Influence of Media Coverage and Sentiment on Seasoned Equity Offerings

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Abstract

This paper exams the role of media in seasoned equity offerings (SEOs) price and market reactions on SEO announcements. Using a sample of SEO deals in UK, we find that media coverage is significantly and negatively related to SEO price discounts and market returns around SEO announcements. Moreover, we document that more pessimistic media sentiment predicts larger SEO price discounts and more negative market reactions to SEO announcements. In summary, both media coverage and media sentiment influence investor decisions in SEOs, but through different mechanism.

JEL classification: G14; G32; G33; G34.

Keywords: Media Coverage; Media Sentiment; SEOs; Offer Discount; Announcement Return

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I. Introduction

As one of the most important channels for information dissemination, media coverage has been shown to be able to assist in reducing information asymmetry between the firm and investors. Even if media does not supply genuine news, higher media coverage still lowers stock's required rate of return by raising the awareness and demand of a stock among investors (e.g. Huberman and Regev, 2001; Barber and Odean 2008; Fang and Peress, 2009; Da et al. 2011). Meanwhile, media sentiment impacts investor expectations and thus has prediction power on future aggregate market returns (Tetlock 2007; Garcia, 2013). The impacts of media on asset pricing have been documented in various scenarios such as IPOs (Cook et al., 2006), bubbles (Bhattacharya et al., 2009), recessions (Garcia, 2013), corporate governance (Dyck et al., 2008), and earnings announcement (Peress, 2008). However, no prior literature has investigated whether media plays a role in seasoned equity offerings (SEOs). SEO represents the most important equity financing channel for publicly listed firms. The price discounts and the adverse price reactions of SEOs reflect the implicit costs for the issuing firms (e.g. Barnes and Walker, 2006; Armitage et al., 2014). One way to reduce such costs is to enhance the efficiency of information dissemination to the investors. The objective of this paper is to investigate whether and how media affects the implicit costs during SEO issues.

We exam whether and to what extent media helps issuing firms reduce the implicit costs in SEOs from two aspects. Our first line of inquiry examines whether mass media results in lower price discounts. As prior literature (e.g., Cook et al., 2006; Da et al., 2011) points out that media coverage attracts additional investors' attention and alleviates information fraction among investors and thereby higher demand of new shares, we expect that media coverage decreases price discounts in SEOs, even without necessarily revealing any value-relevant information. Different from news quantity, news content changes investor behaviour through influencing investor sentiment and affects their valuation on the stock (Gurun and Butler, 2012). Therefore, we expect negative news contents leads to investor pessimism and results in higher price discounts in SEOs.

Our second line of inquiry examines whether media affects the negative value effect on

SEO announcements. SEO announcements are often perceived as a signal of overvaluation and information asymmetry, resulting in unexpected negative announcement returns. High media coverage attracts investor attention to the adverse information signalled by SEO announcements. Therefore, we expect that media coverage would amplify market's adverse reaction towards SEO announcements. On the other hand, media content affects market reactions on SEO announcements in a different mechanism. Positive news generates run-up in stock prices (Engelberg et al., 2012; Ahern and Sosyura, 2014), which may mitigate the negative market reactions to SEO announcements, while negative news further pressure down the stock prices and thus causes even more negative reactions to SEO announcements.

Different from prior studies (e.g. Cook et al., 2006; Ferris et al., 2013; Loughran and McDonald, 2013; Liu et al., 2014), our analysis is conducted in the setting of UK SEOs instead of US IPOs for the following considerations. First, SEO is a more strict setting to investigate media's influence on investors. SEO firms have longer listing histories, with more value-relevant information regularly disclosed and embedded in stock price. Since investors timely observe information in stock price from the secondary market, investors are less likely to be influenced by a large amount of compounding new information disclosed by issuers during SEOs compared with IPOs. Second, UK SEO is a clearer setting than US SEO because of the different SEO pricing mechanism in UK (Slovin et al., 2000). In the US, after SEC approval of the offering, the price range and offer size can be adjusted in response to the demand information, such as market reactions to SEO announcements, gathered by the underwriter since SEO initial announcement date till the actual issue date. In comparison, offer price and size are definitive at the initial announcement in the UK. Underwriters use only pre-announcement information to determine offer price and size (Slovin et al., 2000). Therefore, the special characteristics of the British SEO enable us to investigate the causality effect of media on SEO pricing by excluding the possible secondary market feedback effects on SEO pricing after the initial announcements.

Considering the features of UK SEO, our analysis focuses on the media news during a period starting from 30 days until 2 days prior to the announcement date, defined as the

pre-SEO period. We construct two sets of media measures: 1) media coverage, which is the summative amount of media news covering the SEO issuer (e.g., Fang and Peress, 2009; Liu et al., 2014); and 2) media sentiment, which is evaluated according to the linguistic content of media articles, and calculated as the average of the ratio of negative words minus positive words to total words for all related articles in the pre-SEO period (e.g. Garcia 2013).

When examining the link between media coverage and SEO pricing, we use an instrumental variable approach to control for potential endogeneity concern. To satisfy the exclusion restriction, we use the occurrence of newspaper strike as the instrument. It is a binary variable that equals one if newspaper related strike occurs during a period of [-30, -2] days prior to the SEO announcement date.[1] The idea is that, newspaper strike is a disruption in media outlet for exogenous reasons, which should be independent of SEO issuers' characteristics. We report both the results estimated from OLS and those from 2SLS using instrumental variable in media coverage tests.We find strong evidence that media coverage and sentiment affect firms' issue pricing. We document a significantly negative correlation between pre-SEO media coverage and the discounts of the SEO offer price in both the OLS model and instrumental variable approach. Moreover, we find that issuers covered by more pessimistic news reports are likely to be traded at larger discounts.

Second, we document that media coverage and news sentiment have significant impacts on how market reacts to SEO announcements. Particularly, we find higher media coverage exaggerate the adverse effects of SEO announcements on stock price, in both OLS and instrumental variable approach. However, more positive news sentiment mitigates the negative market reaction to SEO announcements.

The present paper offers new insights to the recent emerging literature on the role of media playing in financial markets from at least three aspects. Firstly, we document the influences of media in SEOs. While prior literature primarily focuses on the role of media in IPOs (e.g., Cook et al., 2006; Liu et al., 2009), our paper is the first study showing that media significantly affects price discounts in SEOs, which is the most important channel of equity financing for listed firms. Compared to IPO, SEO is a cleaner setting to investigate

[1] The information of newspaper strike is manually collected from the UK LexisNexis.

the influence of media, as value-relevant information from other channels are timely embedded in the stock price and thus more likely to be publicly known. Moreover, by using the UK setting, where offer price and issue size are fixed after the initial announcements, we are able to eliminate the possibility of firm learning from the market responses to SEO announcements and adjust offer price before the actual issue date. Secondly, we simultaneously consider media coverage and news content, both of which affect asset pricing but through different mechanisms. While media coverage affects capital market through investor attention grabbing, news content influences investor sentiment and changes public opinion. Finally, our analysis reveals that the impacts of the media, either media coverage or media content, on market response to SEO announcements tends to be persistent in a relatively long window, which is more consistent with the argument of media facilitating investor information processing rather than biasing investor reaction.

The remainder of this paper proceeds as follows. Section II establishes the arguments underlying the main hypotheses by reviewing the related literature. Section III describes the sample selection and variable constructions. Section IV discusses summary statistics and the main findings from the empirical analysis. Section V concludes the paper.

