

MEDIA LEGITIMATION EFFECTS IN THE MARKET FOR INITIAL PUBLIC OFFERINGS

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In this study, we argue that media-provided information affects investors' impressions of newly public firms. In 225 initial public offerings (IPOs), the volume of media-provided information had a negative, diminishing relationship with underpricing and a positive, diminishing relationship with stock turnover on the first day of trading. The relationship between the tenor of media-provided information and underpricing increases at a nonlinear rate, and decreases similarly for turnover. Findings provide important evidence that publicly available information not only reflects IPOs' legitimacy, but also adds to their legitimacy and influences investor behavior.

In the last 20 years, an increasing amount of research on markets has been conducted from a social constructionist perspective, emphasizing how social structures enhance the flow of useful and credible information that market participants use to reduce the uncertainty of market exchanges (e.g., Aldrich & Fiol, 1994; Zuckerman, 1999). Further, recent organizational research has begun to stress the influence of information intermediaries, such as financial analysts and the media, on markets (Deephouse, 2000; Rao, Greve, & Davis, 2001; Rindova & Fombrun, 1999; Zuckerman, 1999). Within organizational research, two views of information mediaries, or "infomediaries," can be identified: Economists view infomediaries as expert monitors that facilitate exchanges between buyers and sellers (Biglaiser, 1993; Croson, 1996). Institutional theorists, on the other hand, emphasize how infomediaries legitimate firms by influencing stakeholder perceptions of the desirability and appropriateness of firm actions and characteristics

(Elsbach, 1994; Lamertz & Baum, 1998; Zuckerman, 1999). Although prior research has demonstrated the importance of infomediaries from a social-structural perspective, it has not examined how the information these actors disseminate shapes market behaviors. In this study, we highlight the role of the media as an information intermediary and propose that the characteristics of the information it provides serve as information stimuli that affect the formation of investors' impressions of firms. Our treatment of the effects of media-provided information is informed by social cognition research, which emphasizes the roles of selectivity and social influence in perception and inference (Fiske & Taylor, 1991; Rao et al., 2001).

We investigated the role of the media as an institutional infomediary in an empirical analysis of 225 firms conducting initial public offerings (IPOs). We chose the IPO market as the context for this research because it is a market in which investors need to form impressions of relatively new companies about which they are likely to lack firm-specific knowledge. In such an environment, the media can facilitate or inhibit the formation of impressions about firms by increasing investor exposure to information about them and by framing this information positively or negatively. Through framing and exposure, the media renders some firms more comprehensible and desirable, and therefore more legitimate (Suchman, 1995). Perceptions of legitimacy in turn affect organizational access to resources, because "the legitimate organization [is perceived] not only as more worthy, but also as more meaningful, more predictable, and more trustworthy" (Suchman, 1995: 571), and stakeholders are most likely to exchange resources with organizations with these attributes. In other

Both authors contributed equally to this work. We gratefully acknowledge the financial support of the Ewing Marion Kauffman Foundation in completing this study. We would like to thank Associate Editor Marshall Schminke and three anonymous *AMJ* reviewers for their helpful comments. We would also like to thank Ted Baker, Mason Carpenter, Iliia Dichev, Avi Fiegenbaum, Candice Jones, Luis Martins, Craig Olson, Jim Peters, Michael Peters, Jim Westphal, and the participants in the University of Wisconsin—Madison Working Paper Workshop for their comments on earlier versions of this paper. We thank Shannon Lamote for help with data collection. Earlier versions were presented at the Kauffman/Babson Conference on Entrepreneurship and the Conference on Institutions, Conflict and Change at Northwestern University.

words, the media legitimates firms by creating an interpretive context for investor decisions.

Our study extends current research on legitimacy, which has emphasized the socially constructed nature of markets and the role of perception in market exchanges (Aldrich & Fiol, 1994; Rindova & Fombrun, 1999), but has seldom attended to the processes through which impressions and beliefs in markets are formed. Further, extant empirical research on creating legitimacy has tended to focus either on the symbolic and impression management strategies of firms pursuing legitimacy (e.g., Elsbach, 1994; Ritti & Silver, 1986), or on legitimization processes at the organizational field or industry level (DiMaggio, 1991; Rao, 1994). Research examining how third parties impact firm-level accumulation of legitimacy is lacking. Lounsbury and Glynn (2001) highlighted the importance of such research by arguing that while positive media coverage of an industry as a whole provides generalized "institutional capital" on which entrepreneurs in the industry can draw, further research is needed to understand which firms benefit the most from such a process. We begin to address this issue by examining empirically how information provided by the media legitimate IPO firms.

Our study also contributes to the substantive body of research on firm performance in the IPO market. Current IPO research has studied this market primarily from an economics of information perspective, which rests on the assumption that publicly available information, such as media-provided information, has already been incorporated in a stock's price when it is issued. As a result, current research has focused almost exclusively on how IPO firms reveal privately held information to investors through signaling strategies (Ibbotson & Ritter, 1995; Stuart, Hoang, & Hybels, 1999). In contrast, in the sociocognitive perspective we adopt, publicly available, media-provided information affects investor choices not only because of what investors know about a given firm, but also because of how investors cognitively integrate available information in forming impressions of firms.

