Media Coverage and Stock Returns on the London Stock Exchange, 1825–70

Walker, C. B., Ye, Q., & Turner, J. D. (2017). Media Coverage and Stock Returns on the London Stock Exchange, 1825–70. *Review of Finance*, *22*(4), 1605. https://doi.org/10.1093/rof/rfx016

Published in:
Review of Finance

Document Version:
Peer reviewed version

Queen's University Belfast - Research Portal:
Link to publication record in Queen's University Belfast Research Portal

Publisher rights
Copyright OUP 2017.
This work is made available online in accordance with the publisher's policies. Please refer to any applicable terms of use of the publisher.

General rights
Copyright for the publications made accessible via the Queen's University Belfast Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy
The Research Portal is Queen's institutional repository that provides access to Queen's research output. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact openaccess@qub.ac.uk.

Open Access
This research has been made openly available by Queen's academics and its Open Research team. We would love to hear how access to this research benefits you. – Share your feedback with us: http://go.qub.ac.uk/oa-feedback

Download date:09. Nov. 2026

Media Coverage and Stock Returns on the London Stock Exchange, 1825–70[*]

John D. Turner (Queen's University Belfast)
Qing Ye (Xi'an Jiaotong-Liverpool University)
Clive B. Walker (Queen's University Belfast)

Abstract
News media plays an important role in modern financial markets. In this paper, we analyse the role played by the news media in an historical financial market. Using *The Times's* coverage of companies listed on the London stock market between 1825 and 1870, we examine the determinants of media coverage in this era and whether media coverage affected returns. Our main finding is that a media effect mainly manifests itself after the mid-1840s and that the introduction of arm's-length ownership along with markedly increased market participation was the main reason for the emergence of this media effect.

JEL classifications: G12; N23

Keywords: Media, financial press, historical stock markets, advertising

[*] Acknowledgements: Thanks to the ESRC (RES-000-22-1391) for financial support. Thanks to Amit Goyal and an anonymous referee for their comments. Thanks to Graeme Acheson for his invaluable input to this project. Research assistance was provided by Lei Qu and Nadia Vanteeva.

1. Introduction

The UK capital market underwent a major transformation in the nineteenth-century, with large capital-intensive companies raising funds on the equity market from multiple arm's-length investors. This revolution resulted in a major increase in the number and value of companies listed, an increase in the number of stock exchanges operating outside London, and a substantial increase in the proportion of the UK's population investing in equities (Thomas, 1973; Michie, 1999, pp. 88–9; Grossman, 2002; Acheson et al., 2009; Rutterford, 2011). This expansion of the equity market was accompanied by an increase in the demand for corporate information, which was partially met by companies through annual shareholder meetings and annual reports. In addition, the financial press emerged during the nineteenth-century to meet the demand from arm's-length investors for independent corporate news (Preda, 2001; Taylor, 2012).

In this paper, we analyse the press coverage of companies listed on the London stock market in the nineteenth century. In particular, we examine the coverage by *The Times*, the leading newspaper of the day, of companies listed between 1825 and 1870. Firstly, we look at the determinants of press coverage to understand better what characteristics were associated with a greater probability of being covered by *The Times*. For example, we examine whether companies which advertised in *The Times* in one year were more likely to be covered in it the following year. Secondly, using monthly stock data collected from the London Stock Exchange's official price list, we test whether media coverage affected stock returns. The media may affect returns because companies not covered in the press need to pay a premium in the form of higher expected returns because they lack recognition

among investors (Merton, 1987; Fang and Peress, 2009) or because there are impediments-to-trade such as liquidity constraints or higher transaction costs which prevent traders from exploiting mispriced securities (Miller, 1977).

This paper is the first to examine the effect of the media on asset prices before and after the period when arm's-length and diffuse ownership emerged. We hypothesise that the media had no influence in the first half of our sample period because ownership was concentrated in the hands of a small number of shareholders, who would have had access to corporate information via local networks or through involvement in corporate governance. However, in the second half of our sample period, we hypothesise that media influenced relative returns between media and no-media stocks because they provided arm's-length investors with additional and valuable information for covered companies. Consequently, companies which were not covered by the media and which had diffuse share ownership had to offer a higher return than companies covered by the media due to a lack of information about the company.

An additional motivation for this paper is that it tests the relationship between media and finance in an environment where there were few other substitutes or confounding information providers such as analysts, city circulars, 24-hour television, or internet news sources.[2] In addition, equity investors at this time were individuals rather than well-informed institutional investors (Anderson and Cottrell 1975; Cheffins, 2008, p.190; Turner 2009; Campbell and Turner, 2012). This makes the nineteenth-century stock market a unique and relatively noiseless environment in which to test the media-finance hypothesis.

[2] Dyck and Zingales (2003) in their study highlight that the effect of media is more pronounced for companies with low analyst coverage.

A further feature of this era which makes this paper interesting is that, unlike with modern newspapers, advertisements were exclusively text based, making it easier to gather information on whether companies which were reported on in the newspaper had previously placed advertisements with the paper. We are not testing whether companies 'paid' for coverage or whether journalistic integrity was compromised — we simply wish to see if the two things are correlated, which might suggest some implicit and unspoken arrangement. Indeed, pressure for *The Times* to acquiesce to such arrangements may have grown during the century because of increased competition from aggressive parvenus in the newspaper market.

We find that media coverage was broadly comparable to modern markets, with *The Times* covering 58 per cent of our sample companies. Notably, the proportion of companies covered in a particular year increases in a non-linear fashion over time and the average number of articles written conditional on coverage also increased non-linearly over time. In terms of media coverage, the number of issued shares, company size and industry are all important determinants, suggesting that larger, widely-held companies were more likely to be covered by the press in the nineteenth-century. Interestingly, we also find that placing 10 advertisements in *The Times* is associated with an additional article for that company in the subsequent year.

With regards to the media effect, when we examined the whole sample period and the first half of the sample period, the evidence that returns vary with media coverage is rather weak. However, in the second half of our sample period, we find that companies without coverage have statistically significant higher returns, even after adjusting for market and company-specific risk factors. This is consistent with our hypothesis that a media effect would only manifest itself after the mid-1840s, when participation in the stock market increased dramatically and when arm’s-length

ownership began to emerge. In an attempt to corroborate this hypothesis, we test whether stocks with greater participation and arm's-length ownership experience a larger media effect. Using the number of shares issued as a proxy for participation and arm's-length ownership, we find some evidence supporting our hypothesis. We also discover that in times when the level of ownership diffusion is greater for media relative to no-media stocks, the media effect is larger. This is consistent with our hypothesis that ownership diffusion is closely associated with the media effect. In terms of the mechanism, our evidence suggests that no-media stocks have to pay a return premium because they lack investor recognition and not because of impediments to trade, which supports Merton (1987) rather than Miller (1977).

This study contributes to the growing literature which examines the relationship between media and financial markets. One branch of this literature looks at whether sentiment, as measured by the optimism / pessimism of newspaper reporting, affects asset prices (Tetlock, 2007; Tetlock et al., 2008; Engelberg et al., 2012; García, 2013; Soo, 2013; Walker, 2014; Manela and Moreira, 2015). The other branch of this literature focuses on the informational role played by news media and therefore concentrates on the extent of coverage (Fang and Peress, 2009; Cumming et al., 2016; Ferguson et al., 2015). Our paper is most closely related to this second branch of the literature and our findings are similar to the seminal contribution of Fang and Peress (2009), who identify a media effect on NYSE and NASDAQ stocks in the period 1993–2002. However, our unique contribution is that we identify that the media effect only emerges when stock ownership becomes diffuse and arm's-length.

Our paper also augments the literature which looks at the informational role of media in historical contexts such as its effect on public health (Costa and Kahn, 2015), financial 'bubbles' (Bhattacharya et al., 2009; Campbell et al., 2012) and

corporate scandals (Taylor, 2012). We augment these papers by looking at the informational role of media on the equity market for the middle two quarters of the nineteenth century. Bignon and Miscio (2010) examine the effect of payments made by French newspapers both directly through advertising and indirectly through investment banks placing laudatory articles in a newspaper's editorial section (so-called *réclames*) on media coverage. They find that companies paying for coverage were more likely to be covered. We also find that companies that advertised in *The Times* were more likely to be covered.

The next section examines the institutional and historical setting of the study and develops our hypotheses. Section three describes our media and stock price data. Section four examines the determinants of media coverage. Section five asks whether there was a media effect in this historical market and tests the impediments-to-trade and investor-recognition hypotheses regarding the mechanism by which media affects returns. Section six tests our explanation as to why we only find a media effect in the second half of our sample period. Section seven is a brief summary and conclusion.

2. The Development of the Equity Market and the Financial Press

The UK equity market grew substantially during the middle two quarters of the nineteenth-century. In terms of issues, the market grew by circa 40 per cent between 1825 and 1870, but in terms of market capitalisation to GDP, it trebled in size over this same time period (Acheson et al., 2009, pp. 1115–7). This growth was driven on the demand side by a growing number of middle-class investors looking for returns in excess of those provided by government bonds (Jefferys, 1977). On the supply side, it was stimulated by the liberalisation of UK incorporation law (Shannon, 1933; Cottrell, 1980; Taylor, 2006) and the rise of capital-intensive infrastructure projects

such as railways, gas-light and coke companies, waterworks, and telegraph companies (Acheson et al., 2009).

