The Governance Role of the Media Through News Dissemination: Evidence from Insider Trading

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This paper introduces a new antecedent to the insider trading literature - the governance role of news coverage as a disciplining tool for insiders' equity trades. We examine how insider trading related news coverage about firms reduces insiders' trading profits. Using a comprehensive dataset of corporate and insiders' news coverage over the period 2001 to 2012, our empirical evidence supports the role of news coverage in attenuating insiders' profits. This effect is present even when we instrument coverage with exogenous determinants, and survives the inclusion of alternative governance mechanisms that could plausibly reduce insiders' trading profits. The media's influence is through disseminating regulatory filings about insider trading activities; coverage following initial releases still attenuates insiders' *alpha*. The media effect seems to specifically target predictably profitable insiders' trades.

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1. Introduction

The literature recognizes the role of news media in bringing governance issues to the attention of shareholders (Tetlock, 2007; Dyck, Volchkova and Zingales, 2008), board members (Joe, Louis and Robinson, 2009), corporate policymakers (Dyck, Morse and Zingales, 2010), and the general public, (Miller, 2006, and Dyck, Volchkova and Zingales, 2008). Examples of documented governance interventions through the media include the reversal of governance violations (Dyck, Volchkova and Zingales, 2008) and the pressuring of managers to act in ways that are "socially acceptable" (Dyck and Zingales, 2002). It is surprising that such outcomes are possible given that the media focuses on rebroadcasting information created by company management (e.g., Huberman and Regev, 2001; Kothari, Li and Short, 2009; Dyck, Volchkova and Zingales, 2008) or other information intermediaries such as regulators (e.g., Miller, 2006, Li, Ramesh and Shen, 2011). Bushee et al. (2010) show that rebroadcasting or disseminating news has a bigger impact on reducing information asymmetry around earnings announcements than press-generated new information. Arguably, it is more intuitive to expect that the impact of the media on markets should be through the creation of new content, for example, the exposition of socially unacceptable practices as in Dyck, Volchkova and Zingales (2008). The purpose of this paper is to use insider trading activities as a laboratory in which to pin-point the mechanism through which the information dissemination role of the media affects market participants. We measure the impact of news about insiders' trading activities on the profitability of their transactions.

We examine the view that the role of the media in disseminating regulatory releases of insider trading activities plays a disciplining role by highlighting the trading activities of insiders, thereby reducing the profitability of their transactions as well as the probability of opportunistic trading.[1] We refer to this depiction of the role of news in attenuating insiders' profits as the "*insider disciplining*

[1] Following the literature, we examine legal insider trading that is disclosed to the Securities and Exchange Commission. We discuss the regulation of insiders' trades in detail in Section 2.

view". This view is supported by at least three conjectures. First, it is possible that, with timely disclosure of firm-specific information to the public through the press, information asymmetry between insiders and investors is lowered. Hence, insiders should not have much opportunity to profit through insider trading, given the price is closer to the level supported by fundamentals. In this way, the press disciplines insiders by fostering transparency. Tetlock (2010) concludes that "public news levels the playing field for other investors" when insiders trade on private information based on his model of the media's role in resolving asymmetric information.

Second, if a firm is extensively covered in the news, insiders' activities are likely to be monitored by the public. The regular following of insiders' transactions in the financial press and the advent of numerous online disseminators of insider trading data are prominent examples of the increasing market interest in the trading activities of inside parties.[2] Moreover, news coverage may quicken the market's access to information about insiders' trades.[3]

Third, it is reasonable to expect that, under the concern of potential litigation risk, insiders in firms that are in the media spotlight should reduce their trading activities and profitability. For example, after the financial press reports intensive share selling by a company executive, managers can be sued or charged by the SEC if they profit through any negative nonpublic material information.

Insider trading is particularly suited for our empirical study. First, there is now a large literature showing the profitability of insiders' trades (e.g. Aboody and Lev (2000), Piotroski and Roulstone (2005), Huddart, Ke and Shi (2007), Ravina and Sapienza (2010), and Cohen, Malloy and

[2] For examples of typical headline coverage of insiders' trades see: "Lock-Up Expires for LinkedIn Shares, and Insiders Cash In", *New York Times*, 22 November 2011; "View from inside: Time to buy", *Washington Post*, 23 August 2011; or "Executives' Decisions: Buying Battered Shares", *Wall Street Journal*, 19 November 2008. Examples of the numerous websites dedicated to insiders' trading activities, mostly gleaned from SEC filings (Forms, 3, 4 and 5), include Form4Oracle.com, InsiderCow.com, InsiderMonkey.com, InsiderTradings.com, Insiderslab.com, Insider-Monitor.com, Pennystocksinsiders.com, secform4.com, and TrackingTheInsiders.com. Stories featuring data from such websites frequently appear in prominent national newspapers and business magazines.

[3] Fidrmuc, Goergen and Renneboog (2006) show that the speed with which insiders' trading activities come to the attention of the market has implications on the abnormal returns accompanying the announcement of the trades. Chang and Suk (1998) show that even after official notification of insiders trades to the SEC takes place, there is still a significant price reaction to the regurgitation of news from the SEC's online *Insider Trading Report* in the Wall Street Journal, suggesting that the press has a role in disseminating insider trading information.

Pomorski (2012)). Corporate governance has been identified as one of the restraints to insiders' trading profits (e.g. Jagolinzer, Larcker, and Taylor (2011), Cziraki, De Goeij and Renneboog (2013), Dai et al. (2012), Frankel and Li (2004)). This literature concentrates on the monitoring role of governance, chiefly through blockholders, as the channel through which governance curtails the profitability of insiders' trades. In the meantime, news coverage has emerged as one of the peripheral parties in the corporate environment that are most effective in generating governance outcomes. Ours is the first paper to estimate the impact of news about insiders' trading activities on the profitability of their transactions.

By basing our analysis on insider trading, our paper also benefits from the richness of the information this setting presents. Here we highlight several examples. Our study is free of a key reverse causality concern highlighted by Ahern and Sosruya (2012) – that insiders (including managers) might be able to determine the timing and content of new releases, especially for the news originally disclosed by the firms on a voluntary basis, and therefore gain from trading. However, in the way insider trading is notified to the market, there is limited managerial discretion over the timing and content of insider trading news, which, as we show below, is instigated by mandatorily lodged SEC reports. This arrangement partially mitigates the concern of news manipulation by managers. Another benefit of the insider trading laboratory is that we have ample access to variations of the key variables to be able to disentangle different forms of media effects. For example, our results will show, on the basis of the timing of insider trading news relative to regulatory releases, whether the media disseminates previously known news or is a conduit for newly created content. Similarly, we draw important inferences from being able to observe the different levels of seniority among the insiders.

Our empirical analysis covers both the price impact and reduced probability of trading angles found in the story of how the media might affect corporate insiders' trading outcomes. We utilize a comprehensive database of trades by US corporate insiders, assembled from Securities and Exchange

Commission filings, and corporate news coverage data from RavenPack[4], which provides us with counts of Dow Jones news releases associated with the insiders' firms. Importantly, the data allow us to separate insider trading specific news from general news about the firms. In the majority of our tests, we adopt the analytical framework of Jagolinzer, Larcker, and Taylor (2011) and compute insider trading profits as the alpha earned during the 180-day window following an insider buy or sell trade, and test whether insider trades consistently earn abnormal profits, adding, in our case, the conditionality of prior media coverage. We also examine whether news coverage has an impact on the probability of observing abnormal trading activity by insiders.

In our initial analysis, we show that the amount of total news coverage in the previous year is negatively related to subsequent insider trading profits measured by alpha. This finding is robust to the incorporation of various firm-level control variables, (e.g. firm size, market-to-book ratio, momentum, and *R&D* expenses), trade characteristics (insiders' transaction size and frequency), and industry- and year-fixed effects. Moreover, the result stands whether we use four-factor-model or market adjusted returns, sample period partitioning, and clustering of standard errors by industry or year. We then decompose our news coverage measure into two components – (1) counts of articles that are specifically related to the firm insiders' trading activities and (2) number of news releases not related to insider trading. We find that the negative association between insider profits and news coverage is entirely restricted to news about insiders' trading activities. We interpret this finding as drawing us closer to accepting the *insider disciplining* story and concentrate the rest of the analysis on regressions incorporating only news relevant to firm insiders' trading activities.

Next we explore the channel through which news coverage works. Following the literature, we investigate at least two channels through which news may exert a disciplining effect on insiders. First, previous studies highlight the information dissemination effect of the media with regards, for instance,

[4] RavenPack is a leading global news database that collects real time firm news from Dow Jones Newswires, regional editions of the Wall Street Journal, and Barron's. Its collection starts from 2000, and covers more than 170,000 entities over 100 countries, which represents over 98% of the investable global market.

to insider trading filings to the SEC (Chang and Suk, 1998; Rogers, Skinner and Zechman, 2013), reports on firms from the SEC to markets (Li, Ramesh and Shen (2011)), activist investors' exposure of corporate governance violations (Dyck, Volchkova and Zingales (2008), and accounting fraud (Miller (2006). In this role, the media simply rebroadcasts or passes on regulatory information to the market more broadly than the regulators alone would have achieved. Second, the media may add value to the regulatory information by contributing editorial content based on original investigation and analysis (Miller, 2006), resulting in information creation rather than mere dissemination. With news coverage variables focusing on firm insiders' trading activities, a justified concern is that our news coverage variable is capturing only the replication of the announcements of insiders' trades to the SEC as required by law.

We find that both regulatory filings of insider trading activities and news counts net of simple replication of regulatory filings have the effect of reducing the profitability of insiders' trades. However, in a simultaneous analysis in which both variables of interest are included in the same model, only news counts net of simple replication of regulatory filings retain significance. Moreover, we find that repeated news coverage of insider trading activities has the same effect of attenuating insiders' profits as in our baseline findings. However, initial news coverage alone does not have a significant influence on insiders' profits. We conclude that the media plays the role of exploring, analyzing, and disseminating news about insiders' transactions, and hence, is not merely a simple conduit for replicating the announcements.

One concern the reader might have with our findings is that they do not allow for a conclusive verdict of the causal effect of news coverage on insiders' profits. We use three approaches to address the problem of causality. First, following Rogers, Skinner and Zechman (2013), we take advantage of the fact that the underlying source of insiders' news data, Dow Jones, commenced coverage of insider trading filings in January 2004, several years into our sample period. This gives us an apt natural experiment to cleanly identify the causal effects of insiders' news coverage. The results show clear

evidence of the coverage effect. Prior to the exogenous shift in coverage (years 2001-2003) there is a positive, statistically insignificant, relationship between our news coverage of insiders' activities variable and insiders' profits. This result is reversed in the post-coverage initiation period (years 2005-2007). We also confirm both sets of findings for the individual years 2003 and 2005, respectively.