II. Theoretical Background, Related Literature and Hypotheses

A. The Media and SEO Price Discounts

Prior literature has shown that media disseminates information, alleviates information asymmetry between investors, and grabs investors' attention, which ultimately affect investors trading decisions and their required rate of return. Merton (1987) argues investors hold incomplete information regarding the available stocks, and thus are more likely to buy and hold stocks that have recently attracted their attention, which is supported by a number of empirical studies. Barber and Odean (2008) confirm that individual investors are the net buyers of stocks covered by the news. Fang and Peress (2009) and Tetlock (2010) find that stocks not covered by the media earn significantly higher returns than those heavily covered by the media. Such "no media premium" indicates that the breadth of information dissemination can create investor awareness and hence generate investor buying behavior,

resulting in a lower cost of capital. Using Google search volume as the proxy for individual investor attention, Da et al. (2010) also find that the investor attention is positively related to the short-run stock performance. Ahern and Sosyura (2014) exam how bidders manage media coverage to induce a temporary run-up in stock during the period when the stock exchange ratio is determined during merger negations. Huberman and Regev (2001) points out that spurious publicity is no less important to stock pricing than risk. More importantly, media's influences on capital market through attention grabbing can be spurious publicity, and remains even without genuine information (Huberman and Regev, 2001; Liu et al., 2014).

In the scenario of the price setting of SEOs, investor attention is one of the identified determinants (Liu et al., 2009; Duffie, 2010), among other factors such as asymmetric information (Benveniste and Spindt, 1989; Ritter and Welch, 2002), and opinions discrepancy among investors (Miller, 1977; Hong and Stein, 2007). High media coverage raises the publicity and improves investors' awareness of the SEO issuer. In addition, high media coverage efficiently facilitates the dissemination of firm-specific information to the financial market, and thus alleviates the information asymmetry concern between investors. Therefore, high media coverage increases the demand of the new shares. Consistent with this, Cook et al. (2006) find that higher publicity is positively associated with offer price in IPOs. Therefore, we predict that *media coverage during pre-SEO period is negatively related to SEO pricing discounts.*[2]

Media coverage, i.e. the news quantity, is not the only channel through which media affects capital market. Prior studies have also documented that news contents affect investor sentiment and expectations. Tetlock (2007) explores the daily content from the news in *The Wall Street Journal* using textual analysis and finds that media content affects investor sentiment and can predict market prices and trading volume. Tetlock (2007) refers to the *Harvard Psychosocial Dictionary* to classify pessimistic words in each media article and obtains each article's news attitude, which he labels as "media pessimism". Garcia (2013)

[2] We do not exclude the possibility that media brings new information to the financial market and reduce the information asymmetry between the issuer and investors, which also leads to a reduction in SEO price discounts. However, Tetlock (2007) fail to find consistent results with theories of media content as a proxy for new information. Moreover, new information is not a necessary condition for media's influence on capital market. Therefore, our prediction about media's influence on SEOs does not depend on whether media news brings private information into the market.

further shows that "media pessimism" has predictive power for daily stock returns, particularly in times of recession. Solomon (2012) finds that firms generate more positive news on purpose to raise investor expectations and improve announcement returns. In the setting of SEOs, we predict that *more negative contents contained in news reports during pre-SEO period leads to higher SEO pricing discounts.*

B. The Media and Market Reactions to SEO Announcements

The attention grabbing of media coverage also facilitates investors' information processing. Bernard and Thomas (1989) shows that delay in the response to earnings reports is more likely to be the explanation for post-earnings-announcement-drift than risk mismeasurement. And Dellavigna and Pollet (2009) documents that investors' inattention leads to underreactions and more delayed responses to earnings announcement. Hong and Stein (1999) argue that the gradual diffusion of private information among investors help to explain investors' short-term underreaction. This financial market friction caused by limited attention can be alleviated by media's information dissemination, as both Peress (2016) and Dellavigna and Pollet (2009) find that firm announcements with higher media coverage trigger stronger immediate price and trading volume reaction, along with less subsequent drift.

Based on the arguments above, we expect that high investor attention brought by high media coverage before the SEO announcements would exaggerate market reactions around SEO announcements. Given that market usually consider SEO as a bad signal on firm value and previous studies document an average negative market reaction around SEO announcements (e.g., Armitage et al. 2014; Barnes and Walker, 2006; Bradley and Yuan, 2013), we propose that *media coverage during the pre-SEO period is negatively related to SEO announcement returns.*

We also consider the effect of news content on SEO announcement returns. While positive news may induce optimistic investor sentiment and thus neutralize the negative signalling effect of SEO announcements, negative news will become an amplifier of the announcements and further pressure down firm valuation. Therefore, we predict that *more*

negative contents contained in news reports during pre-SEO period leads to lower SEO announcement returns.

III. Data and Variable Constructions

A. Data

We obtained all UK common stock SEOs between January 1, 1998 and December 31, 2010 from the Thomson One Banker database. We chose this sample period because of the data availability for all variables and to have a sample period after the regulatory change that occurred in 1996, when the London Stock Exchange (LSE) relaxed the rules on the maximum size of a placing issue.[3] The number of placing issues among all UK SEOs has grown significantly after 1996, when offer size is no longer constrained by issue type (Barnes and Walker, 2006).

Our analysis solely considers non-financial and non-utility issuer stocks listed on the LSE, i.e. we exclude all firms with SIC codes between 6000-6999 and 4900-4949. The initial sample contains 4,674 SEO deals. In accordance with Slovin et al. (2000), we exclude pure secondary and joint issues because large shareholders and insiders can sell a portion of their stock holdings in secondary offerings, leaving a sample of 3,590 deals. We further require the SEO proceeds to be over £1 million, resulting in a sample size of 2,457 deals. To identify issue characteristics, we collected the following terms of each offer: the announcement date, the offer price, the offer amount, the issue type and the name of the book runners. The number of deals with complete issue information reduces to 1,663. The daily stock price data are obtained from DataStream, including the closing market price prior to the announcement day, on the offer day, and on the first trading day after the issue. The firms' financial data are also got from DataStream. The ownership information is obtained from Thomson One bank. The information of analyst recommendations and earning announcements is derived from IBES. After merging SEO deals with ownership data, financial data and analyst recommendations, our final sample consists of 377 deals.

[3] Prior to 1990, a maximum monetary value of £3million was imposed by the LSE on the total value of shares being placed. A higher ceiling of £15 million applied to the period 1990-1995. In January 1996, all size limitations were effectively removed, paving the way for an unconstrained choice of issue methods by publicly listed firms (Barnes and Walker, 2006).

B. Construction of Media Variables

To obtain the media data for each firm, we searched media articles related to SEO issuers in the LexisNexis UK database. We only focus on media news published in the *Financial Times* (London), *The Times* (London), the *Guardian* (London), the *Mirror,* and the *Sunday Mirror*. The search window starts from 1 January 1995 to 31 December 2010.

These media sources are selected for three reasons. First, these are the five most influential newspapers with extremely large circulations, over 6.6 million daily readerships in total. In particular, the *Financial Times* is a finance-oriented newspaper, with an average daily readership of 2.1 million. The other newspapers also have dedicated sections for international business and financial news. Second, these newspapers all have a long history[4] and thus these publications have strong reputations and credibility for all types of investors. Third, the competition among these five newspapers leads to lower media bias (Gentzkow and Shapiro, 2010). Additionally, due to the long history and strong influence of these newspapers, the electronic text of their news reports is accessible from the LexisNexis UK database during our sample period.

