Strategic News Releases in Equity Vesting Months

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We find that CEOs release 20% more discretionary news items in months in which they are expected to sell equity, predicted using scheduled vesting months. These vesting months are determined by equity grants made several years prior and thus unlikely to be driven by the current information environment. The increase arises for positive news, but not neutral or negative news, nor nondiscretionary news. News releases fall in the month before and month after the vesting month. News in vesting months generates a temporary increase in stock prices and market liquidity, which the CEO exploits by cashing out shortly afterwards. (*JEL* G14, G34)

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The timely release of information is central to the efficiency of both financial markets and the real economy. Information can influence real decisions either directly, or indirectly by affecting stock prices that agents use as signals (see the survey of Bond, Edmans, and Goldstein 2012). For example, suppliers, employees, and investors may base their decision of whether to initiate, continue, or terminate their relationship with a firm on news releases, or stock prices that are affected by news. Moreover, real decisions may be affected by not only specific information releases, but also the general informativeness of stock prices.

News can have distributional as well as efficiency effects. In particular, news reduces information asymmetry between investors, thus protecting uninformed investors from trading losses. Indeed, Regulation Fair Disclosure aims to "level the playing field" among investors by restricting selective disclosure. Moreover, these distributional consequences in the secondary market may feed back into efficiency consequences in the primary market. Uninformed investors, who expect future trading losses due to information asymmetry, may withdraw from the market (Bhattacharya and Spiegel 1991) or require a higher cost of capital (Diamond and Verrecchia 1991), in turn hindering investment.

Importantly, news releases do not occur mechanically whenever corporate events take place, but are often a discretionary decision of the CEO. This paper investigates whether CEOs strategically time some news releases for personal gain. Specifically, we hypothesize that a CEO who intends to sell equity in a given month may delay otherwise past news until that month, and accelerate otherwise future news into that month. This is because disclosure can temporarily boost the stock price through three channels. First, disclosure can attract investor attention: Barber and Odean (2008) find that retail investors are net buyers of attention-grabbing stocks, and Da, Engelberg, and Gao (2011) show that attention-based buying leads to temporary price increases. Second, disclosure can reduce information asymmetry, encouraging uninformed investors to buy the stock. Third, if the news is positive, disclosure conveys favorable information to the market.

However, documenting that CEOs disclose more (positive) news in months in which they sell equity would not imply a causal relationship from equity sales to disclosure, because the decision to sell equity is endogenous. There are three potential sources of endogeneity. The first is reverse causality. For example, if a particular month happens to coincide with many favorable events, the CEO will release positive news (even absent strategic considerations) and take advantage of any resulting stock price increase by opportunistically selling equity. Thus, disclosure causes equity sales rather than expected equity sales causing disclosure. Second, measurement error could bias the coefficient downwards: strategic news releases result from planned equity sales, for which actual equity sales are a noisy measure. An actual sale may be unanticipated, due to a liquidity shock, and so the CEO cannot delay news from a prior month in anticipation (since that prior month has already passed) or release news in

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time for the unexpected sale. Third, there could be omitted variables, such as an industry shock, that are correlated with the CEO's decisions both to release news and sell equity.

We identify a CEO's likelihood of selling equity in a given month by whether there are shares or options scheduled to vest in that month. These vesting months depend on equity grants made several years prior,[1] and so they are unlikely to be affected by the current information environment. It is unlikely that boards can forecast, to the exact month, when news will be released several years in the future. We identify vesting months between 2006 and 2011 using the Equilar data set, and we hand-collect them from proxy statements and SEC Form 4 filings from 1994 to 2005.

We find that CEOs are likely to sell equity shortly after it vests, consistent with diversification motives. In 57% of months in which stock vests, the CEO sells equity in the same month; in only 6% of cases is the first sale in the following month. These figures are 32% and 7% for months in which options vest. Thus, scheduled vesting of equity can indeed lead to equity sales and hence short-term stock price concerns. The link between vesting and sales remains significant after adding several controls for equity sales.

We use novel data from Capital IQ's Key Developments database, which has wide coverage from 2002, as our source for news releases. This database has three advantages over standard news sources such as Factiva, LexisNexis, and Dow Jones Newswires. First, it pre-filters the data to eliminate duplicates and consolidates all the different sources of a particular news item in a single record. Second, it classifies news into categories, allowing us to better stratify news into discretionary (where the timing is likely under the CEO's control, such as conferences, client and product announcements, and special dividends) and nondiscretionary (such as earnings announcements or annual general meetings [AGMs]). Third, some data providers (e.g., Factiva) forbid automated downloads, restricting their use in academic research. While researchers have frequently used Capital IQ for transactions, this is one of the first papers to use its Key Developments database of news items.[2]

Using vesting months as an instrument for sale months in a two-stage least squares (2SLS) analysis, we find that CEOs release 0.57 more discretionary news items in months in which they expect to sell equity, 20% of the sample mean. This figure is statistically significant at the 1% level and after controlling for other determinants of news releases, such as months in which there is an earnings announcement, AGM or board meeting, analyst coverage, recent stock performance, unvested and vested equity, and other determinants of equity sales. In contrast, the amount of nondiscretionary news releases is no different between predicted sale months and other months.

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[1] The average vesting horizon in our sample is three years, with a maximum of eight years.

[2] We are aware of only two working papers that use the Key Developments database: Nichols (2009) and Cohn, Gurun, and Moussawi (2016).

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We also find a positive relationship when regressing news releases directly on vesting months; moreover, we find that the CEO releases significantly less news in both the month before and the month after the vesting month. These results suggest that the CEOs strategically reallocate news into months in which their equity is scheduled to vest and away from adjacent months. All three results hold for discretionary news but not nondiscretionary news. While our main results use ordinary least squares (OLS), they continue to hold using two alternative methods to account for the skewness of news—a Poisson regression and a linear probability model (LPM) for the probability of releasing any news in a given month. They also hold for both stock and options individually as well as for total equity, and for firms both with and without blackout policies (identified using an algorithm similar to Roulstone 2003). They are robust to removing out-of-the-money options (which are unlikely to be exercised upon vesting) and equity with performance-based vesting provisions (which may not vest if performance thresholds have not been met). They disappear when considering months in which only out-of-the-money options vest.

A CEO who wishes to boost the short-term stock price will have incentives to release positive news in particular. We count the number of positive and negative words in Capital IQ's summary of the news item using the dictionary from Loughran and McDonald (2011). We calculate the overall tone of a news release as the difference between the number of positive and negative words, divided by their sum, and classify a news release as positive, neutral, or negative, depending on the tercile of the tone score. We find that predicted sale months are significantly positively associated with the number of positive news releases, but not negative releases.

Next, we study the effect of news releases on stock returns and trading volume to verify whether they indeed improve the conditions for equity sales. The disclosure of one discretionary news item in a vesting month generates a significant 16-day abnormal return of 40 basis points (bps). The 31-day return is smaller (25 bps), suggesting a temporary attention boost. The median CEO equity sale, scaled by average daily trading volume, is 4.5%. Since sales are sizable, the CEO may benefit from not only the higher price that results from disclosure, but also any increased liquidity. On the first day after a discretionary news release, abnormal trading volume rises by 0.45% of shares outstanding, compared with the mean of 1%. This value decreases over time, consistent with an attention story. The median CEO equity sale on a sale day, scaled by shares outstanding, is 0.045%. Thus, the abnormal trading volume of 0.45% can provide adequate camouflage.

The final step is to show that CEOs indeed take advantage of the observed short-term run-ups in stock price and trading volume. We find that the median interval between a discretionary disclosure that occurs within 30 days of a vesting date (i.e., is likely prompted by vesting), and the first equity sale after the disclosure, is five days.

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Our paper is mainly related to two literatures: corporate disclosures and equity vesting. Starting with the former, several papers examine the relation between disclosure and equity incentives (Penman 1982; Noe 1999; Nagar, Nanda, and Wysocki 2003; Cheng and Lo 2006; Brockman, Khurana, and Martin 2008). These studies use standard incentive measures that are likely endogenous. Other papers study disclosure incentives from sources other than the CEO's contract. In Balakrishnan et al. (2014), exogenous broker closures or mergers reduce public information and thus increase firms' incentives to disclose in response. Ahern and Sosyura (2014) find that bidders in stock mergers with fixed exchange ratios originate more positive news stories, which improves their stock price and thus merger terms. While the decision to undertake a stock-financed merger may be driven by the expectation of imminent positive news releases,[3] we study disclosure incentives that result from equity grants made several years prior.