There was a marked change in the ownership of public companies before and after the 1840s. Prior to the 1840s, shareholder numbers in most companies were in the low hundreds and shareholders typically lived close to the company they were investing in (Acheson et al., 2015). For example, canals, which were the largest companies in terms of market capitalisation in the pre-1840 era, fitted this characterisation (Ward, 1974). From the mid-1840s onwards, there was a notable change in ownership of public companies which accompanied their growth in scale and their national, rather than regional, reach. This was true for the railway industry, which experienced a substantial surge in growth in the mid-1840s. For example, a Parliamentary survey of railway shareholders in 1855 found that there were 166,125 railway shareholdings (Parliamentary Papers, 1856). Three railway companies had in excess of 10,000 shareholders, a further three had 5,000 shareholders or more, and a further 10 had more than 2,000 shareholders (Parliamentary Papers, 1856). But the growth in shareholder numbers was not just limited to railways and new sectors. Banks grew in size and with it their shareholder bases. For example, the number of UK bank shareholdings grew from 23,941 in 1844 to 40,583 in 1869. Only one bank had more than 1,000 shareholders in 1844, yet by 1869, 12 banks had in excess of 1,000 shareholders.[3]

Consequently, from the mid-1840s onwards, the UK experienced the rise of the arm's-length and diffuse corporate ownership, which developed further in the last quarter of the nineteenth-century, with the majority of large public companies at the beginning of the twentieth-century being characterised by this type of ownership

[3] *Banking Almanac and Yearbook*, 1844 and 1870.

(Foreman-Peck and Hannah, 2012). The rise of this type of ownership from the mid-1840s onwards resulted in a change in investors' access to company information. When ownership was geographically concentrated and there were a low number of shareholders, information on performance was relatively easy to obtain via direct participation in governance, local knowledge, and social networks which contained company directors. However, the rise of dispersed and arm's-length ownership implied that investors required alternative information sources on company performance. Given that institutional investors did not participate in the equity market in this era and that there was no analyst coverage of stocks, investors could not rely on information being collected, analysed and disseminated by these sources. In addition, UK public companies did not face formal reporting requirements until the late-1860s (Watts and Zimmerman, 1983; Baskin and Miranti, 1997, p. 185) and it was not until the early twentieth-century that companies listed on the London Stock Exchange were required to distribute their annual financial accounts to shareholders (Cheffins, 2008, p. 95).

Into this information lacuna stepped the press. *The Times* had covered financial and money markets from well before the 1840s, but the 1840s marked the beginning of widespread press coverage of equity markets by the news media (Preda, 2001; Taylor, 2012). This coverage came in two forms — expanded coverage by newspapers like *The Times* and the rise of weekly railway periodicals, e.g., *Railway Times* (est. 1837), *Herepath's Railway Journal* (est. 1835), and the *Railway Record* (est. 1844). These periodicals carried share price tables, editorial commentary, company financial reports, reports of company AGMs, and advertisements from railway promoters.

The credibility of the information provider is also something which matters for investors. For example, Dyck and Zingales (2003) in their study highlight that the effect of media is more pronounced the more credible is the news source. The railway press was far from impartial — it acted as a cheerleader for railway companies and talked up railway shares during the Railway Mania promotional boom of the mid-1840s, partially due to the large advertising revenue generated for it by railway companies and promoters (Kostal, 1994, p.37; Campbell et al., 2012). *The Times*, on the other hand, was a credible source which was perceived to be independent of the companies it was reporting on. For example, it was extremely critical of speculation in railway shares and it published a highly critical exposé a few weeks before the railway 'bubble' crashed (Tuck, 1846; Simmons, 1978, p.40; Campbell et al., 2012).

In terms of our hypotheses, the context described above suggests that we should expect less press coverage of the equity market before the large expansion of arm's-length ownership in the 1840s. In addition, due to concentrated ownership, most of the investors were aware and well informed about the companies that they were investing in, there should have been no informational advantage to investors of press reporting on companies and there should have been no effect on the shares of companies which were covered by the press. In contrast, after the expansion of arm's-length ownership, we would expect greater coverage of companies because newspaper readers who were investing in equities valued this. We also hypothesise that by increasing the information available to investors, the press helped to diminish the problem of "investor recognition" for covered stocks, resulting in lower returns for such stocks (Fang and Peress, 2009).

In terms of advertising, we hypothesise that companies which advertised in *The Times* were more likely to be subsequently covered by the newspaper. This could

have occurred for several reasons. First, companies which advertise are more likely to have greater public recognition and therefore be covered by the press. Second, the placing of adverts may have simply brought companies to the attention of *The Times's* reporters. Thirdly, as with the case of the French press discussed by Bignon and Miscio (2010), companies may have been indirectly paying for coverage. However, this is not to suggest that this revenue stream influenced the content of reports in *The Times*. Indeed, it demonstrated this in 1845 when it issued several highly critical reports concerning the railway sector, which was a major source of advertising revenue for the paper.

3. Stock and Media Data

Our stock data was obtained from the *Course of the Exchange* (*COE*), a bi-weekly list which was regarded as the official price list for the London Stock Exchange (LSE). For listed securities, the *COE* reported dividends, number of issued shares, nominal and paid-up values of stock, and stock prices. The stock prices reported in the official list are usually the transaction prices from the previous day (Ye and Turner, 2014). We use Ye and Turner's (2014) hand-collected data for each common stock listed in the *COE* for every month between March 1825 and December 1870.

<INSERT TABLE I>

Our dataset contains 102,408 observations, consisting of stocks issued by 580 companies. Panel A of Table I contains the summary statistics for our dataset, which reveals that stocks in this era had high denominations and that the mean market capitalisation was £650,000. Our data comprises stocks from 13 industries, including banks, bridges, mining, canals, docks, gas-light and coke, insurance, roads, railways, telegraphs, waterworks, and miscellaneous industrial and commercial companies. If

media coverage is biased towards particular industries, this will be identified in subsequent analysis. In addition, to account for this possibility, industry controls are used when assessing the impact of media coverage on stock returns.

From Panels B and C of Table I, we see that there were notable differences in the characteristics of stocks that did and did not appear in *The Times*. First, media stocks issued a far greater number of shares: the mean number of shares issued by companies covered by the media being 32,620, which was nearly twice that issued by companies not covered by the media. Second, the average size of media stock was much greater than no-media stock, with mean market capitalisation of £1.42 million and £0.46 million respectively. Both of these differences are consistent with our hypothesis that the media played an important information role for investors in companies which had arm's-length and diffuse ownership.

Figure 1 demonstrates the step change which took place in the UK equity market in the mid-1840s. Prior to the mid-1840s, there had not been much growth in market capitalisation or in the number of issued shares on the market. This changed after the mid-1840s, largely due to the arrival of large companies such as the railways rather than a substantial increase in the number of companies on the market (Campbell, 2012). The average number of shares issued by public companies increased from 9,502 to 27,568 after 1845 and the issuance of a greater number of shares was coupled with a decrease in the nominal value of shares by 20.2 per cent. These changes capture an important market development — a significant increase in the number of shares available at lower denominations suggests that shares were held by a greater numbers of investors. The mid-1840s, therefore, marks the watershed moment in the development of diffuse and arm's-length corporate ownership in the UK (Acheson et al., 2015).

<INSERT FIGURE 1>

Our media data are sourced from *The Times* via *The Times Digital Archive* (*TDA*). *The Times* was by far the most significant newspaper in terms of influence during our sample period (Brown, 1985, pp. 27–9, 50; Simmons, 1991; Campbell et al., 2012). It also had by far the widest circulation of any daily UK newspaper, with three to four times the circulation of its nearest rival (Parliamentary Papers, 1852; Campbell et al., 2012, p. 464). Notably, our sample period predates the specialised daily financial press by nearly two decades, with the *Financial News* and *Financial Times* first published in 1884 and 1888 respectively. Although the *Financial Times* sought to provide cutting insight and commentary from its foundation, the market reporting in *The Times* and other newspapers tended "to be fairly staid…[and] desperately dull" (Kynaston, 1988, p.3). This is immaterial for our analysis because we are simply interested in whether the media reported on companies.

Unlike modern newspaper databases, the *TDA* enables users to identify advertisements through search filters. This has a twofold advantage for our study. First, we are able to see if any correlation exists between advertisements by companies and subsequent coverage in *The Times*. Second, we are able to remove advertisements from our definition of media coverage to ensure that our findings are robust.

Articles were identified using unique search filters for each of the 580 companies. Searches for company names were carried out for the period that they were listed in the *COE* and the search results on the *TDA* were set to exclude cases where a company was simply reported in a stock price table in the newspaper. An additional industry filter was occasionally used if there was ambiguity that articles were irrelevant. The number of articles published in each section of the newspaper for

each year that the company was active was then recorded. The total number of articles published over the sample period was 6,995.

Table II shows that across the entire sample period, 57 per cent of stocks were covered by *The Times*. However, annual coverage rates in *The Times* varied between 5 and 42 per cent and of the companies that were covered (hereafter 'media stock'). The mean and median number of articles published were 20.95 and 5.0, which indicates that there were some companies with substantial amounts of press coverage. Remarkably, Fang and Peress (2009) find that *The New York Times* covered 57 per cent of all companies listed on the New York Stock Exchange between 1993 and 2002. However, the mean and median number of articles published for media stock in their sample were only 4.2 and 2.0 respectively, whilst annual coverage rates were substantially higher than in our sample, ranging from 41 to 62 per cent.

