

When Marketing Strategy First Meets Wall Street: Marketing Spendings and Firms' Initial Public Offerings

This article examines the role of marketing in the context of initial public offerings (IPOs), a neglected issue in the extant literature. The results from a large-scale, cross-industry study indicate that firms' pre-IPO marketing spendings help reduce IPO underpricing and boost IPO trading in the stock market. The econometric models also suggest that these effects are heterogeneous; that is, they are more salient for firms with higher cost reduction efficiency and in markets with a smaller number of historical IPOs. With regard to theory, this research ushers in a greenfield of IPOs, helping build more powerful theories of market-based assets and customer equity. With regard to practice, it builds the case for not cutting marketing before an IPO. Prudent investors may be better able to pick "star" IPOs if they can track pre-IPO marketing spendings and model firm cost reduction efficiency simultaneously. Overall, this article offers fresh implications for the marketing–finance interface, uncovering brand-new IPO-based reasons that marketing can help create shareholder value.

Keywords: marketing strategy, initial public offering, marketing–finance interface, efficiency, customer equity

How can marketing help create firm shareholder value? Recent research on the marketing–finance interface has shown that marketing spendings (i.e., expenses in communications, market research, advertising, and other marketing efforts) matter financially *after* firm stocks are traded publicly (e.g., Joshi and Hanssens 2008; Luo 2008; McAlister, Srinivasan, and Kim 2007; Mizik and Jacobson 2008). This article examines this issue rather differently and in an innovative way. It addresses the value of marketing spendings when "marketing strategy first meets Wall Street"—that is, at the time firm stocks first become traded publicly in the context of initial public offerings (IPOs).

This study examines the IPO market because of its economic importance. The IPO event empowers a company to offer its stocks to public investors for the first time through financial markets, such as the American Stock Exchange (AMEX), NASDAQ, and the New York Stock Exchange (NYSE). For most firms, the IPO is a critical milestone. It can raise a substantial amount of cash, which helps finance valuable projects. For example, Heelys (an innovative firm offering sneaker shoes with removable wheels to children between the ages of 6 and 14) recently had a hot, successful IPO, which helped the firm hire more talented employees to upgrade the company. As the finance literature notes, the IPO oftentimes represents wealth, recognition, and news-

stand fame (Brau and Fawcett 2006; Ritter and Welch 2002).

Indeed, according to the popular trade press, IPO firms have been identified as growth engines of the U.S. economy, amassing \$43 billion in 2006 and \$34 billion in 2005 on the comeback trail after garnering \$97 billion in 2000, the highest level in history. The IPO is popular not merely in the United States but also in China (the world's largest IPO ever at China's ICBC bank raised \$22 billion in 2006) and India (in 2007, more than 150 companies were expected to generate \$10 billion, for another record-breaking IPO season) (Ghosh 2007; Gimbel and Kate 2006; *The Wall Street Journal* 2007).

Therefore, given its economic importance, the IPO offers a good setting to test the value relevance of marketing spendings.¹ However, to date, there does not appear to be any published research that has focused on IPOs in the marketing literature, perhaps because its properties are grounded in finance. In addition, the possible association between pre-IPO marketing spendings and investor responses to IPOs has not been addressed in either the marketing or the finance literature.

Against this backdrop, the current study investigates the following questions: Do firms' pre-IPO marketing spendings have a significant impact on investor responses to IPOs, such as underpricing and trading? and Is this impact heterogeneous across firm and market situations? According to the theories of market-based assets (Srivastava, Shervani, and Fahey 1998) and customer equity (Rust et al.

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¹It focuses on firms' pre-IPO marketing spendings (firm marketing expenses before IPOs) and their direct and moderated effects. This article does not examine investment bankers' efforts to market (make the public aware of) the IPOs.

2004), successful marketing actions may help generate valuable assets (e.g., strong brands, loyal customers and channel partners, attractive price premiums, useful defense against new entrants), leading to superior future cash flows with a healthier financial outlook. If so, pre-IPO marketing spendings may help provide information about the true value of the firm and reduce the information asymmetry in IPOs, thus likely influencing investor responses to IPOs. This study finds some support for these ideas with a unique data set of IPOs over the 1996–2005 period. The data analysis results based on robust econometric models suggest that pre-IPO marketing spendings indeed help reduce IPO underpricing and boost IPO trading. In addition, these effects are neither simple nor unconditional. Rather, they tend to change, depending on the micro, firm-level variable of cost reduction efficiency and the macro, industry-level factor of the number of historical IPOs.

These findings are important and refreshing. First, theoretically, given the current hot-button research themes that have focused solely on the value of marketing after IPOs, it is useful to understand whether pre-IPO marketing affects investor reactions to newly minted stocks (a neglected issue in the extant literature). In so doing, research on the marketing–finance interface can build more powerful theories of market-based assets and customer equity in terms of the value relevance of marketing both before and after IPOs. For example, fostering market-based assets through pre-IPO marketing spendings can help reduce the uncertainty and volatility of IPOs insofar as company fundamentals are boosted. Second, methodologically, the econometric models realistically acknowledge that not all firms are equal with respect to the IPO implications of marketing. The modeled heterogeneous effects suggest that, coupled with better cost reduction efficiency, firms’ pre-IPO marketing spendings tend to have a more salient impact on investor responses to IPOs (firms get “more bang for their buck” from their marketing expenses). Thus, prudent

investors may be better able to pick “star” IPOs if they can track pre-IPO marketing spendings and model firm cost reduction efficiency simultaneously. Third, practically, this article builds the case for top executives not to cut marketing before an IPO. Without a serious commitment in marketing instruments before IPOs, the chance is high for investors to downgrade the financial potential of the firm. In contrast, firms building market-based assets with a track record of pre-IPO marketing instruments may attract the eye of investors and cultivate more successful IPOs. Overall, this work enables academics and practitioners to appreciate the brand-new, IPO-based reasons that marketing can help create shareholder value.

Theory and Hypotheses

This section develops the theoretical framework. Because IPOs seem new to the marketing literature, the IPO metrics of interest to this study are defined. Then, market-based asset and customer equity theories are drawn on to posit that pre-IPO marketing spendings influence IPO underpricing and trading.

IPOs

Although to date there has been no prior marketing research focusing on IPOs, great effort has been made to understand the nature and advantages of IPOs in the finance literature (Brau and Fawcett 2006, p. 399; Ritter and Welch 2002, p. 1796). Table 1 reports a glossary of IPO-related concepts and definitions.

