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Don't Believe the Hype: Local Media Slant, Local Advertising, and Firm Value

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ABSTRACT

When local media report news about local companies, they use fewer negative words compared to the same media reporting about nonlocal companies. We document that one reason for this positive slant is the firms' local media advertising expenditures. Abnormal positive local media slant strongly relates to firm equity values. The effect is stronger for small firms; firms held predominantly by individual investors; and firms with illiquid or highly volatile stock, low analyst following, or high dispersion of analyst forecasts. These findings show that news content varies systematically with the characteristics and conflicts of interest of the source.

NOT ALL MEDIA STORIES are created equal. On June 9, 2004, May Department Stores Co. of St. Louis, Missouri announced that it planned to buy the Marshall Field's store chain. The next day, the *St. Louis Post-Dispatch* announced the news to its readers as follows (emphasis added):

> May Department Stores Co. announced Wednesday that it will buy the Marshall Field's department store chain and a handful of Mervyn's stores for $3.24 billion in cash. May Chief Executive Gene Kahn said he had high hopes for Marshall Field's, whose flagship store is an anchor in downtown Chicago. "*This is a banner day for May*" Kahn said in an interview. "All of us here are truly excited about the potential of this acquisition, and we think *it will reward the share owners handsomely*."[1]

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[1] Bess, Allyce, "May Co. Will Buy Marshall Fields," *St. Louis Post-Dispatch*, June 10, 2004, A1.

The *Wall Street Journal* article on the same event began (emphasis added):

> Winning a showdown between the nation's two largest department-store companies, May Department Stores Co. agreed to buy the Marshall Field's chain from Target Corp. for $3.24 billion. May outbid Federated Department Stores Inc., the owner of Bloomingdale's and Macy's. *The purchase price is significantly higher than the loftiest analyst predictions for the sale.*[2]

Both stories are based on the same underlying event. Yet by selective omission (e.g., analyst predictions) and choice of words (e.g., CEO's assessment of the acquisition), each conveys a very different impression of what happened. Gentzkow and Shapiro (2006) describe the choice to present information selectively as *media slant*. Such bias has been widely documented (e.g., Groseclose and Milyo (2005)). In this paper, we investigate whether major U.S. newspapers exhibit such slant in their reports on local firms, the determinants of slant, and the consequences of slant for firm value.

We measure slant using the number of negative financial words in firm-specific news stories that are in a large database of news reported by *Dow Jones Newswire*, *Wall Street Journal*, and eight major local newspapers that meet our data requirements (*Boston Globe*, *Chicago Sun Times*, *Denver Post*, *Pittsburgh Post-Gazette*, *San Francisco Chronicle*, *Seattle Post-Intelligencer*, *St. Louis Post-Dispatch*, and *Washington Post*) between 2002 and 2006. To quantify slant, we use the financial dictionary of Loughran and McDonald (2011).

Local media may act as watchdogs (Dyck, Volchkova, and Zingales (2008)). If local media are more likely to discover information from local sources (such as employees and local suppliers) and report negative news that is as-of-yet undisclosed by a firm, local media stories may exhibit more negative slant in their news compared to national media stories. In other words, proximity to news sources and asymmetric disclosure by firms' managers (Kothari, Shu, and Wysocki (2009)) may cause local media to publish stories with negative slant before distant newspapers.

However, our results show that, on average and holding other factors constant, when the media report news about companies headquartered nearby—that is, local companies—they use fewer negative words compared to their reports about nonlocal companies. That is, rather than serving as watchdogs, we find that local media in our sample act as cheerleaders. We refer to the abnormally positive slant that a firm receives from local media as "hype." There are at least three reasons local newspapers may produce hype about local firms; we characterize these reasons as the *catering hypothesis,* the *constrained reporting hypothesis,* and the *advertising hypothesis.*

The first of these hypotheses relates to a demand-side source of hype: local media produce hype in response to demand from local readership for less negative stories. Local media may write favorably about local firms because employees of local firms are more likely to be the audience of local newspapers.

[2] Merrick, Amy, and Ellen Byron, "May Purchases Marshall Field's from Target Corp.," *Wall Street Journal*, June 10, 2004, A3.

If these employees demand favorable news about their company, then the local media may cater to them. Although the idea that local media cater the tone of their articles to address readers' demand has intuitive appeal, our evidence is inconsistent with the catering hypothesis.

The second of these hypotheses relates to a supply-side source of hype in which local media's capacity to produce critical reports is a binding constraint. Local coverage could be more positive if local reporters have more constrained budgets for investigating and reporting critically on companies. In such a case, local newspapers may be more likely to reproduce the qualitative content of company press releases, which are likely to be positive in tone. Under the constrained reporting hypothesis, local newspapers produce positive slant, but this slant does not reflect a conflict of interest or a reporting bias per se. Constrained reporting is more likely when writing original stories is more difficult, such as when firms are more opaque or complex. We use measures such as the firm's organizational complexity and the readability of the firm's financial reports to describe the complexity of a firm's information environment. We find mixed evidence in support of this hypothesis.

The third of these hypotheses relates to a demand-side source of hype in which the corporate subjects of media stories demand less negative stories about themselves in the local media. Herman and Chomsky (1988) hypothesize that the media cater to advertisers. Our third hypothesis formalizes this possibility in our setting as the advertising hypothesis. We test whether local media slant is related to the advertising expenditures of local firms. Media, particularly local newspapers, generate a large proportion of their revenues through advertising. For instance, according to Pew Research Center's Project for Excellence in Journalism, advertising accounts for about 75% of newspaper revenues during a period similar to our sample.[3] This raises the question of whether advertising by local firms in local media creates a conflict of interest resulting in overly positive articles. Our results show that positive slant about local companies is strongly positively related to the local advertising budgets of those companies.

One challenge to establishing evidence of a causal role of the advertising hypothesis is that advertising expenses are likely to be endogenous—the characteristics of firms that make them likely to be the subject of media coverage may also be the characteristics of firms that advertise a lot. We use an instrumental variables approach to deal with this endogeneity. Our instruments for a given firm's advertising expenditures in local and national media outlets are industry-year averages (omitting the firm's contribution to the average), where industry is classified by two-digit SIC codes. When we use this instrumental variable procedure, the magnitude of the local advertising effect on slant increases more than three-fold and the effect of national advertising on media slant becomes negligible. This finding establishes a causal relation between local advertising and local media slant. Our interpretation of this result is that local media are more susceptible to conflicts of interest from advertising

[3] See http://www.stateofthenewsmedia.org/2005/printable_newspapers_economics.asp.

dollars than national media. This conflict of interest is particularly important because it undermines local media's potential role as a source of external governance (Miller (2006), Dyck, Morse, and Zingales (2010), Dyck, Volchkova, and Zingales (2008)).

To reinforce our instrumental variables approach, we use two alternative empirical approaches. First, we use a propensity score matching method and show that, after matching on multiple firm characteristics, local firms have significantly more positive slant than nonlocal firms, and firms that advertise in local newspapers receive significantly more positive slant than firms that do not advertise in local newspapers. Our second approach uses a quasi-natural experiment. Local newspapers in two of our sample cities, Pittsburgh and St. Louis, faced new competition for their advertising revenues when an online posting site, Craigslist, entered their markets in October 2003. Based on extensive anecdotal evidence that Craigslist sapped noncorporate advertising (classifieds) revenues from newspapers, we hypothesize that Craigslist's entry into these cities made the *Pittsburgh Post-Gazette* and *St. Louis Post-Dispatch* more susceptible to supplying slant in response to corporate advertising. Consistent with the argument that a corporation's local advertising causes local media to provide more positive slant, we find evidence that sensitivity of local media slant to firms' local media advertising increased after Craigslist's entry into their market.

We also examine whether local media slant matters for firms. Because stock market participants may rely on information from the media in making investment decisions, we examine whether abnormal local media slant relates to firms' stock market valuations. We find that it does. In a portfolio setting, a long-short portfolio based on abnormal local media slant (i.e., long stocks with comparatively low abnormal local media slant and short stocks with comparatively high abnormal local media slant) generates annual abnormal returns of 5.52%, controlling for other well-known asset pricing factors and including a factor premium for no media coverage.

In regressions of Tobin's Q on abnormal local media slant and a vector of control variables, a one standard deviation increase in abnormal local media slant is associated with 4.29% higher firm value on average. When we parse the sample we find this relation appears only in firms with relatively poor information environments and/or high arbitrage costs, consistent with the view that local slant might impact a firm's value if the marginal investor in the firm's stock is a local investor. Hong, Kubik, and Stein (2008) propose a theory that investigates the asset pricing implications of local bias and present empirical findings consistent with ours: local investors are likely to be marginal investors of less visible local firms. We find that local media slant has a stronger effect on firm value for firms in which arbitrage trades are likely to be costly (illiquid firms and firms with high idiosyncratic volatility), firms that are otherwise informationally opaque (small firms, firms with little analyst following, firms that have high dispersion of analyst forecasts), and firms that are predominantly owned by individual, rather than institutional, investors.

Our results shed some light on home bias, one of the puzzling empirical findings in the literature on how market participants invest. Home bias is the phenomenon whereby people tend to invest disproportionately in the companies to which they are geographically close. The literature on home bias sometimes attributes this local preference to the possibility that investors' proximity to local firms facilitates the acquisition of disproportionately *accurate* value-relevant information (Van Nieuwerburgh and Veldkamp (2009)). Our results suggest a different channel: because of their proximity to local firms, investors acquire disproportionately *positive* (though not necessarily more accurate) value-relevant information from local media.

The paper proceeds as follows. Section I provides a detailed discussion of why local media matter for information production and how advertising affects newspapers. Section II describes the paper's data and methods. Section III discusses our main results. Section IV concludes.

I. Why Should Local Media Matter for Information Production?

The local media may matter to investors or firms. First, if the local media are one of the sources for the national media, then it is possible that part of the national media's content is bolstered by information provided by local media. As such, linguistic media content—the tone that derives from articles' word choices—at the *local* level may capture previously overlooked information about companies above and beyond the information contained in other sources such as earnings announcements, corporate disclosures, analysts' forecasts, rating agencies' assessments, and so forth. Second, the local media are more likely to be followed by a local audience. For instance, a recent survey by the Readership Institute of Northwestern University finds that local papers have much higher local readership than other papers—in 2006, 71% of respondents read a local paper whereas 24% read a paper other than (or in addition to) a local paper. Thus, story content and tone in local media may be a potentially important source of information to investors because local media are one of the information channels that local investors have a comparative advantage (though not necessarily absolute advantage) at accessing. We test whether the slant of articles by local media about local firms is different from the slant of articles about nonlocal firms.