Our key measurements of media include media coverage and media sentiment. The variable to measure media coverage is *Coverage*, calculated as the number of news articles covering an issuer during the pre-SEO period. Following Fang and Peress (2009) and Liu et al. (2014), we define the pre-SEO period as a window over [-30,-2], where Day0 refers to SEO announcement day. We only calculate media coverage and media sentiment for SEO deals covered by news. As a supplement, we construct an indicator for all SEO deals, i.e. *News(-30,-2)*, which is an indicator of the news existence that equals one for the SEOs covered by media news during the pre-SEO period.

As for media sentiment, we construct a variable (*Sentiment*) by quantifying the content of media articles. Using the classification method by Loughran and McDonald (2011), we capture business-specific positive and negative words from each media article. Following

[4] For example, the *Financial Times* was founded in 1888; *The Times* was established in 1785; the *Guardian* in 1821; and the *Mirror* and the *Sunday Mirror* in 1930 and 1915, respectively.

Garcia (2013), the measure of media sentiment is calculated as:

Sentiment (per Article) = (Number of Negative Words – Number of Positive Words) / Total Number of Words

A higher *Sentiment* indicates a more pessimistic attitude of a news article. For each SEO, media sentiment is calculated as the mean of the sentiment per article during the pre-announcement period.

C. Instrumental Variable for Media Coverage

One challenge to establish evidence of a causal role of the media in SEO pricing and market response is that media coverage is likely to be endogenous - the change in firm characteristics may attract the media attention, which simultaneously influences SEO price setting and market response. We use an instrumental variable approach to address this endogeneity issue.

The instrument variable we adopt is *NewspaperStrike*, a dummy variable that equals one if the newspaper related strike occurs during a period of [-30,-2] days prior to offer announcement date. The strike information is manually collected from UK LexisNexis.[5] Newspaper strikes directly reduce the human capital in news reporting and thus the press coverage, while not correlated with firm characteristics. And therefore, it is likely to satisfy the necessary exclusion restriction.

D. Control Variables

Drawing from the existing study on the determinants of SEO price setting and market response to announcements (e.g. Altinkilic and Hansen, 2003; Corwin, 2003; Huang and Zhang, 2011), we include offering characteristics such as proceeds amounts (*Proceeds*), underwriter reputation (*Top-tier UW*), and indicators of the four offering types including

[5] We use newspaper strike, or journalist strike, or postman strike as searching key words throughout all the national newspaper during 1997-2010. We obtain 5 strikes directly affecting newspaper publishers, including the journalist at a national newspaper group are to stage strikes over pay on 04/04/2008; Scottish journalists battle for jobs with strike action in April 2009; BBC Journalists' strike steals headlines on newspaper from 29/10/2010 to 10/11/2010; The newspapers' strike over dismissals in the Mirror occurs on 30/10/2008; Postman's strike on 09/10/2007.

right offers (*RO*), placing (*PL*), open offer (*OO*), and combined offer (*PLOO*). In addition, following prior literature (e.g. Denis, 1994; Baker and Wurgler, 2002; Solvin et al. 2000; Eckbo et al., 2000; Barnes and Walker, 2006; Bowen et al., 2008; Chan and Chan, 2014), we also control firm characteristics including institutional ownership (*IO*) and managerial ownership (*MSO*), issuer size (*Size*), growth opportunities measured by market-to-book ratio (*MV/BV*), the return on equity (*ROE*) and leverage ratio (*Leverage*). We also control for dividend yield (*Dividend*), stock liquidity (*Turnover*), per-announcement stock performance (*Pasts*), market conditions (*Pastm*), and analyst coverage (*NUM_Analyst*). The detailed definitions of all variables are provided in the Appendix.

IV. Empirical Results

In this section, we start by providing the institutional setup of SEOs in the UK. Next, we show the summary statistics of media related variables. We further present comparisons of issues and firm characteristics for SEOs covered by news versus SEOs not reported by news. Then, we use OLS and 2SLS regression models to examine whether media coverage and sentiment affect firm's offering price discounts. Finally, we explore whether media coverage and sentiment influence the value effect of a SEO announcement.

A. Descriptive Statistics

i. Institutional Features of UK Seasoned Equity Offerings

Panel A in Table 1 presents the number of SEO deals, along with the average offering proceeds across years. We also categorize all SOEs into two groups according to whether the issuer is covered by media during the pre-SEO period. We define SEOs whose issuers reported by news during the pre-SEO period as SEOs with news, and SEOs whose issuers not covered by media during the pre-SEO period as SEOs without news. The number of SEOs and annual average offering proceeds fluctuate over the 14 years during our sample period. 92 SEO events occurred in 2009, which is the highest number of SEOs during one particular year and accounts for 30.16% of the total proceeds raised during our sample period. One potential explanation is the UK debt crisis in 2009, when firms found it easier to

raise capital via equity issuance than debt. The total number of SEO deals during our sample period is 377, among which 43.8% SEO issuers are reported by news (165 SEOs with news versus 212 SEOs without news), indicating a bit smaller than a half chance for the issuers to appear in news reports before the SEOs are announced to the public. Panel A also report the average proceeds per offer during out sample period. The average proceeds for SEOs with news are significantly higher than without news (UK £158.42 million versus UK £103.27 million, respectively).

Panel B of Table 1 reports the number of SEOs and average proceeds across different issue types. In the UK, rights offering (*RO*), placing (*PL*), open offering (*OO*) and a combination of open offering with placing (*PLOO*) are the four most common types of SEOs. The distribution reported in Panel B shows that *PL*s are most likely to be covered by news compared with all other three issue types. Since there are potential influences of issue type on both media coverage and SEO price discounts, we control issue types in all our models.

(Insert Table 1 here)

ii. Summary Statistics of Media Related Variables

Table 2 presents the summary statistics of the media related variables during pre-SEO period. Panel A includes all SEOs with news in the sample. There are 568media articles about SEO issuers during the pre-SEO period, covering 165 SEO deals. On average, each SEO with news are reported by 3.442 pieces of news. Both mean and median of media sentiment (*Sentiment*) are positive, which indicates that the number of negative words is on average larger than the number of positive words. This finding is consistent with Tetlock et al. (2008). One potential reason is that the word list of Loughran and McDonald (2011) contains a greater number of negative words than positive words. Another explanation is that the psychology literature argues that negative information has a greater influence on audience psychology than positive information (Rozin and Royzman, 2001) and thus news reporting biases towards negative words. Tetlock (2007) confirms this psychological theory by finding that negative words are more likely to be associated with stock returns compared with other types of words.

In Panel B, we split the sample of SEOs with news into two subgroups according to whether there is a newspaper strike happened during a period of 60 days before the SEO announcement. We identify 38 SEOs that affected by newspaper strikes. Compared with SEOs not affected by newspaper strikes, the newspaper coverage for SEOs affected is significantly smaller, consistent with our argument that newspaper strike can directly reduce the media coverage. Meanwhile, the sentiment is significantly lower for news influenced by the strike, indicating news become less negative around the strike. These results provide preliminary support for newspaper strike to be a valid instrument for media related variables.