Second, we utilize two instrumental variables to proxy for news coverage that do not affect the degree of insiders' profits – state population and state income. When we instrument coverage of insider trading activities with these exogenous determinants, its estimated impact on insiders' profits remains qualitatively unchanged, suggesting the link might be causal.

Third we address the concern that, as with any instrument, ours may not be truly exogenous. To complement our instrumental variable analysis, we use a raft of tests to gather additional evidence to rule out alternative insider disciplining mechanisms. We analyze a broader set of factors that have been shown in the literature to attenuate insiders' trading profits. Kyle's (1985) model demonstrates that insider profits are increasing in insiders' information advantage, while Baiman and Verrecchia (1996) show that insider profits decrease as public information becomes more precise. Therefore, we repeat our regression analysis and include as additional independent variables, firm attributes which shape a firm's public information environment: the level of institutional ownership, analyst coverage, being contracted to a Big Five audit firm, independent director representation, and CEO/Chairman duality.[5] Our main results remain unchanged.

[5] The level of institutional ownership is associated with the information content of earnings (El-Gazzar, 1998) and superior governance and monitoring of corporations (Huson, Parrino and Starks (2001)). Frankel and Li (2004) show that increased analyst coverage reduces the strength of the relationship between insiders' trades and subsequent stock returns. Behn, Choi and Kang (2008) demonstrate that firms audited by the Big Five audit firms attract more accurate financial forecasts and less dispersion. Independent directors are regarded as better monitors of management (see, for example, Fama and Jensen; 1983, and Srinivasan, 2005), inducing them to comply with accounting rules and produce more accurate financial statements (see, for instance, Sengupta (2004)). Finally, CEO and Chairman position duality is considered to be inimical to proper corporate monitoring (Jensen (1993)).

We complement the above analysis with empirical tests designed to provide insights into the characteristics of the disciplining effect and to rule out the possibility that we have omitted important factors that are correlated with both news coverage and insider profits. First, value relevance and timeliness are two important characteristics of news releases. Based on these two elements, we show that only insider trading-related news articles pre-identified as having high price impact potential significantly attenuate insiders' subsequent trading profits. Similarly, among insider-related articles, only recent ones published within the past quarter or half year drive our results. The nature of this pricing and timing relevance of insider trading coverage suggests our findings are related to news coverage rather than a missing variable.

Second, we turn to the types of insiders' trades that are more likely to be impacted by news coverage. Following a recent comprehensive study by Cohen, Malloy, and Pormoski (2012) who disentangle the sources of insiders' profits, we separate our analysis according to trades that are predicted to be profitable. Specifically, trades made by senior executive insiders who are more likely to have direct access to the first-hand information needed to identify equity trading opportunities, are predicted to be more profitable than those made by directors. As well, insiders' non-routine transactions that are less likely to be consumption-motivated should have a greater probability of being profitable than those that occur at predictable intervals. Consistent with these predictions, we find that the disciplining impact of news coverage on insider trading profits clusters on the transactions of the senior officers and non-routine traders. From this evidence, it appears that the press is indeed capable of identifying sources of beneficial insider trading and then disciplining such market participants. Our finding here contributes circumstantial evidence in support of our main results – if the effects of news coverage were similar between routine and non-routine trades, our hypothesized effects of the media would be thrown into doubt. By showing the media's effect as being focused on specific types of trades, our finding also strengthens the case that the media has the role of adding value to coverage of insider trading news, beyond just disseminating regulatory filings.

Exploring these results further, distinguishing between types of insiders helps us to shed light on the likely channel through which the *insider disciplining* role of news works. It is reasonable to expect that senior officers have more to lose, whether financially or reputation-wise, from litigation over their equity trades. Moreover, the legal literature documents that courts look for evidence that insiders engaged in selling rather than buying as a mechanism to establish that the defendants acted with scienter or intent in allegations of insider trading and securities fraud (Brockett (2010)).[6] Taken together, our evidence based on the apparently asymmetric effects of media coverage on insiders' profits suggests the validity of the litigation risk argument.

We also ask whether insiders' equity incentives magnify the disciplining role of news coverage. If insiders care about the price impact caused by news releases, we expect that insiders with more equity-based compensation worry more about insider-related news releases. Using both CEO (or executive) equity compensation levels and proportions, and the interaction of these measures with our news coverage variable, we find that equity incentives magnify the negative relationship between news coverage and insiders' trading profits. Collectively, based on these five sets of additional analyses, we conclude that the most plausible explanation for our findings is that news coverage serves to reduce the profitability of insiders' trades.

Finally, one remaining question is whether insiders' profitability is the only conduit through which the governance role of news might work. Could news coverage simply discourage abnormal insider trading in the first instance? To answer this question, we analyze abnormal insider trading measured by abnormal trade frequency and the effects on this variable of news coverage related to insider trading. Our results show that news coverage significantly reduces the incidence of abnormal insider trading, both in terms of trade frequency and size. Taken together with our findings on insiders' trading profits, it appears what we have documented is a conservative measure of the economic effects of the governance role of media coverage on corporate insiders. Return effects are

[6] The argument used by courts to focus on sales is that executives inflate stock prices to profit (Sale (2002)).

accompanied by other repercussions for insiders whose trading activities are in the media spotlight, which future research might focus on.

In terms of contribution, our paper is among the first to link news coverage with insider trading. Griffin, Hirschey and Kelly (2011) find that stock price volatility is positively related to the contemporaneous prevalence of news in developed but not in emerging markets, and attribute this asymmetric result to the relatively poor quality of information distribution channels in the latter. The authors conjecture that larger price run-ups due to information leakage through insider trading ahead of mergers may explain their findings in emerging markets. However, we provide direct evidence of the impact of news on insiders' trades in a developed economy for the first time. Frankel and Li (2004) examine the impact of financial statement informativeness, analyst following, and news on insider trading profits and frequency. They find an insignificant relationship between news coverage, used as an alternative variable to proxy for the information environment, and insider trading profits, and document counterintuitive findings in which company news is positively related to insiders' purchases, regardless of the direction (good or bad) of the news. Contrary to Frankel and Li's finding, our study shows that both news coverage and sentiment matters.

More broadly, our paper contributes to the literature on the role of news coverage on financial markets. Here we cite just a few examples. Several papers show the media's coverage of news on stocks reduces expected returns (Fang and Peress (2009)); induces trading by grabbing investors' attention (Barber and Odean (2008)); resolves information asymmetry (Tetlock (2010); and affects aggregate stock prices (Dougal et al. (2012)). The tone captured in news articles has also been shown to be informative (see, e.g. Tetlock (2007) and Tetlock, Saar-Tsechansky and Macskassy (2008)). Finally, the literature also covers the information dissemination effect of the media with regards, for instance, to regulatory reports (Li, Ramesh and Shen (2011)), corporate governance violations (Dyck, Volchkova and Zingales (2008)), and accounting frauds (Miller (2006)).

We now provide a brief overview of the article. In Section 2, we describe the legal requirements for reporting insiders' ownership and trading information in the U.S. In Section 3, we explain our data sources and key empirical measures, and present several summary statistics. We present the main findings of this study in support of the *insider disciplining view* in Section 4. Finally, we provide a concluding discussion in Section 6.

2. U.S. insider reporting requirements

This paper relies on disclosed trading by corporate insiders. The requirement that insiders in the U.S. must report specific details of each of their trades dates back to the Securities and Exchange Act ("the Act") of 1934 under which the Securities and Exchange Commission (SEC) promulgated Rule 10b-5. This regulation requires that certain persons possessing "material" nonpublic information about a firm should disclose that information or abstain from trading. The U.S. Supreme Court clarified that the rule applies to the firm's insiders – its officers and directors, as well as controlling shareholders.

Thereafter, with the promulgation of the Sarbanes-Oxley Act of 2002, the SEC adopted new rules and shortened the window for most SEC filings of insider trading information to two business days after the buy or sell transaction. Prior to this change, the reporting period typically lasted until the 10th day of the following month of insiders' trades. Corporate insiders are required to file with the SEC a statement of ownership regarding the firm's securities they hold. This initial filing is on the so-called Form 3 and applies to both newly registered securities under Section 12 of the Act (for filings no later than the effective date of the registration statement). If the company is already registered under Section 12 of the Act, Form 3 must be filed within ten days of an individual's becoming an insider.

Changes in ownership are reported to the SEC and must be notified using Form 4 within two business days. Finally, Form 5 is used to update the SEC on transactions that should have been

reported earlier on a Form 4 or were eligible for deferred reporting. Where applicable, this form is due 45 days after the end of the company's fiscal year. Since June 30, 2003, the SEC has required insiders to submit Forms 3, 4 and 5 electronically through its EDGAR system. Prior to this date, electronic submission was optional. Since the EDGAR system is readily searchable, information on insiders' trades is now easily available to investors, the media and specialist third-party vendors of insider trading data and analytics.

Also of relevance to our empirical design as explained below, Section 16 (b) of the Securities Exchange Act of 1934 prohibits insiders and persons owning more than 10 percent of the firm from making "short-swing profits" or buying and selling stock within a six-month period with a sale price that's higher than the purchase price.

3. Data, variable construction and summary statistics

3.1 Data sample and variable construction

In this section, we describe the main sources of data for this study and then discuss the construction of the main response variables and summary statistics. Our insider trading database includes corporate insiders' transactions in stocks listed on the NYSE, AMEX, or NASDAQ covered in the Thomson Financial Insiders Data Feed over the period from 2001 to 2012. The Thomson Financial Insiders Data Feed contains trade information on directors, officers, and large stockholders with holdings greater than 10 percent of a firm's stock, all subject to disclosure requirements discussed above.

In line with our objective to examine the impact of news coverage on insiders' trades, we exclude transactions made by large shareholders from the sample and retain only those attributed to officers and directors. We focus only on valid transactions of share purchases and sales.[7] Following previous studies, we further limit the sample by requiring that share codes in Center for Research in

[7] A valid transaction is one without a cleanse code of "A" or "S" in the Thomson Financial Insiders Data Feed.

Security Prices (CRSP) database be 10 or 11 and we exclude the following transactions: (1) transactions with less than 100 shares or those with trading prices less than $2; (2) transactions with traded prices outside the range between the daily low and high prices reported in CRSP; (3) transactions with the number of shares exceeding the total number of shares outstanding in CRSP; (4) transactions with the number of shares traded exceeding total daily trading volume in CRSP; and (5) firms in the financial or utilities industries (firms with SIC codes between 6000 and 6999 or between 4900 and 4999). These restrictions result in a final sample of 1.285 million insider transactions.