THEORY AND HYPOTHESES

Media Coverage and Investor Behavior

Despite the pervasiveness of the media in markets, organizational scholars have dedicated surprisingly little attention to studying how it affects the choices of market participants (Chen & Meindl, 1991; Deephouse, 2000). The media records public knowledge and opinions and focuses public atten-

tion and interest on certain issues, thus setting the "agenda" of public discourse (McCombs, 1981; Rogers, Dearing, & Bregman, 1993). Further, it frames issues through "persistent patterns of cognition, interpretation, and presentation, of selection, emphasis, and exclusion" (Gitlin, 1980: 7), providing institutional and cultural accounts within which the appropriateness and desirability of actions can be evaluated (Elsbach, 1994; Lamertz & Baum, 1998). Therefore, in performing its functions of informing, highlighting, and framing, the media presents market participants with information that affects impression formation and the legitimization of firms.

Whereas numerous researchers have suggested that the media plays an important role in legitimization processes, they have neither agreed on, nor systematically investigated, how this role is performed. Some researchers have argued that media coverage *reflects* public evaluation and therefore provides a measure of organizational legitimacy (Baum & Powell, 1995; Elsbach, 1994). Others have suggested that the media *affects* perceptions of legitimacy and therefore is an active force that firms need to manage strategically in the pursuit of legitimacy (Fombrun, 1996; Hoffman & Ocasio, 2001). The dual role of the media in the legitimization of firms presents both theoretical and methodological issues that need to be addressed for research in this area to progress toward a better theoretical understanding of the effect of the media on market outcomes.

In this study, we view the media as a "propagator" of legitimacy. Whereas some level of legitimacy may be necessary for a firm to be considered newsworthy, media coverage further legitimates firms. The media legitimates firms by directing public attention to those it selects for coverage, thereby increasing the public's exposure to them (Kosicki, 1993; McCombs, Llamas, Lopez-Escobar, & Rey, 1997; Rogers et al., 1993). It also impacts the ways that stakeholders interpret and evaluate information about firms by framing its descriptions of them in positive and negative terms (Golan & Wanta, 2001; McCombs et al., 1997). We draw on social cognition research that explores how the nature of available information affects impression formation (Fiske & Taylor, 1991) and judgment (Heath & Tversky, 1991) to elaborate how media coverage affects sociocognitive processes and investor choices.

Investor Choices and IPO Market Outcomes

In this study, we examined how media-provided information affects two types of investor choices in

the IPO market: underpricing and turnover. On the first day they are traded, most stocks close at a price higher than their initial offering price—a phenomenon that finance scholars have labeled “underpricing.” The greater the difference between the offering and the closing price, the more the stock is underpriced (Ibbotson & Ritter, 1995). Finance scholars have argued that the degree of underpricing an IPO firm experiences is a strategic choice that the firm and its underwriter make in an effort to mitigate the firm’s lack of legitimacy (e.g., Rock, 1986; Tinic, 1988). In this sense, underpricing can be viewed as a form of “illegitimacy discount” (Zuckerman, 1999). We extend this logic by suggesting that media coverage, and the attributes of the coverage that increase the legitimacy of an IPO firm, will decrease its illegitimacy discount and reduce underpricing.

The second market outcome we examined is the turnover in the number of shares available on the first day a stock is traded (Ellis, Michaely, & O’Hara, 2000). We examined turnover because it also has economic consequences for IPO firms. Higher trading volumes create a liquid market for a firm’s stock, which increases investors’ comfort with holding larger equity positions (Ellis et al., 2000). Turnover also provides an indicator of the pent-up interest in, and demand for, the stock. Although high turnover shows that investors are interested in both buying and selling a stock, we view high turnover as suggestive of legitimacy as well because it usually indicates an oversubscribed offering, in which demand for shares of the IPO exceeds the supply (Cornelli & Goldreich, 2001). Such unmet demand produces first-day trading turnover that, on the average, is 30 times higher than the average trading turnover in the 60 days following the IPO (Ellis et al., 2000). We expect that media coverage, and the attributes of the coverage that increase the legitimacy of an IPO firm, will also stimulate greater levels of investor interest in a stock and will lead to greater turnover on the first day of trading.¹

¹ Some of the investors receiving initial allocations may hold on to their shares once a stock begins trading if they see a firm as highly legitimate, resulting in a restriction in the number of shares available for trade and limiting the ability to observe higher levels of turnover. High turnover would be observed under these conditions when trading in the restricted set of shares is active, making turnover a conservative indicator of market demand.