There are several reasons why we might expect slanted news on average. For instance, one role the media can play is providing external corporate governance and monitoring firms, thereby influencing investors and the general public (Dyck, Volchkova, and Zingales (2008)). Companies might try to manage their relationship with the media through investments in public relations and corporate social responsibility events.

Another channel that connects firms and media outlets is firms' advertising activities. Advertising constitutes a significant portion of local newspaper revenues, and media outlets may want to avoid writing negative stories about firms that advertise heavily and risk alienating those firms. There is much anecdotal evidence that firms' advertising choices and expenditures are related to the qualitative nature of the coverage they receive from the media, such as around product recalls, unflattering product reviews, and editorial analysis[4]. Whether the collective force of corporate advertising has any effect on media content is an empirical question, and one of the focuses of our paper.

If local media matter for information production about firms, media slant may be correlated with firm value for two reasons. First, local media may improve the information environment, and therefore reduce the information asymmetry between investors and firms. Second, the local media may influence the perceptions and sentiment of individual investors. We expect individual investors to be influenced by the slant that local media create to a greater extent than institutional investors. If this channel links media slant to firm value, then we expect a contemporaneous association between media slant and a firm's value.

Previous work on media slant emphasizes the biases generated by advertising pressure (Reuter and Zitzewitz (2006)), media ownership (Besley and Pratt (2006)), the influence of board members with media expertise (Gurun (2010)), competition for audience (Baron (2005), Mullainathan and Shleifer (2005), and Gentzkow and Shapiro (2006)), whether media hype can create bubbles (Bhattacharya et al. (2009)), and the quid pro quo between journalists and sources (Dyck and Zingales (2003)). Our paper extends this literature by providing evidence that media bias not only has geographical attributes, but also valuation implications for some firms.

II. Data Description

We collect data on firm-specific news published by local newspapers, as well as a firm's advertising expenditures, location, financial analyst following, and institutional ownership. We obtain stock return and accounting data from CRSP/COMPUSTAT. Data on financial analyst coverage come from First Call. We use SEC 13-F filings for all reporting institutions to construct firm-level institutional ownership.

A. Advertising Measures

We obtain monthly advertising information from the TNS Media Intelligence (TNSMI) database for the 2002 to 2006 period. TNSMI gathers its data by continually monitoring multiple media channels and collecting information about observed advertisements. The media channels include advertising expenditures by firms in newspapers, network TV, cable TV, magazines, and network radio (see Appendix A for the list of categories covered by the advertising database). Of these categories, we focus on two newspaper-related advertising

[4] Adams, Russell, "Major Detroit Newspaper Takes Cues from Advertisers," *Wall Street Journal*, November 2, 2009. Motavalli, Jim, "Toyota Dealers Pull Ads on ABC for 'Excessive Stories' on Recalls," *Wall Street Journal*, February 9, 2010. Rhee, Joseph, and Mark Schone, "Toyota Dealers Pull ABC TV Ads; Anger over 'Excessive Stories'," http://abcnews.go.com/Blotter/toyota-dealers-pull-abc-tv-ads-anger-excessive/story?id=9776474, February 8, 2010.

expenditures: (1) National newspaper dollars, and (2) Newspaper dollars. The first category measures advertising in three national newspapers: *New York Times*, *USA Today,* and *Wall Street Journal*. Advertising expenditures spent in regional editions of these newspapers are also included in this category. The second category measures advertising expenditures in any of over 250 daily and Sunday newspaper editions and Sunday magazines. That is, the second category pertains to newspaper advertising that is not at the national level (i.e., not included in category (1)). Although the data allow us to observe how much firms spend in these categories, the data do not identify which specific local/national newspaper they used.

The database reports media spending by brand. For example, media spending by Johnson & Johnson is reported separately by its brands, which include Band-Aid, Tylenol, Neutrogena, etc. We aggregate the advertising outlays of all brands that belong to a particular sample firm. We use the names of these companies and the SOUNDEX algorithm[5] of SAS to match firm identifiers in other databases such as CRSP. After generating a list of potential matches to the name, we hand-match the names to the corresponding PERMNO number (CRSP Identifiers) by inspecting the firm's name using a conservative approach: names for which we cannot identify a unique match are excluded from the sample. As a result, from a total of 9,604 company names that exist in CRSP over our sample period, our matching procedure matches 1,457 unique company names in the TNSMI database. The frequency of most TNSMI data is weekly; however, the variables we are interested in present little variation during a month for two reasons: (1) often the data provider divides monthly advertising expenditures by four to get to the weekly frequency if the weekly frequency is not available, and (2) companies themselves sometimes report data based on simply dividing their monthly advertising budget into weeks. To minimize the impact of such measurement errors, we conduct our analysis at the monthly frequency.

B. Firm Location

We collect company location information (zip codes) from Bloomberg and obtain local newspaper locations from newspaper websites. We then identify the latitude and longitude for each county from the U.S. Census Bureau's Gazetteer Place and Zip Code Database. Following Ivković and Weisbenner (2005), we compute distances between media outlets and firms using the latitude and longitude information.

C. Local Newspapers and National News Outlets

Our news stories come from media that have a content agreement with Factiva in 2001 and are in the database from 2002 to 2006. We collect from Factiva the lead paragraphs of stories from eight local newspapers

[5] SOUNDE is a phonetic algorithm developed by Robert C. Russell and Margaret K. Odell for indexing names by sound as pronounced in English. For further information on this algorithm, see http://www.archives.gov/research/census/soundex.html.

(*Boston Globe*, *Chicago Sun-Times*, *Denver Post*, *Pittsburgh Post-Gazette*, *San Francisco Chronicle*, *Seattle Post-Intelligencer*, *St. Louis Post-Dispatch*, and *Washington Post*), one national newspaper (*Wall Street Journal*), and a newswire (*Dow Jones Newswire*). Appendix B provides additional information about the location of the local newspapers.

Dow Jones Newswire differs from other outlets because, unlike traditional newspapers, *Dow Jones Newswire* has no physical capacity constraint in terms of number of print pages available to run stories. We refer to *Dow Jones Newswire* as a "national" news outlet with the idea being that a wider audience can more easily follow it compared to local newspapers.

Not all local newspapers provide content to Factiva. Our sample does not include several large metropolitan newspapers (such as *Los Angeles Times*) because Factiva blocks their content to public libraries and universities. Our sample selection requirement also excludes local newspapers such as *Dallas Morning News* and *Miami Herald* that have inadequate coverage in Factiva. For *Dallas Morning News*, for example, Factiva reports "Factiva's agreement with the *Dallas Morning News* calls for the 'daily' text of the *Dallas Morning News* to be sent to Factiva from March 28, 2003 forward, but not for archived content information prior to March 28, 2003. There would also be a conflict for material older than 2002 because of certain effects of the *Tasini v. New York Times* Supreme Court decision . . . "[6] We exclude newspapers that are constrained by such content sharing.

In order to match news stories to other databases, we use the ticker symbols, firm names, and name variants of the stocks from the CRSP database as the search strings in Factiva. The name variants we use include singular and plural versions of the following abbreviations from the company names: ADR, CO, CORP, HLDG, INC, IND, LTD, and MFG. The search algorithm and name matching can be done in various ways. Our search algorithm first searches for capital letters within brackets (e.g., GM, the ticker symbol for General Motors) in the title and lead paragraph. If no match is found, then we search for the name and name variants. We use the CRSP company name change file to identify situations in which a firm changes its name. Newspapers may report on companies that are bankrupt or that will go public in an initial public offering (IPO). In order to accommodate this possibility, we keep the names of firms before an IPO and after delisting for an additional 6-month period.

In searching for news stories featuring the company names, we follow the guidelines provided by Tetlock, Saar-Tsechansky, and Macskassy (2008) except that we do not limit our sample firms to those in the S&P 500. Because of the large number of firms and news stories, we use an automated story retrieval system. We construct a query that specifies firm names to be searched. The system then submits the query and records the retrieved stories. In total,

[6] In *Tasini v. New York Times*, freelance writers complained that their work was posted on the Internet without their permission and, in some cases, was used to earn extra revenue for publishers who sold access to the archived material. The court found that publishing the same article in print and online is two separate things when it comes to copyright.

we retrieve the lead paragraph of over 330,000 qualifying news stories—over 240,000 from *Dow Jones Newswire,* over 60,000 from *Wall Street Journal,* and the rest from local newspapers—containing over 100 million words between 2002 and 2006.

D. Measure of Slant

Previous papers that quantify the qualitative content of news stories use as a measure of interest scaled counts of certain words. These quantitative measures have been dubbed "media content" (Tetlock (2007)), "media slant" (Gentzkow and Shapiro (2008)), and "media bias" (Dyck, Volchkova, and Zingales (2008)). We use the negative and positive word categorization of the Loughran and McDonald (2011) dictionary to count the number of negative and positive words in a given news story. The Loughran and McDonald (2011) dictionary differs from other dictionaries used in research using context analysis in that it includes *financial* words that carry negative or positive tone. We make the simplifying assumption that all negative words in the predetermined dictionary are equally informative, and other words are uninformative. The Loughran and McDonald (2011) dictionary lists 2,337 words as negative and 353 words as positive. We measure a story's slant according to the frequency of negative financial words in each news story. Each of the stories in our sample meets certain requirements that we impose to eliminate irrelevant stories and blurbs. Specifically, we require that each firm-specific story include the firm's official name at least once within the first 25 words of the lead paragraph of the article and the headline. We further require that each story have at least 50 words in total. Using more stringent filters for story requirements, such as requiring at least five words that are either positive or negative, or requiring that at least three of the five positive/negative words be unique, does not change our results.

It is possible that some words in an article that are classified as negative or positive may not truly relate to the company. This creates noise in the measure of positive or negative content. With more than 100 million words in our sample, a more hands-on approach of subjectively assessing the information content of each word is not feasible. The noise inherent in our measure is thus the cost of having a large sample and eschewing the use of subjective judgment.