Another difference with the above papers is that we study the incentives of the CEO in particular, rather than the firm in general.[4] While Bebchuk and Fried (2004) argue that CEOs negotiate higher grant-date pay, we show that CEOs can also increase the value of their pay upon vesting. Applied to the average annual CEO vesting equity of $5.26 million, the 16-day return of 40 bps translates into a gain of $21,040, in line with the gains to illegal insider trading and option backdating. These gains come at little cost: changing the timing of news releases is legal,[5] and involves less effort than other actions to boost the stock price, such as cutting investment projects. However, while meaningful for the CEO, these gains are small compared with firm value. Thus, we do not claim to identify a major agency problem between the CEO and shareholders. The main effect of delaying news releases may be on stakeholders who made decisions prior to the vesting month with less information, or on the distribution of wealth among shareholders who traded in prior months. Note that the welfare effects of strategic timing are asymmetric: delaying information is typically detrimental to stakeholders, while accelerating information is beneficial.

Other papers study disclosures around option award (rather than vesting) dates. Aboody and Kasznik (2000) hypothesize that managers who receive scheduled option grants just before earnings announcements are more likely to have private information than those who receive grants afterwards. Studying 70 earnings forecasts, they find that the former group is more likely to issue pessimistic earnings forecasts, which may lower the grant strike price. Daines, McQueen, and Schonlau (2018) find that before (after) scheduled option grants, management issues negative (positive) earnings guidance, and 8-K filings of material corporate events exhibit negative (positive) announcement

[3] Ahern and Sosyura (2014) thus undertake a battery of tests to address alternative explanations for their results.

[4] Yermack (2014) studies CEO effort rather than monetary incentives. He finds that firms release less news when the CEO is on vacation and thus disclosures involve more effort.

[5] See the Online Appendix of Ahern and Sosyura (2014) for the legality of strategic news disclosure.

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returns. We study the CEO's incentives to time news in general, using a sample of 337,547 news releases that predominantly contain disclosures other than earnings guidance and 8-K filings, and show how the effect differs across discretionary and nondiscretionary news. While option grants have been markedly replaced by stock grants in recent years (Edmans, Gabaix, and Jenter 2017), we show that the CEO's stock as well as option holdings affect the incentives to disclose news.[6]

The second literature studies the relationship between vesting equity and corporate decisions. Edmans, Fang, and Lewellen (2017) show that vesting equity is associated with declines in investment growth and a greater likelihood of both issuing positive earnings guidance and narrowly beating earnings forecasts. Ladika and Sautner (2016) find that the adoption of FAS 123R induced some firms to accelerate option vesting, which in turn led to a fall in investment. Jochem, Ladika, and Sautner (forthcoming) show that the accelerated vesting following FAS 123R led to voluntary CEO turnover rising from 6% to 19% per year. While those papers document that vesting equity affects real decisions, we show that it can affect the information environment, thus linking a corporate finance variable (the CEO's contract) to financial markets. Since news releases are easier to manage than real decisions, disclosure is arguably the most plausible arena in which short-term concerns will manifest. The only news releases that Edmans, Fang, and Lewellen (2017) analyze are earnings guidance and earnings announcements, which must be underpinned by real changes such as investment cuts. We study a much broader set of news items, the majority of which can be strategically managed without needing to undertake changes in real decisions that may be costly to the firm and require effort from the CEO.[7] Gopalan et al. (2014) study a different measure of short-term incentives: the duration (average vesting horizon) of the CEO's equity holdings. This is less appropriate for our setting as it is endogenous to current equity grants and the decision to retain previously vested equity. Gopalan, Huang, and Maharjan (2016) use vesting equity as an instrument for duration and show that it encourages CEO turnover. Cohn, Gurun, and Moussawi (2016) find that CEOs with more short-term concerns engage in worse projects, as measured by a more muted market reaction to client and product announcements, and that these announcements themselves contain filler words rather than specific positive details. We study a broader set of

[6] Yermack (1997) shows that CEOs can also increase the value of their option grants by influencing their award dates around prescheduled earnings announcements. Options are more likely to be awarded before (after) positive (negative) earnings surprises. Smukler (2009) documents anecdotal examples of companies releasing negative information shortly after what he assumes to be the vesting dates of options. We have data on actual vesting dates and conduct a systematic study. Fich, Parrino, and Tran (2015) find no evidence of opportunistic timing as a result of 10b5-1 plans, which allow CEOs to pre-announce equity sales.

[7] In addition, Edmans, Fang, and Lewellen (2017) study the Equilar data, which starts in 2006, while Ladika and Sautner (2016) use the R.G. Associates Option Accelerated Vester Database, which covers May 2004 to February 2006. We use the Equilar data from 2006 to 2011, and hand-collect data from 1994 to 2005 to obtain a much longer sample.

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news releases and use vesting equity to identify plausibly exogenous shocks to short-term concerns.

In addition to the literature on short-term incentives in particular, our paper contributes to the literature on CEO compensation in general. While this literature is substantial, it is very difficult to document causal effects. The survey of Edmans, Gabaix, and Jenter (2017) notes that "compensation arrangements are the endogenous outcome of a complex process involving the executive, board, compensation consultants, and the managerial labor market. As a result, they are inevitably correlated with a huge number of observable and unobservable firm, industry, and executive characteristics. This makes it impossible to interpret any observed correlation between executive pay and firm outcomes as a causal relationship." We use a measure of CEO incentives that is unlikely to be driven by the current contracting environment, allowing us to show that CEO contracts can affect behavior.

1. Data and Variable Construction

This section describes the variables used in our analysis. Our goal is to study how disclosure is affected by the CEO's stock price concerns in a given month. Theoretically, these concerns will arise if equity is vesting in that month, because the CEO is likely to sell vesting equity for diversification reasons. We thus seek to identify these vesting months. Information on vesting schedules is available in SEC Form 4, which must be filed after a stock or option grant. It provides the number of securities granted and the grant date in a standardized table, and vesting information in a footnote. For example, Form 4 indicates that John H. Eyler Jr. of Toys "R" Us was awarded 20,000 restricted shares on April 1, 2004. The footnote reads: "These shares vest 50% on the second anniversary of the award date and 100% on the third anniversary of the award date." Here, 10,000 shares vest on April 1, 2006, and the remaining 10,000 vest on April 1, 2007.

For option grants, a second source of vesting information is SEC proxy statements, which contain the number of securities, strike price, and maturity in a standardized table, and the vesting schedule in a footnote. For example, the 2001 proxy filing of IBM states that Louis Gerstner received 650,000 options with a strike price of $109.62. The footnote reads: "Mr. Gerstner's grant becomes exercisable in two equal installments, on March 1, 2001, and on March 1, 2002." Here, 325,000 options vest on March 1, 2001, and the remaining 325,000 vest on March 1, 2002.

In a randomized sample of options, we find that the information quality is higher in proxy statements than Form 4 filings, which are not filed regularly and sometimes missing altogether. Unfortunately, proxy statements do not provide grant-level vesting information on restricted stock, which would allow identification of vesting months, but only the number of shares vesting in the fiscal year as a whole. Therefore, we hand-collect option vesting information

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from proxy statements and stock vesting information from Form 4 filings, from 1994 (when SEC filings become available electronically) to 2005.[8] To make the hand-collection manageable, we restrict our pre-2006 sample to firms that were part of the S&P 500 index in any year within that period.

For grants starting from 2006 to 2011, we use the Equilar data set. Using proxy statements and Form 4 filings, Equilar provides vesting information for all stock and option grants to Russell 3000 executives, in a standardized format. For each grant, Equilar records the date, size, vesting period, and whether it exhibits cliff vesting (where the entire grant vests at the end of the vesting period) or graded vesting. Graded vesting could correspond to straight-line, back-loaded, or front-loaded vesting; we assume that it refers to straight-line vesting on an annual schedule, as most pre-2006 grants with graded vesting vest on this basis.

We use these vesting schedules to create the variable $VestingMonth$, an indicator that equals one if the CEO has any equity vesting in a given month. Our identification strategy is that the CEO sells equity upon vesting for diversification reasons. For example, the average amount of vesting equity in a vesting month is \$2.2 million. The 10th (25th) percentile stock return in a given month is –14.5% (–6.3%), and so a CEO who experiences a 10th (25th) percentile return will lose \$313,000 (\$135,000) by waiting one month to sell vesting equity. These amounts are sizable and give incentives to sell upon vesting.