Sociocognitive Effects of Media Coverage

Exposure. Exposure results from the information transmission role of the media, which makes it possible for audiences to “experience” otherwise distant events (McLeod, Kosicki, & Pan, 1991). The degree of audience exposure to a firm through the media is a function of the volume of coverage a firm receives. Exposure affects sociocognitive processes related to both comprehension and liking. Researchers have provided evidence of three mechanisms through which increased exposure leads to favorable impressions of firms. First, repeated exposure to an object increased familiarity with, and subsequent liking of, the object (Harrison, 1977; Zajonc, 1968). Even when subjects were unaware of their familiarity with a stimulus, they nonetheless exhibited preferences for a stimulus to which they had been exposed more frequently. Second, Hawkins and Hoch (1992) reported that simple repetition increased the degree to which individuals rated trivia statements as true, suggesting that the simple repetition of information increases its acceptance (again, even when subjects are unaware of their prior exposure). Third, the volume of available information about an activity reduces perceptions of its riskiness (Heath & Tversky, 1991), suggesting that, all other things being equal, a higher volume of information about a firm may reduce its perceived riskiness as an investment. This effect is especially important for new firms, which by definition are riskier investments than older firms (Ibbotson & Ritter, 1995). All else being equal, the combined effects of increased familiarity, acceptance, and reduced perceptions of risk can generate legitimacy benefits for a firm that receives a higher volume of media coverage.

However, the relationship between exposure and favorable impression formation based on increased familiarity may not increase monotonically. Social cognition research has shown that attending to an object reaches threshold levels above which the object becomes “taken-for-granted,” in that further exposure does not further increase attention (Fiske & Taylor, 1991; Starbuck & Milliken, 1988). In addition, Anderson (1981) suggested that the degree to which individuals will use a piece of information in impression formation depends on the value of the information, which is a function of its non-redundancy. He proposed that redundant information leads to an “attention decrement,” diminishing the effect of additional exposure.

Overall, these arguments suggest that increasing volumes of media-provided information about an IPO firm facilitate favorable impression formation and legitimation. Increased legitimacy should lead

to lower levels of underpricing and higher turnover on the day a firm goes public. However, the positive effects of exposure on impression formation and legitimacy may decline as the firm becomes “taken for granted.” We therefore hypothesize that:

Hypothesis 1a. The volume of media-provided information about a firm prior to its IPO affects underpricing on the first day of trading negatively, and at a diminishing rate.

Hypothesis 1b. The volume of media-provided information about a firm prior to its IPO affects turnover on the first day of trading positively, and at a diminishing rate.

Framing. Media coverage also frames social issues through the selection and interpretation of events. In particular, framing events and issues in positive or negative terms provides audiences with visible public expressions of approval or disapproval of firms and their actions (Elsbach, 1994; Lamertz & Baum, 1998). Therefore, the information that the media provide about a firm may affect the processes of impression formation and legitimation not only through the volume of the information, but also through its tenor, or its framing as positive or negative.

Mass communications research has documented the impact of the positive and negative tenor of media reports on public perceptions of political candidates (e.g., Golan & Wanta, 2001; McCombs, 1981; McCombs et al., 1997). To the degree that positive or negative media coverage represents a public evaluation, it serves as a source of “social proof” (Rao et al., 2001) that can lead to “information cascades” (Bikhchandani, Hirschleifer, & Welch, 1992) and “availability cascades” (Kuran & Sunstein, 1999). Information cascades occur under conditions of uncertainty, when individuals presumed to have very precise judgments, such as opinion leaders, express their judgments, thereby enabling others to deal with uncertainty through imitation, rather than by making their own private assessments (Bikhchandani et al., 1992; Rao et al., 2001). Since media coverage contains a high degree of information generated by opinion leaders such as journalists, industry experts, and financial analysts, the positive and negative information it provides is likely to be used as social proof of the legitimacy of IPO firms. Further, to the degree that the media makes such expressed evaluations widely available in public discourse, it creates availability cascades that increase the tendency to perceive expressed evaluations as more plausible (Kuran & Sunstein, 1999). These arguments lead us to expect that in the IPO market, the positive tenor

of media coverage is likely to legitimate firms, resulting in lower levels of underpricing and higher levels of turnover.

However, the willingness of individuals to sustain information cascades by acting in ways consistent with the choices of opinion leaders depends on beliefs that the judgments expressed by opinion leaders have superior accuracy (Bikhchandani et al., 1992). If individuals begin to see the views expressed by opinion leaders as less accurate, and therefore less informative, they will reduce the degree to which they rely on these expressed views in forming impressions and making choices. As the tenor of media accounts becomes more imbalanced (that is, more uniformly positive or negative), their impact on investor choice may diminish, as investors choose to rely on them to a lesser degree. Thus, we expected to observe that the relationship between positive media tenor and underpricing and turnover would also diminish. Taken together, these arguments suggest the following hypotheses:

Hypothesis 2a. The proportion of media-provided information of positive tenor about a firm prior to its IPO affects underpricing on the first day of trading negatively, and at a diminishing rate.