Essentially, the finance literature suggests that IPOs involve a strategic movement from private to public ownership. The IPO can offer many advantages to the firm. For example, at the time of the IPO, a firm typically obtains a large amount of cash. This enables the firm to have access to investment capital from a large pool of institutional and individual public investors (e.g., Fama and French 2004;

TABLE 1
A Glossary of IPO-Related Concepts and Definitions

Concepts	Definitions	Sample Prior Finance Work
IPOs	The first day a firm’s stocks are publicly traded in AMEX, NASDAQ, and NYSE.	Brau and Fawcett 2006; Lowry and Murphy 2007
IPO underpricing	The extent to which stocks close at a price higher than their IPO price on the first trading day in financial markets; the larger the closing prices compared with the initial offering prices, the more the stock is underpriced and the more money is left on the table.	Loughran and Ritter 2004; Lowry and Murphy 2007
IPO trading	The number of shares traded compared with the total number of shares available on the first day when the stock is newly listed in financial markets; higher IPO trading indicates stimulated interest in and pent-up demand for the stock at the time of the IPO, resulting in a liquid market for a firm’s stock.	Bradley, Jordon, and Ritter 2003; Lowry and Murphy 2007
A prestigious underwriter of the IPO	Whether the quality underwriter is top-tier and prestigious; there is less uncertainty if IPO values are certified by a prestigious underwriter.	Carter and Manaster 1990; Lowry and Murphy 2007
Venture-capital backing of the IPO	Whether the firm uses venture-capital financing before IPOs; venture capitalist can help certify the value of an IPO.	Lowry and Murphy 2007; Megginson and Weiss 1991

Welch 1989). In addition, the IPO can increase the firm's public recognition, visibility, and reputation among the financial community on Wall Street, all of which are non-trivial for the firm's long-term success (Cook, Kieschnick, and Van Ness 2006; Lowry and Murphy 2007). Furthermore, the IPO can help the firm establish a more rigorous corporate governance structure based on guidelines from the Securities and Exchange Commission. Indeed, a successful IPO creates public shares for merger and acquisitions, reduces firms' cost of capital in equity markets, and generates financial analyst following (Loughran and Ritter 2002, 2004). (For a comprehensive review of more than 126 IPO studies, see Ritter and Welch [2002]; for a recent survey of 336 financial experts' views of IPOs, see Brau and Fawcett [2006].)

IPO Underpricing and Trading

This study examines two metrics that measure investor responses to IPOs: underpricing and trading. First, IPO underpricing is the extent to which stocks close at a price higher than their initial offering price on the first trading day in financial markets (Lowry and Murphy 2007; Ritter and Welch 2002). The larger the gap between closing prices and the IPO prices, the more the stock is underpriced. When a stock is underpriced in the IPO, management has essentially "left money on the table."² That is, additional gains have been lost that would have been received had the initial offer price more accurately reflected the true value of the firm. In this sense, IPO underpricing is a risk premium in the form of a discounted price to compensate for the uncertainty of the true firm value in the minds of investors (Brau and Fawcett 2006; Loughran and Ritter 2002).

Second, IPO trading is the number of shares traded relative to the total number of shares available on the first day when stocks are newly listed in financial markets (Bradley, Jordon, and Ritter 2003; Cook, Kieschnick, and Van Ness 2006). Lower IPO trading means that there is little interest for a stock at the time of its IPO. In contrast, higher IPO trading indicates stimulated interest in and pent-up demand for the stock, resulting in a more liquid market for the firm's stock at the time of its IPO. Thus, higher IPO trading volume suggests boosted comfort for institutional and individual investors to buy and hold equity of the firm's stocks on the first trading day (Demers and Joos 2007; Welch 1989).

Prior finance literature has paid a great deal of attention to explaining IPO underpricing and trading. Although there are many different views that account for investor responses to IPOs (Loughran and Ritter 2002, 2004), an enduring one is Rock's (1986) information asymmetry theory. According to this theory, there is an information asymmetry between the issuing firms and the investors. Unlike the issuing firms, which have more complete information, investors often lack

full knowledge about the true value of the firms when participating in IPO markets. Thus, given the information asymmetry and uncertainty of the true value of the newly listed stocks, firms and underwriters provide a premium in the form of a discounted price (or underpriced IPOs) to attract investors and compensate them for the uncertainty/risk of investing in IPOs. In general, the higher the informational asymmetry related to assessing the true value of the firms going public, the higher is IPO underpricing, and the lower is IPO trading (i.e., less interest in the stock at the IPO).

An important implication of Rock's (1986) theory is that an increase in the information available about the true value of the firm before an IPO leads to a decrease in information asymmetry, thus resulting in a drop in IPO underpricing and a rise in IPO trading. Indeed, since Rock's seminal work, financial economists have examined a battery of the predictors of IPO underpricing and trading (Bradley, Jordon, and Ritter 2003; Carter and Manaster 1990; Cook, Kieschnick, and Van Ness 2006). As Lowry and Murphy (2007) summarize in their recent model of IPOs, these predictors include underwriter prestige, venture-capital backing, pre-IPO asset size, market returns, and the like. The subsequent econometric analyses use this recent model as the benchmark model and extend it by proposing pre-IPO marketing spendings as an additional predictor of investor responses to IPOs, beyond those established in finance. Just as the finance literature suggests that venture-capital backing and a prestigious underwriter can certify the value of an IPO (Loughran and Ritter 2002, 2004; Megginson and Weiss 1991), it is expected that intangible assets induced by marketing spendings can also attest to the true value of IPOs and thus affect investor responses to IPOs. Next, additional theory-based justification linking pre-IPO marketing spendings to IPO underpricing and trading is offered.