(Insert Table 2 here)

iii. Descriptive Statistics of Issue and Firm Characteristics

Table 3 reports the issue and issuers' characteristics of UK SEOs, along with the comparison between SEOs with news and those without. In Panel A, we report the issue characteristics including proceeds (*Proceeds*), pricing discounts (*Discount*), market reactions around SEO announcements (*CAR [-1,+1]*), issue types (*PL*, *RO*, *OO*, *PLOO*), and underwriter reputation (*Top-tier UW*). As reported in panel A of Table 3, the average dollar value of proceeds of SEOs with news is UK £150.52 million, whereas for SEOs without news, the average proceeds is £92.64 million. These findings suggest that, on average, SEOs with news raise more funds than those without. These results are consistent with Liu et al. (2009), who find that the IPO offer size is positively related to the level of media coverage. The average pricing discount for SEOs in our sample is 12.1%, which is similar to the 12% documented by Barnes and Walker (2006) in a UK sample during 1989 and 1998. The mean of pricing discounts for SEOs with and without news are 8.6% and 14.5% respectively. The difference between the two groups is insignificant in mean but significant at 10% level in median.

Panel A also presents the descriptive statistics for the market reactions to SEO announcements, defined by *CAR [-1,+1]*.[6] We find that the average three-day stock return

[6] To capture the market reactions to SEO announcements, we use the event study method introduced by Asquith and Mullins (1986) and Kang and Stulz (1996). Daily stock returns are computed in logarithmic form and adjusted for dividends. We apply the Carhart (1997) four-factor model, with the FTSE All Share equally weighted portfolio as a proxy for the

around SEO announcements is -2.31%, significantly different from zero. This result is consistent with several theories such as the downward-sloping demand curves, signaling effects (Heinkel and Schwartz, 1986; Gao and Ritter, 2010), and asymmetric information (Eckbo and Masulis, 1992). The market reactions to the SEO announcements are negative for both two subgroups. However, market reacts more negatively to the announcements of SEO with news, which provides preliminary support to our hypothesis that *media coverage during the pre-SEO period is negatively related to SEO announcement returns.* In addition, we also find SEOs in the type of placing, rather than open offer, and SEOs underwritten by top-tier under-writers are more likely to attract media attention.

Panel B reports the issuers' characteristics. The results show that issuers of SEOs with news tend to have higher institutional ownership (*IO*) and managerial ownership (*MSO*) compared with SEOs without news. These findings suggest that media is more likely to report the firms with higher institutional ownership and managerial ownership. Panel B also shows that the average firm size, measured by the market valuation (*MV*), is significantly higher for SEOs with news than for SEOs without news (UK £1266.92 million versus UK £771.33 million, respectively). In addition, the average leverage ratio (*Leverage*) for SEOs with news is significantly higher than that for SEOs without news. These results indicate that the media is more likely to notice large firms and firms borrowing more debts. Moreover, we find that the average turnover of SEOs with news is significantly higher than that of SEOs without news, suggesting that stocks actively traded in the capital market attract more media attention.

We also examine the past cumulative excess returns of SEO issuers, measured by *Pasts* during the period [-60,-2] days prior to the announcement date. As shown in Panel B, the average *Pasts* for all SEOs is 18.01%, which is positive and significant at the 1% level. This result is consistent Marsh (1982), who finds that excess returns during the year before the SEO are positively related to the probability of issuing equity as an external financing choice. We further document a significantly positive cumulative market excess return (*Pastm*) during the pre-SEO period. The difference between two subgroups is insignificant for both

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market. The cumulative abnormal returns are generated for the three-day event window around the SEO announcement day. The estimated period is set to cover [-260, -61] days prior to the announcement day.

Pasts and *Pastm*. SEOs attracting more media coverage also tend to attract higher analyst coverage (*NUM_Analyst*).

(Insert Table 3 here)

B. Media and SEO Price Discount

Our first set of analyses examines whether and to what degree media coverage and sentiment influences SEO offer price. The OLS regression analyses are performed as follows:

$$Discount = \alpha + \beta_1 News(-30,-2) / \log(1 + Covergae) / Sentiment + \beta_2 IssueCharacteristics + \beta_3 FirmCharacteristics + \varepsilon \quad (1)$$

Where *Discount* is SEO price discount, measured as the percentage difference between the closing price on the day before the announcement day and the offer price. *News (-30,-2)* is a dummy variable that equals to one if the SEO issuer is covered by news during the period of [-30,-2] days prior to the announcement, and zero otherwise. We include offering characteristics, issuer characteristics, and market conditions discussed in the previous section as control variables.

To identify the causal relationship between media features and SEO price discounts, we adopt the instrumental variable approach and run a 2SLS regression. We use the new paper occurrence (*NewspaperStrike*) as the instrument in the first stage regression.

$$News(-30,-2) / \log(1 + Covergae) = \alpha + \beta_1 NewspaperStrike + \beta_2 IssueCharacteristics + \beta_3 FirmCharacteristics + \varepsilon \quad (2)$$

From the equation (2), we obtain the predicted value of media coverage and apply them into the original model shown as follows.[7]

[7] We also try to use newspaper strike as the instrument for news sentiment. However, we fail to find a significant relation between the occurrence of newspaper strikes and news sentiment in the multivariable regression. Along with the lack of theory in the causality between newspaper strike and news sentiment, we do not use the occurrences of newspaper strikes as the instrument for news sentiment.

$$Discount = \alpha + \beta_1 \overline{News(-30,-2)} / \overline{\log(1+Coverage)} / \overline{Sentiment} + \beta_2 IssueCharacteristics + \beta_3 FirmCharacteristics + \varepsilon \quad (3)$$

Panel A in Table 4 presents the first-stage regression results of the instrumental variable model. The results suggest that the instrument, *NewspaperStrike*, is strongly related to the two measurements of media coverage. Our first measure of media coverage, *News(-30,-2)*, is a dummy variable that equals to one is there exists at least one news report about the SEO issuer during the pre-SEO period. Our second measure of media coverage is a continuous measure, *Log(1+Coverage)*, which is the natural logarithm of one plus the number of articles covering the SEO issuer during the pre-SEO period. According to Larcker and Rusticus (2010), the instrument is tested for the endogeneity/appropriation of instrumental variable model (Durbin-Wu-Hausman test and partial F-test) and over-identification (Sargan Statistic). The F-statistics on the instruments in our first stage are all above the critical value from Sargan Statistic over-identification test. Furthermore, the first stage R^2 is considerably large, i.e. 0.341 for *News(-30,-2)* and 0.485 for *Log (1+Coverage)*, indicating that the chosen instrument is valid for our model.

Panel B presents the OLS regression results and the second-stage results of instrumental variables regression. In Model 1, we estimate the OLS regression by using *News(-30,-2)* as the independent variable and estimate the regression by including all SEO deals.[8] The coefficient on *News(-30,-2)* is significantly negative (-0.023, t = -1.68), suggesting a negative correlation between media coverage and SEO price discounts. This result remains similar by using 2SLS regression and the results are reported in Model 2. In addition, as shown in Model 3 to 4, the coefficients on *Log(1+Coverage)* are negative in both OLS and IV regressions, at a significant level from 5% to 10%. These findings suggest that issuers with higher media coverage prior to the SEO announcements are likely to have lower SEO price discounts, which is consistent with our hypothesis that *media coverage during pre-SEO period is negatively related to SEO pricing discounts*. Media news raises the stock publicity among investors and facilitates the dissemination of firm-specific information in

[8] In Model 2 to 4, we focus on a constrained sample including only SEOs with news to further mitigate the potential endogeneity. Our results remain similar if estimating the regression with all SEO events and set *Coverage* as zero for SEOs without news. The reason why we include only SEOs covered by news in Model 5 is because sentiment can only be measured for SEOs with news.

the market, and thus, reduces the SEO discounts.