We measure the profitability of insider trading by estimating abnormal returns over the 180 calendar days following the transaction date. We use two approaches to calculate abnormal returns. First, following Jagolinzer, Larcker, and Taylor (2011), we define the abnormal return as an intercept from the Carhart (1997) four-factor model estimated over the 180 calendar days subsequent to the transaction date (*Alpha*). The 180-day window is particularly suited to accommodate the six-month legal prohibition on "short-swing profits" as explained above. Specifically, we estimate the following regression model and use the intercept, $Alpha_i$, as our measure of abnormal returns from insider trading:

$$(R_i - R_f) = Alpha_{ii} + \beta_{i1}(R_{mkt} - R_f) + \beta_{i2} SMB + \beta_{i3} HML + \beta_{i4} UMD + \varepsilon_i , \qquad (1)$$

where R_i is the daily stock return of firm i, R_f is the daily risk-free interest rate, R_{mkt} is the CRSP value-weighted market return, and *SMB*, *HML*, and *UMD* are the size, book-to-market, and momentum factors, respectively (Fama and French (1993), Carhart (1997)). For sales, *Alpha* is multiplied by -1.

Second, similar to Ravina and Sapienza (2010), we define the abnormal return as the difference between a firm's buy-and-hold return over the 180 calendar days following the transaction date and the corresponding buy-and-hold return for the market (*AdjReturn*). For sales *AdjReturn* is multiplied by -1.

$$AdjReturn_i = \sum R_i - \sum R_{mkt}, \quad (2)$$

We obtain data on the news coverage of stocks listed on the NYSE, AMEX, or NASQAQ over the period from 2001 to 2012 from RavenPack, a leading global news database. The database has been used in the finance literature by Kolasinski, Reed and Ringgenberg (2013), for example. In its commercial business, RavenPack collects real time news articles relevant to stocks directly from news publishers such as Dow Jones Newswires, regional editions of the Wall Street Journal, and Barron's, and processes the data to generate company relevance, novelty, and sentiment scores. The company relevance scores allow us to extract and compute aggregate counts of news articles related to specific firms in the database. We only include news with relevance scores equal to 100, which means that a firm is quoted as the main subject of the news release. Further and most importantly, based on news category information, our empirical analysis relies heavily on our ability to identify specific news about insiders' trades separately from general news coverage about corporations.

Another important feature of RavenPack is that it provides additional background data to its news counts, which we utilize in this paper. First, we can observe when a story is the breaking news item (*First News Coverage*). Related to this attribute, time stamps are available against news article counts, enabling their classification into *Recent* and *Old* news. Second, RavenPack employs an algorithm that classifies news as either having high or low impact potential with regards to the relevant firm's stock price.

We obtain accounting and stock price information from Compustat and CRSP, and analyst forecast information from I/B/E/S. We also construct managerial compensation variables from BoardEx. Thomson Reuters and Audit Analytics provide companies' institutional ownership and audit firm data, respectively. In some of our analyses we require population data by area, which we obtain from the U.S. Census Bureau.

Our final sample includes over 4,600 stocks over the period from 2001 to 2012. As the data requirements differ across tests, the sample size for each table varies depending on its data requirements. More detailed definitions of variables are provided in Appendix A.

3.2 Summary statistics

In Table 1, Panel A reports descriptive statistics for the sample of 1,376,567 insider transactions, news coverage, and our key control variables. We can see that the insider trading and news coverage variables have reasonable variation. For example, the mean annualized Carhart (1997) four-factor alpha (*Alpha*) and market adjusted return ($Return_{ADJ}$) over the 180 days subsequent to the insider trade amount to approximately one percent and two percent, respectively. The alpha on insider trades is comparable to that reported in Jagolinzer, Larcker and Taylor (2011), although they investigated a shorter sample period of June 2003 to December 2005. On average, the press publishes 207 (2.068 X 100) news articles that are related to each firm in the year preceding an insider transaction. Of these, 97 are specific to the trading activities of insiders in the firms, while 110 are not. Distinguishing between insider trading specific and general news coverage is important for our identification strategy, as we shall explain below. Insider trades are related to some firm characteristics. For example, insider trades tend to follow stock return momentum over the previous year of 29 percent for the annual stock return and almost 60 percent of our sample firms report positive R&D figures in the year preceding an insider trade. The mean *Trade Frequency* is 5 (on a natural logarithm basis).

Panel B reports Pearson (Spearman) correlation coefficients among our main variables. Concentrating on insider trading activities, we see that our risk adjusted performance measure (*Alpha*) is highly correlated with $Return_{ADJ}$ (Pearson correlation coefficient = 0.837 and Spearman correlation coefficient = 0.840). General news coverage about the firm (*News Coverage*) is negatively correlated with insiders' trading profits, which is in line with the argument that insiders profit from private

information (Jagolizer, Larcker and Taylor (2011)). The negative Spearman correlation coefficient is almost two percentage points higher for news specific to insider trading (*News Coverage*$_{IT}$) than non-insider trading related news (*News Coverage*$_{Non\text{-}IT}$). Interestingly, insiders' trading profits are negatively related to both *Trade Size* and *Trade Frequency*. Finally, insiders in larger firms earn lower returns.

Table 2 shows the distribution of the news-related variables in the sample by year and firm size. Generally, the amount of articles relevant to our sample firms that are published in the press has more than doubled from 2001 to 2012. Much of the increase in insider trading news coverage occurs after the first three years of our sample period, coinciding with the January 2004 formal initiation of coverage of Form 4 regulatory filings by Dow Jones. For example, for the largest firms, 158 (1.580 X 100) articles were written in 2001, compared to 211 in 2004. However, there has not been a monotonic increase in coverage, with a peak of more than 575 articles published in each of 2005 and 2006. Similar coverage trends apply to news that is specific and not related to insider trading. Generally, the variation in the data across firm sizes suggests this company attribute needs to be controlled for in our analysis.

In work of this nature, it is perhaps necessary to show, on a preliminary basis, that there is economic justification for proceeding with the proposed empirical analysis. In our case, given that the objective is to show the impact of treatment effects (news coverage) on the subsequent return profitability of particular subjects (corporate insiders), a natural first step is to assess changes in market conditions around the focal events (insiders' trades).[8] We measure changes in turnover ratio, quoted spread and volatility over a five-day window before and after a news release related or not related to insider trading over our sample period. These measures rely upon the notion that the intensity of asymmetric information about the value of an asset is an important determinant of that asset's liquidity and are suggested by prior microstructure work as proxies of adverse selection (see Bharath, Pasquariello and Wu (2009) for a comprehensive review). In our context market

[8] We thank Jonathan Karpoff for this suggestion.

microstructure measures of information asymmetry summarize the financial markets' perception of the information advantage held by firm insiders and the resulting adverse selection costs (Bharath, Pasquariello, and Wu, 2009). The results of the preliminary analysis are in Appendix B. We find significant decreases in turnover, quoted spreads and volatility around the release of insider-related news. For general, non-insider related news, there is in fact *increased* turnover accompanied only by reduced quoted spreads, with insignificant results on volatility. In summary, our preliminary analysis suggests that the information environment is much improved by media coverage around insider trading events.

4. Results

4.1 Baseline findings

Table 3 reports the results of our regression test of whether news coverage plays a role in limiting the profitability of insider trading. The dependent variable in the models is *Alpha*, except in Model (8) where $Return_{ADJ}$ is utilized as a robustness check.[9] Following the existing literature, we include all the control variables that potentially affect insiders' trading profits. These variables are firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development expenses (*R&D*), transaction size of insider trades (*Trade Size*), and frequency of insider trades (*Trade Frequency*).[10] We also add industry- and year-fixed effects to

[9] In subsequent tables, we only present results based on returns to insider trades measured by *Alpha* for conciseness. Results based on AdjReturn are available from the authors upon request.

[10] Following Lakonishok and Lee (2001), we include Size and MB, respectively, to control for size and book-to-market effects (Fama and French (1997)). In addition, following Brochet (2010), we control for momentum (*Return*), *R&D*, *Trade Size* and *Trading Frequency*. Momentum controls for insiders' contrarian behavior. *R&D* is included since insider sales and purchases are likely to be more informative in firms with higher *R&D* intensity, for which information asymmetry problems are perceived to be greater than those with lower *R&D* intensity (Aboody and Lev (2000)). *Trade Size* controls for the possible link between the importance of private information and the quantity of shares traded. *Trading Frequency* controls for either pre-emptions of insider trades' information content, or reinforcements of prior signals from such trades.

further control for cross-sectional and time-series dependence and cluster standard errors at the firm level.[11]

The evidence presented in Model (1) shows that news coverage about firms generally reduces insiders' subsequent trading profits. In untabulated results, we find that this result is robust to insider trading profitability measure and sub-period analysis. Model (2) restricts the analysis to specific news coverage of firm insiders' trading activities. The coefficient on *News Coverage*$_{IT}$ is highly significant (*t*-stat = -3.89) showing that insiders' profits are largely attenuated when the press reports on the transactions of inside parties. However, in Model (3), the coefficient on *News Coverage*$_{Non\text{-}IT}$ is not significant. The coefficient remains insignificant in Model (4) when we add *News Coverage*$_{IT}$, whose own coefficient is in fact slightly raised. These results are the first key to our identification strategy in that we show that it is not news about firms in general but coverage of insiders' activities that has the effect of reducing insiders' profits. The findings are consistent with our *insider disciplining view* of the role of the media.

4.2 News Dissemination versus News Exploration Effects

In this section we take advantage of the fact that we have access to both the regulatory filings and the news coverage of insiders trading activities to disentangle the information dissemination and exploration roles of the media. Our main conjecture in this regard is that if news coverage only regurgitates regulatory filings, then substituting the former with the latter in our analyses above should yield similar results between the two.[12] We present the results of this 'falsification test' in Table 4. In the specification labeled "Model (2)" regress post-coverage *Alpha* on *Filing Frequency*, the number of Form 4 filings to the SEC in the year preceding the insider trade, as well as control

[11] We use industry fixed effects since we already have firm level controls for factors related to insider profits and news coverage but do not have specific industry level controls, which Solomon and Soltes (2012) have shown to explain a significant proportion of the variation in firm media coverage.

[12] The concern that our news coverage variable is capturing only the replication of the announcements of insiders' trades to the SEC as required by law is reasonable since we calculate the correlation coefficients between corresponding counts of Form 4 and News Coverage (News Coverage$_{IT}$, News Coverage$_{Non\text{-}IT}$) to be 0.65 (0.73 and 0.24).

variables. We compare the results from this model to those in Model (1), where our independent variable of interest is *Adjusted News Coverage*$_{IT}$, given by the number of news releases specifically on insiders' trading activities minus the number of Form 4 filings during the same period. We also run alternative analyses separating *Repeated News Coverage*$_{IT}$ from initial or *First News Coverage*$_{IT}$.