The Impact of Pre-IPO Marketing Spendings on IPO Underpricing and Trading

Why should pre-IPO marketing spendings affect IPO underpricing and trading? Two lines of reasoning are offered to justify this impact. First, according to the market-based asset theory (Srivastava, Shervani, and Fahey 1998), long-term asset building requires committed marketing spendings on a variety of activities, including communications, market research, advertising, and other marketing efforts in today's highly competitive marketplace (e.g., Joshi and Hanssens 2008; Pauwels et al. 2004). The intangible assets fostered by these marketing instruments may help provide information about the firm's true value (i.e., a more accurate prospect of the level, timing, and volatility of the firm's future cash flows). For example, prior research has shown that firm advertising and communication spendings can "promote product differentiation, distributor loyalty, repurchases intention, and price insensitivities that directly affect firm sales and profit" (Joshi and Hanssens 2008, p. 9; Luo and Donthu 2006), thus increasing and accelerating cash flows. Second, marketing spendings may build brand equity (Keller and Lehmann 2006) that can "function as financial hedging contracts when entering new markets, act as a barrier to competition, and serve as a high-quality

²The amount of money left on the table in IPO underpricing can be economically large. For example, in 2004, Google left \$300 million on the table in its IPO (<http://bear.cba.ufl.edu/ritter>). The recent debut of the Chinese IPO Baidu also left a huge amount of money on the table (\$400 million), with an underpricing of 350%. Although it may be deliberate given the uncertain value of IPOs, IPO underpricing is risky because the stock could plummet in coming weeks and months (Ritter and Welch 2002).

information channel that leads to higher liquidity and increased breadth of investor ownership” (McAlister, Srinivasan, and Kim 2007, p. 38), thus reducing the volatility/risk of cash flows for the firm. Without considering these financial implications of pre-IPO marketing spendings, the value of IPOs would be largely discounted, along with less enthusiastic demand for the IPOs. If so, this would increase IPO underpricing and decrease IPO trading. Conversely, accounting for these financial implications of marketing spendings would help more accurately reflect the value of the newly listed stocks and generate more enthusiastic demand for the IPOs, thus decreasing IPO underpricing and increasing IPO trading.

Indeed, compelling support for the impact of pre-IPO marketing spendings on investor responses to IPOs can also be gleaned from customer equity theory (Rust et al. 2004; see also Gupta, Lehmann, and Stuart 2004). This theory holds that satisfied customers with positive word of mouth directly affect the level and volatility of firm cash flows (Anderson, Fornell, and Mazvancheryl 2004; Gruca and Rego 2005; Luo 2008), thus providing information about the values of IPOs. To improve customer relationships and lifetime value, firms must invest in many marketing areas (Mizik and Jacobson 2008; Venkatesan, Kumar, and Bohling 2007). Perhaps the negative side is more obvious. That is, without successful marketing programs (i.e., due to relentless cuts in pre-IPO marketing spendings in developing new products and/or supporting current ones), there are likely to be more dissatisfied and frustrated customers with negative word of mouth, which can lead to diminished customer loyalty, decreased customer lifetime value, lower retention rate, and higher ratio of switching to competition (Luo 2007). This would provide a lackluster prospect regarding the value of and demand for the stocks at IPOs.

As such, according to the logic of the stock price implications of customer equity and market-based assets (Rust et al. 2004; Srivastava, Shervani, and Fahey 1998), pre-IPO marketing spendings may help provide information about the true value of the IPO with reduced information asymmetry, leading to a drop of IPO underpricing and a rise in IPO trading in equity markets, all else being equal. Thus:

H₁: *Ceteris paribus*, the higher the firms’ pre-IPO marketing expenditures, (a) the lower is IPO underpricing in equity markets, and (b) the higher is IPO trading in equity markets.

In addition to the hypothesized main effects of pre-IPO marketing spendings, some moderating effects should be considered because not all firms are equal with respect to the IPO implications of marketing. It seems naive to assume that pre-IPO marketing spendings have unvarying, unconditional effects on IPOs. Thus, the impact of pre-IPO marketing spendings on IPO underpricing and trading might be more or less salient, depending on some contingencies. Two such contingent variables addressed here are (1) micro, firm-level cost reduction efficiency and (2) macro, industry-level number of historical IPOs.

Firm cost reduction efficiency refers to an optimally weighted ratio of firms’ multiple operating costs to multiple sales outputs (Mittal et al. 2005, p. 549). Neoclassical production theory and the resource-based view in economics

suggest that firms can enhance shareholder wealth in competitive markets by operating in the most efficient manner; that is, they can either maximize the desirable outputs given the costs or minimize the required costs given the outputs, when compared with rival firms’ best practices (Caves, Christensen, and Diewert 1982; Luo 2004).

It is expected that firm cost reduction efficiency changes the strength of the association between pre-IPO marketing spendings and IPO underpricing and trading. In particular, efficiently operating companies with lean expenses may get more bang for their buck from their marketing expenses because these firms may not have reached diminishing returns (Anderson, Fornell, and Rust 1997) and because superior internal operating capabilities can empower the firms to leverage more effectively external market-based assets (stronger brand differentiation and less brand switching and customer churn) fostered by marketing expenditures (Joshi and Hanssens 2008; Mizik and Jacobson 2008; Srivastava, Shervani, and Fahey 1998). Indeed, firms with higher cost reduction efficiency may also benefit more from pre-IPO marketing spendings because of the mutual facilitation effects between operating efficiency (reducing costs) and marketing expenditures (enhancing revenues), as theorized in the “dual emphasis” of a firm toward superior financial performance (Mittal et al. 2005; Rust, Moorman, Dickson 2002). Therefore, for firms with higher (versus lower) cost reduction efficiency, pre-IPO marketing spendings may better reflect the true value of the IPO stock and reduce information asymmetry, having a stronger impact on IPO underpricing and trading.³

The number of historical IPOs may also change the strength of the association between pre-IPO marketing spendings and IPO underpricing and trading. In the finance literature, it is noted that the number of IPOs is not constant across industries but rather fluctuates with both stronger or more exuberant and weaker or less exuberant market conditions (Derrien 2005; Loughran and Ritter 2002). The larger (smaller) the number of historical IPOs in an industry, the stronger (weaker) are the macro market conditions for IPOs in the industry (Derrien and Womack 2003; Khanna, Noe, and Sonti 2008).

It is expected that the number of historical IPOs introduces industry-level heterogeneity in the impact of pre-IPO

³Why is cost reduction efficiency necessary in the moderating hypothesis (H₂) (pre-IPO marketing spendings × cost reduction efficiency)? H₁ pertains to the effectiveness (doing the right things with pre-IPO marketing spendings to obtain good performance in terms of investor responses to IPOs), and H₂ pertains to the effectiveness and efficiency simultaneously (doing the right things with pre-IPO marketing spendings and doing things right simultaneously to obtain better performance). Another way to understand this more clearly is to think about the marketing budget issues in reality. That is, most marketers often do not have an unlimited budget. In the boardroom, they are pressured to save costs and cut corners. Thus, the marketing budget is lean and shrinking. Firms may need to achieve the same goals with less resources. That cues H₂; the more efficient operations would help firms get more bang for their buck from their marketing expenses. If supported, H₂ implies that prudent investors may be better able to pick star IPOs insofar as they can track pre-IPO marketing spendings and model firm cost reduction efficiency simultaneously.