Model 5 displays the result of the relation between media sentiment and SEO price discounts. We note that the coefficient on media sentiment (*Sentiment*) is positive (0.307) and significant at 5% level, suggesting that more negative words in news reports covering the issuers leads to higher discounts on the offer price. This result confirms our argument that investors' valuation on the firm is influenced by media sentiment. More optimistic media sentiment raises investors' valuation and encourages more investors to participate in the SEO primary market, resulting in a higher offer price and lower price pressure after the issue. Similarly, when media sentiment is more pessimistic, the offer price turns out to have a higher discount. As for control variables, whenever significant, are consistent with previous literature (e.g. Corwin, 2003; Barnes and Walker, 2006; Huang and Zhang, 2011).

(Insert Table 4 here)

C. Media and Market Reaction to SEO Announcement

We next investigate whether media coverage and sentiment affect market responses to SEO announcements. We use both the OLS and instrumental variable approach. Specifically, we estimate the following two models[9]:

$$\begin{aligned} CAR(-1,+1) &= \alpha + \beta_1 News(-30,-2) / \log(1+Covergae) / Sentiment \\ &+ \beta_2 IssueCharacteristics + \beta_3 FirmCharacteristics + \varepsilon \end{aligned} \tag{4}$$

$$\begin{aligned} CAR(-1,+1) &= \alpha + \beta_1 \overline{News(-30,-2)} / \overline{\log(1+Coverage)} + \beta_2 IssueCharacteristics \\ &+ \beta_3 FirmCharacteristics + \varepsilon \end{aligned} \tag{5}$$

The dependent variable, *CAR(-1,+1)*, is three-day cumulative abnormal return around SEO announcements. All the issue and issuer characteristics included are the same as those in equation (2) and (3).

Table 5 reports the outcome of estimating equation (4) and (5). Notably, we find that the coefficients on media coverage (*News(-30,-2)* and *Log(1+Coverage)*) are all significantly

[9] In the second stage of 2SLS regression, we use the fitted value of media variables estimated by equation (2).

negative across Model (1) to (4). These findings suggest that firms with higher media attention experience larger value declines upon the SEO announcements. Given that in general SEO signals to the market that the firm's current stock price is overvalued, higher investor attention attracted by media news exaggerate the negative influences of SEO announcements on stock price.

The estimates for the influences of media sentiment in Model 5 suggest that more negative information disseminated by the media will further depress the stock price, leading to stronger negative return around SEO announcements. This result is consistent with the psychology theory that individual investors influenced by the news content (Tetlock et al., 2008), which ultimately reflected in their trading activities. The coefficients on control variables, whenever significant, are consistent with previous literatures (e.g., Cronqvist and Nilsson, 2003; Barnes and Walker, 2006; Ljungqvist et al., 2006; Balachandran et al., 2008)

(Insert Table 5 here)

D. Robustness Test of Long-term Effect of the Media

To further investigate the influences of the media in stock returns involved in SEOs, we construct a zero-investment long-short portfolio of stocks sorted by media coverage. As before, we divide all SEOs into SEOs with news and SEOs without news. Using the cumulative abnormal return, we find that, on average, the portfolio of SEOs with news underperforms the portfolio of SEOs without news by 4% in 60 days after SEOs. We draw the trend of cumulative abnormal return in 60 days after SEOs in Figure 1. Figure 1 suggests that the market price reflects the information contained in the SEO announcements more precisely when investor recognition is broadened by the mass media, which supports

the investor recognition hypothesis (Merton, 1987) and the "no media premium" hypothesis (Fang and Peress, 2009). Moreover, the return premium in stocks without news suggests a mispricing, and such a mispricing can persist in an incomplete information market. In this case, the long-short strategy would generate a positive alpha. This result also supports Autore and Kovacs's (2014) view that greater media coverage as a proxy for improved investor recognition, can partially explain the appearance of post-issue stock underperformance.

We then form a long-short portfolio of SEO stocks sorted by media sentiment. We divide SEO stocks with news into two subsamples: SEOs with positive news and SEOs with negative news. Figure 2 shows that the return of portfolio of SEO stocks with positive news outperforms the portfolio of SEO stocks with negative news by 3.48% over 60 days after an SEO and the return trend is likely to be persistent.

Overall, the results displayed in Figures 1 and 2 suggest that the long run role of media in price setting of SEOs. These findings confirm the arguments that media coverage, as a proxy of investor attention, and media content, as a proxy for investor sentiment, tend to related to a firm's long term equity value.

(Insert Figure 1 and Figure 2 here)

V. Conclusions

In this paper, we document that both media coverage and media sentiment before an SEO announcement are significantly related to offering price discounts and market responses to the SEO announcements. We measure the media coverage by the existence of news reports,

and the total number of news articles related to the issuer during the pre-SEO period. The media sentiment is computed as the ratio of negative words minus positive words to the total number of words in a news article.

Our paper yields two main sets of findings. First, media coverage increases investor attention and facilities the information dissemination among investors. In the setting of SEO pricing, we document lower SEO discounts for issuers covered by news reports and a negative correlation between the number of news articles and SEO price discounts. As for market reaction to SEO announcements, higher media coverage accelerates the information processing of investors and exaggerates the adverse effects of SEO announcements on stock price.

Our second set of findings focus on media sentiment. Our results suggest investor decisions are influenced by media sentiment. Specifically, a larger number of negative words contained in the news reports increases SEO price discounts, and results in even more negative market reaction to the SEO announcements. Meanwhile, more optimistic media news neutralizes the negative market reaction to SEO announcements. These findings support the conjecture that media sentiment has an important impact on investor sentiment (e.g. Shiller, 2005; Tetlock, 2007). Furthermore, the results in robustness test show that the lower return around SEO announcements predicted by greater media coverage and more pessimistic news tends to be persistent in a window of 60 days after SEO.

Our study contributes to the growing literature on the media's role in asset pricing and investor behavior. By using a UK sample, we provide strong evidence that media influences price discounts and market responses to SEOs. We note that not only the media coverage

but also the news contents have impacts on investors.

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Appendix: Variables Definitions