We find that both *Filing Frequency* and *Adjusted News Coverage*$_{IT}$ have the effect of reducing the profitability of insiders' trades. In Model (3) when both variables of interest are included in the same model, only *Adjusted News Coverage*$_{IT}$ retains statistical significance. In Model (4) *Repeated News CoverageIT* has the same effect of attenuating insiders' profits as in our baseline findings. However, in Model (5) *First News Coverage*$_{IT}$ does not have a significant influence on insiders' profits. In fact, when pitched against each other in the same regression in Model (5), repeated news coverage is highly statistically significant in its negative relationship to *Alpha*, while *First News Coverage*$_{IT}$ returns a counterintuitive finding of being positively related to insiders' profits. Based on these findings, we conclude that news coverage plays a *dissemination* role. News coverage seems to add value by extending the reach of insider trading regulatory filings into the market through replication.

4.3 Addressing Causality Concerns

There is a potential objection to the results presented in this paper so far: Firms that attract media attention (for whatever reason) are better at overseeing insiders trading actions, resulting in reduced profitability of their trades. If it is also true that more serious insider trading instances are more likely to be attenuated due the glare of the media spotlight, our main results may be spurious. We have confronted the problem in part by showing that it is news about insider trading, not general press coverage, that matters, and by identifying the channel through which the media effect seems to work. But to confront the problem directly, we utilize three approaches.

First, our sample period yields an excellent opportunity to identify the impact of news coverage because there exists an exogenous shift in the coverage of news specifically about insiders' trades. Dow Jones formerly created a product focused on covering news about insider trading filings in January 2004. Recall that in Table 2 our descriptive statistics show a significant rising in *News Coverage*$_{IT}$ from January 2004 onwards. Since Dow Jones focuses on generating news coverage in general and is one of the dominant players in this business, its formal initiation of coverage of Form 4 filings should represent an exogenous shift in news coverage, which can be used to identify a causal mechanism between *News Coverage*$_{IT}$ and insiders' profits.

We report the results of the analysis in Table 5. In the specification labeled "Model (1)" ("Model (2)") we run our baseline analysis prior to (post) the initiation of Down Jones coverage. The results show clear evidence of the coverage effect. Prior to the exogenous shift in coverage (years 2001-2003) there is a positive, statistically insignificant, relationship between *News Coverage*$_{IT}$ and insiders' *Alpha*. This result is reversed in the post-coverage initiation period (years 2005-2007). We also confirm both sets of findings for the individual years 2003 and 2005, respectively.

Second, an alternative way to address the causality problem is to determine some exogenous determinants of news coverage, and then verify whether the effect of coverage on outcome is spurious by using these exogenous factors as instruments. We present the results of this analysis in Table 6 where In Models (1) and (3), news coverage related to insider trading (*News Coverage*$_{IT}$) is predicted by the instrumental variable: state population (*Population*$_{State}$) and state income (*Income*$_{State}$), respectively, as well as firm-level control variables as well as unreported industry- and year-fixed effects (IY). In Models (2) and (4), insider' trading profit measured by alpha (*Alpha*) is regressed on the predicted news coverage related to insider trading (*Predicted News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The results show that *Predicted News Coverage*$_{IT}$ reduces insider trading profits. This analysis ameliorates concerns that our headline findings are spurious.

Finally, yet one more way to examine the hypothesis of causality flowing from media coverage to outcomes (reduced insiders' profits) is to check whether our results hold in the presence of well-documents alternative attenuators of insiders' profits. Our next set of tests regarding the ability of news coverage to reduce the profitability of insiders' trades is to reinforce that the effectiveness of news coverage cannot be subsumed by alternative disciplining channels. Theoretically, seminal work by Kyle (1985) demonstrates that insider profits increase in insiders' information advantage, and Baiman and Verrecchia (1996) show that insider profits decrease as public information becomes more precise. We target a representative set of alternative insider disciplining channels (*ADC*s) that may reduce the profitability of insider trades. The *ADC*s are essentially a set of public information environment measures that mitigate insider profits.

First, the level of institutional ownership is associated with the information content of earnings (El-Gazzar, 1998). As well, the level of institutional ownership is often used to proxy for corporate governance since institutional owners have the motivation and means to monitor corporations (Huson, Parrino and Starks (2001)). We consider institutional ownership (*Institution*), measured prior to the transaction as the number of shares owned by institutions, scaled by shares outstanding, to be an *ADC*.

Second, Frankel and Li (2004) show that increased analyst coverage reduces the strength of the relationship between insiders' trades and subsequent stock returns. We therefore examine the role of the log value of analyst following (*Analyst*) prior to the transaction.

Third, since Behn, Choi and Kang (2008) demonstrate that firms audited by the Big Five audit firms attract more accurate financial forecasts and less dispersion, we conjecture that such stocks are less prone to insider profiting. We denote Big Five audited firms with a dummy variable *BigN*. Fourth, independent directors are regarded as better monitors of management (see, for example, Fama and Jensen; 1983, and Srinivasan, 2005), inducing them to comply with accounting rules and produce more accurate financial statements (see, for instance, Sengupta, 2004). We therefore take board

independence as another attribute that may compete with our *insider disciplining* hypothesis and compute the measure *Board Independence* as the ratio of non-executive directors on the board.

Finally, since Jensen's (1993) study, the conflicts of interests and difficulties that arise in performing the monitoring function over management when the same individual holds both the chairman and CEO positions have been well recognized. We use a dummy variable denoting firms whose CEO is also the chairman to test the role of CEO/Chairman duality as our last *ADC*.

The results of examining alternative insider disciplining mechanisms are summarized in Table 7. Each column reports on a model that is a variation of our base regression of the determinants of insiders' post-trade profits in the type of *ADC* incorporated (*Institution*, *Analyst*, *BigN*, *Board Independence*, or *CEO Chairman*). The results show that none of the alternative *ADCs* subsumes the disciplining effect of news coverage.

4.4 Characteristics of the Disciplining Effect of News

To further explore the characteristics of the disciplining effect of news coverage, we decompose news about insiders' trades according to its value relevance and timeliness. To measure the predicted price impact of news, we rely on the RavenPack measure - News Impact Projection (NIP) - a score taking values between 0 and 100 that represents confidence that this story will have an impact on the market over the following two-hour period. A score of 50 means that RavenPack was unable to determine if the story had any impact. We define high (low) impact *News Coverage*$_{IT}$ as being the count of relevant news releases with NIP equal or in excess (below) of the median NIP. Alternatively we define the impact cutoff as being below or above mean NIP scores. To measure the time relevance of specific news related to insider trading, we define recent *News Coverage*$_{IT}$ as news articles published within the past 180 days of the insider transaction. As an alternative measure we use a 90-day cutoff. We present results of regressions incorporating these variants of *News Coverage*$_{IT}$ in Table 8, and find clear evidence that there is variation in the behavior of our *News*

Coverage$_{IT}$ variable along both price relevance and time dimensions. Only high impact and recent news about insider trading activities attenuates insider profits.

Our next strategy to identify the characteristics of the disciplining effects of news coverage is to turn the spotlight onto the types of insiders' trades that are impacted by news coverage. We expect to find that news coverage is more effective as a disciplining tool against predictably profitable insiders' trades. Not all insiders engage in profitable trades. Cohen, Malloy and Pomorski (2012) find that non-senior officers (i.e. not CEO, chairman or executive director) are more likely to earn superior returns from their trades than senior officers. This result is consistent with the argument that officers have direct access to the first-hand information to be able to identify profitable equity trading opportunities. Further, Cohen, Malloy and Pormoski find that routine insider trades that are executed at regular time intervals are less informative than non-routine transactions that follow no discernible timing patterns.

Building on Cohen, Malloy and Pomorski's (2012) study, in Table 9, we split our regression analysis of insiders' trades into routine and non-routine transactions. We define routine traders as those reporting insider transactions executed in the same month over the past three years; the remainder as non-routine traders. As trades executed by non-routine traders are more likely to be informed trading, our conjecture is that the attenuating effect of insider specific news releases is more pronounced for trades made by non-routine traders.

We apply four methods for robustness. Method One places no conditions on the identification of routine versus non-routine traders. The rest of our approaches incorporate conditions designed to mitigate the impact of trivial trades in this identification process. The first condition is that the number of shares traded is equal to or more than 100. The second condition is that the transaction price is equal to or more than $2. Accordingly, in Method Two we apply these two conditions to identify routine traders – i.e. identification based on those non-trivial trades executed in the same

month over the three-year period preceding the inside transaction. In Method Three the conditions apply to the identification for non-routine traders, while in Method Four we impose the conditions to both types of traders. Regardless of the method used, we find that news coverage of insiders' trading activities reduces the subsequent profits of trades made by non-routine but not routine traders. Across all four specifications, the coefficients on *News Coverage*$_{IT}$ are negative and statistically significant within conventional levels only for profits earned by non-routine traders. Taken together with the evidence presented in Table 9, our results show the characteristics of news in its disciplinary governance role.

Next we adapt our baseline regression framework to testing whether the impact of news releases related to insider trading is affected by the direction of the trades and the type of insiders behind the transactions. Distinguishing between purchases and sales and, further, between types of insiders, helps us to shed light on the likely channel through which the *insider disciplining* role of news works. It is reasonable to expect that senior officers and those with executive responsibilities have more to lose, whether financially or reputation-wise, from litigation over their equity trades. Moreover, the legal literature documents that courts look for evidence that insiders engaged in selling rather than buying as a mechanism to establish that the defendants acted with scienter or intent in allegations of insider trading and securities fraud (Brockett (2010), Sale (2002)).

In Table 10, we show that, in general, news coverage attenuates insiders' profits from sales rather than purchases. This result is interesting in that generally sell transactions tend to be associated with diversification and liquidity needs rather than information (e.g., Lakonishok and Lee (2001); Fidrmuc, Goergen and Renneboog (2006)). Our findings in Table 10 suggest that trades by insiders who systematically profit from insider trading as documented by Cohen, Malloy and Pormoski (2012) account for this result. First, news coverage reduces the profitability of the trades of both senior and non-senior officers. However, the coefficient on *News Coverage*$_{IT}$ for the non-seniors' sales sample is larger (-4.27 compared to -2.81 in Models (7) and (4), respectively). When we add a refinement to our

classification of insiders by separating executive and non-executive insiders, we obtain a much clearer role of the role of the media. The attenuating effect of news on insiders' profits seems to be restricted to sales by executive officers. This evidence confirms the efficacy of the hypothesis that the media correctly identifies the parties that drive most of the insider profits, resulting in the diminishing of such gains. Taken together, our results on officers and insiders' sales support the conjecture that the channel through which news plays a disciplining role on insiders' trades is through litigation risk aversion.