marketing spendings on IPO underpricing and trading. Specifically, this impact may be expanded in weaker markets with a smaller (versus larger) number of historical IPOs. This is because in weaker and less exuberant markets, in which investors are not very hungry, it is more important to rely on the intangible market-based assets, such as strong brands and customer loyalty fostered by marketing expenditures, to price IPOs more accurately and attract investor attention (Derrien and Womack 2003; Loughran and Ritter 2002; Pollock and Rindova 2003). Indeed, in weaker or more “sleepy” markets with a smaller number of IPOs, pre-IPO marketing spendings may more clearly “light up the gloom” and boost the prospect of fundamentals of IPOs (i.e., raised level and lower volatility of cash flows due to customer and brand equity; see Luo 2008; Rust et al. 2004; Srivastava, Shervani, and Fahey 1998), having a stronger impact on IPO underpricing and trading. Thus:

H₂: Pre-IPO marketing spendings have a stronger impact on (a) IPO underpricing and (b) IPO trading for firms with higher (versus lower) cost reduction efficiency.

H₃: Pre-IPO marketing spendings have a stronger impact on (a) IPO underpricing and (b) IPO trading in markets with a smaller (versus larger) number of historical IPOs.

Models

This section presents the econometric models employed to test the hypotheses. The base model is at the aggregated level. To uncover more nuanced effects of pre-IPO marketing spendings across firms and industries, a disaggregated model is introduced. This advanced, disaggregated model accounts for both observed and unobserved heterogeneity in the IPO implications of marketing spendings.

This approach directly builds on Lowry and Murphy’s (2007) model from the finance literature, which controls for established finance predictors, such as pre-IPO assets or firm size, a prestigious underwriter, venture-capital backing, and lagged market returns (details are discussed subsequently). Along with these controls, the model put forth here adds firm age, cost reduction efficiency, year dummies, and the number of historical IPOs.

Baseline Aggregated Model

The baseline aggregated-level model is specified as follows:

$$(1) \text{IPO}_{ij} = \xi_0 + \xi_1 \text{Marketing spendings}_{ij} + \xi_2 \text{Marketing spendings}_{ij} \times \text{Cost reduction efficiency}_{ij} + \xi_3 \text{Marketing spendings}_{ij} \times \text{Number of historical IPOs}_{ij} + \xi_{\text{controls}} \text{Controls}_{ij} + \varepsilon_{1ij},$$

where i = firm, j = industry, and IPO = IPO underpricing or trading.

Disaggregated Model

At the disaggregated level, a hierarchical linear regression model (HLM) is used. More specifically, at Level 1 of this HLM approach, the within-industry model is as follows (Raudenbush and Bryk 2002):

$$(2) \text{IPO}_{ij} = \psi_{0j} + \psi_{1j} \text{Marketing spendings}_{ij} + \psi_{2j} \text{Marketing spendings}_{ij} \times \text{Cost reduction efficiency}_{ij} + \psi_{\text{controls}} \text{FControls}_{ij} + \varepsilon_{2ij},$$

where FControls include firm-level controls, such as pre-IPO assets, a prestigious underwriter, venture-capital backing, and firm age. Year dummies are also entered to accommodate the fixed effects of different periods over the 1996–2005 span. The Level 1 within-industry model captures the heterogeneous effects of pre-IPO marketing spendings with the moderating role of firm cost reduction efficiency.

At Level 2, the between-industry model allows the intercept and coefficients of Level 1 to vary across industry-level factors, such as the number of historical IPOs, and other controls (OControls), such as lagged market returns. In this way, the Level 2 between-industry model accommodates unobserved heterogeneity in the effects of pre-IPO marketing spendings on investor responses to IPOs:

$$(3) \begin{aligned} \psi_{0j} &= \pi_{00} + \pi_{01} \text{Number of historical IPOs}_j + \pi_{\text{controls}} \text{OControls}_j + \tau_{00j}, \\ \psi_{1j} &= \pi_{10} + \pi_{11} \text{Number of historical IPOs}_j + \pi_{\text{controls}} \text{OControls}_j + \tau_{10j}, \\ \psi_{2j} &= \pi_{20} + \pi_{21} \text{Number of historical IPOs}_j + \pi_{\text{controls}} \text{OControls}_j + \tau_{20j}. \end{aligned}$$

Data

To estimate the proposed models, a data set based on multiple sources was assembled. Data on IPOs were collected from the Securities Data Corporation (SDC) Platinum New Issues database. Data were collected on approximately 3840 new IPOs in the period between January 1, 1996, and December 31, 2005, from the SDC source. In line with appropriate guidelines from the finance literature (Lowry and Murphy 2007; Ritter and Welch 2002), IPO data that were related to closed-end funds, spin-offs, reverse leveraged buyouts, real estate investment trust, unit offerings, American Depositary Receipts, demutualizations of insurance companies and savings banks, firms with an IPO offer price below \$5, and IPOs with total proceeds less than \$5 million were eliminated. Then, IPO data were matched with COMPUSTAT and the Center for Research in Security Prices (CRSP) sources, and IPOs with missing data on marketing spendings and cost reduction efficiency were deleted (Mittal et al. 2005; Mizik and Jacobson 2007; Rao, Agarwal, and Dahloff 2004). This merging process led to a final sample of 1981 IPOs in the data analyses. Figure 1 presents a plot of the studied IPOs across the sample years.

Investor Responses to IPOs

Underpricing of IPOs (IPOU) is calculated as the difference (in percentage) between the IPO closing price and the initial offering price on the first trading day:

$$(4) \quad \text{IPOU} = 100 \times \left(\frac{P_{\text{end}} - P_{\text{initial}}}{P_{\text{initial}}} \right),$$

where P_{end} is the closing price at the end of the first trading day and P_{initial} is the IPO initial offering price.

Trading of IPOs (IPOT) is calculated as the ratio (in percentage) of the trading volume to the total number of shares available on the first day when stocks are newly listed in financial markets:

$$(5) \quad \text{IPOT} = 100 \times \left(\frac{S_{\text{traded}}}{S_{\text{offered}}} \right),$$

where S_{traded} is the shares traded in stock exchanges during the first day of trading and S_{offered} is the shares offered in the IPO. Both IPOU and IPOT are derived from the SDC and CRSP databases. Table 2 reports summary statistics for the variables.

Marketing Spendings

Data for pre-IPO marketing spendings were collected from COMPUSTAT. Whenever possible, data were also filled in with company annual reports and Compact Disclosure.