<INSERT TABLE II>

The trend in Table II is also interesting because it is consistent with our hypothesis that after the expansion of arm's-length ownership, there is greater coverage of companies in terms of the number of articles per covered company, with the average for the 1848–70 period being 20.46, compared to 10.56 for the first half of our sample period. There is also a noticeable step change in the annual fraction of companies covered after the mid-1840s. In the period 1825–47, the average annual fraction of companies covered in *The Times* was 0.15, whereas in the period 1848–70, the corresponding figure was 0.26.

Table II also provides details on how the relative importance of advertising changed over our sample period. From 1825 until 1847, 22 per cent of all media coverage was advertisements, but in the period 1848 until 1870, this nearly halves to 12 per cent.

Table III shows media coverage by industry and by section of the newspaper, i.e., advertisements and newspaper reporting on companies. 57.24 per cent of sample companies were covered in *The Times*, with 32.41 per cent of companies having advertisements and 47.07 per cent of companies being reported on by the newspaper. Notably, 10.17 per cent of our sample only appeared in adverts and were not reported on by *The Times*.

<INSERT TABLE III>

In terms of industry coverage, Table III shows that of the large industrial sectors, railways were by some distance the most covered industry, with 87.69 per cent of railways in our sample being reported on by *The Times*. This is consistent with our hypothesis that press coverage is greater for companies with more diffuse and arm's-length ownership. Canals and British mines are two large sectors with very little press coverage. This is also consistent with our hypothesis as canals and British mines were typically owned by investors living in proximity to the canals and mines, and were not characterised by diffuse and arm's-length ownership (Bartlett, 1850; Ward, 1974; Burke and Richardson, 1981). Investors in gas-light and coke companies typically came from the towns and cities in which they were located (Falkus, 1967), which is consistent with the relatively low coverage of this sector by *The Times*. Insurance companies have relatively a lot of coverage in *The Times*, but this is somewhat unsurprising due to the large number of advertisements placed by this sector. About half of the banks in the sample were covered by *The Times*. Many banks in our sample had diffuse ownership, but several were small provincial banks dominated by a local shareholder base (Turner, 2009; Newton, 2010), which explains the relatively low coverage of this sector. The miscellaneous sector contains industrial and commercial companies, many of which were established after the liberalisation of

incorporation law in the mid-1850s. The relatively high press coverage of this sector is consistent with recent evidence which suggests that many of these companies had diffuse and arm's-length ownership (Acheson et al., 2015).

4. The Determinants of Media Coverage

In this section, we examine the factors that determined coverage. In particular, we are interested in whether the diffusion of share ownership and advertising are covariates of media coverage. One of our main hypotheses is that diffuse ownership meant that there was a greater need for media coverage. We also hypothesise that companies which advertised in *The Times* were more likely to be subsequently reported on by the paper.

In order to assess the relationships between advertising and media reporting and share ownership and media reporting, we aggregated media coverage, number of shares issued, and advertisements to an annual level, and used the last observed values of the various company and stock characteristics for the given year. Lagged explanatory variables are used so that advertisements predate media reporting. To ensure that our variables are not capturing any company-specific characteristics, we controlled for observed variables such as industry, return, nominal value and market capitalisation. We used a two-stage Generalised Method of Moments (GMM) Estimation (Hansen, 1982), which is conceptually equivalent to Fama-Macbeth (1973) regressions. The findings are robust to using other approaches such as Rogers (1993) or Newey-West (1987) robust standard errors. Our regression specification is as follows:

$$Media_{it} = \gamma_{0t} + \gamma_1 Ads_{it-1} + \gamma_2 NShares + \gamma_3 X_{it-1} + \varepsilon_t \qquad (1)$$

where $Media_{it}$ is the number of articles on company i reported on by *The Times* in year t, Ads_{it-1} is the number of advertisements placed by company i in *The Times* in year t-1; $NShares_{it-1}$ is the number of issued shares of company i in year t-1; and X_{it-1} is a matrix of control variables, with controls for industry, number of shares, return, nominal value, and market capitalisation.

Table IV shows a significant and positive relationship between advertisements placed in *The Times* and coverage in the main body of the newspaper over the subsequent year. Results suggest that placing 10 advertisements in one year is associated with an additional article for that company in the following year. This finding is robust to excluding railway companies and using different time periods, with the advertising effect increasing in the post-1850 period.

<INSERT TABLE IV>

The coefficient on the NShares variable in Table IV variable indicates that the greater the number of issued shares which a company had, the greater the likelihood that it was covered in the press. This finding is consistent with our hypothesis that companies with more diffuse and arm's-length ownership were more likely to be covered in *The Times*.

The results in Table IV suggest that larger companies, as proxied by the market capitalisation variable, were more likely to be covered by the media, which is a similar finding to that of Bignon and Miscio (2010). Notably, a stock's absolute return is not a covariate of media coverage, suggesting that the media were not more likely to report on stocks which were performing particularly well or poorly.

The above results suggest that the media is responding to the market need for additional information on those companies with diffuse ownership. This additional information could encourage more investors to buy a stock and enable companies to

further increase their share ownership. To test if there is feedback between media coverage and share ownership, we assessed the relationship between number of shares and lagged media coverage in a GMM framework, controlling for additional variables as per Equation (1). We find that there is a significant relationship between previous media coverage and present number of shares on the market. Thus, there appears to be a feedback between media coverage and market participation.

To understand the factors that precede the first occurrence of media coverage for companies, we analysed the time series of annual company data. We find that there is little time-series variation in the number of shares at the company level, with changes occurring in only 2.87 per cent of observations. The likelihood of this preceding the start of media coverage is very small — in only 0.10 per cent of observations was there a change in the number of shares followed by the first occurrence of media coverage within the next year. Other corporate policy decisions were similarly unlikely to be followed by initial media coverage e.g., in only 0.17 per cent of observations was there a change in dividends followed by the first occurrence of media coverage.

5. Did Media Affect Returns?

If the press is increasing the information available to investors, it reduces the investor recognition problem for covered stocks, which should in turn result in lower returns for such stocks relative to stocks which are not covered (Fang and Peress, 2009).

We initially used a broad definition of media coverage which views media coverage as advertisements plus media reports on companies. We do this for a theoretical and a practical reason. The theoretical reason for doing this is that advertisements in newspapers may have aided investor recognition just as easily as

press reporting on companies and the only difference was that advertisements were simply coverage which was paid for by the company. The practical reason is that prior to 1846, there are insufficient companies with media coverage that are not advertisements to facilitate a statistically-robust portfolio analysis. However, for the sake of robustness, we excluded advertisements from our definition of media coverage and our conclusions do not differ.

To test if media coverage affected returns at the cross-sectional level, we formed portfolios of stocks based on media coverage in the prior year. At the beginning of each year, we divided our sample into companies with media coverage and those without. The monthly performance of each portfolio is then assessed over the next 12 months.[4] This process is repeated for each of the years between 1826 and 1870. We then calculated the differential returns between the two portfolios during our sample period and this is our measure for the media effect.

Figure 2 shows the 24-month moving average of differential returns between the media and no-media portfolios between 1826 and 1870. Although there appears to be cyclicality in the media effect, the long-run trend demonstrates that higher returns gave way to lower returns from the late-1840s for companies covered by the media. For example, the value-weighted media portfolio outperforms the no-media portfolio by 8.4 basis points per month between 1826 and mid-1848. However, it underperforms the no-media portfolio by 29.4 basis points per month post mid-1848.

<INSERT FIGURE 2>

[4] To reduce the influence of outlier returns, we winsorised monthly stock returns at the 0.5 and 99.5 percentiles.

In Table V we report the statistical significance of the media effect for the whole sample period as well as in the two sub-periods.[5] In addition, in order to examine whether the differential returns between media and no media portfolios can be attributed to different level of risks, we calculated the risk-adjusted differential returns (i.e., alphas for the portfolio that long media stocks and short no-media stocks), using three classic asset pricing models: CAPM, Fama-French three-factor model and Carhart four-factor model. The SMB and HML factors are constructed following Fama and French (1993) and the WML factor is constructed following Carhart (1997).[6] In order to control for a possible bias in the estimation of the risk loadings due to the thin-trading problem, we report the results for the risk-adjusted returns where the bias is corrected using Dimson's (1979) method.

[5] For the sake of brevity, we present results for the first and second half of our sample only with June/July 1848 being the mid-point. It should be noted that the hypothesized change to the media effect is not likely to be identifiable to a single date, and we have used alternative break-points with qualitatively similar results.

[6] We construct Small and Big portfolios using the median market capitalisation of stocks at December each year as the breakpoint. As book-to-market data is not available during our sample period, we construct High, Medium, and Low portfolios using the 30th and the 70th percentiles of the dividend-price ratio at December as the breakpoints. The dividend price ratio is calculated as the sum of dividend paid in the year divided by the end-of-year stock price. From these, we get six intersection portfolios, namely, Small High, Small Medium, Small Low, Big High, Big Medium, and Big Low. SMB is the average return on the three small portfolios minus the average return on the three big portfolios. HML is the average return on the two high portfolios minus the average return on the two low portfolios. Zero-yielding stocks are excluded when constructing the SMB and HML factors. To construct the WML factor, at each month t, we construct Winner and Loser portfolios based on the 30th and 70th breakpoint of the eleven-month returns between months t-1 and t-12. The difference between the equally-weighted returns from the Winner portfolio and the Loser portfolio is our WML factor.