Hypothesis 2b. The proportion of media-provided information of positive tenor about a firm prior to its IPO affects turnover on the first day of trading positively, and at a diminishing rate.

DATA AND RESEARCH METHODS

Setting and Sample

The IPO market. In overseeing the IPO registration process, the U.S. Securities and Exchange Commission (SEC) regulates the disclosure of information by IPO firms such that the IPO process can be divided into three phases: the preregistration period, when a firm begins to lay plans for going public (hereafter, the “pre-IPO period”); the registration period, when the firm files a registration document with the SEC requesting approval of its offering stock to the public; and the posteffective period, which begins when the SEC grants a company permission to offer its shares to the public and ends when the distribution of the company’s stock is completed (Husick & Arrington, 1998). Since the SEC discourages public communications by an offering firm during the registration period, we focused on the year prior to the registration of an offering with the SEC when collecting data on media coverage. The pre-IPO time frame of one year

was chosen to allow for sufficient media coverage and comparability across IPOs. Also, the practitioner literature on IPOs (e.g., Gutterman, 1991; Husick & Arrington, 1998) suggests that firms begin planning for their initial public offerings about a year before they actually file with the SEC and are especially likely to engage in activities that will result in media exposure during this time.

Sample. The sample for this study was drawn from all IPOs conducted in 1992.² In keeping with prior IPO research (e.g., Ritter, 1991), closed-end mutual funds, real estate investment trusts, unit offerings, spin-offs, “demutualizations” of savings banks and insurance companies, and reverse leveraged buyouts (reverse LBOs) were excluded from the sample. The final sample contained 245 IPOs. Missing data reduced the sample to 225 IPOs.

Dependent Variables

Underpricing equaled the percent change in stock price ($[price_{end} - price_{initial}/price_{initial}] \times 100$) on the first day a stock traded on a national exchange. *Turnover* equaled the percentage of shares offered that were traded ($[shares\ traded/shares\ offered] \times 100$) on the day of the IPO (Ellis et al., 2000). Turnover was also used as a control variable when predicting underpricing. The data used to calculate both of these measures were drawn from IPO prospectuses and the Center for Research on Securities Pricing (CRSP) database.

Independent Variables

The data used to “operationalize” the attributes of media-provided information were drawn from all newspaper and print magazine articles available about an IPO firm in the “Major Newspapers,” “Journals and Magazines,” and “Trade Magazines” databases of Lexis-Nexis during the pre-IPO period. Overall, we collected and content-analyzed 514 pre-IPO media articles. To assess the *volume of media coverage*, we counted the total number of articles about each IPO firm. We measured the overall *tenor of media coverage* using the Janis-Fader coefficient of imbalance (Deephouse, 2000;

Janis & Fader, 1965). This measure was calculated using the formula:

$$Tenor = (P^2 - PN)/V^2 \text{ if } P > N; 0 \text{ if } P = N, \text{ and } (PN - N^2)/V^2 \text{ if } N > P,$$

where P is the number of positive articles about a firm, N is the number of negative articles about it, and V is the total volume of articles about it, including articles that are neutral in tenor. The range of this variable is -1 to 1 , where -1 equals “all negative coverage” and 1 equals “all positive coverage.” To allow for nonlinear transformations of this measure, we multiplied this score by 100 .

As has been done in prior research (Deephouse, 2000), each article was coded as positive, negative, or neutral in its discussion of a company by a trained coder. Because past research has suggested that a given article may contain multiple accounts (Lamertz & Baum, 1998), each paragraph containing a reference to the firm was coded as positive, negative, or neutral in tenor. An article with relatively equal instances of positive and negative references was coded as neutral in tenor, because in most cases in which both positive and negative statements were made, the negative references tended to qualify or offer counterpoints to the positive references. One of the authors coded all articles and press releases (the latter were used in constructing the control variables discussed below) for ten randomly selected firms from the 83 companies that received media coverage (12 percent of the subsample). The Cohen’s kappa of .86 indicated high interrater agreement.

Control Variables

To control for information made available by the IPO firms through press releases during the pre-IPO period, we collected and content-analyzed 229 press releases available in “Business Wires,” a Lexis-Nexis database. We then calculated volume and tenor variables for the press releases in a manner identical to that used for media coverage.