Even though many CEOs hold already-vested equity, they may face explicit or implicit constraints on selling it; vesting relaxes these constraints and thus increases equity sales. One constraint may result from ownership guidelines set by the board. These guidelines are typically satisfied only by vested equity (Core and Larcker 2002), and so vesting allows the CEO to sell equity without violating the guidelines. Second, the CEO may hold vested equity voluntarily for control reasons. Since unvested equity does not provide voting rights, vesting allows additional sales without falling below the CEO's desired level of voting rights. Similarly, the CEO may hold a threshold level of vested equity to signal confidence in the firm. Consistent with these points, we show in Section 2 that CEOs sell significantly more equity in vesting months, even after controlling for already-vested equity. Note that our identification does not require CEOs to sell their entire equity stakes upon vesting, only that vesting months are a significant determinant of equity sales.

Our main analysis links equity vesting to news releases. We obtain data on news releases from Capital IQ's Key Developments database, which starts in 2002. This database consists of information from over 20,000 public news sources, company press releases, regulatory filings, call transcripts, investor presentations, stock exchanges, regulatory websites, and company

[8] While our news source starts in 2002, we collect vesting information from 1994, since equity that vests in 2002 will have been granted prior to 2002.

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websites. We exclude news released by the media, and retain only news items generated from within the firm: those whose sources are company websites, newswires that disseminate corporate press releases (e.g., Business Wire, PR Newswire, Market Wire, and GlobeNewsWire), SEC filings, and the Capital IQ transactions database (e.g., M&A announcements, debt issuances, and share buybacks). As discussed in the Introduction, we classify news releases into discretionary and nondiscretionary. Appendix B provides the full classification, as well as the frequency of the different news items, and Appendix C shows examples of Capital IQ news items for Wal-Mart in the first quarter of 2012.

The first stage of our 2SLS analysis links vesting equity to equity sales, to show that it indeed induces short-term stock price concerns.[9] We obtain data from the Thomson Financial Insider Trading database, which is collected from SEC Form 4. $SaleMonth$ is an indicator that equals one if the CEO sells any equity in a given month. The second stage relates $NewsEvents$, the number of news events, to $SaleMonth$, instrumented using $VestingMonth$. We control for several variables that likely affect the CEO's incentive to release news in a given month. $EAYearly$ and $EAQuarterly$ are indicators for whether that month featured a yearly or quarterly earnings announcement. AGM and $Board$ are indicators for whether there is an AGM or board meeting that month, which Dimitrov and Jain (2011) show are positively associated with news releases. $EarningsSurprise$ is that month's earnings surprise, taken from Institutional Brokers' Estimate System (I/B/E/S); it is zero if there is no earnings announcement that month. $Analyst$ is the number of analysts following the stock (from I/B/E/S). Balakrishnan et al. (2014) show that firms release news to compensate for a loss in analyst coverage. $VestedSensitivity$ and $UnvestedSensitivity$ are the sensitivity of the CEO's already-vested and unvested equity to a 100% change in the stock price.[10] We do not make clear predictions for the coefficients on these variables because both are endogenous. For example, the decision to hold onto vested equity, or the CEO's willingness to accept new unvested equity as compensation, could be driven by the anticipation of future positive news releases. We also include control variables that may affect the CEO's decision to sell equity in the first stage. We use the firm-level controls in Fos and Jiang (2016)'s study of option exercise behavior: the 12-month past stock return ($PastReturn$), idiosyncratic volatility ($IdioVol$), Tobin's q (Q), sales growth ($SalesGrowth$), the Amihud (2002) liquidity

[9] For brevity, we will use the term "equity sales" to refer to standard stock sales, sales of shares obtained upon option exercise, or the CEO cancelling some shares to pay for taxes or the strike price upon option exercise.

[10] For $VestedSensitivity$, we first calculate the delta of the vested securities. We calculate the Black-Scholes value of an option grant using the strike price and maturity date from either the proxy statement or Equilar, the average monthly stock return volatility over the past 12 months, the annual dividend yield from CRSP, and the one-month Treasury bill rate as the risk-free rate. We sum across the deltas of all option grants and add the number of shares (since the delta of a share is 1) to calculate the aggregate delta of all vested securities: their dollar sensitivity to a $1 increase in the stock price. We multiply it by the stock price at prior month-end to calculate $VestedSensitivity$, the dollar sensitivity to a 100% change in the stock price. $UnvestedSensitivity$ is calculated analogously.

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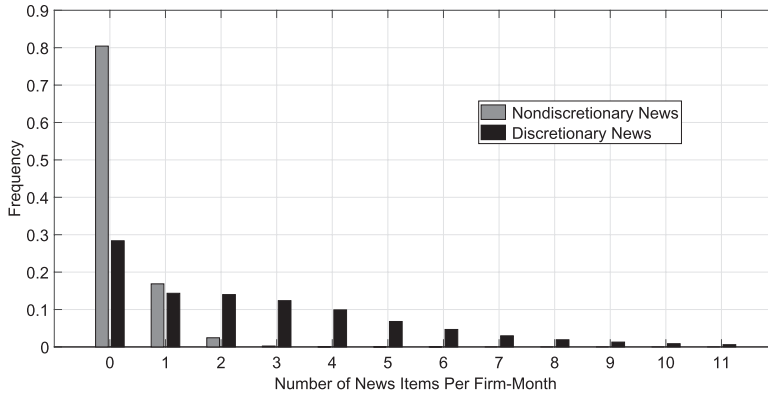

Figure 1
Histogram of the number of news items per firm-month
This figure reports the frequency of the number of discretionary and nondiscretionary news items per firm-month. The data is obtained from Capital IQ for 2002–2011.

measure ($Liquidity$), dividend yield ($DivYield$), and market capitalization ($MarketCap$). The calculation of all controls is described in Appendix A. After filtering for the availability of these controls, we have 337,547 news releases.

Table 1 presents summary statistics for our main variables. Panel A shows that vesting periods average 3.2 years for stock and 3.6 years for options, with a maximum of 7 and 8 years, respectively. Thus, vesting equity is determined by equity grants awarded to the CEO several years prior, and can plausibly be considered exogenous. Excluding no-news months, a typical firm has an average of 4.1 news releases, of which 3.8 are discretionary. Including no-news months, the averages are 3.0 and 2.8. Figure 1 plots a histogram of the number of discretionary and nondiscretionary news items per firm-month. Panel B of Table 1 gives the frequency of discretionary and nondiscretionary news across vesting and non-vesting months. Panel C provides summary statistics on equity vesting and equity sales by CEOs. On average, CEOs sell $6.75 million of equity per year, and there are 2.4 vesting months per year. Appendix D shows the distribution of events across months. The first quarter contains approximately 40% of vesting months and 80% of yearly earnings announcements. It will therefore be important to control for month fixed effects in our analyses.

2. News Releases in Predicted Sale Months and Vesting Months

2.1 Equity vesting months and CEO sales

This section studies whether CEOs indeed sell equity soon after it vests, to verify the validity of our instrument. In Table 2, we compute the average distance between the month in which a CEO's shares or options vest and the month in

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Table 1
Sample statistics

Panel A: Equity granted, CEO incentives, news events, and stock/firm characteristics