Following Ye and Turner (2014), we used three different treatments for missing stock prices. Firstly, we assumed missing prices were the same as the last available price. We call this the *zero return method*. Second, in the *listwise method*, observations with missing prices are deleted and all calculations only use the remaining observations. Finally, in the *mean return method*, we filled in the total returns of the observations when prices were missing with the mean returns of the same stock over the sample period.

When stocks were delisted, they disappear from our dataset. When delisting was the result of bankruptcy rather than name changes, mergers or listing migrations to regional exchanges, shareholders potentially suffered large losses, which are not captured. The difficulty in identifying the cause of delisting is highlighted by Ye and Turner (2014). If the reason for delisting is unknown, we assume that the reason for delisting was bankruptcy. We assigned a -40 per cent return to all stocks on the month following delisting, following the assumption made by Ye and Turner (2014). As the delisting adjustment does not affect our main findings, we focus our discussion on the results with no adjustment for delisting bias unless otherwise stated.

<INSERT TABLE V>

Table V shows that, with the exception of the listwise method, there is no statistical difference in return differentials when we focus on the overall period. However, consistent with our hypothesis, we see that in the first half of our sample period, there is little evidence of a media effect, whereas in the second half of our sample period, the results in Table V show that companies with media coverage tended to have much lower returns. Furthermore, the differential returns in the second half of our sample period become even more negative after adjusting for the different level of risks in the media and no-media portfolios. Between 1848 and 1870, the

magnitudes of the risk-adjusted differential returns are in the range 0.311 to 0.422. The scale of the media effect is comparable to modern markets, where Fang and Peress (2009) found that no-media stocks outperform media stocks by about 3.0 per cent on an annual basis after adjusting for known risk factors. We find the media effect for the 1848–70 period is slightly higher at 3.79 to 5.18 per cent.[7]

We also analysed the performance as well as the risk loadings of media and no-media portfolios separately. The results are reported in Table VI.[8] Consistent with Fang and Peress (2009), the media effect is more likely to be driven by companies not covered by the media having abnormally high returns rather than media covered companies having abnormally low returns. For example, the alphas for the no-media portfolios are significantly positive but those for the media portfolios are not negative. In the value-weighted portfolio returns, alphas for the media portfolio are not significantly different from zero, suggesting that they can be justified by their risk structure. The risk loadings reported in Table VI suggest that, relative to the media covered stocks, the no-media stocks tend to have lower market risk, greater SMB and WML loadings, and smaller HML loadings. Apart from the loadings on the HML factor, these results are also consistent with the results in Fang and Peress (2009).

<INSERT TABLE VI>

[7] Because railways were the dominant sector on the equity market after the mid-1840s and because the Railway Mania of the mid-1840s may distort our findings, we checked whether our findings are robust to their exclusion. For the sake of robustness, we also looked at the difference between media and no-media portfolios using a narrower definition of media coverage, i.e., one which excludes advertisements. Results are qualitatively similar when excluding railway companies or advertisements; a media effect emerges in the second half of our sample, ranging from 0.190 to 0.375 per cent per month.

[8] In the following sections, we only report results from the listwise method for space reasons.

There are two possible mechanisms through which the media effect may emerge and persist: Merton's (1987) investor recognition mechanism and Miller's (1977) impediments-to-trade mechanism. In the investor recognition hypothesis, stocks with lower investor recognition need to offer higher returns to compensate their holders for being imperfectly diversified. Because media coverage can broaden investors' recognition, it reduces the returns on covered stocks relative to non-covered stocks. To investigate this hypothesis, we double sorted companies by media coverage and several company characteristics.[9] As pointed out by Chichernea et al. (2015), neglected stocks are, in general, smaller and have higher idiosyncratic volatility relative to more visible stocks. Therefore, for each year, we double sorted companies based on their prior year's media coverage and their size or idiosyncratic volatility in the year. The size of a stock was proxied by its market capitalisation. The idiosyncratic volatility for each stock was constructed following Ang et al. (2006).[10] In Panels A and B of Table VII, we report the monthly raw and risk-adjusted differential returns from the double-sorted portfolios. We find that the media effects are much stronger for smaller stocks and for stocks with higher idiosyncratic volatility. These results suggest that media coverage among less recognised companies has a greater effect on stock returns. This is consistent with Merton's (1987) investor recognition hypothesis.

<INSERT TABLE VII>

[9] The break point for constructing portfolios with different level of company characteristics is always the 50th percentile.

[10] The idiosyncratic risk for a stock in year t is defined as the standard deviation of the residual in the regression of this stock's return against the factors suggested by the Fama and French three-factor model.

If the premium for no-media stocks represents mispricing, arbitrageurs can eliminate the premium only if there are no significant impediments-to-trade (Miller, 1977). Thus, it may be that no-media stocks have greater trading impediments, which means that the mispricing cannot be exploited by traders and that the media effect does not disappear. We assessed this possibility by double sorting portfolios by media coverage and two measures of trading impediments. First, we used a stock's nominal value to approximate the impediments to trade. Low nominal value stocks in this era had higher trading costs and thus greater impediments-to-trade (Acheson et al., 2012, p.870). Our second measure of trading impediments is stock liquidity. Based on Lesmond et al. (1999), we used the zero-return measure of liquidity for each year for each stock by dividing the number of months with non-zero return by the number of months in the year. Panels C and D in Table VII show that in our sample, the media effect is stronger for low-trading-impediments stocks rather than high-trading-impediments stocks using both the zero-return liquidity and nominal value proxies. These findings are inconsistent with the impediments-to-trade hypothesis.[11]

6. Ownership Diffusion and Media Effect

The results in Table V suggest that the media effect emerged in the second half of the sample period. We argue that this media effect appears at this point in time because corporate ownership in the UK had become diffuse and arm's-length and therefore the role that media played in increasing investor recognition for covered stocks became more important in influencing the relative return between media and no-media stocks. In order to obtain corroborating evidence for this conjecture, we conducted two types

[11] As per previous results, we make adjustments for delisting, exclude railway companies and exclude advertisements. Our findings are robust to these changes.

of analysis. Firstly, we double sorted our sample stocks based on media coverage and ownership diffusion in order to investigate whether the media effect has any cross-sectional relation with a stock's degree of ownership diffusion. If diffuse ownership is a necessary condition for the emergence of the media effect, we should observe that the media effect only exists or is much stronger in stocks with high ownership diffusion. Secondly, in a time-series regression analysis, we tested whether media stocks' relative degree of diffuse ownership can explain away the media effect.

Unfortunately, systematic evidence on corporate ownership structure or number of shareholders in this era is sporadic (Acheson et al., 2015). Instead, we have to rely on a proxy for ownership structure. The proxy we used is the number of shares companies issued because this gives some idea about how many shareholders the company wished to hold their stock and the diffuseness of ownership.

In order to show that shares outstanding is associated with diffuse ownership, we collected data on the number shareholders for all English banks in 1850, 1860 and 1870 from the relevant issue of the *Banking Almanac and Yearbook*. Data for the number of railway shareholders is only available for 1855 from a special report commissioned by the UK Parliament (Parliamentary Papers, 1856). Companies which registered after 1856 had to produce an annual list of shareholders under UK company legislation. Fortunately, some of these lists have been preserved in the National Archives in London. We obtained pre-1870 ownership records for 43 companies traded on the London stock exchange. Notably, these records permit us to calculate ownership dispersion as well as the number of shareholders.

In terms of English banks in 1850, 1860, and 1870, the correlation between the number of issued shares and number of shareholders is 0.72, 0.61 and 0.69 respectively. For the 50 railways in our sample in 1855, the correlation between

issued shares and number of shareholders is 0.75. For the miscellaneous 43 companies, the correlation coefficient was 0.84. In addition, the correlation between the capital ownership of the top five and ten shareholders and number of issued shares was -0.46 and -0.50 respectively, suggesting that diffuse ownership structure was correlated with a greater number of issued shares.

In Table VIII, where we display the returns from the four portfolios double sorted on ownership diffusion and media coverage, we see that the media effect only exists in stocks with high ownership diffusion. This suggests that when a stock's ownership diffusion is low, media coverage has no effect on the stock's return. By contrast, when a stock has a diffused ownership structure, its return/alphas become much lower if the company is covered by the press. In addition, from Table VIII we can see that the media portfolios' alphas are not significantly different from zero for the stocks with high ownership diffusion. This suggests that due to increased investor recognition, investors no longer require higher returns for the companies covered by the press. This is consistent with our conjecture that arm's-length ownership is a pre-condition for the media effect.

To further corroborate this finding, we form two portfolios based on media coverage to assess differences in portfolio number of shares and liquidity. Based on our prior argument, we would expect that the relative degree of ownership diffuseness for the media-covered stocks compared to the no-media stocks is negatively associated with the difference in their returns. More importantly, the media effect should disappear once the differential ownership diffusion between media-covered and no-media stocks is controlled for. For the sake of brevity, we do not report results, but our findings are consistent with our prior expectation. When controlling for both liquidity and ownership diffusion, only ownership diffusion is significantly correlated

with differential returns, suggesting that liquidity is not correlated with the media effect. Consequently, ownership diffusion does not simply serve as a proxy for liquidity, suggesting that ownership diffusion goes some way to explain the existence of a media effect.