As our primary measure of media slant, we use the fraction of negative words to total words in each news story. We then transform this measure into a measure of positive slant by multiplying it by -100. Our slant measure is therefore bounded between -100 and zero, with higher values indicating more positive slant, that is, less usage of negative words. We prefer this method to using a fraction of positive words to total words because negative information may have more impact than positive information (see Tetlock (2007), Baumeister et al. (2001), and Rozin and Royzman (2001)). To reduce our computational burden, before counting instances of negative words we produce a "composite story" by combining all qualifying news stories from a given media outlet for each firm in a given month, which gives us a panel of firm-month-outlet observations. (We note that we obtain similar results if we use shorter windows—for example biweekly or weekly—to combine the articles. Using shorter windows increases the likelihood that articles in different media outlets cover the same event or issue, but shorter windows also mean that the advertising data are measured with error.) Formally, we define the following measure:

$$Slant_{itm} = -100 \times \frac{\text{number of negative words}}{\text{number of total words}},$$

where i is the firm identifier, t is the month, and m is the media outlet. We note that newspapers may have their own editorial dictionaries and news writing styles, and these styles can change over time based on editorial preferences. Our results do not change when we standardize *Slant* by the mean and standard deviation of media outlets' slant over prior years.

III. Results and Discussion

This section presents our empirical results.

A. Summary Statistics

Table I reports firm characteristics of the 5,330 CRSP-listed firms that we include in the empirical analysis. (We note that some of our tests use fewer firms due to data limitations.) For a firm-month-outlet observation to be included in the analysis, we require that there exist at least one monthly composite story. The annual news coverage variables in Table I report the number of times in a given year that newspapers (both local and national) report a story on a company. On average, a company appears in our news sample an average of 2.01 times per year.

Compared to the universe of COMPUSTAT firms for the same 2002 to 2006 time period, our sample contains larger firms. The pooled average firm size in the sample is 3.6 billion dollars in assets, with a median of 379 million dollars in assets, whereas the pooled average firm size in COMPUSTAT is 3.1 billion dollars in assets with a median of 271 million dollars in assets. For our sample, *Tobin's Q* has a mean of 1.52 and median of 1.10. The average number of analysts following a firm's stock is 3.65, which is statistically larger than the average analyst following of COMPUSTAT firms (1.93). The average institutional ownership in our sample (47%) is also high compared to the universe of firms covered in COMPUSTAT (35%).

The average annual total advertising expenses to sales ratio as reported in COMPUSTAT for our sample firms is about 0.011, with a median of zero. This figure corresponds to annual advertising spending of 320 million dollars. Local newspaper advertising outlays tracked by the TNSMI database are 0.29 million dollars annually, on average, and national newspaper advertising outlays tracked by the TNSMI database are $1.49 million annually, on average, for the same set of firms. The correlation between the annual advertising

Table I

Descriptive Statistics on Companies

This table summarizes the characteristics of the firms analyzed in the paper. The sample period is 2002 to 2006. The unit of observation is the firm-year. For the COMPUSTAT column, we code missing observations of *Advertising Expenditures*, *R&D Expenses*, *CAPX*, *Analyst Following*, *Institutional Ownership*, *Annual National*, and *Local Media Coverage* as zero. A description of the variables is provided in Appendix C.

	Mean	Median	*SD*	75%ile	25%ile	COMPUSTAT Mean
Market value of equity (million $)	3,567	379	15,863	1,509	90	3,126
Book leverage	0.429	0.463	0.750	0.672	0.234	0.320
Momentum	0.220	0.102	0.826	0.381	−0.153	0.210
Idiosyncratic risk	0.131	0.103	0.098	0.163	0.068	0.121
R&D expenses/sales	0.045	0.000	1.800	0.058	0.000	0.042
Advertising expenditures/sales	0.011	0.000	0.039	0.007	0.000	0.009
CAPX/sales	0.467	0.026	42.585	0.057	0.010	0.055
Tobin's Q	1.517	1.102	1.744	1.818	0.656	1.618
ROA	0.008	0.024	0.320	0.077	−0.018	0.017
Analyst following	3.645	1.000	5.254	5.000	0.000	1.930
Institutional ownership (%)	0.479	0.509	0.321	0.761	0.171	0.351
Number of employees	10.092	1.118	41.340	5.400	0.256	9.019
Employees/population (×1,000)	0.356	0.004	3.851	0.025	0.001	0.293
Number of segments	1.713	1.000	1.302	2.000	1.000	1.457
Plain English	0.668	0.474	2.219	2.193	−0.908	0.671
Annual nat'l and local media coverage	2.014	1.609	1.752	2.565	1.099	3.996
Local newspaper advertising (million $)	0.286	0.000	3.214	0.000	0.000	n/a
Nat'l newspaper advertising (million $)	1.493	0.000	19.139	0.000	0.000	n/a
Slant	−1.689	−1.087	1.940	−0.556	−2.051	n/a

expenses reported in COMPUSTAT and the annual newspaper-related advertising in our database is 0.36. The mean value of our sample firms' advertising expenditures as a percentage of sales (0.011) is statistically not different from that for the average COMPUSTAT firm (0.009). In our sample, on average each year 42% of firms have nonzero advertising spending. For large firms (above sample median assets), this percentage is 47%; for small firms (below sample median assets), this percentage is 38%.

Table II reports summary statistics for our slant measure (defined above) by each media outlet. We report the distribution of composite stories, number of firms covered, and slant (about a firm for a given media outlet in a particular month) by the geographical location of firms with respect to each local newspaper. For each firm-media outlet pair, we construct the dummy variable *Local Firm*. This variable takes a value of one if the firm's headquarters is within

Table II

Descriptive Statistics on Slant in National and Local News

This table summarizes the distribution of slant by newspaper. *Slant* is the ratio of the number of negative words to the total number of words used in a composite story reported in month t multiplied by -100. The sample period is 2002 to 2006. The unit of observation is the firm-month-media outlet. If the distance between the location of a newspaper (see Appendix B) and the location of a firm's headquarters is less than 100 miles, then the firm is considered a local firm for the corresponding newspaper.

	Boston Globe	*Chicago Sun Times*	*Denver Post*	*Pittsburgh Post-Gazette*	*Seattle Post-Intelligencer*
News on local firms					
Mean	−2.43	−1.14	−1.02	−1.12	−1.30
Median	−1.25	−0.88	−0.74	−0.88	−0.78
SD	2.93	1.09	1.20	0.94	1.58
Number of firms	174	104	68	36	70
Number of composite stories	1,109	834	299	423	879
News on nonlocal firms					
Mean	−2.14	−1.49	−0.90	−0.95	−1.89
Median	−0.95	−1.05	−0.60	−0.67	−0.93
SD	2.81	1.58	1.16	1.01	2.52
Number of firms	602	585	261	560	393
Number of composite stories	2,268	2,504	576	2,198	1,328

	San Francisco Chronicle	*St. Louis Post-Dispatch*	*Washington Post*	*Dow Jones*	*Wall Street Journal*
News on local firms					
Mean	−0.87	−0.99	−1.21		
Median	−0.6	−0.69	−0.85		
SD	1.00	1.23	1.37		
Number of firms	149	42	143		
Number of composite stories	983	759	1,370		
News on nonlocal firms					
Mean	−1.08	−1.14	−1.05	−1.37	−3.19
Median	−0.65	−0.70	−0.72	−1.05	−1.92
SD	1.39	1.41	1.24	1.24	3.13
Number of firms	226	763	736	5,274	2,780
Number of composite stories	554	2,900	3,252	80,634	22,115

100 miles of the newspaper's headquarters, and zero otherwise. Using a broader definition of *Local Firm* (specifically, a 250-mile radius) gives similar results.

Average slant is lowest in the *Wall Street Journal* (−3.19). A pair-wise mean comparison indicates that on average *Wall Street Journal* articles contain more negative words compared to articles written in all local media outlets. For local newspapers, the average slant is statistically the same for stories written about local compared to nonlocal firms. Of course, univariate statistics ignore the impact on slant of firm characteristics and firms' dealings with newspapers. In the next section, we control for these factors and investigate the relationship between localness and slant.

B. Local Firms and Media Slant

In Table III, we examine the determinants of slant in newspaper media. We hypothesize that slant is a function of firms' proximity to the location of the newspaper. The first regression in Table III shows one of our main results: the correlation between slant and a dummy that denotes whether a firm is geographically close to media outlets is positive and statistically significant after controlling for firm-month fixed effects. This specification forces identification through variation in slant *across* newspapers, controlling for the timing of news events for a given firm. Our firm-month dummies subsume all our other control variables, and so the controls are omitted. In this specification, we find that the coefficient estimate on *Local Firm* is 0.515. The interpretation of this result is that local media outlets write more positive stories about local firms than they do about nonlocal firms, controlling for the information environment for a given firm and for the average slant of a given media outlet.

The firm-month fixed effects provide clean identification but obscure other interesting variation in the data. In the next specification, we omit the stringent firm-month fixed effects and regress newspapers' monthly slant on *Local Firm*, proxies to test the catering hypothesis and the constrained reporting hypothesis, and several control variables. We consider the advertising hypothesis separately below. The number of observations drops by almost half when we add variables to the regressors.

To test the catering hypothesis, we include variables that capture readers' demand for slanted news. If employees of local firms are more likely to be the audience of local newspapers and if these employees demand favorable news about their company, then the local media may cater to them. Accordingly, we include in our specification (1) the log of the number of firm employees and (2) the number of employees scaled by the population of the local media's coverage area. We use COMPUSTAT's data on total number of employees.

To test the constrained reporting hypothesis, we include variables that capture a media outlet's inclination to reproduce, paraphrase, or play off of company press releases. Our first variable measures the readability of a firm's financial reports. A resource-constrained journalist is likely to spend less time and effort to decipher a financial report that is difficult to read and understand. We use the *Plain English* measure developed by Loughran and McDonald (2010) as our measure of the complexity of a firm's information environment. Higher values of this measure indicate SEC filings (e.g., 10Ks) that are easier to read. Our second measure is the number of business segments (per the COMPUSTAT segment files) in a firm. We hypothesize that the complexity of analyzing a firm will be more difficult as the number of business segments increase.

