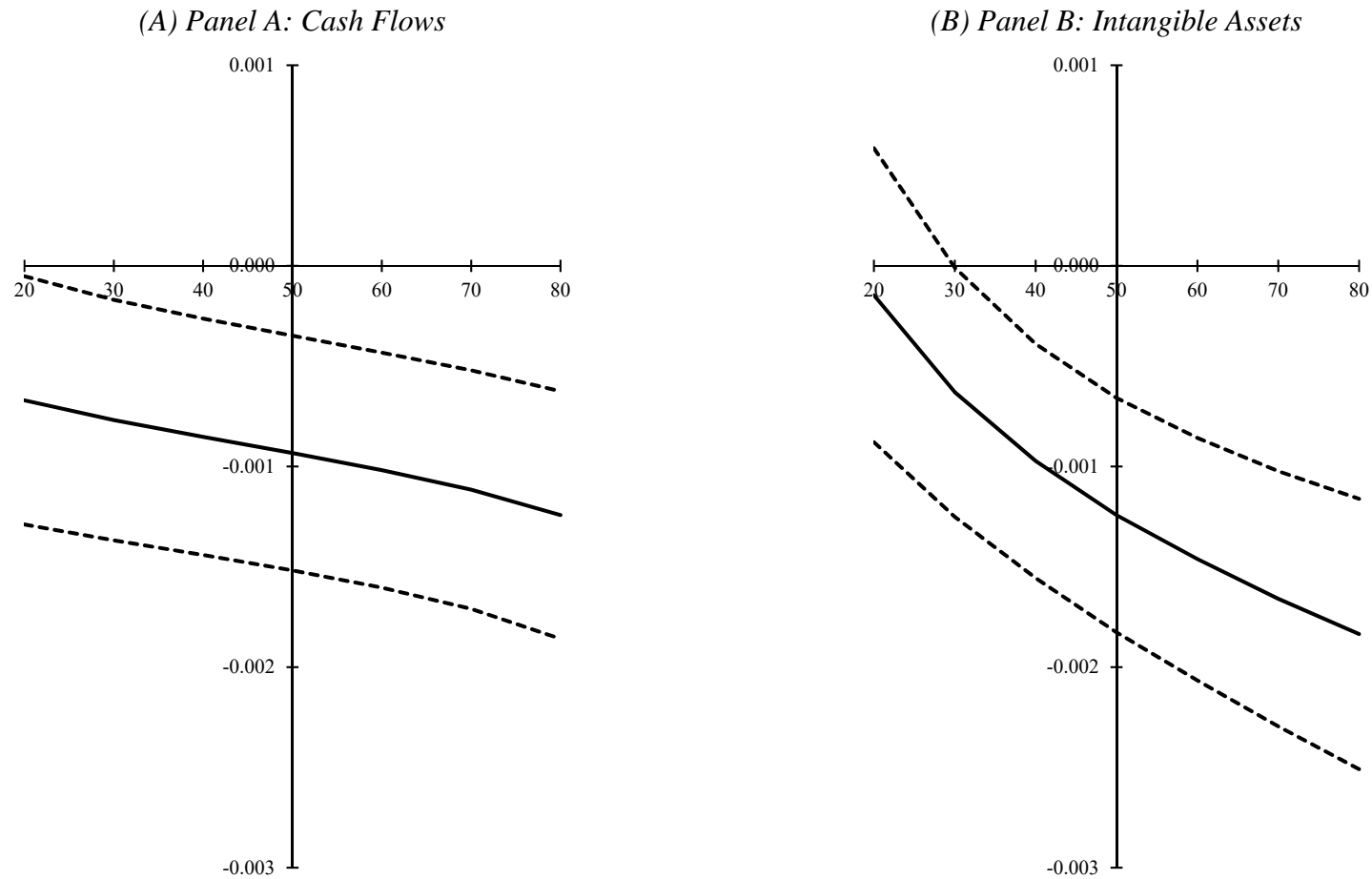
FIGURE 1
PERCENTAGE OF PUBLICLY LISTED FIRMS DISCLOSING ADVERTISING SPENDING



Notes:

- The vertical axis represents the percentage of publicly listed firms that disclose advertising spending.
- The horizontal axis represents the fiscal years from 1995 to 2016.