<INSERT TABLE VIII>

7. Conclusions

The main finding of this paper is that media coverage of stocks grows substantially after the emergence of arm's-length and diffuse ownership in the UK from the mid-1840s onwards. We argue that the media were playing an important informational role for the new cadre of middle-class investors which emerged at this time and that the additional information generated by the press increased investor recognition for covered stocks. Consistent with this, after the mid-1840s, we find that companies not covered by the media had higher returns relative to media companies. In other words, as in modern developed country stock markets, there was a media effect in the nineteenth-century London market, but this only emerged after ownership became arm's-length and diffuse. Therefore, our findings imply that arm's-length and diffuse ownership may be a prerequisite for the media effect. Indeed, the absence of arm's-length and diffuse ownership may explain why media appears to have little effect on developing country financial markets today (Griffin et al., 2011).

Our findings suggest two avenues which could be explored by future scholars. First, our findings highlight the relationship between press reporting and advertisements. Future work could explore the nature of this relationship and whether it was insidious or benign. Second, newspaper reporting on financial markets in our

period was factual, which means that an analysis of the tone or language used in newspaper reports is not possible. However, the development of the UK's daily financial press in the 1880s and whether it influenced financial markets through its use of language is something that future work could explore.

References

Acheson, G. G., Hickson, C. R., Turner, J. D. and Ye, Q. (2009) Rule Britannia!: British stock market returns, 1825–1870. *Journal of Economic History* **69**, 1107–37.

Acheson, G. G., Campbell, G., Turner, J. D. and Vanteeva, N. (2015) Corporate ownership and control in Victorian Britain. *Economic History Review* **68**, 911–36.

Acheson, G. G., Turner, J. D. and Ye, Q. (2012) The character and denomination of shares in the Victorian equity market. *Economic History Review* **65**, 862–86.

Anderson, B. L. and Cottrell, P. L. (1975) Another Victorian capital market: A study of banking and bank investors on Merseyside. *Economic History Review* **28**, 600–615.

Ang, A., Hodrick, R. J., Xing, Y. and Zhang, X. (2006) The cross-section of volatility and expected returns. *The Journal of Finance* **61**, 259–299.

Bartlett, T. (1850) *A Treatise on British Mining*, Effingham Wilson, London.

Baskin, J. B. and Miranti, P. J. (1997) *A History of Corporate Finance*, Cambridge University Press, Cambridge.

Bignon, V. and Miscio, A. (2010) Media bias in financial newspapers: Evidence from early twentieth-century France. *European Review of Economic History* **14**, 383–432.

Bhattacharya, U. I., Galpin, N., Ray, R. and Yu, X. (2009) The role of the media in the internet IPO bubble. *Journal of Financial and Quantitative Analysis* **44**, 657–682.

Brown, L. (1985) *Victorian News and Newspapers*, Clarendon Press, Oxford.

Burke, G. and Richardson, P. (1981) The decline and fall of the cost book system in the Cornish tin mining industry, 1895–1914. *Business History* **23**, 4–18.

Campbell, G. (2012) Myopic rationality in a mania. *Explorations in Economic History* **49**, 75–91.

Campbell, G and Turner, J. D. (2012) Dispelling the myth of the naïve investor during the British railway mania. *Business History Review* **86**, 3–41.

Campbell, G., Turner, J. D. and Walker, C. B. (2012) The role of the media in a bubble: Evidence from the British railway mania. *Explorations in Economic History* **49**, 461–481.

Carhart, M. M. (1997) On persistence in mutual fund performance. *Journal of Finance* **52**, 57–82.

Cheffins, B. R. (2008) *Corporate Ownership and Control: British Business Transformed*, Oxford University Press, Oxford.

Chichernea, D. C., Ferguson, M. F. and Kassa, H. (2015) Idiosyncratic risk, investor base, and returns. *Financial Management* **44**, 267-93.

Costa, D. L. and Kahn, M. E. (2015) Death and the media: Asymmetries in infectious disease reporting during the health transition. NBER Working Paper No. 21073, Cambridge, MA, April 2015.

Cottrell, P. L. (1980) *Industrial Finance, 1830–1914*, Methuen & Co. Ltd., London.

Cumming, D., Dixon, R., Hou, W., and Lee, E. (2016) Media coverage and foreign share discount puzzle in China. *The European Journal of Finance* **22**, 393–412.

Dyck, A. and Zingales, L. (2003) The media and asset prices, unpublished working paper, Harvard Business School, Cambridge, Massachusetts.

Engelberg, J., Reed, A. V. and Ringgenber, M. C (2012) How are shorts informed? Short sellers, news, and information processing. *Journal of Financial Economics* **105**, 260–278.

Falkus, M. E. (1967) The British gas industry before 1850. *Economic History Review* **20**, 494–508.

Fama, E. J. and MacBeth J. D. (1973) Risk, return and equilibrium: Empirical tests. *The Journal of Political Economy* **81**, 607–636.

Fang, L. and Peress, J. (2009) Media coverage and the cross-section of stock returns. *Journal of Finance* **64**, 2023–2052.

Ferguson, N. J., Philip, D., Lam, H. Y. T. and Guo, M. (2015) Media content and stock returns the predictive power of press. *Multinational Finance Journal* **19**, 1–31.

Foreman-Peck, J. and Hannah, L. (2012) Extreme divorce: The managerial revolution in UK companies before 1914. *Economic History Review* **65**, 217–1238.

García, D. (2013) Sentiment during recessions. *The Journal of Finance* **68**, 1267–1300.

Griffin, J. M., Hirschey, N. H. and Kelly, P. J. (2011) How important is the financial media in global markets? *Review of Financial Studies* **24**, 3941–3992.

Grossman, R. S. (2002) New indices of British equity prices, 1870–1913. *Journal of Economic History* **62**, 121–46.

Hansen, L. P. (1982) Large sample properties of generalized method of moments estimators. *Econometrica: Journal of the Econometric Society* **50**, 1029–1054.

Jefferys, J. B. (1977) *Business Organisation in Great Britain: 1856–1914*, Arno Press, New York.

Kostal, R. W. (1994) *Law and English Railway Capitalism*, Clarendon Press, Oxford.

Kynaston, D (1988) *The Financial Times: A Centenary History*, Viking, London.

Lesmond, D. A., Ogden, J. P. and Trzcinka, C. A. (1999) A new estimate of transaction costs. *Review of Financial Studies* **12**, 1113–1141.

Manela, A. and Moreira, A. (2015) News implied volatility and disaster concerns, unpublished working paper, available at SSRN: http://ssrn.com/abstract=2382197 or http://dx.doi.org/10.2139/ssrn.2382197.

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

Michie, R. C. (1999) *The London Stock Exchange*, Oxford University Press, Oxford.

Miller, E. M. (1977) Risk, uncertainty, and divergence of opinion. *The Journal of Finance* **32**, 1151–1168.

Newey, W. K. and West, K. D. (1987) A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica* **55**, 703–8.

Newton, L. A. (2010) The birth of joint-stock banking: England and New England compared. *Business History Review* **84**, 27–52.

Parliamentary Papers (1852) *Return of the Number of Newpaper Stamps at One Penny*, XLII, House of Commons, London.

Parliamentary Papers (1856) *Returns of the Number of Proprietors in Each Railway Company in the United Kingdom*, CCXXXVIII, House of Commons, London.

Preda, A. (2001) The rise of the popular investor: Financial knowledge and investing in England and France, 1840–1880. *The Sociological Quarterly* **42**, 205–32.

Rogers, W. (1993) Regression standard errors in clustered samples. *Stata Technical Bulletin* **13**, 19–23.

Rutterford, J., Green, D. R., Maltby, J. and Owens A. (2011) Who comprised the nation of shareholders? Gender and investment in Great Britain, c.1870–1935. *Economic History Review* **64**, 157–87.

Shannon, H. A. (1933) The limited companies of 1863–1883. *Economic History Review* **4**, 290–316.

Simmons, J. (1991) *The Victorian Railway*, Thames and Hudson, London.

Soo, C. (2013) Quantifying animal spirits: News media and sentiment in the housing market, unpublished working paper, Ross School of Business, Michigan.

Taylor, J. (2006) *Creating Capitalism: Joint-Stock Enterprise in British Politics and Culture, 1800–1870*, Royal Historical Society, London.

Taylor, J. (2012) Watchdogs or apologists? Financial journalism and company fraud in early Victorian Britain. *Historical Research* **85**, 632–52.

Tetlock, P. C. (2007) Giving content to investor sentiment: The role of the media in the stock market. *Journal of Finance* **62**, 1139–1168.

Tetlock, P. C., Saar-Tsechansky, M. and Macskassy, S. (2008) More than words: Quantifying language to measure firm's fundamentals. *Journal of Finance* **63**, 1437–1467.

Thomas, W. A. (1973) *The Provincial Stock Exchanges*, Frank Cass, London.

Tuck, H. (1846) *The Railway Shareholder's Manual; Or Practical Guide to All the Railways in the World*, Seventh Edition, Effingham Wilson, London.

Turner, J. D. (2009) Wider share ownership?: Investors in English bank shares, 1826–1900. *Economic History Review* **62**, 167–192.

Walker, C. (2014) Housing booms and media coverage. *Applied Economics* **46**, 3954–3967.

Ward, J. R. (1974) *The Finance of Canal Building in Eighteenth-Century England*, Oxford University Press, Oxford.

Watts, R. L. and Zimmerman, J. L. (1983) Agency problems, auditing, and the theory of the firm: Some evidence. *Journal of Law and Economics* **26**, 613–33.