Our control variables include firm characteristics that might affect slant about the company: log of firm size, return on assets, book leverage,

Table III

Determinants of Media Slant, Catering, and Constrained Reporting Hypotheses

This table reports the results of the following pooled OLS regression: *Slant* = a + b × *Local Firm* + c × *Controls* + d × *Fixed Effects* + residual. The unit of analysis is the firm-month-media outlet. *Slant* is the ratio of the number of negative words to the total number of words used in a composite story reported in month t multiplied by −100. The regressors are defined in Appendix C. Heteroskedasticity-robust standard errors are clustered by firm and provided in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Slant	Slant	Slant
Local firm	0.515***	0.192***	0.325***
	(0.033)	(0.055)	(0.041)
Log(market value)		0.142***	0.092***
		(0.013)	(0.022)
ROA		0.160***	0.168***
		(0.029)	(0.039)
Book leverage		−0.035	0.140*
		(0.052)	(0.077)
Analyst following		0.001	0.002
		(0.002)	(0.002)
Inst. ownership (%)		−0.128**	0.128**
		(0.050)	(0.065)
Momentum		0.064***	0.062***
		(0.008)	(0.009)
Idiosyncratic volatility		−0.787***	−0.366**
		(0.143)	(0.146)
Return		0.262***	0.219***
		(0.045)	(0.044)
Sales growth		0.006	0.042
		(0.007)	(0.063)
Log(employees)		−0.040***	0.126***
		(0.014)	(0.038)
Employees/population		−7.603***	−16.886***
		(1.999)	(1.657)
Number of segments		0.004	0.003
		(0.009)	(0.014)
Plain English		0.016**	0.002
		(0.006)	(0.007)
Firm fixed effects	Subsumed	No	Included
Media fixed effects	Included	Included	Included
Industry fixed effects	Subsumed	Included	Subsumed
Month fixed effects	Subsumed	Included	Included
Firm-month fixed effects	Included	No	No
Constant	Included	Included	Included
N	124,585	69,334	69,334
Adjusted-R^2	0.43	0.19	0.27

analyst following, percentage of institutional ownership, prior 12-month return, idiosyncratic volatility, current month return, and sales growth. Several of our control variables (log of firm size, analyst following, and percentage of institutional ownership) characterize companies' information environment.

Information asymmetry between the firm and investors may affect media slant. For instance, if the media serve as an external governance mechanism, then this role may impact the disclosure behavior of firm managers because what the media report is often supplied by the management.[7]

Using publicly traded companies in our analysis is an advantage of our empirical design. We can control for the market's perception of a firm's prospects by including prior stock return variables in our regressions. For instance, when the market views a firm favorably, stock prices tend to go up. The stock market return variables that we use in our tests are: momentum (prior 12-month stock return), idiosyncratic volatility, and current month return. We also include accounting variables—sales growth, book leverage, and return on assets (*ROA*)—to capture the overall financial health of the firm. If the firm is not doing well, it could be subject to more media coverage with a more negative slant.

To capture the possibility that some outlets are systematically more positive or negative than others, we also include media outlet fixed effects. We further control for unobserved heterogeneity by including industry fixed effects (based on two-digit SIC classifications), month dummies, and an intercept term. We note that excluding *Dow Jones Newswire*, dividing the sample into two subperiods, or using alternate industry definitions does not alter our results. We compute heteroskedasticity-robust standard errors that are adjusted for clustering by firm.

Our baseline regression, the second specification in Table III, includes all the variables mentioned above and the fixed effects for media outlet, industry, and month. The results do not support the catering hypothesis: the coefficients on both the log of the number of employees and number of employees scaled by coverage population are negative, suggesting that slant is higher for firms with fewer employees and firms with a smaller share of the local population. These findings are inconsistent with catering by newspapers to firms' employees. Unfortunately, the COMPUSTAT employment data do not allow us to identify the number of local employees around firm headquarters. To examine the impact of potential measurement problems, in untabulated regressions we restrict our sample to firms with a single business segment because such firms are less likely to have geographically diffused employees. Our results do not change. Further restricting the sample to single-segment firms that have

[7] See McChesney (2003) for a detailed discussion of the information sources used by the media. Kothari, Shu, and Wysocki (2009), Healy and Palepu (2001), and Verrecchia (2001) provide a detailed discussion of factors affecting disclosure behavior. For example, litigation risk may force managers to quickly reveal bad news to outside investors (Kasznik and Lev (1995), Skinner (1994)). Managers may also time the release of bad and good news to increase the value of their option grants or the sale price of their stock. Frankel, McNichols, and Wilson (1995) report that managers release good news prior to raising external finance. Yermack (1997) and Aboody and Kasznik (2000) show that managers accelerate bad news and/or withhold good news in the period immediately preceding option grant dates to lower the exercise price of the options and thus increase the value of their option-grant portfolios. Managers also have incentives to withhold bad news when they face opposite incentives, such as career concerns (e.g., promotion, employment opportunities within and outside the firm, and potential termination).

below-median employee size also leaves the results qualitatively unchanged. In addition, because both variables that we use to capture the catering effect have high variation compared to their medians, in untabulated results we use outlier-robust regression to see if the results are driven by firms with few or many employees. We find that they are not.

The negative coefficients on the catering proxy variable suggest that, on average, the media in our sample are more critical of firms with more employees. This result could arise for a couple of reasons. First, bad news may be more likely to leak to the media for a firm that has more employees. Second, the media may voice the concerns of employees or unions.

We also do not find support for the constrained reporting hypothesis. This hypothesis predicts that news of more complex firms will have higher slant. Inconsistent with the constrained reporting hypothesis, we find that firms with easier-to-understand financial statements have higher slant, as indicated by the positive coefficient on *Plain English*. Our other measure of complexity, *Number of Segments*, is insignificant.

The result that local firms receive abnormally positive stories remains qualitatively unchanged. The results of the baseline results in Table III support the notion that local media provide more positive slant (larger reporting bias) for local firms compared to nonlocal firms. The coefficient on *Local Firm* is 0.192 and statistically significant. To put this magnitude in perspective, the coefficient estimates suggest that the difference in slant for local compared to nonlocal firms is the same as a firm improving its profitability (as measured by *ROA*) by almost a full standard deviation.

In the third specification, we replace industry dummies with firm fixed effects. Here, identification comes from the different nature of stories about a given firm across newspapers. If some omitted firm-specific, time-invariant factors drive the results in our first specification, adding firm dummies will capture the impact of these factors. The coefficient estimate on *Local Firm* is more than 50% higher than the estimates obtained in the previous specifications. Thus, even within-firm, cross-media localness is related to slant.

C. Advertising Dollars and Local Media Slant

Newspapers get much more of their revenue from advertising than from subscriptions; for instance, in 2006, advertising revenues were about 65% of total revenues at the *New York Times*. If local firms are more likely to provide a significant amount of local newspapers' revenues, then it is possible that local newspapers may choose the tone of the news so as to protect its future revenues. We test this advertising hypothesis by including variables on how many advertising dollars firms spend in national media (*log of national newspaper advertising*) and local media (*log of local newspaper advertising*) in that month in our baseline specification (i.e., Table III, Column 2). Using prior 1-month, 3-month, 6-month, or 12-month rolling advertising expenditures gives similar results.

Requiring advertising expenditure data for our tests reduces the number of observations from that of Table III. First, in Column 1 of Table IV we re-run

Table IV

Media Slant and Advertising Hypothesis

The first three columns of the table report the results of the following pooled OLS regression: *Slant* = a + b × *Local Firm* + c × Log (*Local Advertising*) + d × Log (*National Advertising*) + e × *Controls* + f × *Fixed Effects* + residual. The last three columns of the table report the first- and second-stage results of the 2SLS regression that uses the log of industry local and national advertising spending for *Local Advertising* and *National Advertising* as instruments. We exclude the firm's contribution to industry average when calculating the instruments. The unit of analysis is the firm-month-media outlet. The dependent variable, *Slant*, is the ratio of the number of negative words to the total number of words used in a composite story reported in month t multiplied by −100. The regressors are defined in Appendix C. Heteroskedasticity-robust standard errors are clustered by firm and provided in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

				IV: First Stage		IV: Second Stage
	OLS *Slant*	OLS *Slant*	OLS *Slant*	Log (*National Advertising*)	Log (*Local Advertising*)	*Slant* (2SLS)
Local firm	0.325***	0.354***	0.345***	−0.612**	−1.559***	0.382***
	(0.071)	(0.071)	(0.055)	(0.259)	(0.453)	(0.067)
Log(market value)	0.152***	0.126***	0.124***	0.601***	1.373***	0.107***
	(0.023)	(0.023)	(0.014)	(0.156)	(0.187)	(0.038)
ROA	0.204	0.242*	0.250**	−0.885	−1.697	0.262**
	(0.139)	(0.137)	(0.104)	(1.264)	(1.178)	(0.117)
Book leverage	0.024	0.048	0.044	−0.839	−1.063	0.036
	(0.118)	(0.112)	(0.057)	(0.660)	(1.006)	(0.072)
Analyst following	0.003	0.003	0.003	0.008	0.018	0.002
	(0.002)	(0.002)	(0.002)	(0.016)	(0.025)	(0.002)
Inst. ownership (%)	−0.307***	−0.256***	−0.254***	−0.352	−3.200***	−0.140
	(0.091)	(0.088)	(0.057)	(0.671)	(0.794)	(0.086)
Momentum	0.091***	0.094***	0.091***	0.059	−0.201	0.107***
	(0.023)	(0.022)	(0.020)	(0.117)	(0.163)	(0.021)
Idiosyncratic volatility	−1.033***	−1.138***	−1.143***	−1.086	7.669***	−1.546***
	(0.307)	(0.309)	(0.216)	(2.162)	(2.638)	(0.289)
Return	0.099	0.101	0.099	−0.108	−0.039	0.098
	(0.093)	(0.093)	(0.088)	(0.246)	(0.304)	(0.088)

(continued)

Table IV—*Continued*

	OLS	OLS	OLS	IV: First Stage		IV: Second Stage
	Slant	*Slant*	*Slant*	Log (*National Advertising*)	Log (*Local Advertising*)	*Slant* (2SLS)
Sales growth	0.467***	0.462***	0.462***	0.321	0.027	0.477***
	(0.156)	(0.148)	(0.119)	(1.111)	(1.538)	(0.120)
Log (employees)	−0.029	−0.051*	−0.051***	1.104***	0.684***	−0.006
	(0.028)	(0.028)	(0.014)	(0.177)	(0.233)	(0.058)
Employees/population	−6.907**	−7.460**	−6.034**	3.208	36.205	−8.737***
	(3.187)	(3.136)	(2.359)	(14.976)	(23.933)	(2.391)
Number of segments	−0.012	−0.017	−0.016**	0.106	0.275**	−0.021**
	(0.013)	(0.013)	(0.007)	(0.079)	(0.135)	(0.009)
Plain English	0.020**	0.016*	0.016***	0.130*	0.156	0.019**
	(0.010)	(0.010)	(0.006)	(0.067)	(0.095)	(0.009)
Log (national advertising)		0.014***	0.014***			−0.056
		(0.003)	(0.002)			(0.054)
Log (local advertising)		0.011**	0.011***			0.057***
		(0.004)	(0.003)			(0.021)
IV: Log (industry national advertising)				0.457***	−0.27	
				(0.159)	(0.245)	
IV: Log (industry local advertising)				0.055	0.529***	
				(0.057)	(0.103)	
Media-month fixed effects	No	No	Included	No	No	No
Media fixed effects	Included	Included	Included	Included	Included	Included
Industry fixed effects	Included	Included	Included	Included	Included	Included
Month fixed effects	Included	Included	Subsumed	Included	Included	Included
Constant	Included	Included	Included	Included	Included	Included
N	28,383	28,383	28,383	28,378	28,378	28,378
Adjusted-R^2	0.22	0.22	0.24	0.47	0.43	0.52
F-test				41.51	158.64	
Cragg-Donald Wald F Statistics						40.25

our tests from Table III, Column 2 using the sample of observations for which we have advertising data. We confirm that the results using this sample are qualitatively similar to what we report above. Next, we turn our attention to the effect of advertising on slant, adding to the regression specification variables that measure local and national advertising expenditures.