Variable	Definition	Source
Media features		
News(-30,-2)	Dummy variable that equals one for the SEO firms that are covered by media news during a period from 30 days to 2 day before the announcement day, and zero otherwise.	LexisNexis UK
Coverage	Total number of media articles related to issuers during the pre-SEO period. *Log(1+Coverage)* is the natural logarithm of one plus *Coverage*.	LexisNexis UK
Log(1+Coverage)	The natural logarithm of 1 plus media coverage	LexisNexis UK
Sentiment	Sentiment is calculated as the mean of the sentiment per article during the pre-SEO period, where sentiment per article is defined as the ratio of (Negative words-Positive words) to Total words.	LexisNexis UK
Issue characteristics		
Discount	1- Offer price/Closing market price on the day before the announcement day.	Thomson One Banker
Proceeds	Gross proceeds. For missing data, the value is constructed as the number of new shares times the offer price. *Log(Proceeds)* is the natural logarithm of gross proceeds.	Thomson One Banker
Top-tier UW	Dummy variable that equals one if the equity issue is underwritten by one of top-8 underwriters according to the value of the equity issue during the sample period (1998 to 2010), and zero otherwise. The top-8 underwriters are Goldman Sachs, Cazenove and Co, Merrill Lynch (now Bank of America Merrill Lynch), UBS Investment Bank, JP Morgan, Credit Suisse, RBS Hoare Govett Ltd, Deutsche Bank.	Thomson One Banker
RO	Dummy variable that equals one for a rights offer, and zero otherwise.	Thomson One Banker
PL	Dummy variable that equals one for placing, and zero otherwise.	Thomson One Banker
OO	Dummy variable that equals one for an open offer, and zero otherwise.	Thomson One Banker
PLOO	Dummy variable that equals one for the combined offer of placing-open offer, and zero otherwise.	Thomson One Banker
Firm characteristics		
IO	Institutional ownership comprises aggregate blocks of at least 3% of the firm's share stakes held by all institutional investors.	Thomson One Banker
MSO	Managerial share ownership, defined as the sum of the ownership of executive and non-executive directors.	Thomson One Banker
MV	The issuer's market value.	Datastream
Size	The natural logarithm of market value.	Datastream
ROE	The ratio of net income over the book value of equity.	Datastream
MV/BV	The ratio of the market value of equity to the book value of equity.	Datastream
Leverage	The ratio of total debt to total assets.	Datastream
Dividend	The cash dividend on stock price.	Datastream
Turnover	Monthly moving average turnover ratio estimated during a period of [-60, -2] days prior to announcement day, where turnover ratio is daily trading volume divided by the number of share outstanding.	Datastream
CAR(-1,+1)	Cumulative abnormal returns for the SEO issuer in the 3-day event window (-1,+1) around the announcement day. The returns are calculated using the Carhart four factor model (1997) with the market model parameters estimated over the period of [-260,-61] days prior to the announcement day.	Datastream
Pasts	Past stock performance, defined as the cumulative abnormal return for SEO firms during the estimated period of [-60, -2] prior to the announcement day.	Datastream
Pastm	Past market performance, defined as the cumulative equal-weighted market returns during the estimated period of [-60, -2] prior to announcement day.	Datastream
NUM_Analyst	The number of analyst reports over firm within the period of [-60, -2] days prior to announcement day. *Log (1+ NUM_Analyst)* is the natural logarithm of one plus *NUM_Analyst*.	IBES
Instrumental variable for media coverage		
NewspaperStrike	Dummy variable that equals one if newspaper related strike occurs during a period of [-30, -2] prior to SEO announcement day.	LexisNexis UK

Table 1: Institutional Features of UK SEOs

The table presents the numbers and the average proceeds of SEOs across years between 1998 and 2010. We exclude utilities and financials listed on the LSE during the sample period. Proceeds are reported in millions of British pounds. All SEOs are separated into two groups: SEOs whose issuers covered by media news during the pre-SEO period (SEOs with news) and SEOs whose issuers not covered by media news during the pre-SEO period (SEOs without news). The pre-SEO period lasts from 30 days before the announcement date to 2 days before the announcement date. All media articles are collected from the LexisNexis UK. Our sample comprises all news articles from the *Financial Times* (London), *The Times* (London), *Guardian* (London), *Mirror* and *Sunday Mirror*.

Panel A SEOs distribution across years						
	All SEOs		**SEOs with news**		**SEOs without news**	
	N	**Average Proceeds**	**N**	**Average Proceeds**	**N**	**Average Proceeds**
1998	13	140.91	8	186.34	5	68.21
1999	11	189.58	9	210.88	2	93.71
2000	37	120.74	20	160.51	17	73.95
2001	39	71.89	21	62.78	18	82.73
2002	24	104.77	9	202.68	15	46.03
2003	29	95.24	9	88.60	20	99.19
2004	39	66.00	11	117.85	28	42.97
2005	30	102.29	11	105.38	19	100.49
2006	28	111.83	14	148.59	14	75.05
2007	19	194.33	8	233.03	11	166.19
2008	11	155.37	5	180.85	6	134.15
2009	92	186.80	39	211.51	53	168.61
2010	5	51.93	1	47.69	4	52.99
Full Sample	377	127.55	165	158.42	212	103.27

Panel B SEOs distribution across issue types						
PL	107	142.74	63	166.11	44	109.29
RO	132	134.50	54	160.07	78	116.80
OO	32	69.15	8	104.69	24	57.31
PLOO	106	121.39	40	154.83	66	101.12
Full Sample	377	127.55	165	158.42	212	103.63

Table 2: Summary Statistics of Media Related Variables

This table presents the summary statistics of the media related variables for the UK SEOs with news from 1998 to 2010. All news articles are collected from the LexisNexis UK, comprising all news articles from the *Financial Times* (London), *The Times* (London), *Guardian* (London), *Mirror* and *Sunday Mirror*. An SEO is classified as SEO with news if its issuer is covered by news during the pre-SEO period. Panel A includes all SEOs with news. Panel B divides the sample of SEOs with news into two subgroups according to whether they are affected by a newspaper strike a period of 60 days before the SEO announcement. All definitions of variables are provided in the Appendix. Wilcoxon Signed Rank test is used to test the difference in means and medians. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A All SEOs with news (N=165)					
	Mean	**Median**	**Std.**	**10th**	**90th**
Coverage	3.442	3.000	2.507	1.000	8.000
Sentiment (%)	1.649	1.300	1.014	0.444	3.443

Panel B Comparison of SEOs with news affected by newspaper strikes and those not affected						
	Not Affected by Newspaper Strike (N=127)		**Affected by Newspaper Strike (N=38)**		**Difference**	
	Mean	**Median**	**Mean**	**Median**	**p-value Mean Diff.**	**p-value Median Diff.**
Coverage	3.776	3.000	2.339	2.000	0.000	0.000
Sentiment (%)	1.675	1.379	1.562	1.262	0.043	0.037

Table 3: Summary Statistics of Issue and Firm Characteristics

This table presents the descriptive statistics for a sample of 377 UK SEOs from 1998 to 2010. Issue characteristics and issuer characteristics are reported in Panel A and B, respectively. All SEOs are separated into two groups: SEOs with news (N=165) and SEOs without (N=212). An SEO is classified as SEO with news if its issuer is covered by news during the pre-SEO period. All definitions of variables are provided in the Appendix. Wilcoxon Signed Rank test is used to test the difference in means and medians between two groups, SEO with news and SEO without news. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

	All SEOs		SEOs with news (1)		SEOs without news (2)		Difference (1)-(2)	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**p-value Mean**	**p-value Median**
Panel A Issue characteristics								
Proceeds (£mil)	122.44	69.25	150.52	83.67	92.64	54.28	0.000	0.000
Discount	0.121	0.202	0.086	0.188	0.145	0.222	0.147	0.085
CAR [-1,+1] (%)	-2.307	-0.144	-4.344	-0.090	-0.720	-0.327	0.010	0.018
PL	0.284	0.000	0.382	0.000	0.208	0.000	0.000	0.000
RO	0.350	0.000	0.327	0.000	0.368	0.000	0.413	0.412
OO	0.085	0.000	0.048	0.000	0.113	0.000	0.026	0.026
PLOO	0.281	0.000	0.242	0.000	0.311	0.000	0.141	0.130
Top-tier UW	0.621	0.000	0.679	0.000	0.575	0.000	0.041	0.041
Panel B Firm characteristics								
IO (%)	37.316	32.390	34.486	29.360	39.519	33.915	0.059	0.193
MSO (%)	6.652	1.750	4.795	1.750	8.096	1.610	0.026	0.720
MV (£ mil)	988.24	655.65	1266.92	941.74	771.34	450.77	0.000	0.000
ROE (%)	7.280	4.100	13.037	5.140	2.800	4.070	0.947	0.375
MV/BV	3.176	2.010	3.676	1.960	2.787	2.055	0.074	0.140
Leverage (%)	26.681	25.068	28.861	26.478	24.984	25.068	0.098	0.072
Dividend (%)	7.260	3.890	8.375	3.890	6.393	3.990	0.188	0.065
Turnover (%)	0.585	0.410	0.717	0.462	0.482	0.374	0.002	0.082
Pasts (%)	18.008	11.282	22.395	13.476	14.594	9.574	0.138	0.142
Pastm (%)	8.496	11.606	7.953	10.733	8.919	12.285	0.747	0.342
NUM_Analyst	2.984	2.000	3.644	2.000	2.470	2.000	0.077	0.215