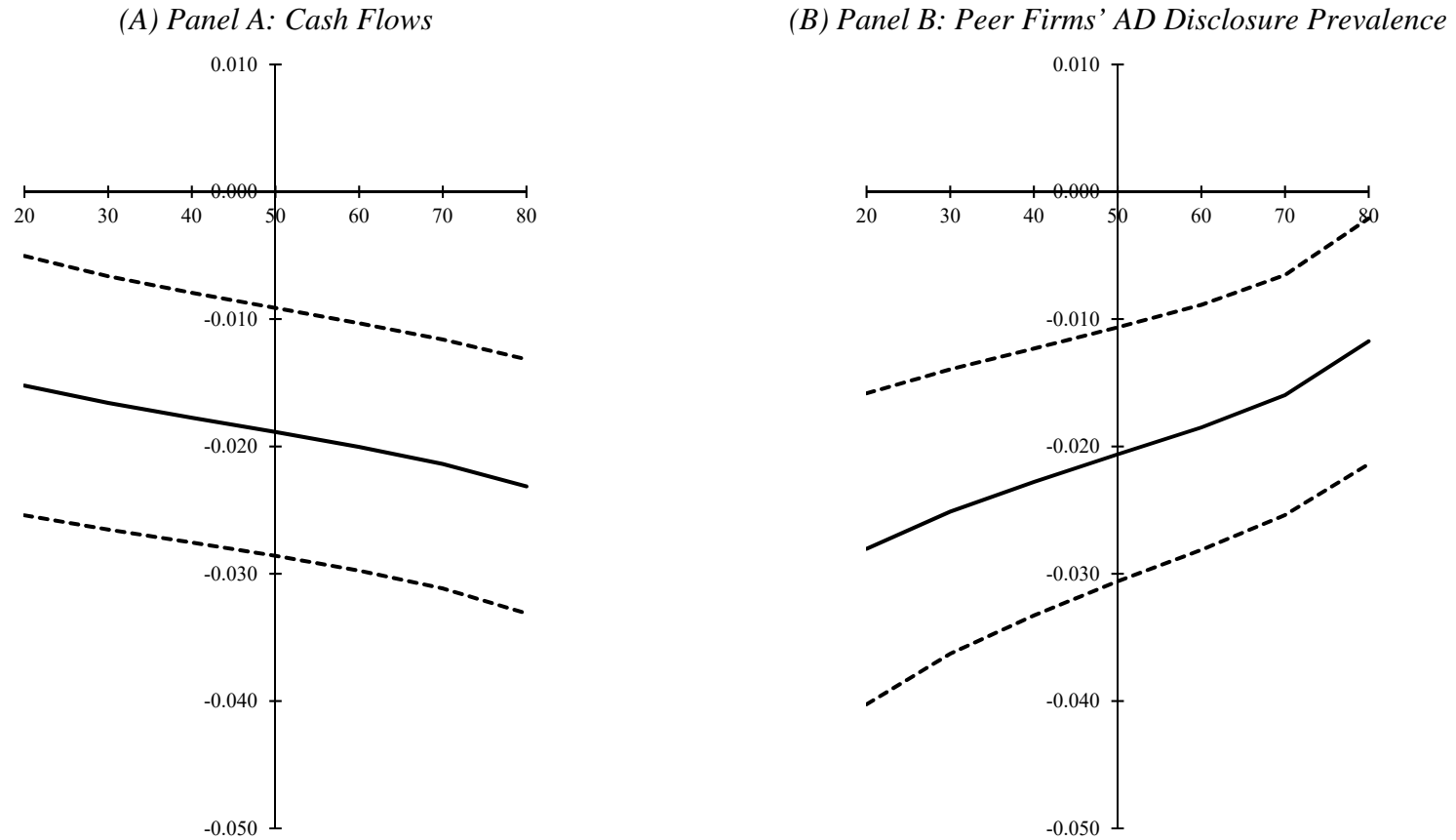
FIGURE 2
MARGINAL EFFECTS OF DISCLOSURE OF ADVERTISING SPENDING ON INVESTORS' UNCERTAINTY
ACROSS VALUES OF CASH FLOWS AND INTANGIBLE ASSETS



Notes:

- The horizontal axis is the percentile of the moderating variable, where the values are between 20th and 80th percentile of each moderating variable.
- The vertical axis is the effect of disclosure of advertising spending on investors' uncertainty.
- The dotted lines represent 95% confidence intervals.