	Obs	Mean	Median	Std	Skewness	Kurtosis	1st pctile	25th pctile	75th pctile	99th pctile
Stock grants:										
Vesting period	16,740	3.15	3.00	1.56	0.48	7.31	0.00	3.00	4.00	7.00
Value granted (in millions)	14,776	1.20	0.49	1.90	3.46	17.25	0.00	0.14	1.30	12.00
% graded	16,740	0.61	1.00	0.49	–0.43	1.19	0.00	0.00	1.00	1.00
Option grants:										
Vesting period	21,070	3.59	4.00	1.37	0.84	8.16	1.00	3.00	4.00	8.00
Value granted (in millions)	16,843	1.20	0.31	2.70	4.41	25.06	0.00	0.08	1.00	19.00
% graded	21,070	0.82	1.00	0.39	–1.66	3.76	0.00	1.00	1.00	1.00
CEO incentives:										
VestingSensitivity (in thousands, vesting months only)	4,293	1,522	317	5,388	15	351	0	1	6,381	17,799
VestedSensitivity (in thousands, all months)	6,664	57,557	5,552	611,457	39	1,648	0	0	193,218	577,618
UnvestedSensitivity (in thousands, all months)	6,664	7,816	1,214	19,833	9	144	0	0	35,508	81,023
Corporate news events (all months):										
All news	111,903	3.02	2	3.09	1.44	5.55	0	0	5	15
Discretionary news	111,903	2.79	2	2.96	1.57	6.07	0	0	4	15
Corporate news events (news months only):										
All news	83,133	4.06	3	2.93	1.53	5.86	1	2	5	15
Discretionary news	81,610	3.82	3	2.83	1.66	6.27	1	2	5	15
Stock characteristics:										
Monthly returns	111,903	0.01	0.006	0.152	2.174	33.476	–0.361	–0.063	0.074	0.462
Monthly turnover	111,903	0.219	0.161	0.227	6.328	125.075	0.011	0.092	0.271	1.051
Daily returns	2,349,479	0.0005	0.0000	0.0309	0.2072	5.2245	–0.0960	–0.0144	0.0145	0.1072
Daily turnover	2,349,474	0.0100	0.0069	0.0104	2.5381	11.0014	0.0002	0.0036	0.0124	0.0619
Number of analysts following	111,903	8.38	7	6.95	1.08	3.99	0	3	12	30
Firm characteristics:										
EarningsSurprise	111,903	0.226	0	1.015	2.918	13.596	–1.987	0	0	4.919
IdioVol	111,903	0.025	0.021	0.017	4.196	62.695	0.007	0.014	0.03	0.087
Q	111,903	1.794	1.356	1.349	4.682	45.512	0.695	1.05	2.001	7.229
SalesGrowth	111,903	0.332	0.061	6.924	46.991	2725.609	–0.691	–0.04	0.17	2.172
Liquidity	111,903	–0.15	–0.046	0.424	–6.636	54.001	–2.577	–0.12	–0.019	–0.004
DivYield	111,903	0.014	0	0.036	14.873	413.012	0	0	0.021	0.108
MarketCap (in millions)	111,903	5,692	885	18,000	8	89	29	280	3,332	95,000

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Table 1
(Continued)

Panel B: Quantity and tone of corporate news releases from Capital IQ

	Obs	Mean	Median	Std	Skewness	Kurtosis	1st pctile	25th pctile	75th pctile	99th pctile
Quantity of news releases:										
Discretionary (vesting months)	12,945	4.03	3	2.80	1.48	5.69	1	2	5	15
Nondiscretionary (vesting months)	3,885	1.15	1	0.36	1.93	4.74	1	1	1	2
Discretionary (non-vesting months)	68,665	3.78	3	2.84	1.69	6.40	1	2	5	15
Nondiscretionary (non-vesting months)	18,661	1.14	1	0.34	2.11	5.43	1	1	1	2
Tone of discretionary news releases (news months only):										
Positive news:										
All	27,236	1.908	1	2.25	6.884	74.925	1	1	2	11
Vesting months	4,589	1.886	1	2.077	6.565	70.515	1	1	2	10
Non-vesting months	22,647	1.913	1	2.283	6.919	75.15	1	1	2	11
Negative news:										
All	36,945	1.833	1	3.374	24.778	758.952	1	1	2	7
Vesting months	5,896	1.796	1	2.669	28.183	1011.822	1	1	2	6
Non-vesting months	31,049	1.84	1	3.492	24.206	721.555	1	1	2	7
Neutral news:										
All	44,864	2.084	2	1.844	7.734	166.648	1	1	2	8
Vesting months	7,156	2.082	2	1.621	4.538	46.745	1	1	3	8
Non-vesting months	37,708	2.085	2	1.883	8.089	177.371	1	1	2	8
Tone of discretionary news releases (all months):										
Positive news:										
All	111,903	0.464	0	1.379	9.554	164.068	0	0	0	5
Vesting months	17,090	0.506	0	1.363	8.376	131.563	0	0	1	5
Non-vesting months	94,813	0.457	0	1.382	9.761	169.688	0	0	0	5
Negative news:										
All	111,903	0.605	0	2.122	34.398	1680.428	0	0	1	5
Vesting months	17,090	0.62	0	1.785	34.084	1831.454	0	0	1	5
Non-vesting months	94,813	0.602	0	2.177	34.204	1640.671	0	0	1	5
Neutral news:										
All	111,903	0.836	0	1.551	6.69	152.538	0	0	1	6
Vesting months	17,090	0.872	0	1.468	3.933	39.873	0	0	1	6
Non-vesting months	94,813	0.829	0	1.566	7.097	168.012	0	0	1	6

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The Review of Financial Studies / v 31 n 11 2018

Table 1
(Continued)

Panel C: Equity vesting and CEO equity sales

	Obs	Mean	Median	Std	Skewness	Kurtosis	1st pctile	25th pctile	75th pctile	99th pctile
Monthly calculations (all months):										
VestingMonth dummy	111,903	0.15	0.00	0.36	1.93	4.73	0.00	0.00	0.00	1.00
SaleMonth dummy	111,903	0.10	0.00	0.30	2.66	8.07	0.00	0.00	0.00	1.00
Vesting quantity (in thousands)	111,903	14.24	0.00	178.75	132.08	21,455.83	0.00	0.00	0.00	265.00
Vesting value (in thousands)	111,903	327.90	0.00	2,586.83	37.74	2,706.15	0.00	0.00	0.00	7,383.80
Average number of trades	111,903	0.74	0.00	13.65	97.71	12,553.26	0.00	0.00	0.00	10.00
Average quantity traded (in thousands)	111,903	8.50	0.00	174.47	122.59	17,744.15	0.00	0.00	0.00	157.50
Average value traded (in thousands)	111,903	289.28	0.00	4,751.86	105.10	14,323.73	0.00	0.00	0.00	5,838.06
Monthly calculations (non-zero months only):										
Vesting quantity (in thousands)	17,090	93.25	37.50	449.30	53.94	3,482.21	0.57	12.75	97.90	733.24
Vesting value (in thousands)	17,062	2,150.57	532.33	6,322.20	16.07	478.47	3.97	158.41	1,795.09	24,159.08
Average number of trades	11,241	7.36	1.00	42.50	31.76	1,310.03	1.00	1.00	3.00	105.00
Average quantity traded (in thousands)	14,210	66.90	17.17	485.60	44.41	2,307.09	0.22	5.37	50.00	640.00
Average value traded (in thousands)	14,174	2,283.84	434.03	13,180.48	38.43	1,887.29	3.03	107.53	1,608.89	26,377.69
Yearly calculations (non-zero vesting and non-zero trading only):										
Number of vesting months	6,990	2.44	2.00	2.76	3.60	21.05	1.00	1.00	2.00	14.00
Number of trading months	4,013	2.80	2.00	3.09	4.64	39.73	1.00	1.00	3.00	15.00
Vesting quantity (in thousands)	6,990	227.99	91.02	776.45	26.26	945.97	1.80	33.33	222.76	1,951.95
Vesting value (in thousands)	6,980	5,256.89	1,924.30	11,904.41	11.71	255.73	29.95	657.64	5,433.61	45,890.47
Average quantity traded (in thousands)	4,801	198.02	55.06	1,245.92	40.79	2,002.18	0.65	16.03	170.60	1,877.46
Average value traded (in thousands)	4,793	6,753.84	1,459.48	31,790.62	29.84	1,151.63	12.75	354.33	5,417.52	71,184.63

This table reports the summary statistics for the main variables used in this study. The sample period is 2002–2011. The data on vesting schedules is hand-collected from proxy statements (options) and Insider Trading filings (restricted stock) for S&P 500 firms for 2002–2005. For 2006–2011, vesting schedules are extracted from Equilar, which covers Russell 3000 firms. The data on insiders' transactions is extracted from Thomson Reuters Insider Trading filings (SEC Form 4), and the data on firm and stock characteristics is from Compustat and CRSP, respectively. Data on corporate news events for 2002–2011 is from Capital IQ.

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Table 2
Time from vesting to first sale

	Stock		Options	
# Months	Freq.	Perc.	Freq.	Perc.
0	2,770	57.14%	4,364	32.00%
1	285	5.88%	1,000	7.33%
2	145	2.99%	674	4.94%
3	133	2.74%	561	4.11%
4	99	2.04%	440	3.23%
5	95	1.96%	396	2.90%
6	106	2.19%	404	2.96%
7	69	1.42%	327	2.40%
8	70	1.44%	267	1.96%
9	82	1.69%	365	2.68%
10	101	2.08%	376	2.76%
11	87	1.79%	356	2.61%
12	178	3.67%	545	4.00%
13	50	1.03%	203	1.49%
14	19	0.39%	144	1.06%
15	35	0.72%	156	1.14%
16	20	0.41%	120	0.88%
17	19	0.39%	101	0.74%
18	21	0.43%	118	0.87%
>18	464	9.57%	2,720	19.95%
Total	4,848	100%	13,637	100%

This table reports the distance between the month of equity vesting and the month of the first observed sale by the CEO. The data on equity vesting is extracted from Equilar (for Russell 3000 firms for 2006–2011) and hand-collected from SEC Form 4 and proxy statements (for S&P 500 firms for 2002–2005). The data on CEO trading is extracted from Thomson Financial Insider Trading filings (SEC Form 4) for sample firms up to 36 months after the vesting month or until the CEO leaves the firm and hence stops reporting (this data covers 2002–2014).

which we first observe equity sales.[11] In 57% of cases, the CEO sells equity in the month in which stock vests. The frequency of first equity sales in any subsequent month is less than 6%. The pattern is similar for the vesting of options, but with lower magnitudes (32%) for the vesting month, because some options may be out of the money.