In line with Mizik and Jacobson's (2007, p. 367) approach, marketing spendings were calculated one year before the IPOs for each firm as follows:

$$(6) \quad \text{Pre-IPO marketing spendings} = 100 \times \left(\frac{\text{SG\&A_Expense} - \text{R\&D_Expense}}{\text{Total_Assets}} \right),$$

where SG&A Expense is selling and general administrative expenses one year before the IPO and R&D Expense is the research-and-development expenses one year before the IPO.

There are several reasons for using SG&A – R&D expenses one year before IPOs scaled by total assets as a

FIGURE 1
Plot of IPOs Across the Sample Years (January 1, 1996–December 31, 2005)

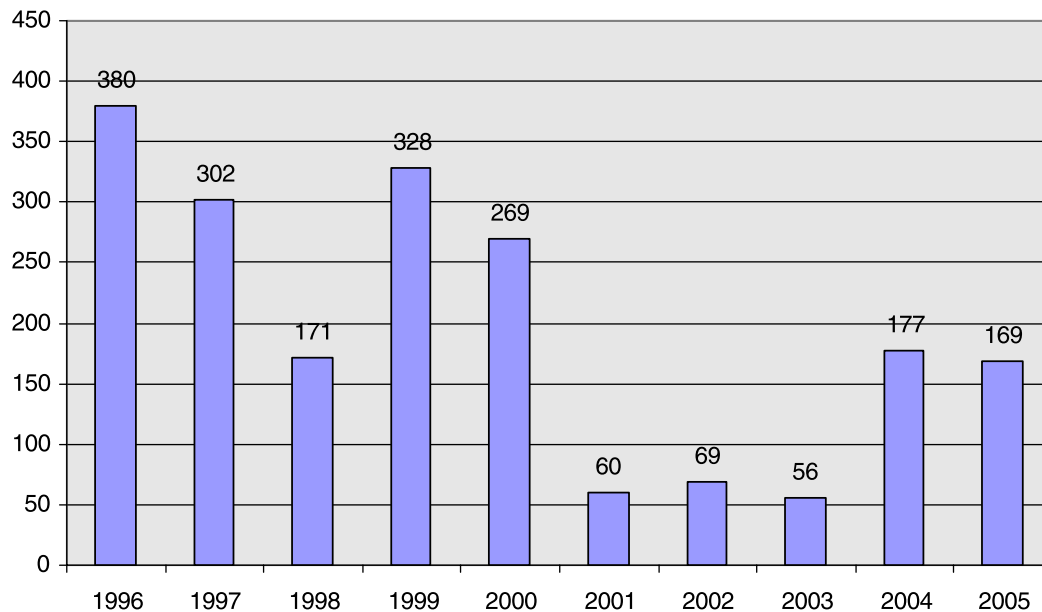


TABLE 2
Summary Statistics of Variables

Variables	Data Source	M	SD
IPO underpricing (IPOU)	SDC Platinum, CRSP	20.981	23.376
IPO trading (IPOT)	SDC Platinum, CRSP	63.052	38.683
Pre-IPO marketing spendings	COMPUSTAT	.235	.127
Firm cost reduction efficiency	COMPUSTAT	.495	.361
The number of historical IPOs	SDC Platinum	23.487	11.132
Firm age	COMPUSTAT	2.746	2.258
Pre-IPO asset (in millions of dollars)	COMPUSTAT, Compact Disclosure	439.911	529.453
A prestigious underwriter	SDC Platinum	.735	.328
Venture-capital backing	SDC Platinum	.607	.466
Lagged market return	CRSP	1.376	5.679

proxy for measuring pre-IPO marketing spendings. First, several prior studies in the literature have used SG&A to measure the stock of marketing spendings (e.g., Dutta, Narasimhan, and Rajiv 1999; Mizik and Jacobson 2007). Specifically, Dutta, Narasimhan, and Rajiv (1999, p. 556) argue that SG&A is “a good proxy for the amount the firm spends on its market research, sales effort, trade promotion expenses, and other related activities.” Thus, the proxy is grounded in the marketing science literature. Second, to be more precise, R&D expenses are parceled out from the raw SG&A one year before IPOs. In this way, it is possible to derive a measure that is more closely related to pre-IPO marketing spendings than the raw SG&A; this is in line with Mizik and Jacobson’s (2007) recent empirical study. Third, theoretically, the SG&A – R&D expenses one year before IPOs may be more appropriate than a single marketing spending item (e.g., advertising) one year before IPOs because the former (but not the latter) includes a multitude of pre-IPO marketing spending items, such as market research, trade promotion, communications, and other marketing instruments (Mizik and Jacobson 2007), all of which may provide information about the true value of IPOs and thus are likely to affect investor responses to IPOs. In other words, without considering the multitude of pre-IPO marketing spending items, subsequent empirical analyses would be narrower and less powerful and thus would not reveal the full strategic importance of marketing spendings in IPOs. Finally, the results are checked by conducting more sensitivity analyses. That is, the single item of advertising spending one year before IPOs is also used as an alternative proxy. This alternative measure of pre-IPO marketing spendings yields results consistent with those reported subsequently. Therefore, on the basis of the theoretical and empirical support, SG&A – R&D expenses one year before IPOs scaled by total assets is a reasonable proxy for measuring pre-IPO marketing spendings (though it is not the ideal or perfect proxy, as noted in the “Limitations and Further Research” section).

Cost Reduction Efficiency

Cost reduction efficiency was measured with the data envelopment analysis (DEA) approach. This approach is a mathematical programming technique that measures the optimally weighted relative efficiency of a firm in converting multiple inputs into multiple outputs (Banker, Charnes, and Cooper 1984; Charnes, Cooper, and Rhodes 1978). The main advantages of the nonparametric DEA approach are (1) it compares the best practices of rival firms and (2) it does not assume any subjective relationship between inputs and outputs (Luo 2004).

As in the work of Mittal and colleagues (2005, p. 549), firm cost reduction efficiency was modeled with four inputs: number of employees (EMP), the cost of the goods sold (COG), advertising expenses (ADV), and the selling and general expenses (SG&A). The outputs are sales (SLS) and sales growth (SLG). Data for all inputs and outputs were collected from COMPUSTAT, and advertising data were also based on the Competitive Media Reporting database (Luo and Donthu 2006; Rao, Agarwal, and Dahloff

2004). The mathematical programming model for estimating firm cost reduction efficiency is as follows:

$$(7) \quad \text{Cost reduction efficiency} = 100 \text{ Max } \phi_i$$

$$\text{Max } \phi_i = \frac{o_1 \text{SLS}_i + o_2 \text{SLG}_i}{w_1 \text{EMP}_i + w_2 \text{COG}_i + w_3 \text{ADV}_i + w_4 \text{SG\&A}_i},$$

$$\text{subject to } \frac{o_1 \text{SLS}_k + o_2 \text{SLG}_k}{w_1 \text{EMP}_k + w_2 \text{COG}_k + w_3 \text{ADV}_k + w_4 \text{SG\&A}_k} \leq 1,$$

where $k = 1, 2, \dots, n$, and $o_1, o_2, w_1, w_2, w_3, w_4 \geq 0$.