As our final look at the nature of the *insider disciplining* effect of news in the presence of alternative governance mechanisms, we turn to asking the question whether the composition of insiders' compensation packages matters for our findings. Following Piotroski and Roulstone (2005), we consider that the impact of news coverage on insiders' trading behavior can be influenced by insiders' equity incentives. Empirically, we are particularly interested in the interaction of news coverage of insider trading and managers' incentive compensation, since the literature shows that insider trading is justifiable on the grounds that it allows insiders to profit from their private information (see, for example, Damodaran and Liu (1993) and Fidrmuc, Goergen, and Renneboog (2006)) and therefore provides incentives to executives (Carlton and Fischel (1983) and Manne (1966)).[13]

The ability to exercise discretionary trading is also valuable to insiders for non-profit related reasons such as selling for consumption (Roulstone (2003)), and personal portfolio rebalancing for hedging purposes (Ofek and Yermack (2000). As such, just as insider trading restrictions on the ability of managers to sell their shares diminish the value of equity-based forms of compensation (Baiman and Verrechia (1996), Core and Guay (2002), we expect that news coverage has similar

[13] A counter argument is that insider trading can create perverse incentives, where insiders, by being able to trade on bad news as well as good news, have less incentives to work on increasing firm value, and may even take deliberate actions that create unfavorable news. See, for example, Bagnoli and Khanna (1992). However, Carlton and Fischel (1983) argue that limits on short-selling as well as reputation and litigation concerns make these adverse incentive effects of insider trading of second-order importance.

effects. According to this argument, it then becomes intuitive to expect that the association between news coverage and insider trading profits will be stronger in firms with higher equity-based incentive pay because managers with greater exposure to equity based compensation care more about the pricing impact of news coverage.[14]

We expect that equity-based compensation magnifies the relation between insider trading profits and news coverage. We target the following measures and proxies of insiders' incentive compensation. *CEO (or Executive) Equity Compensation* is the log value of the CEO's (executive's) total equity compensation. *CEO (or Executive) Equity Proportion* is the ratio of the CEO's (executive's) equity to total compensation. We adopt the index developed by Kaplan and Zingales (1997) (*KZ Index*) as a measure of a firm's financial constraints or dependence on external equity funding, where the higher the index level, the more constrained the firm.[15] We incorporate each of these measures into our base regression model of the determinants of *Alpha* from insider trades, together with the interaction of the measures with $News\ Coverage_{IT.}$

Our findings from this additional analysis are reported in Table 12. The results indicate that equity-based incentives increase the impact of news coverage on insiders' trading profits. In all regressions, the coefficient of the interaction term between news coverage and managerial equity compensation is negative, and it is statistically significant in four of the five specifications. This evidence implies that equity incentives force insiders to care about the disciplining role of news coverage.

4.5 Is Insiders' Trade Profitability the Only Conduit for the Governance Role of News?

[14] The counterfactual would be that our primary results are driven by an omitted variable that is correlated with news coverage, and insider trading news coverage has no impact on the association between equity-based incentive pay and profits from insiders' trading activities.

[15] Stein (1996) defines equity-dependent firms as those that have no option but to issue equity to finance their marginal investment.

Arguably, the point at which the governance role of news coverage affects insiders' profitability follows the onset of the mechanisms we have documented in this paper. One remaining question is whether insiders' profitability is the only conduit through which the governance role of news might work. Could news coverage simply discourage insider trading in the first instance? To answer this question, in Table 12 we present the results of panel regressions of abnormal insider trading measured by abnormal trade frequency (*Trade Frequency*$_{Abn}$) and abnormal trade size (*Trade Size*$_{Abn}$), respectively, on news coverage related to insider trading (*News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The results show that *News Coverage*$_{IT}$ has the effect of significantly reducing the incidence of abnormal insider trading, both in terms of trade frequency and size. Taken together with our findings on insiders' trading profits, it appears what we have documented is a conservative measure of the economic effects of the governance role of media coverage on corporate insiders.

5. Conclusion

This paper examines the effects of media coverage on profits to insider trading. While insider trading has received a tremendous amount of attention from academic researchers and the popular press, our premise is that we can use the insider trading context as a rich laboratory in which to explore the channel through which the dissemination role of the media facilitates corporate governance outcomes. Moreover, the effect of news coverage on insiders' transactions has received relatively little systematic attention.

We show that news coverage is an important disciplining mechanism of insiders. News coverage of corporations in general is negatively related to the firms' insider profits. However, this effect is entirely driven by new coverage that is specific to the firm insiders' trading activities. We characterize the channel through which the governance role of the media works. News coverage

regurgitates regulatory filings of insider trading activities, and adds value through subsequent dissemination of information based on the same initial release.

Our results survive instrumental variable analyses and the inclusion of well-known alternative causes of reduced profitability of insider trades such as the presence of institutional investors as shareholders, analyst coverage, Big Five audit firm relations, board independence and CEO duality. The disciplining role of news coverage provides a market-wide effect in curtailing the profitability of insider trading and protecting shareholder rights, in addition to the well-documented regulatory and institutional methods such as shareholder and governance structures, audit and analyst attention on firms, as well as executive compensation structures.

Being one of the first papers to link the governance role of the media to insiders' profits, a significant part of our empirical analysis addresses the characteristics of the disciplining effect at the core of our hypothesis. Our additional tests indicate that the greater the predicted price impact of news and the more recent the releases, the stronger the disciplining effect. We also show that news coverage of insiders' trades attenuates precisely those transactions the literature suggests should be profitable – trades by non-executive senior managers and those of a non-routine nature. We show that the negative effects of news coverage on insiders' profits strengthen with the level and proportion of CEO (or executive) equity based compensation. Finally, insiders' *alpha* is not the only conduit through which the disciplining mechanism is manifested – news coverage also significantly reduces the probability and size of insiders' trades.

We believe our work opens up avenues for further research on the interaction of media coverage and insider trading. One particular direction stands out. By way of background to the economic significance of our empirical analysis, we have provided preliminary evidence that news coverage has measurable effects on information asymmetry, proxied by well-known microstructure variables. We leave it to future research to investigate the asset pricing implications of media

coverage of insiders' activities. Such work would contribute to the debate about the benefits of liberalizing insider trading, for example.

Appendix A: Variable Definitions

Variable	Acronym	Definition	Data Source
A.Insider Trading Variables			
Alpha	*Alpha*	Annualized abnormal daily return based on the four-factor model in a window (1,180) following the transaction. For sales, return is multiplied by -1.	Thomson Reuters & CRSP
Market-adjusted return	*AdjReturn*	Buy and hold market adjusted return in a window (1,180) following the transaction. For sales, return is multiplied by -1.	Thomson Reuters & CRSP
Trade size	*Trade Size*	Log of transaction size in dollars.	Thomson Reuters
Trade frequency	*Trade Frequency*	Log of number of insider trades in a window (-360, -1) prior to the transaction.	Thomson Reuters
Filing frequency	*Filing Frequency*	Number of form filings to SEC in a window (-360, -1) prior to the transaction.	Thomson Reuters
Abnormal trade frequency	$Trade\ Frequency_{Abn}$	Log of abnormal insider trades in a month adjusted by monthly average of insider trades in a window (-360, -1) prior to the transaction month.	Thomson Reuters
Abnormal trade size	$Trade\ Size_{Abn}$	Log of abnormal transaction size in a month adjusted by monthly average of transaction size in a window (-360, -1) prior to the transaction month.	Thomson Reuters
B.Media Variables			
News coverage	*News Coverage*	Number of news releases in a window (-360, -1) prior to the transaction scaled by 100.	RavenPack
News coverage related to insider trading	$News\ Coverage_{IT}$	Number of news releases related to insider trading in a window (-360, -1) prior to the transaction scaled by 100.	RavenPack
News coverage not related to insider trading	$News\ Coverage_{Non\text{-}IT}$	Number of news releases not related to insider trading in a window (-360, -1) prior to the transaction scaled by 100.	RavenPack
Adjusted news coverage related to insider trading	$Adjusted\ News\ Coverage_{IT}$	Number of news releases minus number of form filings in a window (-360, -1) prior to the transaction scaled by 100.	RavenPack
Repeated news coverage related to insider trading	$Repeated\ News\ Coverage_{IT}$	Number of repeated news releases related to insider trading in a window (-360, -1) prior to the transaction scaled by 100.	RavenPack
First news coverage related to insider trading	$First\ News\ Coverage_{IT}$	Number of the first news releases related to insider trading in a window (-360, -1) prior to the transaction scaled by 100.	RavenPack
High impact news coverage related to insider tradin	$High\ Impact\ News\ Coverage_{IT}$	Number of high impact news releases related to insider trading scaled by 100.	RavenPack
Low impact news coverage related to insider tradin	$Low\ Impact\ News\ Coverage_{IT}$	Number of low impact news releases related to insider trading scaled by 100.	RavenPack
Recent news coverage related to insider trading	$Recent\ News\ Coverage_{IT}$	Number of news releases related to insider trading in a window (-180, -1) prior to the transaction scaled by 100.	RavenPack
Old news coverage related to insider trading	$Old\ News\ Coverage_{IT}$	Number of news releases related to insider trading in a window (-360, -181) prior to the transaction scaled by 100.	RavenPack
C.Firm and Stock Characteristics			
Firm size	*Size*	Log of market capitalization prior to the transaction.	CRSP
Market-to-book ratio	*MB*	Market to book equity ratio prior to the transaction.	Compustat & CRSP
Annual stock return	*Return*	Market-adjusted stock returns in a window (-360, -1) prior to the transaction.	CRSP
Stock return volatility	*STD*	Standard deviation of daily stock returns in a window (-360, -1) prior to the transaction.	CRSP
Research & development	*R&D*	Dummy variable which equals one if there are positive R&D expenses	Compustat
D.Other Variables			
State population	$Population_{State}$	Total population in millions for a state of the headquarter of a firm in the year prior to the transaction	Census Bureau
State income	$Income_{State}$	Total personal income adjusted by CPI index in millions for a state of the headquarter of a firm in the year prior to the transaction.	Census Bureau
Institutional ownership	*Institution*	Proportion of total institutional ownership prior to the transaction.	Thomson Reuters
Number of analyst following	*Analyst*	Log of average analyst following prior to the transaction.	IBES
Big N auditors	*BigN*	Dummy variable which equals one if the firm is audited by a big N auditor.	Audit Analytics
Board independence	*Board Independence*	Ratio of non-executive directors on the board.	BoardEx
CEO chairman	*CEO Chairman*	Dummy variable which equals one if the CEO in a firm is also the chairman of the board.	BoardEx
CEO's equity compensation	*CEO Equity Compensation*	Log of amount of the CEO's total equity compensation.	BoardEx
Executives' equity compensation	*Executive Equity Compensation*	Log of average amount of executives' total equity compensation.	BoardEx
Proportion of CEO's equity compensation	*CEO Equity Proportion*	Ratio of the CEO equity to total compensation.	BoardEx
Proportion of executives' equity compensation	*Executive Equity Proportion*	Average ratio of executives' equity to total compensation.	BoardEx
Kaplan and Zingales' financial constraint index	*KZ Index*	Kaplan and Zingales [1997]'s financial constraint index.	Compustat

Appendix B: Summary Statistics of Changes in Market Conditions

This table summarizes changes in the turnover ratio, quoted spread, and volatility over a five-day window before and after a news release related or not related to insider trading over the 2001 to 2012 sample period. Turnover ratio (*Turnover*) is ratio of number of trading volume to the number of shares outstanding multiplied by 100. Quoted spread (*Quoted Spread*) is (offer price minus bid price) over quote midpoint multiplied by 100. Volatility (*Volatility*) is the volatility of daily stock returns multiplied by 100. The summary statistics includes the number of observations (NObs), mean, median, *t*-statistics, and quartiles (75% and 25%) distribution of the variables.