The characteristics of an IPO firm itself impact the demand for and performance of the offering. Following Gutterman’s (1991) discussion of the factors that the investment community used in assessing a new issue, we standardized the following firm-specific characteristics by transforming them into Z -scores and combining them into a single *firm quality index*: the logarithm of sales in 1991, net income before interest and taxes in 1991, average management team tenure, the percentage of the offering represented by insider selling of stock, and the number of risk factors. Since some firms had no

² We selected 1992 because in this year the IPO market was neither overheated nor dormant, and selecting companies from a single year allowed us to control for significant intertemporal fluctuations in the IPO market (Ibbotson & Ritter, 1995). The average amounts of underpricing (11.68%) and turnover (62.64%) observed for this year were consistent historical averages observed in studies of longer time periods (Ellis et al., 2000; Ibbotson & Ritter, 1995).

sales, we added a 1 to the sales of each company prior to transforming the measure. The index measure captured the overall quality and desirability of an organization as an investment by allowing for trade-offs among the different indicators. The components of this index have face validity, given that they have been endorsed in the practitioner literature as appropriate measures of firm quality (e.g., Gutterman, 1991; Husick & Arrington, 1998). To confirm the index's reliability as well, we calculated a Cronbach's alpha for the items included in the index and conducted a principal components factor analysis. The Cronbach's alpha was .75, and all items loaded strongly on a single factor with an eigenvalue greater than one, suggesting that these variables were indeed consistent indicators of firm quality that could be combined into a single index.

Underwriter reputation was used to control for the signaling effects and resources that a high-status underwriter brings to bear when it takes a company public (Carter & Manaster, 1990). The underwriter reputation measure was based on where an underwriter's name appeared in "tombstone announcements" in 1991 and ranged from 0 to 1.³ Position in tombstone announcements has been widely used in academic research as an indicator of investment bank status and reputation (Carter & Manaster, 1990; Podolny, 1993). Each underwriter's status class was reverse-coded and divided by the total number of classes reflected in a tombstone. For example, if a tombstone had three classes of underwriters, the first class was coded 1, the second class was coded .67, and the third class was coded .33. An underwriter's reputational score equaled the average of the scores across all the syndicates in which the underwriter participated. Data on underwriting syndicates used to calculate underwriter reputation were drawn from Compact Disclosure's "Compact D" database.

Lead institutional investor size was measured as the total assets under management at the end of 1991 by the institutional investor that owned the largest proportion of the stock of a company at the end of the quarter in which it went public. This variable was logged to reduce the effects of extreme

values on the analysis. Larger institutional investors are more likely to be long-term investors, and their participation in an offering can send positive signals to the market about their perceptions of the investment quality and the legitimacy of a company going public. Institutional investor ownership data were drawn from Compact Disclosure's "Compact D SEC" database. Institutional investor size data were drawn from *Nelson's Directory of Investment Managers, Institutional Investor* (a magazine), and the *CDA/Wiesenberg Investment Companies Yearbook*.

Venture capital backing was a dummy variable indicating whether a firm had venture financing prior to its IPO; VC backing has been found to reduce IPO underpricing (Megginson & Weiss, 1991). *Firm age at IPO* was the number of years since incorporation. This variable was logged to reduce the effects of extreme values on the analysis. Since some companies went public the same year they were founded, we added a 1 to all observations before logging. *Offering size* was the total number of shares offered during an IPO multiplied by the offering price. Offering size can send signals to the market about the relative size quality and stability of an offering (Ibbotson & Ritter, 1995). This variable was logged to reduce the effect of extreme values. *Overpricing range* was a dummy variable coded 1 if the initial price set for an IPO exceeded the anticipated highest price for the stock. Pricing above initial expectations is an indicator of pent-up demand for a stock (Hanley, 1994).

Industry dummies were also included, because systematic differences could exist between companies in different industries for both the independent and dependent variables. To control for these potential effects, we included six dummy variables representing membership in the *biotechnology*, *software*, *electrical manufacturing*, *financial*, *retail*, and *services* industries in the analysis. Dummy variables for fiscal *quarters* were also included to control for within-year variances, since particular industries, and the IPO market in general, can go in and out of favor in less than a year.

Method of Analysis

Because media coverage reflects, as well as affects, legitimacy, relating media coverage to investor choices creates a potential endogeneity problem. The endogeneity problem exists because unobserved capabilities and other firm-specific factors may underlie both the media's decision to

³ A tombstone announcement is a small, boxed announcement of a new offering of a stock or bond. This announcement identifies the offering's managing underwriter(s) and all other underwriters included in the offering syndicate. Syndicate members are listed alphabetically within each status class, and the number of classes can vary from offering to offering. These announcements typically appear in publications such as the *Wall Street Journal* and the *Investment Dealer's Digest* (Carter & Manaster, 1990; Podolny, 1993).