The objective of this programming model is to maximize cost reduction efficiency for each company by fitting the data with different weights for outputs (o_1 and o_2) and inputs (w_1, w_2, w_3 , and w_4).⁴ In the data set, the mean of firm cost reduction efficiency was .495 (SD = .361), as reported in Table 2.

The Number of Historical IPOs and Control Variables

Data for the number of historical IPOs were from the SDC source. This variable is the recorded number of IPOs in the same industry in the preceding year (Brau and Fawcett 2006; Derrien 2005; Loughran and Ritter 2002).

Data were also collected for the control variables, such as pre-IPO assets, a prestigious underwriter, venture-capital backing, and lagged market returns (Lowry and Murphy 2007). Specifically, pre-IPO assets were measured as the natural log of the book value of total asset one year before the IPO from COMPUSTAT. Because larger firms tend to offer more information with lower information asymmetry (Chemmanura and Paeglis 2005; Ritter and Welch 2002), pre-IPO assets may reduce IPO underpricing and increase IPO trading.

The prestigious underwriter variable was measured with a dummy variable (1 if the firm’s IPO involves a prestigious underwriter, and 0 if otherwise) based on the quality of underwriters from Compact Disclosure database, which was constructed by Carter and Manaster (1990) and is updated by Loughran and Ritter (2004). Because there is less uncertainty/risk if IPO values are certified by a prestigious underwriter, the presence of a prestigious underwriter is likely to reduce IPO underpricing and increase IPO trading.

Venture-capital backing was gauged with a dummy variable (1 if the firm used venture-capital financing before its IPO, and 0 if otherwise) from SDC database. Because venture capitalists can also certify the value of an IPO, it may decrease information asymmetry and thus reduce IPO underpricing and increase IPO trading (Bradley, Jordon, and Ritter 2003; Megginson and Weiss 1991).

⁴Per an anonymous reviewer, sensitivity checks were also conducted with more advanced DEA models. More specifically, the context-dependent DEA models were employed, which allow the production function frontier to vary across different industries (Luo 2004). Analyses showed that the additional efficiency results from this more advanced DEA approach largely converge with the results reported (i.e., correlation $r = .908, p < .01$).

Finally, lagged market returns were measured by the compounded equally weighted market return (from CRSP) of NYSE/AMEX over the previous 15 trading days before the IPO. The finance literature seems to conclude that pre-IPO overall stock market returns have a positive relationship to IPO underpricing and a negative relationship to IPO trading (Cook, Kieschnick, and Van Ness 2006; Demers and Lewellen 2003; Lowry and Murphy 2007).

Results

Hypotheses-Testing Results

H_{1a} and H_{1b} predicted that pre-IPO marketing spendings affect investor responses to IPOs such as underpricing and trading. The results on IPO underpricing appear in Table 3, and those on IPO trading appear in Table 4. As Model 1 in Table 3 shows, the HLM results lend support for the prediction; pre-IPO marketing spendings are indeed significantly and negatively related to IPO underpricing ($b = -2.872$, $p < .05$).

In addition, as Model 3 in Table 4 shows, pre-IPO marketing spendings are significantly and positively related to IPO trading ($b = 7.119$, $p < .01$). Consequently, the data support H_{1a} and H_{1b}; the higher the firms' pre-IPO marketing spendings, the lower is the IPO underpricing, and the higher is IPO trading in financial markets.

H_{2a} and H_{2b} predicted that firms' pre-IPO marketing spendings have a stronger impact on investor responses to IPOs for firms with higher cost reduction efficiency. As Model 2 in Table 3 shows, because the interaction between pre-IPO marketing spendings and cost reduction efficiency is negative and significant ($MS \times CE$: $b = -1.013$, $p < .10$) in affecting IPO underpricing, cost reduction efficiency increases the negative main effects of pre-IPO marketing spendings on IPO underpricing. In other words, pre-IPO marketing spendings indeed have a stronger negative impact on IPO underpricing in firms with higher cost reduction efficiency than in firms with lower cost reduction efficiency, as expected.

In addition, as Model 4 in Table 4 shows, because the interaction between pre-IPO marketing spendings and cost

TABLE 3
Results of the Impact of Pre-IPO Marketing Spendings on IPO Underpricing

Variables	Hypothesis	Model 1 Coefficient	p-Value	Model 2 Coefficient	p-Value	Conclusion
Pre-IPO asset		-3.038	***	-3.212	***	
A prestigious underwriter		-.065	**	-.068	**	
Venture-capital backing		-.012	n.s.	-.011	n.s.	
Lagged market return		3.266	***	3.259	***	
Firm age		-.008	n.s.	-.004	n.s.	
Pre-IPO marketing spendings (MS)	H _{1a}	-2.872	**	-2.918	**	H _{1a} is supported
Firm cost reduction efficiency (CE)				-.295	**	
The number of historical IPOs (NH)				-.062	n.s.	
MS \times CE	H _{2a}			-1.013	**	H _{2a} is supported
MS \times NH	H _{3a}			.095	*	H _{3a} is supported

* $p < .10$.

** $p < .05$.

*** $p < .01$.

Notes: n.s. = not significant.

TABLE 4
Results of the Impact of Pre-IPO Marketing Spendings on IPO Trading

Variables	Hypothesis	Model 3 Coefficient	p-Value	Model 4 Coefficient	p-Value	Conclusion
Pre-IPO asset		11.275	***	13.090	***	
A prestigious underwriter		.218	***	.172	**	
Venture-capital backing		-.009	n.s.	-.007	n.s.	
Lagged market return		-1.553	n.s.	-1.207	n.s.	
Firm age		.011	n.s.	.016	*	
Pre-IPO marketing spendings (MS)	H _{1b}	7.119	***	7.303	***	H _{1b} is supported
Firm cost reduction efficiency (CE)				1.142	*	
The number of historical IPOs (NH)				.207	n.s.	
MS \times CE	H _{2b}			3.288	**	H _{2b} is supported
MS \times NH	H _{3b}			-.316	n.s.	H _{3b} is not supported

* $p < .10$.