In Table OA1 of the Online Appendix, we show similar results when conducting a regression with control variables. Specifically, we run:

$$SaleMonth_{i,t} = \alpha + \beta_1 * VestingMonth_{i,t} + \beta_2 * MonthBefore_{i,t} + \\ + \beta_3 * MonthAfter_{i,t} + \gamma * Controls_{i,t} + \text{Fixed Effects} + \epsilon_{i,t}, \quad (1)$$

where $MonthBefore$ and $MonthAfter$ are indicators for the months before and after the vesting month, and $Controls$ are the controls described in

[11] We obtain the Insider Trading data up to 2014, to give CEOs 36 months to sell their equity following the end of our Equilar data in 2011. The following example illustrates how we treat the case of multiple vesting months before a sale. Assume that equity vests in March and June, and that the first observed sale is in July. We consider this observation as both a first sale four months after the March vesting month, and a first sale one month after the June vesting month.

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Section 1. The results are consistent with Table 2: CEOs are 25% more likely to sell shares in a month in which stock vests than in a month in which no stock vests; this figure is 12% for options. Both coefficients are significant at the 1% level.

2.2 Quantity of news releases

Table 3 reports the core result of this paper, that news releases are significantly higher in months in which the CEO is expected to sell equity. Since actual equity sales are endogenous, we use vesting months as an instrument. The instrument is relevant since vesting months are strongly correlated with sale months, as shown in Table 2. It also likely satisfies the exclusion restriction since vesting months are determined by equity grants awarded several years prior.

Panel A runs the following 2SLS specification:

$$SaleMonth_{i,t} = \alpha_1 + \beta_1 * VestingMonth_{i,t} + \gamma_1 * Controls_{i,t} + \text{Fixed Effects} + \epsilon_{i,t} \quad (2)$$

$$NewsEvents_{i,t} = \alpha_2 + \beta_2 * \widehat{SaleMonth}_{i,t} + \gamma_2 * Controls_{i,t} + \text{Fixed Effects} + \epsilon_{i,t} \quad (3)$$

In the second stage, our main explanatory variable is the predicted value $\widehat{SaleMonth}$ from the first stage. In all regressions (except for the event study of Table 6 and the two-stage Poisson regression), standard errors are clustered at the firm level and adjusted for heteroscedasticity. We use year, month, and firm fixed effects to control for unobservable firm-level or time-specific determinants of equity sales. (The results are unchanged when using CEO instead of firm fixed effects.)

Column (1) reports the first stage and, consistent with Table 2, further verifies the relevance criterion. The CEO is 11% more likely to sell equity in a given month if equity is also vesting in that month. The Kleibergen-Paap F-statistic for instrument relevance is 203. Column (2) shows that, in the second stage, the CEO releases 0.57 more discretionary news items in months in which equity sales are expected. Compared with the average number of discretionary news releases of 2.79 per month, this corresponds to a 20% increase. Column (3) shows no relationship with nondiscretionary news, consistent with the CEO having less latitude to reallocate such news. This insignificance also suggests that our control variables absorb sources for a relationship between vesting months and news releases that are not related to incentives.

To investigate the bias caused by the potential endogeneity of $SaleMonth$, Columns (4) and (5) present uninstrumented OLS regressions on actual sale months. Recall from the Introduction that two sources of endogeneity act in different directions. The first is reverse causality: (non-strategic) positive news releases induce the CEO to sell equity, which inflates the coefficient. The second

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is measurement error: unexpected equity sales (e.g., due to a liquidity shock) do not allow a CEO to delay news releases from the month prior, which deflates the coefficient. We find that the coefficient on *SaleMonth*, while significant at the 1% level in Column (4), is smaller than in the instrumented specification of Column (2), suggesting that the second source of endogeneity is stronger. The Introduction also suggested a third source of endogeneity, omitted variables, which is ex ante unsigned. The comparison suggests that any omitted variables are likely to be correlated with news releases and equity sales

Table 3
News releases and predicted equity sales

Panel A: Ordinary least squares and two-stage least squares					
Methodology: Dependent variable:	First stage *SaleMonth* (1)	2SLS Discretionary (2)	2SLS Nondiscretionary (3)	OLS Discretionary (4)	OLS Nondiscretionary (5)
VestingMonth	0.1074***				
	(20.58)				
$\widehat{SaleMonth}$		0.5688***	−0.0118		
		(3.38)	(−1.49)		
SaleMonth				0.0805***	−0.0017
				(3.39)	(−1.49)
EAYearly	0.0502***	1.0523***	0.0081***	1.0738***	0.0077***
	(8.93)	(30.40)	(4.48)	(32.15)	(4.41)
EAQuarterly	0.0017	0.9178***	1.0036***	0.9193***	1.0035***
	(0.54)	(34.01)	(512.77)	(33.97)	(513.07)
AGM	0.0177***	0.7910***	1.0334***	0.7989***	1.0332***
	(4.15)	(20.46)	(334.18)	(20.65)	(335.29)
Board	0.0039	1.0573***	0.9400***	1.0580***	0.9399***
	(0.38)	(11.84)	(95.56)	(11.93)	(95.47)
EarningsSurprise	0.0053***	0.1889***	−0.0003	0.1919***	−0.0004
	(4.81)	(21.83)	(−0.77)	(22.33)	(−0.94)
Analyst	−0.0002	0.0509***	0.0000	0.0508***	0.0000
	(−0.35)	(8.85)	(0.12)	(8.85)	(0.13)
PastReturn	0.0228***	0.0090	0.0021	0.0218*	0.0018
	(9.35)	(0.75)	(1.55)	(1.92)	(1.38)
IdioVol	−0.5922***	0.3893	0.1500***	0.0590	0.1569***
	(−5.31)	(0.67)	(2.61)	(0.10)	(2.70)
Q	0.0081***	−0.0361**	−0.0003	−0.0315**	−0.0004
	(3.08)	(−2.45)	(−0.42)	(−2.18)	(−0.56)
SalesGrowth	0.0000	0.0011	0.0001	0.0011	0.0001
	(0.20)	(0.61)	(1.19)	(0.62)	(1.18)
Liquidity	0.0046	−0.0361	0.0006	−0.0335	0.0005
	(1.38)	(−1.25)	(0.35)	(−1.16)	(0.32)
DivYield	−0.0551*	0.2501	−0.0173*	0.2212	−0.0167*
	(−1.87)	(0.57)	(−1.95)	(0.50)	(−1.88)
MarketCap	0.0000	0.0000	0.0000	0.0000	0.0000
	(−1.31)	(0.44)	(−1.47)	(0.39)	(−1.43)
VestedSensitivity	0.0064***	−0.0023	0.0006	0.0016	0.0005
	(2.90)	(−0.12)	(1.01)	(0.08)	(0.88)
UnvestedSensitivity	−0.0014	0.0163	0.0001	0.0153	0.0001
	(−0.62)	(0.96)	(0.09)	(0.91)	(0.12)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	111,903	111,882	111,882	111,882	111,882
R^2	0.182	0.175	0.922	0.547	0.929
F-statistic	203.3				

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Table 3
(Continued)