Variable	NObs	Mean	*T*-Stat	Q1	Median	Q3
Insider-trading news						
Turnover (t+1,t+5) - Turnover (t-5,t-1)	361,325	-7.365	-55.21	-26.533	-3.539	14.661
Quoted Spread (t+1,t+5) - Quoted Spread (t-5,t-1)	238,660	-0.005	-4.52	-0.030	0.000	0.028
Volatility (t+1,t+5) - Volatility (t-5,t-1)	360,001	-0.024	-9.43	-0.033	-0.001	0.024
Non-insider-trading news						
Turnover (t+1,t+5) - Turnover (t-5,t-1)	972,305	7.748	83.00	-17.027	1.646	24.883
Quoted Spread (t+1,t+5) - Quoted Spread (t-5,t-1)	709,813	-0.002	-4.39	-0.030	0.000	0.028
Volatility (t+1,t+5) - Volatility (t-5,t-1)	969,666	-0.007	-0.53	-0.034	0.000	0.037

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Table 1: Summary Statistics

This table presents the summary statistics and Spearman (Pearson) correlation coefficients of main variables used in this study. The variables are alpha (*Alpha*), market-adjusted returns ($Return_{ADJ}$), news coverage (*News Coverage*), news coverage related to insider trading ($News\ Coverage_{IT}$), news coverage not related to insider trading ($News\ Coverage_{Non\text{-}IT}$), firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). All the variables are defined in Appendix A. Panel A reports the number of observations (NObs), mean, median, standard deviation (STD), and the deciles (90% and 10%) and quartiles (75% and 25%) distribution of the variables. Panel B reports the correlation coefficients among the variables above, where the highlighted upper-right part (bottom-left part) of the table refers to the Spearman (Pearson) correlation matrix. The sample is between 2001 and 2012.

Panel A: Summary Statistics

Variable	NObs	Mean	STD	P10	Q1	Median	Q3	P90
Alpha	1,376,567	0.006	0.544	-0.641	-0.303	-0.010	0.291	0.667
$Return_{ADJ}$	1,376,567	0.020	0.256	-0.289	-0.118	0.029	0.174	0.327
News Coverage	1,376,567	2.068	2.837	0.390	0.640	1.140	2.050	4.710
$News\ Coverage_{IT}$	1,376,567	0.971	2.031	0.010	0.120	0.350	0.830	2.080
$News\ Coverage_{Non\text{-}IT}$	1,376,567	1.097	1.425	0.270	0.410	0.640	1.110	2.310
Size	1,376,567	7.479	1.846	5.260	6.246	7.295	8.585	10.053
MB	1,376,567	5.123	5.505	1.230	1.948	3.288	5.962	10.869
Return	1,376,567	0.268	0.640	-0.299	-0.097	0.117	0.441	0.949
STD	1,376,567	0.028	0.013	0.015	0.019	0.026	0.034	0.045
R&D	1,376,567	0.580	0.494	0.000	0.000	1.000	1.000	1.000
Trade Size	1,376,567	10.213	1.806	8.035	8.845	10.046	11.422	12.715
Trade Frequency	1,376,567	4.943	2.054	2.398	3.526	4.890	6.252	7.707

Table 1: Summary Statistics – Continued

Variable	*Alpha*	*Return$_{ADJ}$*	*News Coverage*	*News Coverage$_{IT}$*	*News Coverage$_{Non-IT}$*	*Size*	*MB*	*Return*	*STD*	*R&D*	*Trade Size*	*Trade Frequency*
Alpha	-	0.837	-0.087	-0.092	-0.099	-0.095	-0.018	0.017	0.050	0.006	-0.016	-0.082
Return$_{ADJ}$	0.840	-	-0.051	-0.041	-0.080	-0.082	0.008	0.034	0.089	0.009	-0.026	-0.029
News Coverage	-0.101	-0.080	-	0.802	0.819	0.698	0.280	0.070	-0.261	0.106	0.173	0.559
News Coverage$_{IT}$	-0.095	-0.074	0.880	-	0.407	0.395	0.272	0.112	-0.136	0.126	0.027	0.626
News Coverage$_{Non-IT}$	-0.066	-0.054	0.736	0.327	-	0.777	0.181	0.005	-0.316	0.025	0.270	0.324
Size	-0.090	-0.065	0.610	0.364	0.696	-	0.299	0.107	-0.476	-0.016	0.384	0.352
MB	-0.008	0.006	0.299	0.366	0.074	0.179	-	0.399	0.078	0.365	0.120	0.347
Return	0.051	0.064	0.100	0.177	-0.052	0.017	0.343	-	0.142	0.102	0.071	0.176
STD	0.064	0.071	-0.177	-0.072	-0.249	-0.440	0.091	0.255	-	0.204	-0.203	-0.068
R&D	0.005	-0.005	0.162	0.173	0.076	0.009	0.266	0.113	0.173	-	-0.031	0.170
Trade Size	-0.017	-0.014	0.167	0.040	0.275	0.402	0.046	0.028	-0.166	-0.025	-	-0.147
Trade Frequency	-0.071	-0.039	0.537	0.569	0.257	0.376	0.285	0.141	-0.120	0.175	-0.130	-

Table 2: News Coverage by Year and Firm Size

This table shows the distribution of news coverage variables by year and firm size. The sample firms are classified into three groups by market capitalization: small, medium, and large. The news coverage variables include news coverage (*News Coverage*), news coverage related to insider trading (*News Coverage*$_{IT}$), and news coverage not related to insider trading (*News Coverage*$_{Non\text{-}IT}$). The sample period is from 2001 to 2012.

	News Coverage			*News Coverage*$_{IT}$			*News Coverage*$_{Non\text{-}IT}$		
Year	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
2001	0.363	0.605	1.580	0.127	0.240	0.437	0.235	0.365	1.144
2002	0.357	0.554	1.203	0.049	0.081	0.082	0.308	0.472	1.121
2003	0.346	0.495	1.405	0.001	0.001	0.018	0.345	0.493	1.386
2004	0.649	1.067	2.108	0.251	0.510	0.349	0.398	0.558	1.759
2005	1.056	2.665	5.879	0.630	1.814	3.425	0.427	0.851	2.454
2006	0.714	1.627	5.759	0.246	0.832	3.087	0.468	0.795	2.672
2007	1.021	1.817	3.752	0.544	1.105	1.473	0.477	0.712	2.278
2008	1.000	1.908	4.348	0.514	1.183	1.887	0.486	0.725	2.460
2009	0.673	1.288	2.651	0.269	0.657	0.662	0.404	0.631	1.989
2010	0.745	1.482	4.038	0.347	0.765	1.388	0.397	0.717	2.650
2011	0.791	1.203	2.757	0.442	0.631	0.945	0.349	0.572	1.813
2012	0.764	1.242	2.716	0.372	0.626	0.841	0.392	0.616	1.875

Table 3: News Coverage and Insiders' Trading Profits

This table presents a panel regression of insiders' trading profits measured by alpha (*Alpha*) in Models (1)-(7) and market-adjusted returns ($Return_{ADJ}$) in Model (8) on news coverage (*News Coverage*), news coverage related to insider trading ($News\ Coverage_{IT}$), news coverage not related to insider trading ($News\ Coverage_{Non\text{-}IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering except Models (5)-(7). The standard errors in Models (5)-(7) are clustered by year, industry, and insider, respectively. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

					CYear	CIndustry	CInsider	$Return_{ADJ}$
Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
News Coverage	**-0.009**							
	(-2.87)							
$News\ Coverage_{IT}$		**-0.017**		**-0.017**	**-0.017**	**-0.017**	**-0.017**	**-0.007**
		(-3.89)		**(-4.10)**	**(-3.29)**	**(-4.99)**	**(-5.21)**	**(-3.73)**
$News\ Coverage_{Non\text{-}IT}$			**0.004**	**0.007**				
			(0.68)	**(1.24)**				
Size	-0.012	-0.017	-0.022	-0.021	-0.017	-0.017	-0.017	-0.003
	(-2.01)	(-2.87)	(-3.28)	(-3.29)	(-1.99)	(-3.12)	(-4.20)	(-0.85)
MB	0.000	0.001	0.000	0.001	0.001	0.001	0.001	0.000
	(0.16)	(0.52)	(0.00)	(0.61)	(0.29)	(0.45)	(0.79)	(0.46)
Return	0.046	0.049	0.047	0.050	0.049	0.049	0.049	0.027
	(1.80)	(1.92)	(1.82)	(1.99)	(1.91)	(1.98)	(2.91)	(2.61)
STD	0.524	0.433	0.322	0.349	0.433	0.433	0.433	1.048
	(0.57)	(0.47)	(0.34)	(0.37)	(0.37)	(0.59)	(0.64)	(2.38)
R&D	0.010	0.010	0.005	0.009	0.010	0.010	0.010	-0.006
	(0.51)	(0.53)	(0.24)	(0.47)	(0.68)	(0.63)	(0.73)	(-0.58)
Trade Size	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.30)	(0.42)	(0.23)	(0.44)	(0.47)	(0.41)	(0.50)	(0.96)
Trade Frequency	-0.003	-0.000	-0.007	0.000	-0.000	-0.000	-0.000	0.002
	(-0.45)	(-0.01)	(-0.87)	(0.04)	(-0.02)	(-0.01)	(-0.02)	(0.58)
Fixed Effects	IY	IY	IY	IY	IY	IY	IY	IY
Obs	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567
R^2_{Adj}	3.0%	3.1%	2.9%	3.1%	3.1%	3.1%	3.1%	3.3%