TABLE 1
Correlations and Descriptive Statistics

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Underpricing	11.68	18.81																								
2. Turnover	62.64	40.65	.45																							
3. Volume of media coverage	2.13	5.25	.00	.24																						
4. Volume of media coverage squared	32.00	221.29	.02	.11	.85																					
5. Tenor of media coverage	8.38	24.91	.01	.14	.23	.10																				
6. Tenor of media coverage squared	506.70	2,262.76	.02	.05	.07	.02	.95																			
7. Quarter 1	0.34	0.47	.21	.31	.01	.06	.00	.01																		
8. Quarter 2	0.29	0.45	-.24	-.22	.03	.00	.01	.03	-.46																	
9. Quarter 3	0.14	0.35	-.11	-.19	-.02	-.03	.05	.05	-.29	-.26																
10. Finance	0.07	0.26	-.05	-.20	-.07	-.03	-.09	-.06	-.05	-.10	-.01															
11. Biotechnology	0.09	0.29	-.06	.01	-.05	-.04	-.03	-.04	.19	-.07	-.04	-.09														
12. Electrical manufacturing	0.20	0.40	-.04	-.01	.12	.12	.05	.03	.10	.07	-.05	-.14	-.16													
13. Retail	0.18	0.39	-.02	.11	-.05	-.05	.22	.25	-.22	.11	.17	-.13	-.15	-.24												
14. Service	0.20	0.40	.00	-.12	-.09	-.05	-.18	-.15	.06	-.08	.01	-.14	-.16	-.26	-.24											
15. Software	0.11	0.31	.19	.24	.24	.07	.09	.02	-.01	-.01	-.06	-.10	-.11	-.18	-.17	-.18										
16. Offering size ^a	17.01	0.81	.12	.35	.16	.09	.11	.06	.10	-.10	-.12	.14	-.11	-.04	.04	-.09	-.03									
17. Underwriter reputation	0.83	0.24	-.08	.35	.21	.09	.13	.07	.02	.07	-.04	.05	-.05	.00	.05	-.19	.14	.61								
18. Firm age at IPO ^a	2.08	0.88	-.13	.02	-.02	-.05	.07	.08	-.19	.03	-.07	-.03	-.16	-.05	.24	-.20	.04	.16	.10							
19. Venture capitalist backing	0.60	0.49	-.02	.24	.16	.09	-.01	-.06	.14	.01	.02	-.13	.13	.21	-.25	.00	.14	.01	.21	-.21						
20. Lead institutional investor size ^a	8.96	2.36	-.23	-.11	.07	.04	.08	.06	-.09	.17	-.05	.11	.00	-.01	-.12	-.03	.04	.17	.21	.06	.00					
21. Firm quality index	-0.08	2.69	-.16	-.17	-.16	-.12	.02	.07	-.28	.10	.05	.17	-.35	-.20	.36	-.10	-.15	.21	.07	.58	-.36	.12				
22. Selectivity instrument	0.37	0.28	.04	.37	.47	.14	.21	.08	-.03	.06	-.06	-.18	-.10	.01	.05	-.22	.45	.30	.50	.15	.21	.04	-.09			
23. Overpricing range	0.08	0.28	.24	.21	-.02	-.03	.06	.06	-.01	-.16	-.03	-.02	-.04	-.11	.15	.00	-.06	.18	.08	.08	-.15	-.04	.07	.03		
24. Volume of press releases	0.91	1.86	.03	.20	.42	.14	.12	.02	.02	.00	-.01	-.10	.10	.06	-.07	-.11	.18	.13	.18	-.01	.16	-.04	-.12	.75	-.04	
25. Tenor of press releases	11.53	33.37	.00	.14	.27	.08	.15	.07	.00	.03	-.03	-.08	.08	.10	-.08	-.03	.04	.06	.12	.03	.20	.07	-.09	.52	-.06	.52

^a Logarithm.

cover a firm, and investor choices about the firm.⁴ Since it is unlikely that all firms have an equal probability of receiving media coverage, the results of analyses using characteristics of media coverage to predict investor choices may be biased. We used Heckman's method to correct for selection bias (see Heckman [1979] and Shaver [1998] for detailed discussions of this approach). In the first stage of the analysis, a probit regression was used to predict the likelihood that a firm would receive media coverage. We used the probit regression to create a selection instrument (Rao et al., 2001) that was included in ordinary least squares (OLS) regression analyses predicting the market outcomes as a means of controlling for selection bias. We included the following variables in the probit model: the industry dummy variables, venture capitalist backing, underwriter reputation, firm age, and the press release volume and tenor measures. All of these variables could be expected to increase the likelihood that a firm would receive media coverage. In addition, we included two dummy variables that indicated whether or not a company was located in the northeastern region of the United States or in California. These two regions of the country served as homes to almost half the companies in our sample, as well as to a large number of media outlets, thus increasing the likelihood that firms from these regions would receive media coverage.

RESULTS

Table 1 presents the descriptive statistics and correlations for all variables, and Table 2 presents both unstandardized and standardized regression coefficients for the OLS regressions testing Hypotheses 1 and 2. Because the linear and squared terms for volume and tenor used to test the nonlinear relationships we hypothesize are highly correlated, multicollinearity was a potential problem. Variance inflation factor (VIF) tests confirmed this expectation. Cohen and Cohen (1983) suggested that one method for dealing with multicollinearity in polynomial regression equations—that is, regressions that include higher-order terms—is to orthogonalize the collinear variables by “partialing out” the common variance. The resulting transformed measures are uncorrelated with each other but are still correlated with the dependent variables. We employed the “orthog” command in Stata 7.0 to generate measures for media coverage volume, volume squared, tenor, and tenor squared.