In Table IV, Column 2 the OLS coefficient on *Local Advertising* is 0.014 and statistically significant. The coefficient on *National Advertising* is 0.011 and also statistically significant. The coefficients on local and national advertising indicate that spending 100,000 dollars in 1 month for local (national) advertising expenditures is associated with an increase in slant of approximately 15.2% (18.0%). To put these results in perspective, it is worth noting that average local (national) newspaper advertising in our sample is 0.29 (1.49) million dollars per year (Table I). These figures understate the magnitude of advertising expenditures, however, because many firms do not advertise frequently. Annual average local (national) advertising expenditures of firms tracked by TNSMI are 1.01 (5.46) million dollars. Total revenues from print advertising in the United States in 2007 were 42 billion dollars.[8] Advertising revenues of *New York Times* and *Boston Globe* in the same year were 504 and 361 million dollars, respectively.

It is possible that firms with relatively localized shareholder and customer bases may use local media as a cost-effective way to disseminate information and promote their products. If, in turn, local media relay stories that have positive slant to encourage revelation of information by managers or if local media that lack resources are inclined to reproduce company press releases, then local newspapers may produce positive slant. To force identification through variation across firms and their advertising expenditures at a given paper in a given month while controlling for the resources of the media outlet in the same month, we include month-media dyad fixed effects in the third column of Table IV.[9] We find that the estimated relation between advertising and slant does not change in this specification, providing further support for the advertising hypothesis.

Of course, a firm's choices of advertising levels and venues are likely to be related to the firm's characteristics (Kimbrough and McAlister (2009) and Srinivasan and Hanssens (2009)). In other words, an omitted firm characteristic could explain both a firm's choice to use newspaper advertising and also its allocation to local/national newspapers. Consequently, the OLS coefficients capture both the possibility that firms' advertising expenditures directly influence (cause) slant, and the possibility that firms increase their advertising expenditures in response to having good news.

We use an instrumental variables approach to address the possibility of codetermination of advertising and slant. We need instruments that are correlated with a firm's advertising choices but uncorrelated with the residuals in the

[8] http://www.naa.org/TrendsandNumbers/Advertising-Expenditures.aspx

[9] Restricting the sample to firms that are local to at least one of the media sources gives a similar result in terms of the relation between advertising and slant. In this alternative specification, *Local Firm* is not included in the specification as it is a linear combination of media-firm dummies.

slant regression. Our instruments are *Average Industry Local Advertising Expenditures* and *Average Industry National Advertising Expenditures* for the corresponding calendar year. We exclude the firm's advertising expenditures from the industry average in these calculations. The idea is that, if the firm's industry has increased its overall advertising expenditures in a certain type of newspaper (national/local), then a given firm will also tend to spend more for advertising in that type of outlet, independent of its own characteristics.

Our instruments strongly relate to firm-level advertising expenditures. The F-statistics on the instruments in our first stage are above critical values from a Stock-Yogo weak identification test. The F-statistic for local advertising is 41 and for national advertising it is 158. Furthermore, the first-stage R^2 is large (47% for local advertising and 43% for national advertising), indicating that our estimation is efficient. Because it seems unlikely that average *industry* advertising expenditures would induce slant in a particular local newspaper for a particular firm in that industry, it seems plausible that our instruments meet exclusion requirements.[10] We conclude that our instruments are good ones.[11] In Table IV, the third and fourth columns, we report the first-stage regression estimates. The results suggest that industry-level national (local) advertising expenditures are correlated with firm-level national (local) advertising expenditure variables.

We report the second-stage results of the instrumental variables regression in the last column of Table IV. Consistent with abnormally positive stories being a quid pro quo for advertising expenditures, we find that the coefficient on the instrumented local advertising expenditure variable is statistically significant, with a coefficient estimate of 5.7%. This quid pro quo bias does not extend to national media, however. We find that the coefficient on the instrumented national advertising expenditure variable is statistically insignificant. The results in Table IV support the notion that local media write more positive articles about firms advertising more heavily in local newspapers. That is, to the extent that our instrumenting strategy successfully captures the exogenous portion of advertising expenditures, local advertising *causes* slant in local media.

[10] It is possible that the media may write positive stories about a firm in an industry that advertises a lot in the hope that the firm will advertise in the future or that some *other* firm in the industry will do so. In this case, industry average advertising expenditures may fail to satisfy the necessary exclusion restriction. On the other hand, although some slant could benefit a whole industry (e.g., media denying that investment banks are categorically evil), other forms of slant may favor one competitor over another. But generally, it seems less likely that a media outlet will slant news in the hope of winning advertising, rather than responding to advertising with slant, because if slant is provided free there is no need for firms to pay for it with advertising.

[11] Even if our instruments are not perfectly suited for the task, asymptotically, the bias from an instrumental variables approach like ours should be less than the bias of an ordinary least squares approach (OLS) so long as the correlation between the endogenous variable and the OLS residuals, $\rho(x, u)$, is larger than the ratio of the correlation of the instrument and the residuals to the correlation of the instrument and the endogenous variable, $\rho(\mathrm{z, u})/\rho(\mathrm{z, x})$. Based on the strength of our instruments (i.e., we find that $\rho(\mathrm{z, x})$ is large), unless $\rho(\mathrm{z, u})$ is very large (i.e., the instruments are far from meeting the exclusion requirement), our instrumental variables approach probably improves upon OLS.

C.1. Propensity Score Matching

The results we obtain from the instrumental variables approach support the notion that local advertising causes local media to slant their news. However, if our instruments fail the exclusion requirement that they are uncorrelated with the error term in the second-stage equation, our estimates can be biased. For example, nonlinear impacts of our variables or omitted covariates could bias our coefficients of interest in the direction we observe. One way to deal with this issue is our instrumental variables approach; another is to use propensity score matching to estimate an average treatment effect on slant of a firm advertising in local newspapers.

The first stage of our propensity score matching procedure uses a Probit model to estimate the probability of being in the treated group (i.e., of advertising in local newspapers) as a function of observable characteristics. Next, we use the estimated ex ante probability of being in the treated group to form matched pairs of observations with similar estimated ex ante probability of being in the treated group but different ex post realizations of the treatment. Thus, unlike our instrumental variables estimation, we are using a discrete measure of local advertising—an indicator for nonzero local advertising—as the dependent variable in the first stage.

Our propensity score matching essentially puts together firms that are similar in all the matching dimensions—jointly, rather than individually—but different in terms of their advertising choices. Underlying this technique is the assumption that matching on observable characteristics will mitigate the fact that the firms' advertising choices are made based on their characteristics so that we can make causal inferences from the analysis.

In our matching procedure, we use all the control variables and fixed effects we use in our baseline specification (Table III, Column 2) except the treatment variable. We find that firms that advertise in local newspapers have significantly more positive slant than firms that do not advertise in local newspapers. In Table V, where the treatment is local advertising expenditures exceed zero, the average treatment effect is a 13.2% increase in positive slant.

Following Abadie and Imbens (2008), we obtain confidence intervals using a matching estimator that uses a normal kernel with 500 bootstrap repetitions. Because we are matching jointly on multiple dimensions, treatment and control samples may not have similar characteristics in all matched characteristics. Our results do not change if we use different subsets of these matching characteristics, and our results are robust to other matching procedures as well.[12]

[12] We find qualitatively similar results using the following alternative procedure. Specifically, for every firm-month observation that has a local media report and positive local advertising dollars, we generate a list of potential matches by picking local media reports of firms in the same city in the same month but with no local advertising dollars. For every potential match, we pick the one that has the closest size. We then compute differences in slant and the control variables between our sample and matched sample. We regress the difference in slant on the differences in the controls. (We note that including or excluding industry fixed effects makes no qualitative difference in the results.) The intercept in this model reflects the difference in slant that is due to having local

Table V

Propensity Score Matching Estimates: Local Advertising

Panel A reports the results of the propensity score matching estimates (Column 1) and the sample means of the treatment (Column 2) and control (Column 3) samples for the corresponding variables. The last column reports the p-values of the difference in means. Heteroskedasticity-robust standard errors are clustered by firm. Panel B reports the average treatment effects on *Slant*, where the treatment is defined as "Local Advertising > 0." *Slant* is the ratio of the number of negative words to the total number of words used in a composite story reported in month t multiplied by -100. Matching estimates use the Gaussian kernel with a fixed bandwidth of 0.10. Standard errors (in parentheses) are obtained using 500 bootstrap repetitions. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Propensity Score Model Estimates for Local Media Advertising Spending

	Dep. Variable = 1 if Local Advertising > 0	Treatment Sample Mean	Control Sample Mean	Pr (difference)
Log (market value)	0.286***	7.480	8.981	0.000
ROA	−0.559	0.037	0.052	0.487
Book leverage	−0.340	0.461	0.461	0.997
Analyst following	0.001	7.221	11.294	0.000
Inst. ownership (%)	−0.577***	0.663	0.639	0.276
Momentum	−0.082*	0.215	0.149	0.269
Idiosyncratic volatility	2.132***	0.119	0.109	0.414
Return	−0.043	0.012	0.005	0.319
Sales growth	−0.231	1.056	1.059	0.766
Local firm	−0.412***	0.059	0.066	0.671
Log (national advertising)	0.090***	7.982	11.995	0.000
Log (employees)	0.014	8.559	9.680	0.000
Employees/population	7.083	0.000	0.003	0.043
Number of segments	0.065***	2.875	3.248	0.317
Plain English	0.018	0.495	0.636	0.753
Media fixed effects	Included			
Industry fixed effects	Included			
Month fixed effects	Included			
Constant	Included			
Number of treated observations	14,918			
Number of untreated observations	13,460			

Panel B: Average Treatment Effect (ATE) on *Slant* for Local Media Advertising Spending

	ATE
Local media advertising spending (expenditure > 0 vs. = 0)	13.2%*** (0.042)

advertising or not. We find that the intercept is positive and statistically significant. We conclude that our matching results are not sensitive to these changes in the matching procedure, and, to the extent that our matching criteria are reasonable, the relation between local advertising and slant is not driven by the characteristics on which we matched.