Panel B: Poisson and control function specifications				
Methodology: Dependent variable:	Control function Discretionary (1)	Control function Nondiscretionary (2)	Poisson Discretionary (3)	Poisson Nondiscretionary (4)
SaleMonth	0.1727***	−0.0794	0.0319***	−0.0209
	(4.67)	(−0.58)	(3.75)	(−0.98)
EAYearly	0.3384***	0.3768***	0.3485***	0.3727***
	(46.07)	(13.51)	(30.68)	(17.76)
EAQuarterly	0.2893***	2.3418***	0.2884***	2.3422***
	(54.96)	(138.91)	(31.22)	(132.22)
AGM	0.2151***	2.0588***	0.2189***	2.0573***
	(31.80)	(108.99)	(20.28)	(67.84)
Board	0.3303***	1.4654***	0.3308***	1.4653***
	(20.12)	(40.09)	(10.31)	(18.83)
EarningsSurprise	0.0401***	0.0057	0.0412***	0.0052
	(25.20)	(1.08)	(15.62)	(1.27)
Analyst	0.0077***	−0.0011	0.0080***	−0.0012
	(10.64)	(−0.38)	(5.11)	(−0.54)
PastReturn	0.0030	−0.0034	0.0063	−0.0048
	(0.91)	(−0.31)	(1.63)	(−0.57)
IdioVol	−0.4335**	−0.1839	−0.5620**	−0.1279
	(−1.98)	(−0.31)	(−2.06)	(−0.20)
Q	−0.0103***	0.0011	−0.0088*	0.0005
	(−3.50)	(0.11)	(−1.90)	(0.07)
SalesGrowth	0.0004	0.0005	0.0004	0.0005
	(1.57)	(0.66)	(1.36)	(1.53)
Liquidity	0.0442***	0.0064	0.0460**	0.0057
	(3.44)	(0.24)	(2.47)	(0.36)
DivYield	0.0839	−0.0713	0.0588	−0.0605
	(1.13)	(−0.30)	(0.32)	(−0.36)
MarketCap	0.0000***	0.0000	0.0000	0.0000
	(3.72)	(0.24)	(1.37)	(0.32)
VestedSensitivity	0.0060**	0.0113	0.0061	0.0112
	(2.35)	(1.11)	(1.29)	(1.51)
UnvestedSensitivity	0.0080***	−0.0124	0.0086*	−0.0127*
	(3.08)	(−1.24)	(1.86)	(−1.78)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
Observations	105,222	98,338	105,222	98,338

This table regresses news releases on equity sale months. It instruments the endogenous regressor *SaleMonth* using *VestingMonth*, which results in the instrumented variable $\widehat{SaleMonth}$. Panel A reports OLS and 2SLS results. The dependent variable in the first-stage regression (Column (1)) is the indicator *SaleMonth*, with firm-level controls from Fos and Jiang (2016), and in the second-stage regressions (Columns (2)–(3)) the main independent variable is the instrumented *SaleMonth* obtained from the specification in Column (1), which we denote as $\widehat{SaleMonth}$. In Columns (4)–(5), we report the results of reduced form OLS regressions in which the main independent variable is the uninstrumented *SaleMonth* for comparison with the results using the instrumented $\widehat{SaleMonth}$ in Columns (2)–(3). Panel B reports Poisson and control function results. Controls are described in Appendix A. We control for firm, year, and month fixed effects in all specifications. *t*-statistics are in parentheses, standard errors are corrected for heteroscedasticity and are clustered at the firm level, and *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. The sample period is 2002–2011.

in opposite directions. Column (5) shows that the results remain insignificant for nondiscretionary news.

As shown in Figure 1, the distribution of news releases is positively skewed. Panel B uses a Poisson specification, which accounts for both skewness and discreteness. We conduct a two-stage Poisson regression using the Control

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Function approach. In the first stage, we run an OLS regression of $SaleMonth$ on $VestingMonth$ and controls, and take the residual. The second stage runs a Poisson regression of news releases similar to Equation (3), except that $SaleMonth$ replaces $\widehat{SaleMonth}$, the first-stage residual is included as an additional control, and the standard errors are bootstrapped. The results are very similar to panel A. In sale months, discretionary news releases are 17% higher than in non-sale months, significant at the 1% level. There is no difference for nondiscretionary news, and the relationship is markedly weaker when running the second-stage regression excluding the first-stage residual—that is, a single-stage Poisson. (In a further robustness check in Section 4.1, we will alternatively address skewness with an LPM regression.)

While Table 3 relates news releases to predicted sale months, Table 4 relates them to vesting months directly. This reduced-form regression also allows us to study news releases in the months adjacent to the vesting month. We run the following OLS regression:

$$NewsEvents_{i,t} = \alpha + \beta_1 * VestingMonth_{i,t} + \beta_2 * MonthBefore_{i,t} + \\ + \beta_3 * MonthAfter_{i,t} + \gamma * Controls_{i,t} + \text{Fixed Effects} + \epsilon_{i,t} \quad (4)$$

In the 2SLS regression all controls for equity sales in the first stage were automatically included as controls for news releases in the second stage. In the OLS analysis of Table 4, we have freedom over which control variables to choose. We retain the same controls as in the 2SLS, both for consistency and also because there are economic reasons for why the Fos and Jiang (2016) control variables for option exercises may also affect news releases. If $PastReturn$ and Q are low, the firm may be undervalued, increasing the CEO's incentive to release good news. Firms with low $Analyst$ and $MarketCap$ tend to be less covered, and so may release more news to compensate; relatedly, illiquid stocks (low $Liquidity$) tend to be thinly traded and capture less attention, increasing the role of news. $IdioVol$ and $SalesGrowth$ may arise from significant activity taking place within a firm, leading to news releases. Finally, firms with nonzero $DivYield$ will release dividend-related news. (The results are unchanged when omitting the Fos and Jiang 2016 control variables.)

Column (1) of panel A shows that discretionary news releases are not only higher in vesting months (similar to Table 3) but also lower in both the month before and month after. All coefficients are significant at the 1% level. These results suggest that the CEO may be strategically delaying news until the vesting month and accelerating it into the vesting month. Column (3) finds the same results for the Poisson specification. Column (2) finds no relationship with either the vesting month or adjacent months for discretionary news.

Panel B studies the link between news releases and the amount of vesting equity. We replace $VestingMonth$ with $VestingSensitivity$, the sensitivity of the vesting securities to a 100% change in the stock price,

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calculated analogously to $VestedSensitivity$ and $UnvestedSensitivity$, and drop $MonthBefore$ and $MonthAfter$. The sensitivity of vesting equity is significantly positively related to discretionary news releases, but unrelated to nondiscretionary news releases, in both the OLS and Poisson specifications. The difference in the coefficient of interest between the discretionary and nondiscretionary regressions is significant at the 1% level

Table 4
Timing of news events around the vesting month

Panel A: $VestingMonth$ dummy as main independent variable				
Methodology:	OLS		Poisson	
Dependent variable:	Discretionary (1)	Nondiscretionary (2)	Discretionary (3)	Nondiscretionary (4)
MonthBefore	−0.1381***	0.0008	−0.0521***	−0.0502***
	(−6.18)	(0.68)	(−6.18)	(−2.72)
VestingMonth	0.0717***	−0.0014	0.0226***	−0.0186
	(2.80)	(−1.09)	(2.63)	(−0.85)
MonthAfter	−0.0729***	0.0000	−0.0280***	−0.0438**
	(−3.24)	(0.01)	(−3.39)	(−2.14)
EAYearly	1.0881***	0.0079***	0.3484***	0.3908***
	(31.78)	(4.34)	(30.09)	(17.83)
EAQuarterly	0.9161***	1.0039***	0.2863***	2.3519***
	(33.36)	(500.00)	(30.94)	(129.91)
AGM	0.8003***	1.0346***	0.2171***	2.0733***
	(20.56)	(328.46)	(20.16)	(66.74)
Board	1.0613***	0.9362***	0.3370***	1.4516***
	(11.30)	(92.03)	(10.11)	(17.90)
EarningsSurprise	0.1955***	−0.0004	0.0424***	0.0041
	(22.42)	(−0.91)	(16.08)	(0.94)
Analyst	0.0510***	0.0000	0.0080***	−0.0007
	(8.65)	(0.19)	(5.14)	(−0.30)
PastReturn	0.0185	0.0020	0.0058	−0.0053
	(1.58)	(1.43)	(1.44)	(−0.61)
IdioVol	0.0895	0.1678***	−0.5529**	−0.1074
	(0.15)	(2.69)	(−1.99)	(−0.16)
Q	−0.0327**	−0.0004	−0.0088*	−0.0010
	(−2.23)	(−0.53)	(−1.88)	(−0.14)
SalesGrowth	0.0011	0.0001	0.0004	0.0005
	(0.64)	(1.22)	(1.38)	(1.41)
Liquidity	−0.0286	0.0002	0.0487**	0.0058
	(−0.95)	(0.10)	(2.47)	(0.38)
DivYield	0.1982	−0.0146*	0.0398	−0.0417
	(0.44)	(−1.65)	(0.21)	(−0.25)
MarketCap	0.0000	0.0000	0.0000	0.0000
	(0.18)	(−1.41)	(1.26)	(0.21)
VestedSensitivity	0.0014	0.0004	0.0060	0.0116
	(0.08)	(0.64)	(1.27)	(1.52)
UnvestedSensitivity	0.0152	0.0000	0.0086*	−0.0125*
	(0.89)	(0.05)	(1.93)	(−1.80)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
Observations	107,784	107,784	101,550	94,919
R^2	0.547	0.928		
Test of the difference in the estimate of $VestingMonth$ between discretionary and nondiscretionary news				
F-stat (p-value)	14.59*** (0.0001)		2.80* (0.0943)	