Although this procedure makes direct interpretation of coefficients more difficult (Cohen & Cohen, 1983), it still allows for evaluation of the strength and direction of relationships.

Model 1 is our test of Hypotheses 1a and 2a, and model 2 is the test of Hypotheses 1b and 2b. As predicted in Hypothesis 1a, the volume of pre-IPO media coverage affects underpricing negatively at a diminishing rate. Hypothesis 1a is therefore supported. As predicted in Hypothesis 1b, volume affects turnover positively at a diminishing rate. Hypothesis 1b is therefore supported.

Hypothesis 2a states that media coverage that has a positive tenor will have a negative, diminishing relationship with underpricing. The results in model 1 reveal that the linear tenor variable is not significant, and the squared term has a positive, marginally significant relationship with underpricing. Hypothesis 1b therefore is not supported. Our results suggest that rather than reducing underpricing at a declining rate, as hypothesized, increasingly positive tenor has little or no impact up to a point, but after this “tipping point” (Gladwell, 2000), positive tenor affects underpricing at a positive, nonlinear rate. Hypothesis 2b, which states that positive tenor will have a positive, diminishing relationship with turnover, also is not supported. Similar to the results in model 1, these results show only the tenor-squared variable as having a significant relationship with turnover, and this relationship is negative. This result also suggests that, up to a point, increases in positive tenor have a limited impact on turnover, but after this point increases in positive tenor reduce the turnover of a firm's stock on the first day of trading at a nonlinear rate.

DISCUSSION

Research in organizational theory has increasingly focused on how the social structure of markets enables market players to acquire, interpret, and use information (e.g., Aldrich & Fiol, 1994; Zuckerman, 1999). Yet little research has examined how the characteristics of the information transmitted shape market outcomes. In this study, we drew on social cognition theories to enhance our understanding of how media-provided information affects IPO market outcomes. Our approach complements current research on the social construction of markets (Rao et al., 2001; Zuckerman, 1999) and resonates with expectations that significant contributions to understanding of the role of information in markets will be based on ideas from psychology and sociology (Stiglitz, 2000).

⁴ We are indebted to an anonymous reviewer for drawing our attention to this issue.

TABLE 2
Results of Regression Analyses Predicting Underpricing and Turnover

Variable	Model 1: Underpricing			Model 2: Turnover		
	<i>b</i>	s.e.	β	<i>b</i>	s.e.	β
Quarter 1	-1.46	3.08	-0.04	12.68*	6.05	0.15
Quarter 2	-2.56	3.27	-0.06	-16.99**	6.38	-0.19
Quarter 3	-1.41	3.82	-0.03	-23.94**	7.41	-0.21
Finance	1.37	5.14	0.02	-26.25*	10.04	-0.17
Biotechnology	-6.54	5.34	-0.10	-13.62	10.57	-0.10
Electrical	-0.26	3.98	-0.01	-5.65	7.90	-0.06
Retail	-2.33	4.03	-0.05	25.82**	7.80	0.25
Service	-1.65	3.91	-0.04	-7.33	7.75	-0.07
Software	12.53*	5.10	0.21	20.70*	10.03	0.16
Underwriter reputation	-20.51**	7.17	-0.26	33.74*	14.05	0.20
Firm age ^a	-2.89 [†]	1.62	-0.14	2.68	3.21	0.06
Venture capitalist backing	-3.98	2.50	-0.10	14.26**	4.86	0.17
Investor size ^a	-0.95*	0.48	-0.12	-1.75 [†]	0.94	-0.10
Firm quality index	-0.61	0.63	-0.09	-2.63*	1.23	-0.17
Offering size ^a	4.35*	1.80	0.19	9.52**	3.51	0.19
Overpricing range	9.10*	3.99	0.14	17.90*	7.82	0.12
Turnover	0.22**	0.04	0.48			
Volume of press releases	0.73	1.08	0.07	1.92	2.14	0.09
Tenor of press releases	0.05	0.04	0.08	0.08	0.08	0.06
Selectivity instrument	-6.06	10.57	-0.09	-29.65	20.89	-0.20
Volume of media coverage	-2.71*	1.28	-0.15	4.81*	2.52	0.12
Volume of media coverage squared	2.74*	1.29	0.15	-5.25*	2.54	-0.13
Tenor of media coverage	0.31	1.08	0.02	-0.66	2.15	-0.02
Tenor of media coverage squared	1.92 [†]	1.08	0.10	-4.68*	2.12	-0.12
Constant	-40.64	28.55		-116.69*	56.10	
Adjusted R^2	.34			.44		
<i>n</i>	225			225		

^a Logarithm.