We obtain similar results if we use neighborhood matching instead of Gaussian kernel.

C.2. A Quasi-Natural Experiment: Entry of Craigslist to the Local Advertising Market

As an alternative to our instrumental variables approach, we exploit a quasi-natural experiment presented by the entry in October 2003 of an important competitor, Craigslist, for newspaper advertising revenue. Copious anecdotal evidence suggests that Craigslist competes heavily for newspapers' noncorporate advertising revenues (i.e., classified ads). For example, according to the *New York Times*, *San Jose Mercury News's* revenue from help-wanted ads dropped from \$118 million to \$18 million between 2000 and 2005, as financially troubled dot-com companies in the Silicon Valley turned to "Internet firms like Craigslist.com and Monster.com to post job ads."[13]

We hypothesize that the entry of Craigslist to Pittsburgh and St. Louis made *Pittsburgh Gazette* and *St. Louis Post-Dispatch*, respectively, more susceptible to the pressures of slant-for-advertising. Using a Craigslist entry indicator and this indicator interacted with national and local media advertising expenditures, we test whether the sensitivity of slant for advertising at *Pittsburgh Gazette* and *St. Louis Post-Dispatch* increased after the expansion of Craigslist to Pittsburgh and St. Louis. Because we use articles written only by *Pittsburgh Gazette* and *St. Louis Post-Dispatch* in this test, the sample size drops substantially. We use the same variables and fixed effects as in Column 1 of Table IV (omitting the month fixed effects) and add a *Craigslist* dummy for post-October 2003 (i.e., whether Craigslist had entered the market yet) as well as interaction terms between *Craigslist* and our advertising measures. In the first specification, the coefficient on *Craigslist* is negative but statistically indistinguishable from zero. The statistically significant positive coefficient in the second specification indicates that in the environment after Craigslist is introduced, *Pittsburgh Gazette* and *St. Louis Post-Dispatch* increased their overall slant for all types of firms in the Pittsburgh and St. Louis areas, on average.

In the first column of Table VI, we find that the interaction variable Log *(Local Advertising)* $\times$ *Craigslist* is positive and statistically significant, indicating that, after the exogenous shock, these two newspapers increased their slant to those firms with more advertising dollars. In Column 2 of Table VI we keep the variables and fixed effects the same, but restrict the sample to articles written about firms that are headquartered close to (within 100 miles of) these two newspapers. In this specification we find the change in slant-for-advertising sensitivity is much stronger, consistent with the notion that local advertising causes slant in local media.

[13] Darlin, Damon, "In Boomtown, but Still Stuck on a Bubble," *New York Times*, March 20, 2006.

Table VI

Slant and the Effect of Competition from Craigslist

This table reports the results of the following pooled OLS regression: *Slant* = a + b × *Craigslist* + Log (*National Advertising*) + c × Log (*Local Advertising*) +d × Log (*National Advertising*) × *Craigslist* + e × Log (*Local Advertising*) × *Craigslist* + f × *Controls* + g × *Fixed Effects* + residual. The unit of analysis is the firm-month-media outlet. *Slant* is the ratio of the number of negative words to the total number of words used in a composite story reported by the *Pittsburgh Gazette* and the *St. Louis Post-Dispatch* in month *t* (multiplied by −100). *Craigslist* is an indicator variable that takes a value of one after October 2003. Heteroskedasticity-robust standard errors are clustered by firm and provided in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Slant: All Articles	*Slant*: Articles about Pittsburgh and St. Louis Firms Only
Craigslist	−0.013	0.380***
	(0.201)	(0.129)
Log (national advertising)	0.008	0.021
	(0.017)	(0.019)
Log (local advertising)	−0.007	−0.018
	(0.011)	(0.013)
Log (national advertising) × Craigslist	−0.005	−0.045***
	(0.016)	(0.012)
Log (local advertising) × Craigslist	0.020*	0.045***
	(0.011)	(0.016)
Local firm	0.391***	−0.205
	(0.149)	(0.129)
Log (market value)	0.099***	−0.362
	(0.042)	(0.252)
ROA	0.063	−0.141
	(0.386)	(0.646)
Book leverage	−0.324	−1.209
	(0.252)	(0.815)
Analyst following	0.002	−0.014
	(0.005)	(0.033)
Inst. ownership (%)	0.149	0.629
	(0.236)	(0.547)
Momentum	0.124*	0.045
	(0.064)	(0.157)
Idiosyncratic volatility	−1.494*	1.161
	(0.820)	(0.998)
Return	0.792***	0.451
	(0.368)	(0.345)
Sales growth	0.653	4.655***
	(0.615)	(1.201)
Log (employees)	−0.049	0.943***
	(0.074)	(0.340)
Employees/population	0.011	−81.576***
	(5.081)	(11.537)
Number of segments	0.004	0.056
	(0.021)	(0.057)
Plain English	−0.027	0.130***
	(0.021)	(0.045)

(continued)

Table VI—*Continued*

	Slant: All Articles	*Slant*: Articles about Pittsburgh and St. Louis Firms Only
Media fixed effects	Included	Included
Month fixed effects	Included	Included
Industry fixed effects	Included	Included
Constant	Included	Included
N	1,848	215
Adjusted-R^2	0.10	0.34

D. Returns, Firm Values, and Slant of National and Local Media

In this section, we analyze the effect of local media slant on firm values. Hong, Kubik, and Stein (2008) present evidence consistent with the notion that local investors are likely to be the marginal investors in the stock of less visible local firms. If local newspapers disseminate slanted information to local investors who are marginal investors, then local media slant may affect asset prices of stocks with more local investors. Based on HonG, Kubik, and Stein's (2008) predictions about which types of firms are most likely to be impacted by media slant, we hypothesize that small firms, firms held predominantly by individual investors, and firms with illiquid or highly volatile stock, low analyst following, or high dispersion of analyst forecasts are likely to be held by local investors.

We examine whether the qualitative content of media coverage affects asset valuation. Prior literature on media coverage and asset prices suggests that the quantity of media coverage matters. For instance, the investor recognition hypothesis of Merton (1987) says that stocks with lower investor recognition need to offer higher returns to compensate their holders for being imperfectly diversified, and Fang and Peress (2009) find empirical support for that hypothesis. To examine the incremental effect of local media slant—that is, the qualitative content of stories—on asset prices, it is important to control for previously documented media coverage effects on asset prices. We perform two types of tests, one based on stock returns and the other based on a firm's market value.

First, we test whether stocks with abnormal slant earn lower abnormal returns. We create a portfolio that is long in stocks with low *abnormal* local media slant in the previous month (informally, "negative local news content" stocks) and short in stocks with high *abnormal* local media slant in the previous month (informally, "positive local news content" stocks), where abnormal local media slant is calculated as local media slant minus national media slant. Fang and Peress (2009) show that a trading strategy that goes long in stocks that have media coverage and short in stocks that have no media coverage earns 3.00% per annum.

To identify the incremental impact of slant (the qualitative nature of stories) over coverage (the quantity of stories), we follow Fang and Peress (2009) and calculate a coverage factor (*NOCOV*) that is a zero net investment portfolio long in stocks with no coverage and short in stocks with coverage in any of the media outlets in our sample (national and local). However, whereas Fang and Peress (2009) construct their measure using mentions of firm names in national media (*New York Times, USA Today, Wall Street Journal,* and *Washington Post*), our measure uses media coverage in both local and national media outlets because our intent is to isolate the local media slant effect from the coverage effect at the national or the local level. In a four-factor model that includes factors for the excess return on the market, size, book-to-market, and momentum, the alpha for the *NOCOV* portfolio in our sample is 34 basis points per month (p-value = 0.036), which is similar in magnitude to the corresponding alpha in Fang and Peress (2009) of 39 basis points per month (p-value = 0.004). In this analysis we only include stocks headquartered around our sample of local media outlets. Both the long and the short positions are held for 1 month after portfolio formation, after which portfolios are rebalanced.

Next, we create a portfolio that is long stocks with low abnormal local media slant and short stocks with high abnormal local media slant. This portfolio generates 5.52% per year after controlling for other well-known risk factors that influence the cross section of stock returns and *NOCOV*, the coverage factor (Table VII, column 5). The alpha in the six-factor model is 46 basis points per month, compared to 50 basis points in the market model, indicating that 10% of the alpha relative to the market model is captured by other risk factors. Of the risk factors, the coefficient on the market risk premium is significant and negative in models (1) to (4), indicating that the zero investment strategy of buying low abnormal local media slant stocks and shorting high abnormal local media slant stocks has a negative exposure to the market. In model (5) we include the media coverage factor (*NOCOV*). The coefficient on media coverage is significant and positive, indicating that a zero investment media slant portfolio co-moves with *NOCOV*.

We use regressions to test the hypothesis that firm value is positively related to local media slant. Formally, we test the null hypothesis that local media slant does not affect Tobin's Q, controlling for national media slant, the quantity of media coverage in both the local and the national media, and other factors that theory suggests and prior empirical work has shown to have a significant effect on Tobin's Q.[14]

If any bias in local newspapers' coverage distorts information, this distortion may affect firm value through its impact on local investors' demand for the stock. Local media stories may simply reflect and report changes in firm fundamentals. Above, we show that *national* media slant is not associated with firm advertising expenditures. Our interpretation of this result is that national slant captures news that reflects changes in firm fundamentals, but is otherwise unrelated to firms' advertising expenditures. Because we are controlling for national media slant, we interpret local media slant as reflecting content

[14] Proxies for Tobin's Q are imperfect measures of firm value. Following others studying the determinants of firm value (e.g., Gompers, Ishii, and Metrick (2010) and Ferreira and Matos (2008)), we also use median regressions and use a transformation of Q: $-1/Q$. The results are similar using these alternative methods.