Ye, Q. and Turner, J. D. (2014) The cross-section of stock returns in an early stock market. *International Review of Financial Analysis* **34**, 114–123.

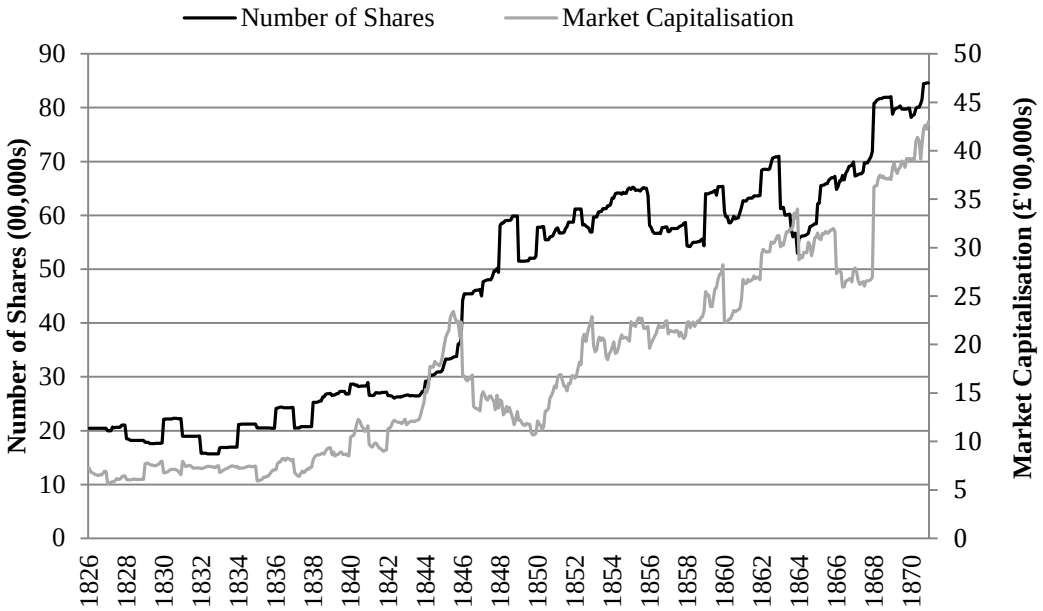

FIGURE 1
TOTAL NUMBER OF ISSUED SHARES AND MARKET CAPITALISATION, LONDON STOCK EXCHANGE, 1826–1870

Based on Ye and Turner's (2014) hand-collected data for each common stock listed in the *Course of the Exchange* for every month between March 1825 and December 1870. The dataset contains 102,408 observations, consisting of stocks issued by 580 companies.

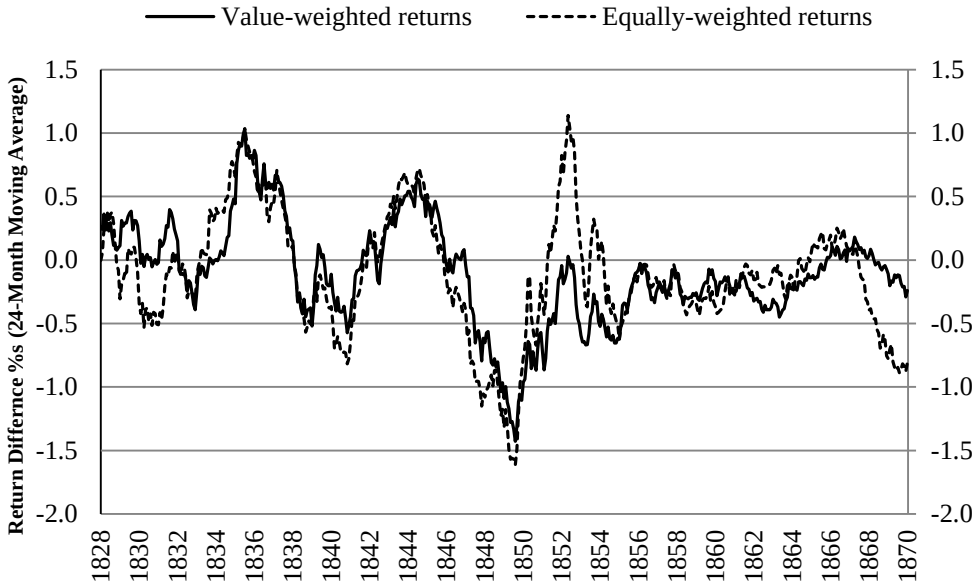

FIGURE 2
24-MONTH MOVING AVERAGE DIFFERENTIAL RETURNS BETWEEN COMPANIES WITH AND WITHOUT MEDIA COVERAGE, LONDON STOCK EXCHANGE, 1828–1870

Based on 580 companies listed on the *Course of the Exchange*. Portfolios of stocks are formed based on media coverage in *The Times* in the prior year. At the beginning of each year, we divided our sample into companies with media coverage and those without. The monthly performance of each portfolio is then assessed over the next 12 months. We then calculated the differential returns between the two portfolios as media coverage minus no media coverage. Differential returns are based on the listwise method for treating missing prices.

TABLE I

COMPANY DESCRIPTIVE STATISTICS BY MEDIA COVERAGE, LONDON STOCK EXCHANGE, 1825–1870

The definition of media coverage in this table includes advertisements in *The Times* as well as reporting on companies. The number of observations differ slightly across variables because of missing data: number of shares, paid-up capital per share, stock price, market capitalisation, paid capital and dividend yield are all based on 102,408 observations, while nominal value per share is based on 98,712 observations.

	No. of Shares (000s)	Nominal Value per Share (£)	Paid-up Capital per Share (£)	Stock Price (£)	Market Capital-isation (£m)	Paid Capital (£m)	Dividend Yield (%)
PANEL A: All Companies							
Mean	19.73	77.02	51.33	71.43	0.65	0.64	0.41
Median	10.00	63.60	36.50	29.00	0.21	0.25	0.39
Std. Dev.	31.86	88.74	48.97	157.62	1.72	1.63	0.72
PANEL B: Companies with Media Coverage							
Mean	32.62	73.07	55.29	52.23	1.42	1.56	0.45
Median	20.00	100.00	50.00	30.25	0.52	0.68	0.36
Std. Dev.	43.93	77.16	52.19	59.50	3.20	3.05	1.31
PANEL C: No-Media Coverage Companies							
Mean	16.59	78.03	50.37	76.10	0.46	0.41	0.40
Median	8.00	61.00	33.00	29.00	0.17	0.20	0.40
Std. Dev.	27.23	91.42	48.11	172.96	1.01	0.90	0.48

TABLE II

SUMMARY STATISTICS OF COMPANY COVERAGE IN *THE TIMES*, 1825–1870

Not all firms were active for the entire sample period. We consider the fraction of firms that were publically listed and that were covered by *The Times* in a given year. The figures for 1825–1847, 1848–1870, and 1825–1870 are not averages of the various years, but consider the three periods in their entirety.

Year	Fraction of Active Firms Covered	Covered Firms Average Articles		Fraction of Adverts/ Articles	Year	Fraction of Active Firms Covered	Covered Firms Average Articles		Fraction of Adverts/ Articles
		Mean	Median				Mean	Median	
PANEL A: Annual statistics									
1825	0.20	1.80	1.0	0.53	1848	0.42	6.50	3.5	0.04
1826	0.20	2.17	1.0	0.35	1849	0.32	4.68	2.0	0.06
1827	0.20	2.84	2.0	0.41	1850	0.31	4.22	2.0	0.10
1828	0.08	4.15	2.0	0.15	1851	0.29	3.64	2.0	0.09
1829	0.13	1.73	1.0	0.39	1852	0.31	5.68	2.0	0.06
1830	0.10	1.75	1.0	0.50	1853	0.22	3.12	2.0	0.18
1831	0.10	1.88	1.0	0.37	1854	0.23	2.22	1.5	0.26
1832	0.12	1.84	1.0	0.31	1855	0.25	2.62	1.0	0.25
1833	0.05	9.38	1.0	0.00	1856	0.26	3.30	2.0	0.20
1834	0.13	3.23	1.0	0.15	1857	0.25	3.64	2.0	0.10
1835	0.11	3.43	1.0	0.19	1858	0.20	3.98	2.0	0.12
1836	0.14	2.40	1.0	0.22	1859	0.18	2.40	1.0	0.12
1837	0.18	2.36	1.0	0.30	1860	0.24	5.89	3.0	0.04
1838	0.17	2.58	1.0	0.29	1861	0.19	2.58	2.0	0.14
1839	0.14	3.53	2.0	0.19	1862	0.21	3.14	1.0	0.16
1840	0.19	2.72	1.0	0.22	1863	0.19	3.38	2.0	0.25
1841	0.14	3.55	2.0	0.17	1864	0.16	3.62	1.0	0.38
1842	0.16	2.88	2.0	0.09	1865	0.24	5.72	2.0	0.07
1843	0.12	2.82	1.0	0.13	1866	0.25	7.44	3.0	0.04
1844	0.17	3.42	1.0	0.08	1867	0.15	5.53	2.0	0.10
1845	0.17	4.41	2.0	0.28	1868	0.11	3.84	2.0	0.24
1846	0.23	3.78	1.0	0.18	1869	0.17	4.79	2.0	0.19
1847	0.29	2.98	2.0	0.17	1870	0.17	3.61	2.0	0.17
PANEL B: Period statistics									
1825–1847	0.54	10.56	3.0	0.22					
1848–1870	0.56	20.46	5.0	0.12					
1825–1870	0.57	20.95	5.0	0.14					

TABLE III

SUMMARY STATISTICS OF COMPANY COVERAGE IN *THE TIMES* BY INDUSTRY, 1825–1870

'Adverts' refers to the fact that the company has advertised in *The Times* and 'Reporting' is where *The Times* has carried a news report on a company. 'Any section' refers to both news reports and advertisements.