Table 4: Media and SEO Price Discount

This table presents the regression results of SEO price discounts on media coverage and sentiment for UK SEOs from 1998 to 2010. Panel A presents the first stage-regression results of instrumental variable approach. *News(-30,-2)* and *Log(1+Coverage)* are respectively predicted by the instrumental variable, *NewspaperStrike*, along with other firm-level control variables. In Panel B, Model 1, 3 and 5 report the results of baseline OLS regression. And Model 2 and 4 report the second-stage regression results of instrumental variable approach, where *News(-30,-2)* and *Log(1+Coverage)* are the fitted value estimated by the first-stage regression. All definitions of variables are provided in the Appendix. All firm variables are lagged with respect to the dependent variable. All regressions include year and industry fixed effect. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

Panel A First-Stage regression of instrumental variable approach

	1		**2**	
	News(-30,-2)		***Log(1+Coverage)***	
	Coefficient	***t*-stat**	**Coefficient**	***t*-stat**
Intercept	-0.183	-1.44	-1.406***	-4.01
IV: *NewspaperStrike*	-0.561***	-9.45	-1.883 ***	-11.47
Issue Characteristics				
Log(Proceed)	0.016	0.78	0.039	0.68
Top-tier UW	0.065	1.28	0.08	0.57
PL	0.018	0.33	0.027	0.18
RO	-0.117**	-1.99	-0.104	-0.64
OO	-0.14	-1.48	-0.272	-1.05
Firm characteristics				
IO	-0.006	-0.23	-0.135*	-1.93
MSO	0.010	0.41	0.059	0.87
Size	0.054***	2.85	0.266***	5.10
ROE	-0.018	-0.81	-0.101	-1.60
MV/BV	-0.195	-0.32	3.359**	2.02
Leverage	-0.323**	-2.08	-0.647	-1.51
Dividend	0.149	0.65	0.489	0.78
Turnover	0.003	0.11	0.034	0.49
Pasts	-0.005	-0.19	-0.119*	-1.83
Pastm	-0.011	-0.47	-0.051	-0.75
Log(1+NUM_Analyst)	-0.076	-0.79	-0.127	-0.48
Partial F-statistics	11.37		19.87	
Adjust-R^2	0.341		0.485	
N	377		377	

Table 4 (cont'd)

Panel B OLS regression results and second-stage of instrumental variable approach

	1		2		3		4		5	
	OLS		Second Stage (IV)		OLS		Second Stage (IV)		OLS	
	Coefficient	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	***t*-stat**
Intercept	0.634***	10.43	0.612***	9.65	0.602***	9.74	0.592 ***	8.88	0.727	8.03
Media Features										
News(-30,-2)	-0.023*	-1.68	-0.085*	-1.65						
Log(1+Coverage)					-0.020**	-2.53	-0.025*	-1.68		
Sentiment									0.307**	2.05
Issue Characteristics										
Log(Proceed)	0.018*	1.84	0.019**	1.87	0.018*	1.86	0.018**	1.86	0.009*	1.97
Top-tier UW	-0.088***	-3.64	-0.087 ***	-3.56	-0.090***	-3.76	-0.090***	-3.77	-0.112***	-3.39
PL	0.088***	3.26	0.090***	3.31	0.088***	3.29	0.088***	3.30	0.076**	2.00
RO	0.002	0.06	0.012	0.41	0.004	0.13	0.005	0.18	-0.019	-0.52
OO	-0.051	-1.13	-0.062	-1.33	-0.055	-1.22	-0.057	-1.26	-0.212	-1.37
Firm characteristics										
IO	-0.035***	-2.87	-0.036***	-2.92	-0.032	-2.70	-0.032	-2.64	-0.017 **	-2.36
MSO	0.009**	2.25	0.009**	2.08	0.008**	2.27	0.008**	2.20	0.002**	2.07
Size	-0.058***	-6.34	-0.052***	-5.15	-0.052***	-5.55	-0.050***	-4.71	-0.068***	-5.90
ROE	0.009	0.79	0.009	0.77	0.008	0.72	0.008	0.69	0.021	1.01
MV/BV	-0.944***	-3.27	-0.943***	-3.24	-0.862***	-2.99	-0.842***	-2.88	-0.685**	-2.07
Leverage	0.081	1.09	0.051	0.64	0.068	0.92	0.062	0.82	0.079	0.82
Dividend	0.458***	4.22	0.451***	4.11	0.452***	4.21	0.450***	4.18	0.557***	4.04
Turnover	-0.016	-1.31	-0.018	-1.46	-0.018	-1.49	-0.018	-1.53	-0.001	-0.09
Pasts	-0.026**	-2.31	-0.025**	-2.21	-0.028**	-2.46	-0.028**	-2.48	-0.028*	-1.78
Pastm	0.016**	2.41	0.017**	2.46	0.017**	2.45	0.018**	2.28	0.032*	1.73
Log(1+ NUM_Analyst)	-0.082*	-1.78	-0.089*	-1.90	-0.079*	-1.74	-0.079*	-1.74	-0.067*	-1.75
Adjust-R^2	0.311		0.309		0.322		0.317		0.413	
N	377		165		165		165		165	

Table 5: Media and Market Reaction to SEO Announcement

This table presents the regression results of the market reaction around SEO announcements on media features for UK SEOs from 1998 to 2010. Models 1, 3 and 5 show the results of baseline OLS regression. Models 2 and 4 report the second-stage regression results of instrumental variable approach, where *News(-30,-2)* and *Log(1+Coverage)* is the fitted value from the first-stage regression. All definitions of variables are provided in the Appendix. All firm variables are lagged with respect to the dependent variable. All regressions include year and industry fixed effect. *t*-statistics for the chi-squared test statistic is also shown in the table. ***, ** and * denote statistical significance at 1%, 5% and 10% levels, respectively.