Table 4: News Dissemination or News Exploration

This table presents panel regression of insiders' trading profits measured by alpha (*Alpha*) on adjusted news coverage related to insider trading (*Adjusted News Coverage*$_{IT}$), filing frequency (*Filing Frequency*), repeated news coverage related to insider trading (*Repeated News Coverage*$_{IT}$), first news coverage related to insider trading (*First News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Adjusted News Coverage$_{IT}$	**-0.018**		**-0.014**			
	(-3.70)		**(-1.76)**			
Filing Frequency		**-0.056**	**-0.034**			
		(-1.65)	**(-0.76)**			
Repeated News Coverage$_{IT}$				**-0.022**		**-0.039**
				(-4.43)		**(-5.03)**
First News Coverage$_{IT}$					**-0.004**	**0.128**
					(-0.10)	**(2.10)**
Size	-0.017	-0.019	-0.017	-0.017	-0.019	-0.017
	(-2.91)	(-3.06)	(-3.00)	(-2.87)	(-2.93)	(-2.88)
MB	0.001	0.001	0.001	0.001	-0.000	0.001
	(0.35)	(0.52)	(0.60)	(0.59)	(-0.02)	(0.45)
Return	0.049	0.046	0.048	0.049	0.047	0.049
	(1.93)	(1.76)	(1.88)	(1.94)	(1.78)	(1.96)
STD	0.440	0.363	0.419	0.476	0.368	0.699
	(0.48)	(0.39)	(0.45)	(0.52)	(0.40)	(0.80)
R&D	0.009	0.011	0.011	0.010	0.006	0.005
	(0.46)	(0.56)	(0.59)	(0.53)	(0.30)	(0.24)
Trade Size	0.001	0.001	0.001	0.001	0.001	0.000
	(0.34)	(0.48)	(0.46)	(0.40)	(0.22)	(0.02)
Trade Frequency	-0.002	0.002	0.002	-0.000	-0.006	-0.006
	(-0.34)	(0.28)	(0.28)	(-0.01)	(-0.97)	(-0.97)
Fixed Effects	IY	IY	IY	IY	IY	IY
Obs	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567
R^2_{Adj}	3.1%	3.0%	3.1%	3.1%	2.9%	3.3%

Table 5: A Natural Experiment with Dow Jones' Initial Coverage of Insider Trading Filings

This table explores a natural experiment with Dow Jones' formally initiated coverage of insider trading filings. Dow Jones formally covers news releases of insider trading filings in January 2004. The per-initial coverage period includes 2001-2003 in Model (1) and only 2003 in Model (3). The post-initial coverage period includes 2005-2007 in Model (2) and only 2005 in Model (4). Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

	01,02,03	05,06,07	2003	2005
	Model	Model	Model	Model
Variable	(1)	(2)	(3)	(4)
News Coverage$_{IT}$	**0.022**	**-0.021**	**1.000**	**-0.022**
	(0.30)	**(-3.22)**	**(2.65)**	**(-2.19)**
Size	-0.008	-0.018	-0.009	-0.061
	(-0.73)	(-1.56)	(-0.82)	(-2.48)
MB	0.000	0.004	-0.005	0.009
	(0.12)	(1.49)	(-0.94)	(1.05)
Return	-0.007	0.088	-0.037	0.028
	(-0.28)	(1.65)	(-1.13)	(0.51)
STD	-1.016	-0.746	-1.257	-11.734
	(-0.88)	(-0.31)	(-0.66)	(-2.35)
R&D	-0.012	0.014	-0.018	-0.044
	(-0.25)	(0.46)	(-0.24)	(-1.07)
Trade Size	-0.004	0.005	-0.014	0.002
	(-0.56)	(1.32)	(-2.26)	(0.25)
Trade Frequency	0.006	-0.004	0.019	0.021
	(0.47)	(-0.35)	(1.98)	(0.96)
Fixed Effects	IY	IY	IY	IY
Obs	165,162	638,861	81,226	145,722
R^2_{Adj}	4.8%	5.7%	10.9%	17.2%

Table 6: An Instrumental Variable Approach

This table presents regression results of an instrumental variable approach. In Models (1) and (3), news coverage related to insider trading (*News Coverage*$_{IT}$) is predicted by the instrumental variable: state population (*Population*$_{State}$) and state income (*Income*$_{State}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). In Models (2) and (4), insider' trading profits measured by alpha (*Alpha*) is regressed on the predicted news coverage related to insider trading (*Predicted News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

	News Coverage$_{IT}$	*Alpha*	*News Coverage*$_{IT}$	*Alpha*
	Stage 1	Stage 2	Stage 1	Stage 2
	Model	Model	Model	Model
Variable	(1)	(2)	(3)	(4)
Population$_{State}$	**0.019**			
	(2.17)			
Income$_{State}$			**0.098**	
			(2.19)	
Predicted News Coverage$_{IT}$		**-0.072**		**-0.070**
		(-1.81)		**(-1.81)**
Size	0.148	-0.009	0.147	-0.009
	(1.64)	(-1.10)	(1.63)	(-1.14)
MB	0.059	0.004	0.059	0.004
	(2.37)	(1.34)	(2.37)	(1.32)
Return	0.155	0.056	0.156	0.056
	(1.25)	(2.16)	(1.26)	(2.15)
STD	2.461	0.737	2.379	0.729
	(0.73)	(0.75)	(0.70)	(0.75)
R&D	0.304	0.030	0.306	0.030
	(2.34)	(1.28)	(2.34)	(1.27)
Trade Size	0.026	0.002	0.026	0.002
	(1.11)	(0.77)	(1.13)	(0.75)
Trade Frequency	0.391	0.023	0.391	0.023
	(5.81)	(1.31)	(5.82)	(1.30)
Fixed Effects	IY	IY	IY	IY
Obs	1,334,593	1,334,593	1,334,593	1,334,593
R^2_{Adj}	49.6%	1.1%	49.6%	1.2%

Table 7: Alternative Disciplining Channels

This table presents a panel regression of insiders' transaction profits measured by alpha (*Alpha*) on news coverage related to insider trading (*News Coverage*$_{IT}$), alternative disciplining variables, and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Alternative disciplining variables include institutional ownership (*Institution*), number of analyst following (*Analyst*), big N auditors (*BigN*), board independence (*Board Independence*), and CEO chairman (*CEO Chairman*). Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
News Coverage$_{IT}$	**-0.017**	**-0.017**	**-0.016**	**-0.016**	**-0.016**	**-0.016**
	(-4.02)	**(-4.00)**	**(-3.58)**	**(-3.56)**	**(-3.74)**	**(-3.42)**
Institution	-0.060					-0.110
	(-1.49)					(-2.25)
Analyst		0.006				0.003
		(0.51)				(0.32)
BigN			0.060			0.073
			(1.79)			(1.85)
Board Independence				0.028		0.039
				(0.31)		(0.45)
CEO Chairman					-0.003	-0.001
					(-0.15)	(-0.03)
Size	-0.014	-0.019	-0.020	-0.018	-0.018	-0.019
	(-2.45)	(-2.69)	(-3.12)	(-2.77)	(-2.81)	(-2.59)
MB	0.001	0.001	0.001	0.001	0.002	0.001
	(0.45)	(0.60)	(0.54)	(0.73)	(0.76)	(0.69)
Return	0.048	0.049	0.049	0.053	0.053	0.053
	(1.90)	(1.92)	(1.95)	(1.85)	(1.86)	(1.90)
STD	0.269	0.380	0.491	0.623	0.611	0.422
	(0.28)	(0.40)	(0.54)	(0.58)	(0.58)	(0.40)
R&D	0.008	0.011	0.011	0.012	0.012	0.011
	(0.44)	(0.55)	(0.58)	(0.59)	(0.59)	(0.53)
Trade Size	0.002	0.001	0.001	0.001	0.001	0.002
	(0.65)	(0.39)	(0.39)	(0.28)	(0.23)	(0.70)
Trade Frequency	0.000	-0.000	-0.001	-0.001	-0.001	-0.001
	(0.06)	(-0.04)	(-0.11)	(-0.16)	(-0.20)	(-0.18)
Fixed Effects	IY	IY	IY	IY	IY	IY
Obs	1,376,567	1,376,567	1,376,567	1,240,959	1,240,959	1,240,959
R^2_{Adj}	3.1%	3.1%	3.2%	3.4%	3.4%	3.7%

Table 8: Value Impact and Timeliness of News

This table presents a panel regression of insiders' trading profits measured by alpha (*Alpha*) on high impact news coverage related to insider trading (*High Impact News Coverage$_{IT}$*), low impact news coverage related to insider trading (*Low Impact News Coverage$_{IT}$*), recent news coverage related to insider trading (*Recent News Coverage$_{IT}$*), old news coverage related to insider trading (*Old News Coverage$_{IT}$*), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

	News impact			News period		
	Model	Model	Model	Model	Model	Model
Variable	(1)	(2)	(3)	(4)	(5)	(6)
High Impact News Coverage$_{IT}$	**-0.022**		**-0.026**			
	(-3.66)		**(-2.65)**			
Low Impact News Coverage$_{IT}$		**-0.015**	**0.029**			
		(-0.61)	**(0.74)**			
Recent News Coverage$_{IT}$				**-0.033**		**-0.030**
				(-3.16)		**(-1.63)**
Old News Coverage$_{IT}$					**-0.017**	**-0.005**
					(-1.37)	**(-0.25)**
Size	-0.017	-0.019	-0.018	-0.017	-0.018	-0.017
	(-2.94)	(-2.92)	(-3.04)	(-2.89)	(-2.92)	(-2.85)
MB	0.001	0.000	0.001	0.001	0.001	0.001
	(0.55)	(0.05)	(0.49)	(0.41)	(0.29)	(0.49)
Return	0.049	0.047	0.049	0.050	0.047	0.050
	(1.93)	(1.80)	(1.93)	(1.97)	(1.83)	(1.99)
STD	0.457	0.369	0.480	0.500	0.368	0.489
	(0.50)	(0.39)	(0.54)	(0.55)	(0.39)	(0.55)
R&D	0.011	0.006	0.010	0.011	0.008	0.011
	(0.55)	(0.33)	(0.52)	(0.57)	(0.39)	(0.58)
Trade Size	0.001	0.001	0.001	0.001	0.001	0.001
	(0.42)	(0.26)	(0.38)	(0.43)	(0.31)	(0.44)
Trade Frequency	0.000	-0.006	-0.000	-0.000	-0.003	0.000
	(0.07)	(-0.70)	(-0.01)	(-0.00)	(-0.45)	(0.06)
Fixed Effects	IY	IY	IY	IY	IY	IY
Obs	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567	1,376,567
R^2_{Adj}	3.1%	2.9%	3.2%	3.1%	0.0295	3.1%

Table 9: Routine and Non-routine Transactions

This table presents a panel regression of insiders' routine and non-routine transaction profits measured by alpha (*Alpha*) on news coverage related to insider trading (*News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Routine and non-routine transactions are classified by four methods. Method one places no conditions on the identification of routine versus non-routine traders. To mitigate the impact of trivial trade in this identification process, the first condition is that the number of shares traded is equal to or more than 100, and the second condition is that the transaction price is equal to or more than $2. Method two applies both the conditions to identify routine traders: identification process based on those non-trivial trades executed in the same month over the three-year period preceding the inside transaction. In Method three, the conditions apply to the identification for non-routine traders. In Method four, the conditions are imposed to identify both routine and non-routine traders. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