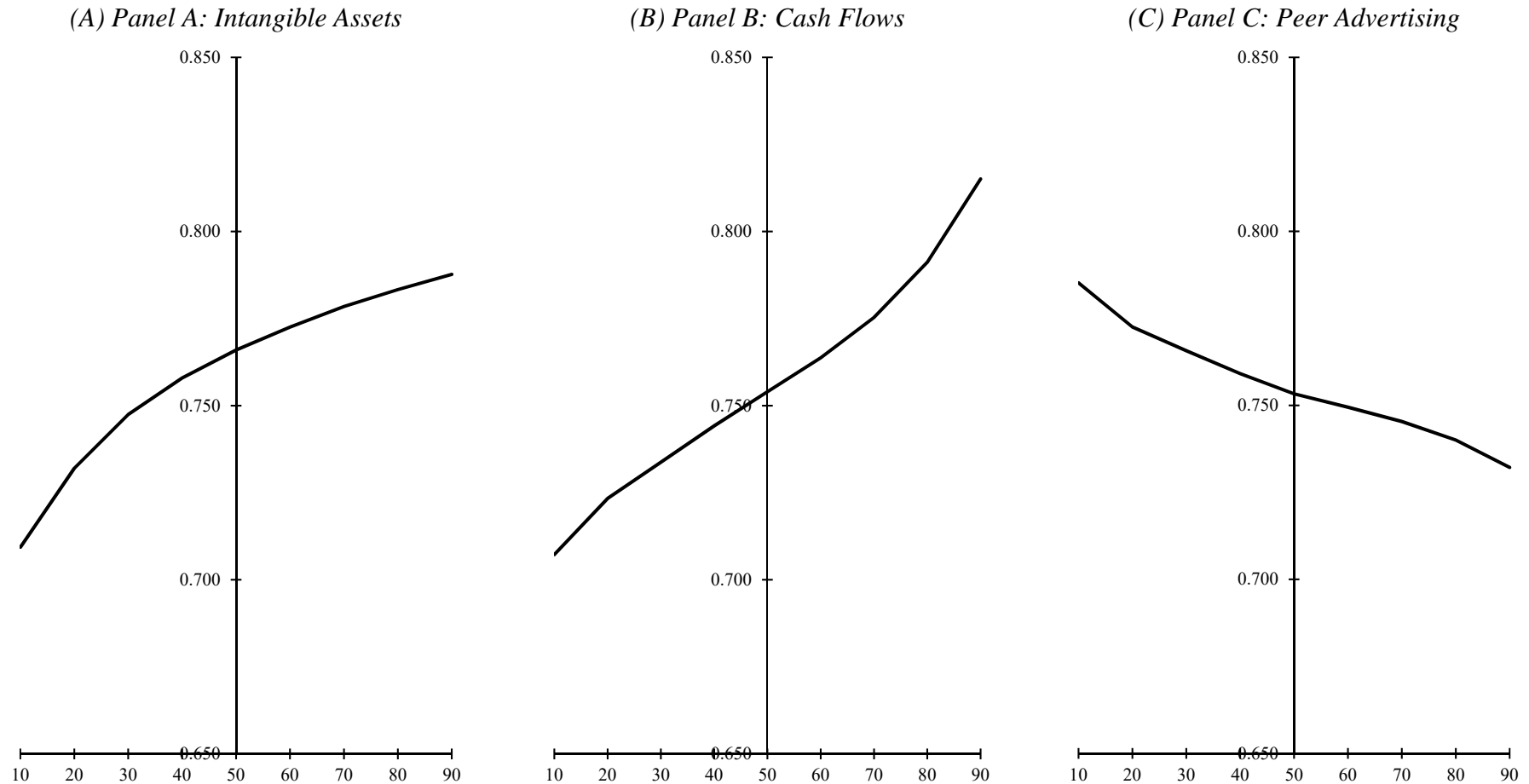
FIGURE 3
MARGINAL EFFECTS OF DISCLOSURE OF ADVERTISING SPENDING ON ANALYSTS' UNCERTAINTY
ACROSS VALUES OF CASH FLOWS AND PEER FIRMS' AD DISCLOSURE PREVALENCE



Notes:

- The horizontal axis is the percentile of the moderating variable, where the values are between 20th and 80th percentile of each moderating variable.
- The vertical axis is the effect of disclosure of advertising spending on analysts' uncertainty.
- The dotted lines represent 95% confidence intervals; AD = advertising spending.

FIGURE 4
MARGINAL EFFECTS OF ADVERTISING SPENDING ON FIRM VALUE
ACROSS VALUES OF INTANGIBLE ASSETS, CASH FLOWS, AND PEER ADVERTISING



Notes: a. The horizontal axis is the percentile of the moderating variable, where the values are between 10th and 90th percentile of each moderating variable.

b. The vertical axis is the effect of advertising spending on firm value.

c. The marginal effects of advertising spending on firm value in Panel A, B, and C are significant at 95 % confidence intervals.