	1		**2**		**3**		**4**		**5**	
	OLS		**Second Stage (IV)**		**OLS**		**Second Stage (IV)**		**OLS**	
	Coefficient	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	***t*-stat**	**Coefficient**	***t*-stat**
Intercept	-0.038*	-1.87	-0.048*	-1.93	-0.045*	-1.94	-0.045*	-1.94	-0.032	-1.00
Media Features										
News (-30,-2)	-0.010***	-2.87	-0.049***	-2.75						
Log (1+coverage)					-0.008***	-2.93	-0.008***	-2.93		
Sentiment									-0.860*	-1.87
Issue Characteristics										
Discount	-0.001**	-1.97	-0.006**	-2.13	-0.007*	-1.93	-0.007*	-1.93	-0.058**	-2.57
Log(Proceed)	0.002	0.56	0.002	0.65	0.002	0.60	0.002	0.60	0.002	0.49
Top-tier UW	0.021**	2.48	0.021**	2.42	0.019**	2.34	0.019**	2.34	0.027***	2.63
PL	0.018	1.59	0.016	1.56	0.018	1.42	0.018	1.40	0.018	1.61
RO	-0.012**	-2.01	-0.019*	-1.83	-0.013*	-1.72	-0.013	-1.35	-0.024	-1.13
OO	0.012	0.80	0.005	0.34	0.011	0.71	0.011	0.71	0.014	0.70
Firm characteristics										
IO	0.002	0.51	0.003	0.69	0.001	0.34	0.001	0.34	0.002	0.41
MSO	-0.012***	-3.15	-0.012***	-2.96	-0.012***	-3.11	-0.012***	-3.11	-0.001*	-1.66
Size	0.006*	1.87	0.009**	2.58	0.008**	2.42	0.008**	2.42	0.005*	1.73
ROE	-0.005	-1.37	-0.005	-1.34	-0.005	-1.47	-0.005	-1.47	-0.006	-1.40
MV/BV	0.045	0.46	0.041	0.40	0.071	0.73	0.071	0.73	0.173	0.96
Leverage	-0.029*	-1.72	-0.048*	-1.77	-0.033*	-1.72	-0.033*	-1.71	-0.117***	-2.69
Dividend	0.064	1.16	0.066	1.18	0.063	1.35	0.063	1.35	0.028	0.95
Turnover	-0.004	-0.88	-0.002	-0.53	-0.003	-0.68	-0.003	-0.68	-0.001	-0.33
Pasts	0.022***	5.8	0.022***	5.50	0.023***	6.06	0.023***	6.06	0.013***	3.07
Pastm	0.013***	3.22	0.013***	3.24	0.013***	3.31	0.013***	3.31	0.007	1.31
Log(1+ NUM_Analyst)	-0.007	-0.46	-0.012	-0.72	-0.006	-0.41	-0.006	-0.41	-0.015	-0.86
Adjust-R^2	0.158		0.160		0.176		0.176		0.129	
N	377		165		165		165		165	

Figure1: CAR of SEOs with News vs. SEOs without News

This figure presents the cumulative average abnormal returns for two groups, SEOs with news (N=165) and SEOs without news (N=212). The sample period starts from 01/01/1998 to 31/12/2010. The portfolio holding period covers [0,+60] days after SEOs, where Day0 is the announcement date.

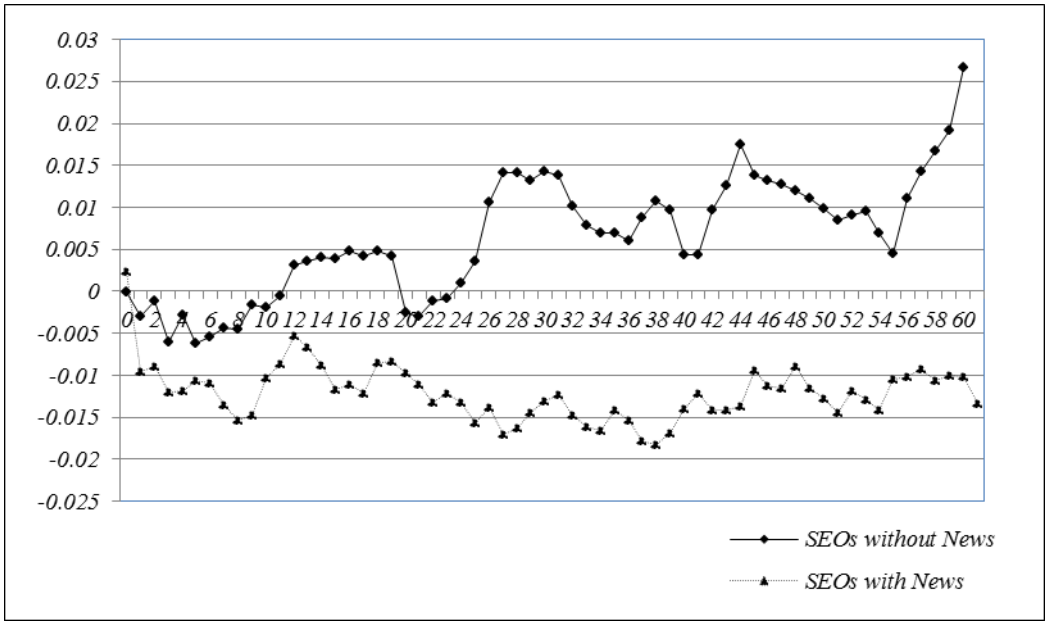
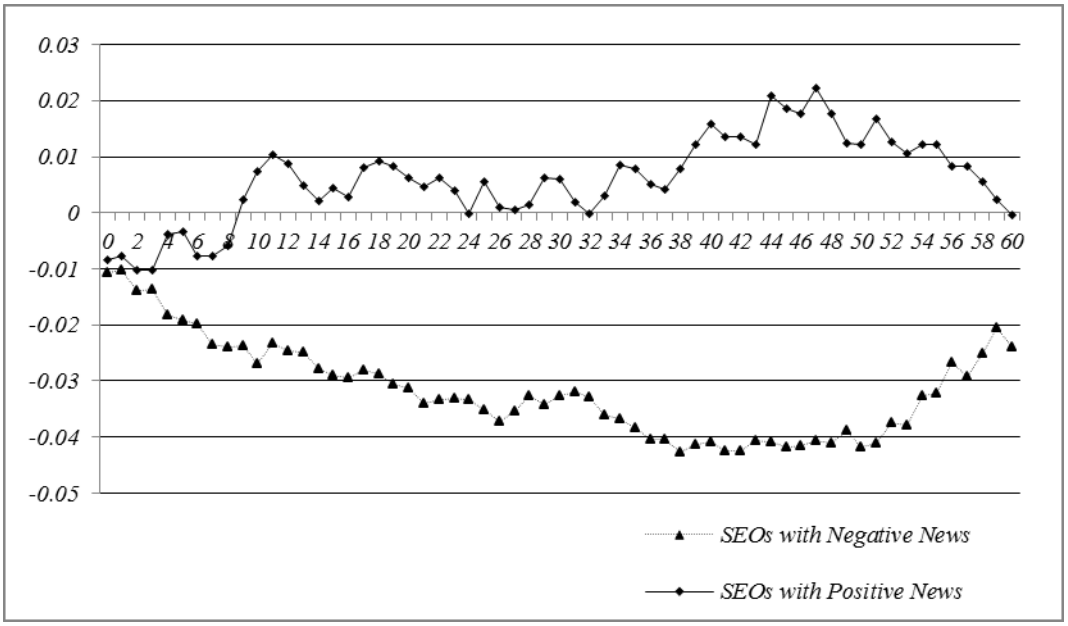


Figure2: CAR of SEOs with Positive News vs. SEOs with Negative News

This figure presents the cumulative average abnormal returns for two groups: SEOs with positive news (N=82) and SEOs with negative news (N=83). The sample period starts from 01/01/1998 to 31/12/2010. The portfolio holding period covers [0,+60] days after SEOs, where Day0 is the announcement date.