** $p < .05$.

*** $p < .01$.

Notes: n.s. = not significant.

reduction efficiency is positive and significant ($MS \times CE$: $b = 3.288$, $p < .05$) in affecting IPO trading, cost reduction efficiency tends to increase the positive main effects of pre-IPO marketing spendings on IPO trading. That is, pre-IPO marketing spendings indeed have a stronger positive impact on IPO trading in firms with higher cost reduction efficiency, as predicted. Thus, overall, the data support H_{2a} and H_{2b} .⁵

H_{3a} and H_{3b} predicted that pre-IPO marketing spendings have a stronger impact on investor responses to IPOs in markets with fewer historical IPOs. As Model 2 in Table 3 shows, because the interaction between pre-IPO marketing spendings and the number of historical IPOs is positive ($MS \times NH$: $b = .095$, $p < .10$) in affecting IPO underpricing, the number of historical IPOs tends to reduce the negative main effects of pre-IPO marketing spendings on IPO underpricing, in support of H_{3a} . Conversely, this means that pre-IPO marketing spendings have a stronger impact on IPO underpricing in markets with a smaller (versus larger) number of historical IPOs.

However, the results in Model 4 in Table 4 do not suggest a statistically significant interaction between the number of historical IPOs and pre-IPO marketing spendings ($p > .10$). Thus, the number of historical IPOs does not significantly moderate the effects of pre-IPO marketing spendings on IPO trading. Thus, the data do not support H_{3b} .

Robustness of Results

Several additional steps were taken to substantiate the robustness of the findings and refine the modeling results. For example, there is no evidence that the results are sensitive to the fixed effects of different periods from 1996 to 2005, because the time dummies were controlled for in the HLM. In addition, because prior finance studies (Bradley, Jordon, and Ritter 2003; Lowry and Murphy 2007) find some IPO implications of the Internet bust in 2000, the data were split into two periods: 1996–2000 and 2001–2005. By and large, the sensitivity analysis results consistently support the main and moderated effects of pre-IPO marketing investment across the subperiods.

In addition, because the two IPO variables can be related (i.e., underpricing may affect the number of shares traded at IPO), more analyses were conducted with a simultaneous equations approach—namely, seemingly unrelated regression (SUR). This SUR estimation technique can explicitly model the impact of IPO underpricing on trading and account for heteroskedasticity and contemporaneous correlations in the errors across the equations, when testing the effects of pre-IPO marketing spendings on IPO underpricing and trading simultaneously (Luo and Homburg 2007). The SUR estimation results confirm the positive association between IPO underpricing and trading ($b = .21$,

$p < .05$), in line with prior research on IPOs (Pollock and Rindova 2003). The estimation also yields better fitting statistics—that is, with lower Akaike information criterion (AIC) and Bayesian information criterion (BIC) ($\Delta AIC = 12.516$, $\Delta BIC = 12.553$). Importantly, and reassuringly, the SUR results indicate that pre-IPO marketing spendings indeed have a negative impact on IPO underpricing ($b = -2.853$, $p < .05$) and a positive impact on IPO trading ($b = 6.978$, $p < .01$), adding further empirical evidence for our conclusion.

Furthermore, the impact of the changes of pre-IPO marketing spendings (both from $t - 2$ to $t - 1$ and from $t - 1$ to t) on IPO underpricing and trading was investigated. In all cases, there was no evidence to call the results into question regarding both the main and the moderating effects of pre-IPO marketing spendings.

Because prior research also suggests that investors often have a negativity bias (Kahneman and Tversky 1979), an examination was conducted on whether the IPO implications of marketing spending changes were asymmetric. Through use of the steps in Mitra and Golder (2006, p. 235), it was found that drops (negative momentum) in pre-IPO marketing spendings over time more significantly ($p < .05$) affected IPO underpricing in magnitude than increases (positive momentum) in pre-IPO marketing spendings, in support of the negativity bias in the context of IPO equity markets. Thus, these findings confirm that drops in marketing spendings before an IPO exert a greater impact on subsequent investor responses to IPOs.

Implications and Conclusions

This article was intended to examine the possible role of marketing in the context of IPOs in the stock market. On the basis of a sample of 1981 IPOs between January 1, 1996, and December 31, 2005, this article shows that pre-IPO marketing spendings significantly reduce IPO underpricing and boost IPO trading. In addition, these effects are heterogeneous, depending on both micro, firm-level cost reduction efficiency and the macro, industry-level factor of the number of historical IPOs. These findings offer some implications for both theory and practice.

Implications for Theory

This research helps extend market-based assets and customer equity theories (Rust et al. 2004; Srivastava, Shervani, and Fahey 1998). It is the first to uncover evidence for the value of marketing spendings in IPO equity markets. The results support the proposition that pre-IPO marketing spendings affect investor responses to newly launched stocks. If the IPO event is a critical milestone representing wealth, recognition, and fame, the uncovered IPO benefits of marketing spendings are not trivial. More specifically, the findings are important in three ways. First, they expand the substantive domain of market-based assets and customer equity by ushering in a greenfield of IPOs. In this way, this article uncovers fresh IPO-based reasons marketing can help create shareholder value. Second, the findings help build a more powerful framework of market-based assets by appreciating the value relevance of marketing before IPOs

⁵The additional variance explained after entering the mean-centered interaction terms was significant statistically (for IPO underpricing: $\Delta R^2 = .057$, $F_{\text{diff}} = 14.186$, $p < .01$; for IPO trading: $\Delta R^2 = .061$, $F_{\text{diff}} = 17.203$, $p < .01$). Because the highest variance inflation factor was 3.107 for IPO underpricing and 2.892 for IPO trading, both less than 10.0, multicollinearity does not seem to be a serious threat to the findings.

because most prior studies have valued market-based assets after IPOs. Third, they show the ability of the market-based asset framework to help solve some intriguing puzzles, such as IPO underpricing; that is, pre-IPO marketing spendings (a significant marketing variable omitted in previous finance models) may help certify IPO values and reduce information asymmetry. As such, coupled with prior research (e.g., Joshi and Hanssens 2008; Luo 2008; Pauwels et al. 2004), this study boosts the power of market-based assets theory to explain stock market responses both before and after IPOs.