	Method one		Method two		Method three		Method four	
	Non-routine	Routine	Non-routine	Routine	Non-routine	Routine	Non-routine	Routine
	Model	Model	Model	Model	Model	Model	Model	Model
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
News Coverage$_{IT}$	**-0.044**	**0.014**	**-0.042**	**0.014**	**-0.043**	**0.014**	**-0.042**	**0.014**
	(-1.95)	**(1.53)**	**(-1.80)**	**(1.65)**	**(-1.87)**	**(1.52)**	**(-1.84)**	**(1.65)**
Size	0.003	-0.042	0.001	-0.040	0.002	-0.041	0.001	-0.040
	(0.35)	(-2.77)	(0.09)	(-2.58)	(0.28)	(-2.70)	(0.14)	(-2.58)
MB	0.008	-0.010	0.008	-0.012	0.008	-0.010	0.009	-0.012
	(1.67)	(-2.70)	(2.13)	(-3.37)	(1.85)	(-2.64)	(2.37)	(-3.37)
Return	0.031	0.081	0.033	0.076	0.052	0.078	0.052	0.076
	(1.21)	(2.27)	(1.33)	(1.86)	(2.27)	(2.09)	(2.31)	(1.86)
STD	1.917	-0.492	1.851	-0.544	2.185	-0.536	2.171	-0.544
	(1.44)	(-0.26)	(1.44)	(-0.27)	(1.67)	(-0.27)	(1.67)	(-0.27)
R&D	-0.037	0.029	-0.035	0.030	-0.036	0.025	-0.035	0.030
	(-1.26)	(0.62)	(-1.23)	(0.66)	(-1.25)	(0.55)	(-1.22)	(0.66)
Trade Size	0.004	0.007	0.004	0.008	0.004	0.008	0.004	0.008
	(1.23)	(1.14)	(1.12)	(1.18)	(1.11)	(1.18)	(1.09)	(1.18)
Trade Frequency	0.011	0.048	0.010	0.048	0.008	0.049	0.008	0.048
	(1.25)	(2.55)	(1.20)	(2.49)	(0.99)	(2.55)	(0.97)	(2.49)
Fixed Effects	IY	IY	IY	IY	IY	IY	IY	IY
Obs	204,090	126,938	207,754	123,274	199,978	125,612	202,316	123,274
R^2_{Adj}	7.5%	14.0%	7.5%	14.4%	8.2%	14.0%	8.2%	14.4%

Table 10: Type of Trades and Type of Insiders

This table presents a panel regression of insiders' transaction profits measured by alpha (*Alpha*) on news coverage related to insider trading (*News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Insiders' transactions are split into sales and purchases. Insiders are classified into senior officers, non-senior officers, executive insiders, and non-executive insiders. Senior officers are insiders holding roles of CEO, CFO, and/or Chairman. Non-senior officers are pure officers excluding CEO, CFO and/or Chairman with no director roles. Inside directors are those with both director and officer roles excluding CEO, CFO and/or Chairman. Outside directors are pure directors excluding Chairman with no officer roles. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

			Senior officers			Non-senior officers			Inside directors			Outside directors		
	Sales	Purchases	Total	Sales	Purchases	Total	Sales	Purchases	Total	Sales	Purchases	Total	Sales	Purchases
	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
News Coverage$_{IT}$	**-0.020**	**0.037**	**-0.017**	**-0.022**	**0.134**	**-0.017**	**-0.019**	**0.116**	**-0.012**	**-0.012**	**0.231**	**0.016**	**0.013**	**0.008**
	(-4.79)	**(1.09)**	**(-2.96)**	**(-3.62)**	**(1.57)**	**(-3.44)**	**(-3.62)**	**(1.57)**	**(-1.03)**	**(-0.97)**	**(1.10)**	**(0.66)**	**(0.51)**	**(0.24)**
Size	-0.014	-0.007	-0.010	-0.007	-0.008	-0.011	-0.011	0.010	-0.006	-0.008	0.023	-0.021	-0.016	-0.013
	(-2.26)	(-1.06)	(-1.44)	(-0.86)	(-0.56)	(-2.05)	(-1.90)	(0.94)	(-0.48)	(-0.60)	(0.87)	(-2.95)	(-1.81)	(-1.95)
MB	0.002	-0.008	0.001	0.003	-0.013	-0.001	-0.000	-0.008	0.009	0.009	0.015	0.000	0.001	-0.006
	(0.87)	(-3.23)	(0.63)	(1.11)	(-4.98)	(-0.43)	(-0.25)	(-1.56)	(1.82)	(1.84)	(1.15)	(0.16)	(0.44)	(-1.70)
Return	0.061	0.001	0.064	0.080	-0.001	0.019	0.023	-0.017	-0.023	-0.027	0.096	0.060	0.081	-0.012
	(2.25)	(0.04)	(2.15)	(2.52)	(-0.03)	(1.02)	(1.17)	(-0.47)	(-0.75)	(-0.87)	(1.51)	(1.87)	(2.32)	(-0.45)
STD	-0.596	4.097	0.126	-1.165	5.601	1.102	0.639	5.739	1.362	0.744	8.628	0.808	-0.647	2.954
	(-0.56)	(4.68)	(0.09)	(-0.76)	(3.46)	(1.34)	(0.73)	(4.37)	(0.58)	(0.29)	(2.45)	(0.79)	(-0.50)	(2.93)
R&D	0.006	0.008	0.014	0.015	-0.047	0.018	0.019	-0.051	0.048	0.060	-0.191	-0.027	-0.046	0.058
	(0.26)	(0.24)	(0.57)	(0.56)	(-0.96)	(0.72)	(0.72)	(-0.99)	(0.84)	(1.03)	(-1.74)	(-0.97)	(-1.44)	(1.65)
Trade Size	0.003	0.001	-0.001	0.001	-0.002	-0.001	-0.000	0.009	-0.006	-0.007	0.035	0.002	0.005	-0.000
	(1.03)	(0.19)	(-0.32)	(0.27)	(-0.39)	(-0.53)	(-0.15)	(1.01)	(-0.75)	(-0.77)	(2.01)	(0.38)	(1.00)	(-0.08)
Trade Frequency	0.006	-0.016	-0.008	-0.001	-0.015	0.006	0.009	-0.041	-0.015	-0.013	-0.066	0.002	0.012	-0.010
	(0.78)	(-1.47)	(-0.80)	(-0.11)	(-0.90)	(1.05)	(1.51)	(-2.46)	(-1.33)	(-1.20)	(-2.54)	(0.27)	(1.57)	(-0.84)
Fixed Effects	IY	IY	IY	IY	IY	IY	IY	IY	IY	IY	IY	IY	IY	IY
Obs	1,239,420	137,147	485,231	446,374	38,857	414,367	397,083	17,284	80,192	76,558	3,634	396,777	319,405	77,372
R^2_{Adj}	3.6%	6.0%	6.3%	6.9%	11.1%	2.9%	3.0%	7.9%	12.1%	13.5%	16.8%	4.7%	7.2%	7.6%

Table 11: Equity Incentives

This table presents a panel regression of insiders' transaction profits measured by alpha (*Alpha*) on news coverage related to insider trading (*News Coverage*$_{IT}$), its interaction with equity incentive variables (*IC*), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), trade size (*Trade Size*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Equity incentive variables include CEO's equity compensation (*CEO Equity Compensation*), executives' equity compensation (*Executive Equity Compensation*), proportion of CEO's equity compensation (*CEO Equity Proportion*), proportion of executives' equity compensation (*Executive Equity Proportion*), and Kaplan and Zingales' financial constraint index (*KZ Index*). Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

	CEO Equity Compensation	*Executive Equity Compensation*	*CEO Equity Proportion*	*Executive Equity Proportion*	*KZ Index*
	Model	Model	Model	Model	Model
Variable	(1)	(2)	(3)	(4)	(5)
News Coverage$_{IT}$×*IC*	**-0.066**	**-0.055**	**-0.007**	**-0.029**	**-0.013**
	(-3.18)	**(-2.33)**	**(-0.43)**	**(-2.60)**	**(-1.75)**
News Coverage$_{IT}$	0.578	0.481	0.040	0.213	0.012
	(3.19)	(2.34)	(0.30)	(2.35)	(0.62)
IC	0.032	0.035	0.006	0.012	-0.004
	(2.10)	(2.27)	(0.50)	(1.09)	(-0.33)
Size	-0.008	-0.011	-0.012	-0.013	-0.014
	(-0.86)	(-1.10)	(-1.20)	(-1.18)	(-2.28)
MB	0.008	0.008	0.006	0.008	0.002
	(2.09)	(2.19)	(1.74)	(2.29)	(0.73)
Return	0.000	0.001	0.007	0.010	0.051
	(0.02)	(0.06)	(0.27)	(0.42)	(1.98)
STD	1.385	1.123	-1.095	-0.864	0.710
	(1.26)	(1.03)	(-0.71)	(-0.60)	(0.76)
R&D	-0.042	-0.041	-0.041	-0.040	-0.000
	(-1.50)	(-1.56)	(-1.81)	(-1.78)	(-0.02)
Trade Size	0.003	0.003	0.002	0.001	0.001
	(1.28)	(1.19)	(0.86)	(0.22)	(0.27)
Trade Frequency	-0.010	-0.013	-0.010	-0.010	0.000
	(-1.63)	(-2.16)	(-1.99)	(-1.72)	(0.08)
Fixed Effects	IY	IY	IY	IY	IY
Obs	521,157	557,478	737,005	775,417	1,224,877
R^2_{Adj}	6.7%	6.2%	5.7%	6.5%	3.3%

Table 12: Abnormal Insider Trading

This table presents a panel regression of abnormal insider trading measured by abnormal trade frequency (*Trade Frequency*$_{Abn}$) and abnormal trade size (*Trade Size*$_{Abn}$) on news coverage related to insider trading (*News Coverage*$_{IT}$), and firm-level control variables as well as unreported industry- and year-fixed effects (IY). The firm-level control variables include firm size (*Size*), market-to-book ratio (*MB*), annual stock return (*Return*), stock return volatility (*STD*), research & development (*R&D*), and trade frequency (*Trade Frequency*). The construction of these variables is detailed in Appendix A. Key results are highlighted in bold. *t*-statistics shown in parentheses are based on standard errors adjusted for heteroskedasticity and firm-level clustering. Obs denotes the number of transaction observations, and R^2_{Adj} is adjusted R^2. The sample period is from 2001 to 2012.

	Trade Frequency$_{Abn}$	*Trade Size*$_{Abn}$
	Model	Model
Variable	(1)	(2)
News Coverage$_{IT}$	**-0.002**	**-0.008**
	(-5.48)	**(-6.91)**
Size	0.010	0.005
	(6.97)	(0.78)
MB	0.001	-0.009
	(2.41)	(-3.06)
Return	0.037	0.119
	(10.63)	(7.46)
STD	-0.077	-0.928
	(-0.81)	(-1.91)
R&D	-0.004	-0.039
	(-0.85)	(-1.53)
Trade Frequency	-0.097	-0.500
	(-47.32)	(-63.90)
Fixed Effects	IY	IY
Obs	480,777	480,777
R^2_{Adj}	3.9%	4.0%