[†] $p < .10$

* $p < .05$

** $p < .01$

The findings of our study support the general argument that the characteristics of information provided by a powerful institutional intermediary—the media—influence investor choices about IPO firms. We reasoned that attributes of media-provided information, such as its volume and tenor, affect investors' understanding and evaluation of an IPO firm, and that variations in the amount and nature of information reported about a company in the media will result in different levels of underpricing and turnover for its stock. Consistent with this argument, the volume of media-provided information had nonlinear relationships with underpricing and trading volume. This finding suggests that the media, through its ability to expose investors to companies, can increase both the financial capital a firm captures from its IPO and the demand for its shares, although these effects occur at a decreasing rate as the volume of coverage increases.

Our study also identified an interesting though

unexpected relationship between the tenor of media coverage and market outcomes. Although low levels of positive tenor appear to have little effect on underpricing and turnover, a critical point is reached beyond which positive tenor may be associated with increased underpricing and decreased turnover at nonlinear rates. One interpretation of this finding is that the media not only propagates legitimacy, but also creates "buzz" about a firm (Dye, 2000), thus changing perceptions of its value. Beyond a certain level, positive media tenor increases perceptions of value, thereby increasing the demand for and reducing the supply of a firm's stock, driving its price up, and increasing underpricing. These dynamics occur at a tipping point, a point at which critical mass effects lead to nonlinear dynamics (Gladwell, 2000). Thus, while the volume of media-provided information impacts interest and attention, the tenor of media coverage seems to affect investor preferences. Keeping in mind that we found only a marginally significant

relationship between media tenor and underpricing, our findings should be viewed as strictly preliminary. Yet they indicate that the tenor of media coverage may alter perceptions of the value of firms and generate a price premium for IPO firms. This finding is consistent with “threshold models” of collective behavior that mathematically represent social influence as a nonlinear process (Granovetter, 1978). Our study provides one of the first empirical examples of these dynamics and highlights the role of the media in generating them.

Overall, our findings provide evidence that, as an institutional infomediary, the media plays an important role in firm legitimation. By affecting the salience and perceived value of a firm, the media can be a powerful factor shaping the interpretative environments in which firms compete (Rindova & Fombrun, 1999). The topic of the role of the media in creating organizational legitimacy has received growing theoretical attention in organizational and strategy research (Aldrich & Fiol, 1994; Lounsbury & Glynn, 2001), but to date surprisingly few links have been made between mass communication research and organizational studies (see Chen and Meindl [1991] and Deephouse [2000] for recent exceptions). Ours is one of the first studies to show how the media affects market exchanges between new firms and the investing public.

Our study also contributes to a long-standing debate in institutional theory about whether legitimacy is developed through strategic efforts by firms or granted by influential institutional actors (Suchman, 1995). Although our study did not focus on firm efforts to manage legitimacy, we controlled for the effects of information provided by the firms in our sample through their press releases. It is interesting to note that the information content of press releases, although ostensibly available to any interested party, did not affect market outcomes. Thus, our study provides some preliminary evidence about the differences between the impact of firm-provided and media-provided information in the IPO market. The results of our study imply that in a market such as the IPO market, with many sophisticated and skeptical buyers, it is media-provided, rather than company-provided, information that has the credibility and/or reach necessary to influence investor behaviors systematically. Future research should attempt to tease out the relationships between organizational impression management and media reporting, or re-reporting, of information about firms, and the effect of these information flows on market transactions.

A final contribution of this study is that, unlike most IPO research, which has focused on how firms

reduce information asymmetries between themselves and investors through strategic disclosures of information, our study highlights the effects of widely available information on investor behavior. By focusing on the degree to which firms are likely to be perceived as familiar and desirable—that is, legitimate—we draw attention to the need for recognizing how information attributes interact with the information-processing tendencies of investors. From this perspective, the content of information in markets is important not only for its novelty, but also for its framing effects (Boland, Singh, Salipante, Aram, Fay, & Kanawattanachai, 2001). Future research on information exchanges in markets should focus more closely on the interpretative impact of information, in addition to its information value.

Like any study, this one leaves some unanswered questions that provide the opportunity for developing future research directions. Although we controlled for interindustry variation, the formation of impressions about firms may be closely related to the characteristics of the information that is available about an industry as a whole (Aldrich & Fiol, 1994). Because firm legitimacy and industry legitimacy may be related, future research could compare the effects of firm-specific and industry-wide legitimation. Two topics to explore are whether the relationship between the two is reinforcing, with industry legitimacy providing a baseline level of legitimacy to which firm-specific legitimacy can be added, or substitutive, with industry legitimacy partially substituting for firm legitimacy.

In addition, because we examined investor choices in the aggregate, we can only speculate about the sociocognitive processes that relate specific information attributes to specific cognitive and behavioral outcomes at the individual level. Another consequence of examining aggregate investor choices is that we were unable to differentiate between the choices and behaviors of different types of investors (institutional investors versus private individuals, public versus private fund managers, and so forth). It is possible, given differences in relative levels of expertise, risk, and other types of investment preferences, that different types of investors may interpret media-provided information in different ways. Future research could endeavor to disaggregate “the market” into finer delineations of investor types in order to determine what role the characteristics of the investors themselves play in information use and processing.

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