In addition, the findings advance empirical research on the marketing–finance interface (Gupta, Lehmann, and Stuart 2004; Srinivasan and Hanssens 2007) on two fronts. First, whereas prior empirical studies in marketing have modeled outcome metrics, such as Tobin's *q*, stock return, and systematic risk of the firm (Anderson, Fornell, and Mazvancheryl 2004; Luo 2007; McAlister, Srinivasan, and Kim 2007), this article introduces two new metrics with underpricing and trading of newly listed stocks. These novel metrics of investor responses to IPOs may contribute to the literature by providing marketing scholars with a new twist (i.e., offering more options regarding the appropriate outcome metrics or dependent variables directly from the finance literature).⁶

Second, going beyond main effects, this article also uses robust econometric models to reveal the moderated, heterogeneous effects of pre-IPO marketing spendings. To date, the extant literature on the marketing–finance interface appears to have paid only scant attention to such moderated relationships (Luo and Bhattachaya 2006; Mizik and Jacobson 2007, 2008). As such, the current research reveals original evidence (and enthusiastically calls) for a contingency theory of the marketing–finance interface. Indeed, in practice, factors such as firm efficiency in operations may act as boundary conditions for the linkage between marketing and finance.

Implications for Practice

Initial public offerings are now on the comeback trail. Thrilled by stupendous returns, hungry investors and entrepreneurial executives are making record-busting IPO seasons since the tech crash. According to the popular trade press, companies such as Orbitz and Heelys both had successful IPOs (Bogoslaw 2007; Ghosh 2007). However, there is a catch:

The threshold for IPOs is much higher than it was during the bull market of the late 90s. Back then, any entrepreneur who could spin a good tale had a very strong chance of taking his company public. Things are different now. Investors, burned by the stock market crash of 2000, want companies to show profits and cash flows, not aggregated eyeballs or foosball tables. (Rosenbush 2006, p. 3)

⁶By uncovering the incremental value relevance of pre-IPO marketing spendings beyond established financial predictors, this article contributes to both marketing and finance, especially for the marketing–finance interface literature.

As such, marketers on Main Street and investors on Wall Street ponder the question of how to “kick the tires.” The current findings suggest two points in this regard. First, this article builds the case for the significant role of marketing spendings before an IPO. Executives should allocate capital to marketing programs in building market-based intangibles for an improved fundamental outlook (superior cash flows) before IPOs to attract investors and cultivate healthy IPOs. In this study, it was calculated that, on average, for companies in the sample, one unit increase of pre-IPO marketing spendings reduced IPO underpricing by approximately \$11.6 million in the amount of money left on the table. In addition, when coupled with higher cost reduction efficiency, the benefit of one unit increase of pre-IPO marketing spendings was even more evident; that is, it reduced approximately \$15.08 million (or the benefit of pre-IPO marketing spendings is expanded by 29% = $[15.08 - 11.6]/11.6$ because of the moderating role of cost reduction efficiency) of underpricing at IPOs. As such, marketers can, and should, think like investors and speak the same language of finance. By using such language with underpricing and trading of IPOs, this study not only helps marketers join in the conversation with investors but also provides them with guidance on creating more effective and efficient pre-IPO marketing budgets that are appealing to the investor community.

Second, there are some cautionary notes to the IPO dream. Marketers would be naive if they assumed that pre-IPO marketing spendings are always fruitful. In the face of fierce competition, unwise use of marketing capital before IPOs could destroy customer/brand equity and shareholder value. Without a solid history of top-line growth backed up by strong marketing in developing new products and/or supporting current ones, it is no wonder some IPOs (e.g., Vonage, Webhire) were gloomy. Investors simply take no more blank checks from marketers. In addition, marketers should acknowledge that pre-IPO marketing spendings do not unconditionally affect IPOs. Rather, marketing spendings have heterogeneous effects and create value within context; they play a more (less) salient role in affecting investor responses to IPOs when the firm has a high (low) cost reduction efficiency and in markets with a small (large) number of historical IPOs. These conditional results support Srivastava, Shervani, and Fahey's (1998, p. 2, emphasis added) theory that “market-based assets arise from the *commingling* of the firm with entities in its external environment.”

Nevertheless, the results also indicate that careful investors may be better able to pick star IPOs if they can track pre-IPO marketing spendings and model firm cost reduction efficiency simultaneously. Although IPOs have two enemies—uncertainty and volatility—the good news is that marketing can help reduce these risks insofar as company fundamentals are boosted by pre-IPO marketing spendings. In addition, this good news goes a long way, especially when firms have superior operating efficiency relative to their rivals. Indeed, with lean and shrinking budgets, marketers are often pressured to cut corners and achieve the same goals with fewer resources. The current research suggests that marketers can meet this challenge

and get more bang for their buck if they can enjoy both more effective marketing spendings and more efficient operations simultaneously.

Limitations and Further Research

Although this study advances the understanding of the marketing–finance interface, it also has limitations that may serve as good directions for further research. First, the measure of marketing spendings (SG&A expense – R&D expense) is coarse. Although there is good theoretical and empirical justification (Dutta, Narasimhan, and Rajiv 1999; Mizik and Jacobson 2007), this measure covers general overheads and legal costs. It would be ideal to isolate only marketing spendings. However, the ability to do this is limited by the nature of the reporting in the COMPUSTAT data source. Therefore, further research could assemble different data sets to isolate the marketing spending items and derive a more precise measure.

Second, the IPO implications of every market-based asset were not evaluated, and this can be embedded in many business processes, such as product development, supply chain management, and customer relationship management. Thus, further research is called for to examine whether IPO activities are related to variables involved in these processes, including product innovations (Chandy et al. 2006; Pauwels et al. 2004), brand dimensions (Mizik and Jacobson 2008), corporate social responsibility initiatives (Luo

and Bhattacharya 2006), and customer satisfaction (Rust et al. 2004). For example, are pre-IPO product development and customer relationship efforts related to the level and volatilities of post-IPO cash flows?

Third, IPO theory and evidence have a profound influence on financial academics and practitioners. Various important topics, including IPO motivation, underpricing, signaling, failure risk, and underwriter selection, have been studied in the finance literature (Brau and Fawcett 2006; Gondat-Larralde and James 2008; Ritter and Welch 2002). The empirical analyses herein are limited to a subset of these topics. Although not all the IPO topics can or should be directly linked to marketing, further research could conduct explorations along those lines to advance the theory development on the marketing–finance interface.

Conclusion

This research illuminates a link between marketing spendings and IPO underpricing and trading. Given the importance of IPO financing and the lack of research on IPOs in marketing, additional scholarly research of this kind should be conducted. It is hoped that in doing so, investors and managers will gain a more complete view of the impact of marketing both before and after IPOs and, thus, more heartily appreciate the shareholder value of market-based assets.

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