Table VII

Local Media-Slant Trading Profits

We regress the returns of a portfolio that longs stocks with low abnormal local media slant and shorts stocks with high abnormal local media slant on various asset pricing factors. Each month, stocks are sorted according to abnormal local media slant. Abnormal local media slant is calculated as the difference between local media slant and national media slant. We define high abnormal local media slant as having abnormal local media slant above the sample mean. Both the long and short positions are held for 1 month after portfolio formation. Portfolios are rebalanced monthly. We examine five different factor models: the market model, the Fama and French (1993) three-factor model, the Carhart (1997) four-factor model, a five-factor model that includes the Pástor and Stambaugh (2003) liquidity factor, and a six-factor model that includes a factor for no media coverage. *RM-RF*, *SMB*, *HML*, *UMD*, *LIQ*, and *NOCOV* are defined in Appendix C. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5
RM-RF	−0.1734***	−0.1934***	−0.1483*	−0.1483*	−0.0755
	(0.066)	(0.069)	(0.078)	(0.075)	(0.072)
SMB		0.0859	0.0564	0.0565	0.0278
		(0.085)	(0.090)	(0.091)	(0.085)
HML		−0.0013	−0.0340	−0.0339	−0.0351
		(0.098)	(0.093)	(0.120)	(0.109)
UMD			0.0639	0.0639	0.0338
			(0.052)	(0.048)	(0.054)
LIQ				−0.0001	−0.0180
				(0.052)	(0.041)
NOCOV					0.4184***
					(0.162)
Intercept	0.0050***	0.0046***	0.0046***	0.0046*	0.0046*
	(0.0024)	(0.0022)	(0.0021)	(0.0026)	(0.0023)
N	60	60	60	60	60
Adjusted-R^2	0.11	0.13	0.14	0.14	0.32

separate from fundamentals reported by the national media. The distortion in value, if any, caused by local media slant is likely to be larger for some firms and smaller for others. We examine cross-sectional variation in the effects of local media slant on firm value in the next section.

We define the following variables to capture different dimensions of the media's effect on a firm's market value: (1) annual national (or local) slant, which is calculated by taking the arithmetic average of monthly slant variables, and (2) annual national (or local) coverage, which is calculated by counting the number of stories about a company in national (or local) newspapers. Higher overall media coverage of a firm may lead to an increase in investor base through increased visibility, and therefore may increase firm's value (Fang and Peress (2009), Grullon, Kanatas, and Weston (2004), Miller (1977)). We use the number of actual stories rather than the number of our composite stories as a coverage variable to capture the intensity of news coverage. Nonetheless, using composite stories instead gives the same qualitative results. A firm with many news stories is likely to be more visible than a firm that has fewer stories.

Following Lang and Stulz (1994) and Rountree, Weston, and Allayanis (2008), we add control variables for the following factors: (1) size, measured as the log of total assets; (2) profitability, measured as ROA; (3) investment growth and intangible assets, measured using as proxies the ratio of capital expenditures to sales, the ratio of R&D to sales, and the ratio of advertising expenditures to sales; and (4) book leverage, measured using the ratio of long-term debt to total assets. In addition, we include the following factors suggested by the literature as a determinant of Tobin's Q: analyst following (Lang, Lins, and Miller (2003)), institutional investors (Badrinath, Gay, and Kale (1989)), and idiosyncratic volatility (Rountree, Weston, and Allayanis (2008)).

We also control for industry effects using two-digit SIC definitions and year fixed effects. Standard errors are clustered by firm. We take the logarithm of our dependent variable, *Tobin's Q*. This log transformation reduces the potential impact of outliers on our analysis and converts the interpretation of all logged independent variables to elasticities. (We note that, if we do not use logged variables, our results do not change qualitatively.) Table VIII, Column 1 presents the results of the OLS regression with *Tobin's Q* (logged) as the dependent variable and the variables described above as independent variables.

The coefficient on the national media slant is 0.064 and the coefficient on local media slant is 0.024. These coefficients mean that an increase in national or local media slant of one standard deviation (1.007 and 1.788, respectively) is associated with an increase in firm value of 6.64% and 4.29%, respectively. From this evidence we conclude that firm value is linked to media slant used in local and national media, and that local media have nontrivial effects on firm value. Thus, once we control for the fundamental information content of news (proxied by national media slant, which we presume to be unbiased), local media slant is still significant. In the second specification of Table VIII, we use a narrower industry definition (four-digit SIC code); our results do not change. Thus, although alternative stories, that is, the effect of firm fundamentals and visibility, find empirical support in the data, slant is still an economically and statistically significant determinant of firm value after controlling for these other factors.[15]

The results in Table VIII are also broadly consistent with Lang and Stulz (1994) and Rountree, Weston, and Allayanis (2008). In our findings, size is negatively related to Tobin's Q. Profitability and one of the intangible asset measures (*Advertising*) are positively and significantly correlated with value (Myers (1977), Smith and Watts (1992)). Book leverage and R&D expenditures are both insignificant. The negative association between idiosyncratic risk and firm value is consistent with findings in recent asset pricing literature claiming that idiosyncratic risk matters (see, for example, Green and Rydqvist (1997) and Goyal and Santa-Clara (2003)). Consistent with the arguments that link

[15] We note that we find similar results from propensity score matching tests in which the treated group comprises firms with above-median local media slant and the control group comprises firms with below-median local media slant. The results are reported in the Internet Appendix, available at http://www.afajof.org/supplements.asp.

Table VIII
Newspaper Slant and Firm Value

This table reports the results of the following pooled OLS regression: *Log of Tobin's Q* = a + b × *Annual Local Slant* + c × *Annual National Slant* + d × *Annual Local Coverage* + e × *Annual National Coverage* + f × *Controls* + g × *Fixed Effects* + residual. The unit of analysis is the firm-year. The regressors are defined in Appendix C. Heteroskedasticity-robust standard errors are clustered by firm and provided in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Ln(Q)	Ln(Q)
Annual local slant	0.024***	0.025***
	(0.009)	(0.006)
Annual national slant	0.064***	0.060***
	(0.014)	(0.011)
Annual local coverage	0.006	0.009
	(0.014)	(0.012)
Annual nat'l coverage	0.127***	0.103***
	(0.020)	(0.014)
Log (total assets)	−0.158***	−0.132***
	(0.016)	(0.010)
Return on assets	0.093	0.061***
	(0.100)	(0.027)
CAPX-to-sales	−0.724***	−0.633***
	(0.126)	(0.089)
Book leverage	0.262***	0.172***
	(0.085)	(0.039)
R&D-to-sales	0.318***	0.074
	(0.144)	(0.105)
Advertising-to-sales	0.72	0.298
	(0.515)	(0.266)
Analyst following	0.023***	0.021***
	(0.002)	(0.002)
Inst. ownership (%)	0.359***	0.368***
	(0.060)	(0.044)
Momentum	0.117***	0.112***
	(0.019)	(0.011)
Idiosyncratic volatility	−1.067***	−0.852***
	(0.197)	(0.143)
Sales growth	0.643***	0.563***
	(0.109)	(0.077)
Industry fixed effects	Included	No
Year fixed effects	Included	Included
Constant	Included	Included
Four-digit industry fixed effects	No	Included
N	3,020	3,020
Adjusted-R^2	0.54	0.65

analyst following and institutional investors to smoothed earnings, and with arguments that smoothed earnings lead to higher firm value, we find positive associations between analyst following, institutional investor holdings, and firm value.

Taken together, the returns tests of Table VII and the firm value tests of Table VIII suggest both a transitory and a persistent component of local media slant on valuations. The abnormal returns suggest that the market corrects for at least part of the mispricing induced by local media slant, that is, stock prices eventually reflect a build-up of information, perhaps gradually. If investors do not sufficiently discount the local media slant following such a correction, it is possible that they will buy in response to the next wave of local slant coming from media stories. In the absence of alternative information sources (e.g., if the firm has low analyst coverage) and correction mechanisms (e.g., if the firm has low institutional ownership or low liquidity), it is possible that local media slant may have persistent long-term effects on valuation as well as short-term price corrections.

E. Slant, Coverage, and Firm Value: Evidence from Sample Splits

Hong, Kubik, and Stein (2008) propose a theory that suggests that local investors are likely to be the marginal investors of less visible firms. If local investors use information in local newspapers in their investment decisions, then the effect that local media slant has on firm value may be more pronounced in such stocks. To study this possibility, in Table IX we repeat the analysis from Table VIII on subsamples of the data. We use the last specification from Table VIII in these tests; that is, we are controlling for local and national slant, local and national media coverage, and the other firm characteristic control variables and fixed effects. These subsample tests allow us to isolate the types of firms for which media slant has stronger effects on firm value. Our splits are based on high (above the median) compared to low (below the median) institutional ownership, size, analyst following, and analyst forecast dispersion. Although we find that the effect of national slant is comparable across both parts of most of the sample splits (the size split is a notable exception: national slant has double the effect in large firms as opposed to small), the effect of local slant is different across subsamples.

For firms whose ownership is dominated by institutional investors, there is no effect of local slant on firm value (the coefficient is very small in magnitude and statistically indistinguishable from zero). But for the firms whose ownership tends to be from individual investors, the effect of local slant is quite strong (coefficient = 0.026, t-statistic = 2.0). Similarly, the value of small firms is more susceptible to local media slant than is the value of large firms. For large firms, the impact of local slant on firm value is negligible. But for small firms, local slant has a statistically significant and economically meaningful effect (coefficient = 0.018, t-statistic = 1.66). Likewise, local slant has no impact on firm value for firms with high levels of analyst following, but has a strong effect for firms with little analyst following (coefficient = 0.027, t-statistic = 2.45). Local slant has no impact on firm value for firms with low levels of analyst forecast dispersion, but has a strong effect for firms with high forecast dispersion (coefficient = 0.024, t-statistic = 2.18).

Finally, we examine whether slant has a stronger effect on firm value in stocks that have large impediments to arbitrage. We split the sample by two

Table IX

Newspaper Slant, Coverage, and Firm Value: Subsample Analysis

This table reports results of the following pooled OLS regression for the subsamples described in the column headings: *Log of Tobin's* Q = a + b × *Annual Local Slant* + c × *Annual National Slant* + d × *Annual Local Coverage* + e × *Annual National Coverage* + f × *Controls* + g × *Fixed Effects* + residual. The unit of analysis is the firm-year. The regressors are defined in Appendix C. Heteroskedasticity-robust standard errors are clustered by firm and provided in parentheses. ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively.