	N	Any Section	Adverts	Reporting	Advert Only	Reporting Only
	Companies (%)					
Banks	73	53.42	34.25	41.10	12.33	19.18
Bridges	5	80.00	60.00	80.00	0.00	20.00
British Mines	57	12.28	12.28	7.02	5.26	0.00
Canals	64	26.56	12.50	20.31	6.25	14.06
Foreign and Colonial Mines	40	45.00	22.50	27.50	17.50	22.50
Docks	14	78.57	42.86	64.29	14.29	35.71
Gas-light and Coke	42	45.24	26.19	33.33	11.90	19.05
Insurance	60	71.67	55.00	48.33	23.33	16.67
Miscellaneous	80	63.75	36.25	48.75	15.00	27.50
Waterworks	14	57.14	42.86	50.00	7.14	14.29
Roads	5	0.00	0.00	0.00	0.00	0.00
Telegraph	7	100.00	42.86	100.00	0.00	57.14
Railways	130	87.69	39.23	86.92	0.77	48.46
All Companies	580	57.24	32.41	47.07	10.17	24.83

TABLE IV

DETERMINANTS OF COMPANY COVERAGE IN *THE TIMES, 1825–1870*

We use a two-stage Generalized Method of Moments (GMM) Estimation (Hansen, 1982). Standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1. The dependent variable is *Media*, which is the number of news articles on a company reported in *The Times* in year t. *Advertising* is the number of advertisements placed in *The Times* by a company in year t–1. *Number of shares* is the average natural log of number (in 000,000's) of shares outstanding for a company in year t–1. *Industry Controls* are a series of dummy variables to capture industry effects. *Share denomination* is the nominal value of shares in £s for a company. *Market capitalisation* is the natural log of market value of a company in £millions in year t–1. *Absolute return* is the previous year's absolute return. *Volatility* is the previous year's standard deviation in returns.

	All Companies			Excluding Railways
	(1)	(2)	(3)	(4)
	1825–1870	1825–1850	1851–1870	1825–1870
Advertising	0.101***	0.312***	0.094***	0.101***
	(0.024)	(0.054)	(0.022)	(0.023)
Number of Shares	0.367***	0.490***	0.461***	0.353***
	(0.059)	(0.080)	(0.095)	(0.060)
Share Denomination	0.002	-0.000	0.007***	0.002*
	(0.001)	(0.002)	(0.001)	(0.001)
Market Capitalisation	0.110**	0.317***	-0.202	0.111**
	(0.047)	(0.098)	(0.067)	(0.048)
Absolute Return	0.903	4.634	-11.68	0.857
	(2.740)	(4.656)	(5.137)	(3.376)
Volatility	0.130	-1.524	1.454	0.149
	(1.100)	(1.670)	(1.493)	(1.106)
Constant	2.194***	3.028***	1.950***	2.142***
	(0.208)	(0.303)	(0.293)	(0.215)
Industry Controls	Yes	Yes	Yes	Yes
Observations	6,911	3,479	3,280	5,607

TABLE V

TESTING THE MEDIA EFFECT: THE DIFFERENCE BETWEEN RETURNS OF COMPANIES COVERED AND NOT COVERED BY THE MEDIA (%)

At the beginning of each year between 1826 and 1870, we sort stocks into two portfolios based on the media coverage in the prior year and calculate the monthly returns for each portfolio during the next 12 months. *Raw Differential Return* represents the differential monthly returns between the media and no-media stocks. We then regress this raw differential return series against several classic risk factors. *CAPM Alpha, FF Three-Factor Alpha, and Carhart Four-Factor Alpha* are the constants in the relevant asset pricing models including CAPM, Fama and French (FF) Three-Factor and Carhart Four-Factor models respectively. The SMB and HML factors are constructed following Fama and French (1993) except that we use the dividend price ratio to proxy the book-to-market. The WML factor is constructed following Carhart (1995, 1997). We use three different treatments for missing stock prices. In Panel A, missing prices were assumed to be the same as last available price. In Panel B, in observations where stock prices were missing, we filled in the total returns with the mean returns of the same stock over the sample period. In Panel C, observations with missing prices are deleted and all calculations only use the remaining observations. Panel D uses the same assumption about missing prices as Panel A, but the delisting bias was adjusted. *** p<0.01, ** p<0.05, * p<0.1.

	Equally-Weighted Portfolios			Value-Weighted Portfolios		
	Jan. 1826–Dec. 1870	Jan. 1826–Jun. 1848	Jul. 1848–Dec. 1870	Jan. 1826–Dec. 1870	Jan. 1826–Jun. 1848	Jul. 1848–Dec. 1870
PANEL A: Zero return method						
Raw Differential Return	0.013	0.022	0.004	-0.059	0.127	-0.246**
	(0.093)	(0.137)	(0.126)	(0.086)	(0.133)	(0.108)
CAPM Alpha	-0.031	0.088	-0.148	-0.099	0.176*	-0.372***
	(0.077)	(0.118)	(0.100)	(0.067)	(0.106)	(0.079)
FF Three-Factor Alpha	-0.017	0.097	-0.147	-0.084	0.152	-0.340***
	(0.079)	(0.121)	(0.102)	(0.069)	(0.107)	(0.078)
Carhart Four-Factor Alpha	-0.011	0.135	-0.157	-0.092	0.145	-0.349***
	(0.079)	(0.124)	(0.103)	(0.068)	(0.108)	(0.078)
PANEL B: Mean return method						
Raw Differential Return	0.001	0.030	-0.028	-0.059	0.143	-0.262**
	(0.079)	(0.114)	(0.111)	(0.082)	(0.125)	(0.106)
CAPM Alpha	-0.040	0.085	-0.161*	-0.102	0.181*	-0.390***
	(0.062)	(0.093)	(0.084)	(0.063)	(0.097)	(0.075)
FF Three-Factor Alpha	-0.023	0.087	-0.143*	-0.090	0.167*	-0.362***
	(0.064)	(0.094)	(0.085)	(0.064)	(0.098)	(0.074)
Carhart Four-Factor Alpha	-0.016	0.117	-0.157*	-0.098	0.160	-0.370***
	(0.064)	(0.096)	(0.086)	(0.064)	(0.099)	(0.074)
PANEL C: Listwise method						
Raw Differential Return	-0.144	-0.040	-0.249*	-0.105	0.084	-0.294***
	(0.106)	(0.153)	(0.147)	(0.091)	(0.143)	(0.111)
CAPM Alpha	-0.191**	0.037	-0.413***	-0.138*	0.143	-0.420***
	(0.088)	(0.127)	(0.122)	(0.074)	(0.115)	(0.087)
FF Three-Factor Alpha	-0.177**	0.032	-0.398***	-0.132*	0.116	-0.391***
	(0.090)	(0.129)	(0.124)	(0.075)	(0.116)	(0.086)
Carhart Four-Factor Alpha	-0.164*	0.071	-0.422***	-0.137*	0.117	-0.400***
	(0.090)	(0.132)	(0.125)	(0.075)	(0.117)	(0.086)
PANEL D: Delisting-adjusted (Zero-return method)						
Raw Differential Return	0.026	0.069	-0.018	-0.030	0.157	-0.218**
	(0.094)	(0.139)	(0.126)	(0.086)	(0.133)	(0.108)

CAPM Alpha	-0.020	0.137	-0.174*	-0.070	0.206*	-0.344***
	(0.078)	(0.120)	(0.100)	(0.068)	(0.106)	(0.079)
FF Three-Factor Alpha	-0.010	0.141	-0.179*	-0.055	0.180*	-0.311***
	(0.080)	(0.123)	(0.102)	(0.069)	(0.108)	(0.078)
Carhart Four-Factor Alpha	-0.003	0.183	-0.190*	-0.063	0.173	-0.321***
	(0.080)	(0.125)	(0.103)	(0.069)	(0.109)	(0.078)

TABLE VI

RETURNS, ALPHAS AND RISK LOADINGS OF MEDIA AND NO-MEDIA STOCK PORTFOLIOS

At the beginning of each year between 1826 and 1870, we sort stocks into two portfolios based on the media coverage in the prior year and calculate the monthly returns for each portfolio during the next 12 months. We then regress the return for each portfolio against several classic risk factors. *Raw return* represents the monthly returns for the media and no-media stocks. *CAPM Alpha, FF Three-Factor Alpha, and Carhart Four-Factor Alpha* are the constants in the relevant asset pricing models, including CAPM, Fama and French (FF) Three-Factor and Carhart Four-Factor models respectively. *Market beta*, *SMB*, *HML*, and *WML* are the coefficients on market factor, SMB, HML and WML factors in these risk models. *Media* column reports the returns, alphas and risk loadings for the portfolio with media covered stocks. *No-Media* column reports the returns, alphas and risk loadings for the portfolio with stocks that were not covered by media. The returns and alphas in this table are calculated using the listwise method of dealing with missing stock prices. In this method, observations with missing prices are deleted and all calculations only use the remaining observations. The SMB and HML factors are constructed following Fama and French (1993), except that we use the dividend-price ratio to proxy the book-to-market. The WML factor is constructed following Carhart (1995, 1997). Standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