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Table 4
(Continued)

Panel B: Sensitivity of newly vested equity as main independent variable				
Methodology:	OLS		Poisson	
Dependent variable:	Discretionary (1)	Nondiscretionary (2)	Discretionary (3)	Nondiscretionary (4)
VestingSensitivity	0.0115***	−0.0002	0.0024**	−0.0012
	(3.72)	(−1.19)	(2.51)	(−0.47)
EAYearly	1.0742***	0.0077***	0.3454***	0.3767***
	(32.03)	(4.41)	(30.22)	(17.78)
EAQuarterly	0.9164***	1.0034***	0.2881***	2.3423***
	(33.82)	(510.49)	(31.09)	(131.96)
AGM	0.8011***	1.0328***	0.2190***	2.0575***
	(20.68)	(333.90)	(20.28)	(67.42)
Board	1.0552***	0.9398***	0.3288***	1.4658***
	(11.84)	(95.16)	(10.20)	(18.77)
EarningsSurprise	0.1926***	−0.0003	0.0415***	0.0050
	(22.32)	(−0.89)	(15.72)	(1.22)
Analyst	0.0512***	0.0000	0.0081***	−0.0011
	(8.87)	(0.13)	(5.17)	(−0.46)
PastReturn	0.0206*	0.0018	0.0070*	−0.0056
	(1.80)	(1.33)	(1.81)	(−0.66)
IdioVol	0.1822	0.1508**	−0.5262*	−0.1304
	(0.32)	(2.56)	(−1.93)	(−0.21)
Q	−0.0315**	−0.0003	−0.0083*	0.0013
	(−2.17)	(−0.45)	(−1.81)	(0.19)
SalesGrowth	0.0011	0.0001	0.0004	0.0005
	(0.64)	(0.76)	(1.42)	(1.19)
Liquidity	−0.0381	0.0004	0.0433**	0.0047
	(−1.33)	(0.25)	(2.36)	(0.30)
DivYield	0.2175	−0.0167*	0.0560	−0.0535
	(0.46)	(−1.81)	(0.29)	(−0.32)
MarketCap	0.0000	0.0000	0.0000	0.0000
	(0.38)	(−1.40)	(1.33)	(0.33)
VestedSensitivity	0.0001	0.0005	0.0060	0.0113
	(0.00)	(0.84)	(1.26)	(1.53)
UnvestedSensitivity	0.0157	0.0000	0.0088*	−0.0123*
	(0.93)	(0.06)	(1.88)	(−1.70)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
Observations	111,136	111,136	104,650	97,877
R^2	0.547	0.929		
Test of the difference in the estimate of $VestingSensitivity$ between discretionary and nondiscretionary news				
F-stat (p-value)	38.55*** (0.0000)		4.70**(0.0302)	

This table regresses news releases on vesting months. It reports both OLS and Poisson regressions. The dependent variable $NewsEvents$ is the number of corporate news releases. In Columns (1) and (3), the dependent variable includes only discretionary news items, and in Columns (2) and (4), it includes only nondiscretionary news items. In panel A, the main independent variable $VestingMonth$ is an indicator function that equals one in a vesting month and zero otherwise. It also includes $MonthBefore$ and $MonthAfter$ to indicate the months before and after vesting, respectively. In panel B, the main independent variable $VestingSensitivity$ is the sensitivity of newly vesting equity to changes in the stock price. Controls are described in Appendix A. We test the difference in the coefficients of $VestingMonth$ and $VestingSensitivity$ between the discretionary and nondiscretionary regressions and report the results below panel A and panel B, respectively. t-statistics are in parentheses, standard errors are corrected for heteroscedasticity and are clustered at the firm level, and *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. The sample period is 2002–2011.

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in both OLS specifications; under Poisson, it is significant at the 10% level when $VestingMonth$ is the main explanatory variable, and at the 5% level using $VestingSensitivity$.[12]

2.3 Positivity of news releases

While Sections 2.1 and 2.2 study news releases in general, this section studies their tone. Our hypothesis is that, in vesting months, the CEO should release not only a greater number of news items, but also more positive news. In Table 5, we perform an analysis similar to that in Tables 3 and 4, except that the dependent variable is either the number of positive, neutral, or negative discretionary news items in that month, using the classification described in the Introduction. Out of our 337,547 news items, 219,617 have tone data. This difference arises because some news items do not have words—for example, an earnings release date announcement may contain only the announced date. A news item with only neutral words (so the total number of positive and negative news releases, in the denominator of the tone measure, is zero) is classified as neutral.

Panel A is the analog of Table 3. Columns (1)–(3) report the second-stage results of a 2SLS analysis (for brevity, we do not report the first stage, which is similar to Table 3). The number of positive news releases are significantly higher (at the 1% level) in predicted sale months, but there is no change in the number of neutral or negative news releases. Columns (4)–(6) show the same results using a two-stage Poisson specification.

Panel B conducts reduced-form analyses analogous to Table 4 and finds that, under both OLS and Poisson, positive news releases increase in vesting months, significant at the 1% level, but significantly decline in adjacent months. Negative news releases are insignificant in both specifications, and neutral news is insignificant under OLS and negatively significant at the 10% level under Poisson. The difference in the coefficient on $VestingMonth$ between positive and negative news is significant at the 1% level in both specifications. There are fewer positive news releases in both the months before and after the vesting month under both OLS and Poisson.

Overall, the results in Table 5 show that vesting equity induces the CEO to release positive news, but not neutral or negative news. This result is consistent with vesting equity providing the CEO with incentives to boost the short-term stock price.

[12] We use $VestingMonth$ as our key explanatory variable for two reasons. First, $VestingMonth$ results are easier to interpret: we can compare the amount of news disclosed in vesting versus non-vesting months, and versus the previous and following months. Second, $VestingSensitivity$ is relevant for CEO actions that likely have long-run costs, such as cutting investment, as studied by Edmans, Fang, and Lewellen (2017). Instead, the main effects of strategic news timing are likely to be on other stakeholders or the distribution of wealth among trading shareholders. In addition, news timing arguably involves less effort than changing investment plans, and so it may be that vesting equity of any amount induces the CEO to increase disclosures.

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3. Returns and Volume in Equity Vesting Months

We have shown that CEOs release more news in vesting months, and that such news is more likely to be positive. Our hypothesis is that they do so to increase the stock price and trading volume. In Table 6, we study whether news releases indeed have these effects. In panel A, we calculate the average 2-day ([0, 1]), 16-day ([0, 15]), and 31-day ([0, 30]) cumulative abnormal return (CAR) and daily abnormal trading volume around the release of discretionary news. We use these different windows to test whether any price and volume increases are temporary, as predicted by an attention story. The CAR is calculated over the CRSP value-weighted index, using a beta estimated over [–300, –46].