	Institutional Ownership		Size		Analyst Following		Forecast Dispersion		Idiosyncratic Volatility		Liquidity	
	Low Ln(Q)	High Ln(Q)	Small Ln(Q)	Large Ln(Q)	Low Ln(Q)	High Ln(Q)	Low Ln(Q)	High Ln(Q)	Low Ln(Q)	High Ln(Q)	Low Ln(Q)	High Ln(Q)
Annual local slant	0.026***	0.012	0.018*	0.01	0.027***	0.005	0.015	0.024***	0.004	0.023***	0.028***	0.002
	(0.013)	(0.008)	(0.011)	(0.010)	(0.011)	(0.010)	(0.012)	(0.011)	(0.010)	(0.011)	(0.011)	(0.008)
Annual nat'l slant	0.053***	0.071***	0.051***	0.083***	0.055***	0.071***	0.070***	0.056***	0.076***	0.051***	0.072***	0.032***
	(0.020)	(0.016)	(0.017)	(0.020)	(0.017)	(0.021)	(0.021)	(0.016)	(0.018)	(0.018)	(0.021)	(0.015)
Annual local coverage	0.01	−0.002	−0.009	0.02	0.006	0.016	0.013	0.001	0.011	−0.036*	−0.023	0.006
	(0.020)	(0.016)	(0.021)	(0.016)	(0.018)	(0.019)	(0.017)	(0.017)	(0.016)	(0.021)	(0.022)	(0.014)
Annual nat'l coverage	0.159***	0.064***	0.083***	0.133***	0.137***	0.098***	0.091***	0.128***	0.117***	0.085***	0.164***	0.065***
	(0.028)	(0.024)	(0.024)	(0.030)	(0.024)	(0.031)	(0.031)	(0.022)	(0.028)	(0.024)	(0.027)	(0.024)
Control variables used in Table VIII	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Adjusted-R^2	0.56	0.59	0.54	0.74	0.49	0.69	0.72	0.51	0.72	0.50	0.46	0.76

commonly used arbitrage cost measures, namely, idiosyncratic volatility and illiquidity.[16] We measure idiosyncratic volatility by calculating the standard deviation of the market model residuals of equity returns in the prior year. Our illiquidity measure is the prior year's average daily Amihud (2002) illiquidity measure. We find that local slant has no effect on the value of firms that have low idiosyncratic volatility or that have high liquidity. However, the effect of local slant on firm value is statistically significant and economically meaningful for both high idiosyncratic volatility firms (coefficient = 0.023, t-statistic = 2.09) and highly illiquid firms (coefficient = 0.028, t-statistic = 2.54). Our interpretation of these sample split results is that local slant has a strong influence on unsophisticated traders (low institutional ownership firms), on firms that are relatively opaque (small firms, firms with little analyst coverage, and firms about which analysts disagree on earnings forecasts), and on firms that have higher arbitrage costs (high idiosyncratic risk and low liquidity).

IV. Conclusions and Implications

We find that, when local newspapers report news about local companies, they use fewer negative words compared to local media reporting about nonlocal companies. Furthermore, we show and quantify that this local media bias is more pronounced for companies with higher local advertising expenditures, whereas national media do not exhibit such a bias. We also provide empirical evidence that this bias is economically meaningful, as firm value is related to the slant of both national and local newspapers. This finding is important because prior finance literature has shown that people tend to invest disproportionately in the companies that they are geographically close to. Our conjecture is that local media slant may influence local investors, with home bias arising as a result.

Newspapers not only report events but also influence the public's perception of them. The unique contribution of our article is to show that the way the media report the news can be a function of their characteristics, such as proximity to a firm's headquarters and the firm's advertising expenditures. These results show that news content varies systematically with these characteristics and with conflicts of interest with respect to the news source. Consumers of news can use this information to discount news content accordingly.

Appendix A: Media Outlets from Which the Advertising Data Are Collected

TNS Media Intelligence (TNSMI) provides advertising expenditures at the brand level (as defined by TNSMI) across 11 advertising categories, as listed below.

[16] Shleifer and Vishny (1997) argue that the risk associated with the volatility of arbitrage returns deters arbitrage activity. Roll, Schwartz, and Subrahmanyam (2007) present empirical evidence that violation of no-arbitrage relations is related to liquidity because liquidity facilitates arbitrage.

1. **Network TV:** The Network TV service provides expenditure information for seven broadcast networks, ABC, CBS, FOX, NBC, PAX/I, MNTV, and CW.
2. **Cable TV:** The Cable TV service provides expenditure information for 52 cable television networks.
3. **Syndication TV:** The Syndication TV service provides expenditure information for major local markets. Syndication advertising scope is somewhere in between that for Network TV and that for Spot TV.
4. **Spot TV:** The Spot TV service provides expenditure information for major local markets.
5. **Magazine:** This service measures and compiles all expenditure data for Publishers Information Bureau, Inc. (PIB). Publications measured must be members of PIB, and currently include 350+ consumer magazines.
6. **Sunday Magazines:** The Sunday Magazines service measures five PIB Sunday Magazines: *New York Times Magazine*, *Los Angeles Times Magazine*, *Life Magazine*, *Parade*, and *USA Weekend*.
7. **National Newspapers:** This service measures advertising in three national newspapers: *New York Times*, *USA Today*, and *Wall Street Journal*.
8. **Newspapers:** Newspaper service measures advertising in over 250 daily and Sunday newspaper editions and Sunday magazines.
9. **Network Radio:** Network Radio includes the following networks: ABC, American Urban, Premier, and Westwood.
10. **National Spot Radio:** National Spot Radio service provides nationally placed spot radio data for approximately 4,000 stations in major local markets.
11. **Outdoor Advertising:** Outdoor Advertising service reports billboard expenditures in major local markets in the United States.

Appendix B: Newspapers and Their Locations

	Name of News Source	Zip Code
Local media		
	Boston Globe	02205
	Chicago Sun Times	60654
	Denver Post	80202
	Pittsburgh Post-Gazette	15222
	San Francisco Chronicle	94103
	Seattle Post-Intelligencer	98119
	St. Louis Post-Dispatch	63101
	Washington Post	22216
National media		
	Wall Street Journal	
	Dow Jones Newswire	

Appendix C: Variable Definitions

Advertising Expenditures: The cost of advertising media (radio, television, newspapers, periodicals) and promotional expenses in the most current annual financial statement reported prior to month t (COMPUSTAT data item 45).

Analyst Following: Number of earnings estimates at the end of the calendar year prior to month t (First Call database item Num_esti).

Annual Local (National) Slant: The average *Slant* in local (national) media for a given company in a given year.

Annual Local (National) Coverage: The number of times local (national) media report a story on a company in a given year.

Book Leverage: Ratio of book equity to total assets in the most current annual financial statement reported prior to month t (COMPUSTAT data item 60/Total assets).

Capital Expenditures (CAPX): Capital expenditures in the most current annual financial statement reported prior to month t (COMPUSTAT data item 128).

Return: Return of common stock in month t (CRSP monthly stock file).

Employees: Number of employees in all segments of the firm in the most current annual financial statement reported prior to month t (represented in thousands) (COMPUSTAT data item 29).

HML: The return on a portfolio of stocks with high book-to-market ratio, minus the return on a portfolio of stocks with low book-to-market ratio (Fama and French (1993)).

Idiosyncratic Risk: The standard deviation of monthly returns for the 2 years before month t.

Institutional Ownership (%): Number of shares owned by institutional investors divided by total number of outstanding shares at the end of the calendar year prior to month t (source: Thomson Financial).

LIQ: Traded liquidity factor constructed by Pástor and Stambaugh (2003).

Local Advertising Expense: The newspaper advertising figure in any of over 250 daily and Sunday newspaper editions and Sunday magazines in month t (source: TNS Media Intelligence).

Local Firm: If the distance between the location of a newspaper (see Appendix B) and the location of a firm's headquarters is less than 100 miles, then the firm is considered a local firm for the corresponding newspaper and the variable takes a value of one; the variable takes a value of zero otherwise.

Long-Term Debt: This variable measures the debt obligations due in more than 1 year or due after the current operating cycle and is measured using the most current annual financial statement reported prior to month t (COMPUSTAT data item 9).

Market Value of Equity (in thousands): This variable measures the market value of the firm at the end of the fiscal year in the most current annual financial statement reported prior to month t (multiplication of COMPUSTAT data item 25 and data item 199).

Momentum: Cumulative prior 12-month raw return prior to month t (source: CRSP monthly stock file).

National Advertising Expense: The newspaper advertising figure in three national newspapers: *New York Times, USA Today*, and *Wall Street Journal* in month t (source: TNS Media Intelligence).

NOCOV: Return to portfolio formed by longing stocks with no media coverage and shorting stocks with media coverage in any of the media outlets. The positions are held for 1 month after portfolio formation, after which portfolios are rebalanced.

Number of Common Shares Outstanding: Net number of all common shares outstanding at fiscal year-end (in millions) (COMPUSTAT data item 25).

Number of Segments: Number of business segments reported in the most current annual financial statement reported prior to month t.

Plain English: A standardized statistic that uses a series of six writing components specifically identified by the SEC to measure 10-K readability (see Loughran and McDonald (2010) for details). Measured using the most current annual financial statement reported prior to month t.

Population: Population of local newspaper's coverage area (100 miles around the local media's location). Measured using the most current population information prior to month t.

R&D Expenses: Spending on research and development expenses as reported by the firm and represented in millions (COMPUSTAT data item 46). Measured using the most current annual financial statement reported prior to month t.

RM-RF: Market return minus return on the U.S. Treasury bond.

ROA: Return on assets. Measured using the most current annual financial statement reported prior to month t. (COMPUSTAT data item 171 scaled by data item 6).

Sales: COMPUSTAT data item 12 in the most current annual financial statement reported before month t.

Sales Growth: The percentage change in sales compared to prior year's sales.

SMB: The return of a portfolio of small stocks minus the return of a portfolio of large stocks (Fama and French (1993)).

Slant: The ratio of the number of negative words to the total number of words used in a composite article reported in month t (multiplied by -100).

Tobin's Q: The firm's market-to-book ratio. Constructed as the ratio of the market value of equity and book value of long-term debt all divided by total assets. Measured using the most current annual financial statement reported prior to month t.

Total Assets: COMPUSTAT annual data item 6. Measured using the most current annual financial statement reported prior to month t.

UMD: Return on a portfolio of stocks with a high past 12-month return, minus the return on a portfolio of stocks with a low past 12-month return.

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