	Equally-Weighted Portfolios		Value-Weighted Portfolios	
PANEL A: Raw Differential Returns				
	No-Media	Media	No-Media	Media
Raw return	0.667***	0.522***	0.506***	0.401***
	(0.065)	(0.128)	(0.063)	(0.118)
PANEL B: Alphas and Risk Loadings in CAPM				
	No-Media	Media	No-Media	Media
CAPM alpha	0.357***	0.166**	0.190***	0.052
	(0.048)	(0.076)	(0.033)	(0.051)
Market beta	0.589***	1.405***	0.707***	1.258***
	(0.040)	(0.062)	(0.027)	(0.042)
R-squared	0.451	0.650	0.725	0.812
PANEL C: Alphas and Risk Loadings in FF Three-Factor Model				
	No-Media	Media	No-Media	Media
FF Three-Factor Alpha	0.303***	0.126*	0.188***	0.057
	(0.044)	(0.076)	(0.034)	(0.052)
Market beta	0.699***	1.468***	0.730***	1.238***
	(0.041)	(0.071)	(0.031)	(0.048)
SMB	0.434***	0.224**	0.101**	-0.121*
	(0.062)	(0.107)	(0.047)	(0.073)
HML	0.048	0.105*	-0.061**	0.057
	(0.034)	(0.059)	(0.026)	(0.040)
R-squared	0.563	0.662	0.734	0.815
PANEL D: Alphas and Risk Loadings in Carhart Four-Factor Model				
	No-Media	Media	No-Media	Media
Carhart Four-Factor Alpha	0.304***	0.140*	0.191***	0.055
	(0.045)	(0.076)	(0.034)	(0.052)
Market beta	0.691***	1.421***	0.728***	1.242***
	(0.043)	(0.073)	(0.033)	(0.050)
SMB	0.439***	0.235**	0.106**	-0.130*
	(0.063)	(0.106)	(0.047)	(0.073)
HML	0.044	0.081	-0.048*	0.049
	(0.036)	(0.062)	(0.027)	(0.042)
WML	-0.024	-0.114*	0.027	-0.002
	(0.037)	(0.063)	(0.028)	(0.043)
R-squared	0.561	0.667	0.733	0.820

TABLE VII

THE MEDIA EFFECT AMONG STOCKS WITH DIFFERENT CHARACTERISTICS

At the beginning of each year, we divide our sample stocks into two groups based on the 50% cutoff rate for one of several company characteristics (e.g., size, idiosyncratic volatility, liquidity and nominal value). The size of a stock is proxied by its market capitalisation at the end of year. The idiosyncratic volatility for each stock is constructed following Ang et al. (2006). Based on Lesmond et al. (1999), we approximate the zero-return measure of liquidity at each year for each stock by dividing the number of months with non-zero return by the number of months in the year. We then further divide each group of stocks into two portfolios: one with stocks covered in the prior year and the other with stocks not covered in the prior year. The *Raw Differential Return* represents the differential monthly return between media and no-media portfolios among each group of stocks. We then regress this raw differential return against several classic risk factors. *CAPM Alpha, FF Three-Factor Alpha, and Carhart Four-Factor Alpha* are the constants in the relevant asset pricing models including CAPM, Fama and French (FF) Three-Factor and Carhart Four-Factor models respectively. The returns and alphas in this table are calculated using the listwise method of dealing with missing stock prices. In this method, observations with missing prices are deleted and all calculations only use the remaining observations. Standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

	Equally-Weighted Portfolios				Value-Weighted Portfolios			
	Raw Differential Return	CAPM Alpha	FF Three-Factor Alpha	Carhart Four-Factor Alpha	Raw Differential Return	CAPM Alpha	FF Three-Factor Alpha	Carhart Four-Factor Alpha
PANEL A: By Size								
Small	-0.243	-0.300*	-0.290*	-0.260	-0.429**	-0.497***	-0.512***	-0.491**
	(0.178)	(0.169)	(0.173)	(0.174)	(0.187)	(0.172)	(0.177)	(0.177)
Large	-0.150	-0.184**	-0.193**	-0.197**	-0.122	-0.151**	-0.154**	-0.162**
	(0.102)	(0.088)	(0.089)	(0.089)	(0.092)	(0.077)	(0.078)	(0.077)
PANEL B: By Idiosyncratic Volatility								
Low Idiosyncratic Volatility	0.015	-0.039	0.004	0.022	0.003	-0.046	-0.023	0.005
	(0.107)	(0.091)	(0.092)	(0.092)	(0.108)	(0.093)	(0.095)	(0.093)
High Idiosyncratic Volatility	-0.287**	-0.323**	-0.295**	-0.289**	-0.238*	-0.256**	-0.243**	-0.256**
	(0.140)	(0.129)	(0.132)	(0.133)	(0.123)	(0.116)	(0.119)	(0.119)
PANEL C: By Liquidity								
Low Liquidity	-0.177	-0.206*	-0.211*	-0.191	-0.117	-0.146	-0.174	-0.179
	(0.123)	(0.123)	(0.126)	(0.126)	(0.112)	(0.111)	(0.113)	(0.112)
High Liquidity	-0.276**	-0.301**	-0.288**	-0.278**	-0.153*	-0.175**	-0.179**	-0.180**
	(0.124)	(0.118)	(0.120)	(0.120)	(0.092)	(0.084)	(0.085)	(0.085)
PANEL D: By Nominal Value								
Low Nominal Value	-0.044	-0.084	-0.090	-0.071	-0.143	-0.170	-0.178	-0.171
	(0.168)	(0.161)	(0.165)	(0.165)	(0.145)	(0.137)	(0.140)	(0.140)
High Nominal Value	-0.151	-0.200**	-0.171*	-0.163*	-0.080	-0.114	-0.115	-0.120
	(0.116)	(0.095)	(0.098)	(0.098)	(0.099)	(0.083)	(0.084)	(0.084)

TABLE VIII
OWNERSHIP DIFFUSION AND THE MEDIA EFFECT: CROSS-SECTIONAL ANALYSIS

At the beginning of each year, we divide our sample stocks into two groups based on the 50% cutoff rate for the sample stocks' ownership diffusion in the year. The ownership diffusion is proxied by the number of shares of a company's stock. We then further divide each group of stocks into two portfolios: one with stocks covered in the prior year and the other with stocks not covered in the prior year. *Raw return* represents the monthly returns for the media and no-media portfolios among each group of stocks. We then regress the raw returns against several classic risk factors. *CAPM Alpha, FF Three-Factor Alpha, and Carhart Four-Factor Alpha* are the constants in the relevant asset pricing models including CAPM, Fama and French (FF) Three-Factor and Carhart Four-Factor models respectively. *Media* column reports the returns and alphas for the portfolio with media covered stocks. *No-Media* column reports the returns and alphas for the portfolio with stocks that were not covered by media. *DIFF* column reports the differential returns and alphas between the media and no-media portfolios. The returns and alphas in this table are calculated using the listwise method of dealing with missing stock prices. In this method, observations with missing prices are deleted and all calculations only use the remaining observations. Standard errors in parentheses and *** p<0.01, ** p<0.05, * p<0.1.

	Equally-Weighted Portfolios			Value-Weighted Portfolios		
PANEL A: Raw Returns						
	No-Media	Media	DIFF	No-Media	Media	DIFF
Low Ownership Diffusion	0.559***	0.593***	0.032	0.464***	0.458***	-0.005
	(0.057)	(0.120)	(0.118)	(0.047)	(0.110)	(0.107)
High Ownership Diffusion	0.824***	0.482***	-0.342***	0.548***	0.388***	-0.159*
	(0.098)	(0.150)	(0.121)	(0.081)	(0.125)	(0.093)
PANEL B: CAPM Alpha						
	No-Media	Media	DIFF	No-Media	Media	DIFF
Low Ownership Diffusion	0.263***	0.271**	0.006	0.169***	0.148	-0.021
	(0.052)	(0.105)	(0.114)	(0.040)	(0.095)	(0.103)
High Ownership Diffusion	0.495***	0.115	-0.379***	0.220***	0.036	-0.184**
	(0.069)	(0.091)	(0.111)	(0.043)	(0.054)	(0.082)
PANEL C: FF Three-Factor Alpha						
	No-Media	Media	DIFF	No-Media	Media	DIFF
Low Ownership Diffusion	0.203***	0.259**	0.055	0.118***	0.154	0.038
	(0.050)	(0.107)	(0.117)	(0.039)	(0.096)	(0.104)
High Ownership Diffusion	0.443***	0.074	-0.369***	0.240***	0.041	-0.199**
	(0.065)	(0.092)	(0.112)	(0.043)	(0.055)	(0.083)
PANEL D: Carhart Four-Factor Alpha						
	No-Media	Media	DIFF	No-Media	Media	DIFF
Low Ownership Diffusion	0.205***	0.265**	0.059	0.125***	0.160	0.036
	(0.050)	(0.107)	(0.118)	(0.038)	(0.097)	(0.105)
High Ownership Diffusion	0.443***	0.089	-0.354***	0.242***	0.038	-0.204**
	(0.066)	(0.092)	(0.112)	(0.043)	(0.055)	(0.083)