Table 5
Tone of discretionary news releases

Panel A: Two-stage least squares and control function specifications

Methodology:	2SLS			Control function		
Dependent variable:	Positive news (1)	Neutral news (2)	Negative news (3)	Positive news (4)	Neutral news (5)	Negative news (6)
(Fitted) *SaleMonth*	0.2404***	0.0120	−0.0549	0.5160***	−0.1363	−0.0439
	(4.88)	(0.22)	(−0.79)	(5.23)	(−1.61)	(−0.40)
EAYearly	0.0632***	0.3371***	0.4121***	0.1375***	0.4500***	0.5256***
	(6.02)	(27.58)	(26.37)	(6.08)	(29.33)	(24.93)
EAQuarterly	0.0248***	0.2616***	0.1847***	0.0696***	0.2006***	0.3519***
	(2.78)	(22.29)	(14.50)	(4.32)	(15.03)	(24.28)
AGM	0.0838***	0.0952***	0.1885***	0.1569***	0.1913***	0.1400***
	(7.83)	(7.41)	(11.61)	(7.13)	(12.32)	(7.21)
Board	0.2536***	0.1298***	0.1537***	0.4840***	0.1648***	0.1970***
	(8.52)	(4.53)	(3.58)	(10.25)	(3.01)	(5.69)
EarningsSurprise	0.0218***	0.0739***	0.0803***	0.0241***	0.0603***	0.0748***
	(7.37)	(20.11)	(18.22)	(5.38)	(16.91)	(19.02)
Analyst	0.0004	0.0047***	0.0044*	0.0046	0.0074***	0.0111***
	(0.22)	(2.69)	(1.94)	(1.54)	(4.44)	(5.01)
PastReturn	−0.0011	0.0153***	0.0013	0.0156	0.0126*	0.0365***
	(−0.25)	(3.01)	(0.24)	(1.51)	(1.71)	(5.26)
IdioVol	−0.7097***	−0.5884**	−1.0107***	−2.0691*	−1.8296***	−1.3253***
	(−2.88)	(−2.41)	(−3.35)	(−1.88)	(−4.17)	(−2.58)
Q	−0.0088*	−0.0134**	−0.0057	−0.0293**	−0.0063	−0.0106
	(−1.74)	(−2.18)	(−0.85)	(−2.52)	(−0.92)	(−1.26)
SalesGrowth	0.0004	0.0003	0.0010**	0.0022*	0.0015	0.0006
	(1.51)	(0.82)	(2.14)	(1.87)	(1.37)	(0.59)
Liquidity	0.0045	0.0231**	0.0174	−0.0415	0.0378	0.0891**
	(0.54)	(2.12)	(1.16)	(−0.70)	(1.05)	(2.15)
DivYield	0.2268**	0.3670***	0.4058***	−0.2035	−0.1578	0.2767
	(2.56)	(4.13)	(2.74)	(−0.83)	(−0.69)	(0.95)
MarketCap	−0.0000***	−0.0000**	−0.0000***	0.0000	0.0000	0.0000
	(−2.65)	(−2.15)	(−2.75)	(−0.04)	(1.28)	(0.65)
VestedSensitivity	0.0243**	0.0069	0.0145	0.0154	−0.0010	−0.0016
	(2.55)	(0.94)	(1.50)	(1.35)	(−0.12)	(−0.15)
UnvestedSensitivity	0.0130*	0.0051	0.0052	0.0002	0.0046	0.0061
	(1.65)	(0.72)	(0.58)	(0.02)	(0.66)	(0.83)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111,823	111,823	111,823	96,086	100,576	96,907
R^2	0.0760	0.1510	0.1800			
F-stat	40.1	96.7	104.9			

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Table 5
(Continued)

Panel B: Ordinary least squares and Poisson specifications						
Methodology:	OLS			Poisson		
Dependent variable:	Positive news (1)	Neutral news (2)	Negative news (3)	Positive news (4)	Neutral news (5)	Negative news (6)
MonthBefore	−0.0198**	−0.0325**	−0.0342***	−0.0551***	−0.0520***	−0.0737***
	(−2.53)	(−2.53)	(−3.49)	(−3.17)	(−3.46)	(−4.47)
VestingMonth	0.0378***	−0.014	−0.0043	0.0707***	−0.0264*	−0.0181
	(4.07)	(−1.14)	(−0.38)	(3.96)	(−1.93)	(−1.00)
MonthAfter	−0.0341***	−0.0214**	−0.0241***	−0.0811***	−0.0398***	−0.0419**
	(−4.22)	(−1.97)	(−2.80)	(−4.77)	(−3.09)	(−2.35)
EAYearly	0.0615***	0.3906***	0.3242***	0.1420***	0.4210***	0.4913***
	(5.09)	(22.19)	(23.13)	(6.31)	(23.76)	(19.60)
EAQuarterly	0.0193*	0.1858***	0.2505***	0.0508**	0.1948***	0.3082***
	(1.90)	(12.87)	(15.25)	(2.46)	(14.01)	(9.57)
AGM	0.0995***	0.1905***	0.1007***	0.1654***	0.1797***	0.1273***
	(5.87)	(10.67)	(6.81)	(6.00)	(10.57)	(6.54)
Board	0.2630***	0.1502***	0.1163***	0.4783***	0.1576***	0.1833***
	(6.64)	(3.17)	(3.75)	(8.86)	(3.17)	(4.29)
EarningsSurprise	0.0242***	0.0817***	0.0704***	0.0248***	0.0575***	0.0663***
	(6.52)	(15.77)	(14.34)	(4.61)	(14.56)	(10.73)
Analyst	0.0016	0.0104***	0.0012	0.0079**	0.0120***	0.0107***
	(0.49)	(2.99)	(0.17)	(2.56)	(4.46)	(2.61)
PastReturn	−0.0007	−0.0109	0.0093	0.0258**	0.0030	0.0372***
	(−0.13)	(−1.61)	(1.23)	(2.20)	(0.48)	(4.63)
IdioVol	−0.7496***	−0.8992**	−1.0146**	−1.9226**	−1.6077***	−1.5759***
	(−2.64)	(−2.57)	(−2.30)	(−2.01)	(−3.31)	(−2.74)
Q	−0.0082	−0.0116	−0.0151**	−0.0325**	−0.0129	−0.0123
	(−1.30)	(−1.49)	(−2.17)	(−2.54)	(−1.44)	(−1.20)
SalesGrowth	0.0003	0.0009*	0.0002	0.0021**	0.0015***	0.0007
	(1.10)	(1.68)	(0.39)	(2.02)	(2.76)	(1.05)
Liquidity	0.0066	0.0141	0.0261*	−0.0565	0.0248	0.0949**
	(0.65)	(0.81)	(1.95)	(−1.00)	(0.63)	(2.28)
DivYield	0.2401**	0.4355***	0.4082***	−0.4742**	−0.2547	0.5830
	(2.32)	(2.71)	(3.46)	(−2.04)	(−1.07)	(1.09)
MarketCap	−0.0000**	−0.0000**	0.0000	−0.0000**	0.0000	0.0000**
	(−2.44)	(−2.21)	(−0.31)	(−1.96)	(−0.13)	(2.03)
VestedSensitivity	0.0473**	0.0257	0.0119	0.0105	−0.0018	−0.0054
	(2.05)	(1.62)	(1.07)	(0.82)	(−0.17)	(−0.40)
UnvestedSensitivity	0.0087	−0.0265	−0.0177	−0.0040	−0.0183	−0.0056
	(0.48)	(−1.08)	(−0.92)	(−0.27)	(−1.34)	(−0.26)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	107,690	107,690	107,690	92,744	96,973	93,314
R^2	0.596	0.430	0.610	0.337	0.425	0.389
Test of the difference in the estimate of *VestingMonth* between positive and negative news						
F-stat (*p*-value)	9.74***(0.002)			23.51***(0.000)		

This table regresses news releases on vesting months, where news releases are stratified by tone. It reports both 2SLS and control function regressions in panel A, and OLS and Poisson regressions in panel B. The dependent variable is the number of corporate news releases. The dependent variable includes only discretionary news items for the analysis in this table. Controls are described in Appendix A. We test the difference in the coefficients of $VestingMonth$ between the positive and negative news regressions and report the results below panel B. *t*-statistics are in parentheses, standard errors are corrected for heteroscedasticity and clustered at the firm level, and *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. The sample period is 2002–2011.

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The daily abnormal trading volume is the daily trading volume minus the average trading volume over [–70, –31], divided by the number of shares outstanding, and excludes the CEO's own trades (including them has very little effect on the results.)

The univariate analysis of panel A shows that a discretionary news release in a vesting month is associated with a 2-day (16-day) CAR of 31 bps (40 bps), both significant at the 1% level. The 31-day CAR is lower at 25 bps, consistent with an attention story. The positive stock price reaction to discretionary news releases in vesting months is consistent with these releases being more positive, as documented in Table 5. However, it could also arise from the news attracting attention to the stock—thus, Table 5 analyzes the content of the news releases, rather than the stock price reaction, to measure their positivity.

As a back-of-the-envelope calculation of the dollar gain to the CEO, Table 1, panel C, reports that the average annual value of CEO equity vesting is \$5.26 million. Therefore, a 40 bp CAR implies an average gain of \$21,040.[13] While this gain appears modest, it is in line with gains reported in cases of illegal insider trading. For example, Meulbroek (1992) reports a median gain per security of \$17,628. This figure is for 1980–89 (i.e., with a midpoint of 1985), whereas our numbers are for 2002–11 (i.e., with a midpoint of 2007). Adjusting for inflation, the Meulbroek (1992) number becomes \$33,968 in 2007 terms. Yermack (1997) reports the median gain over 1992–94 from timing of option

[13] This figure represents the gain if the CEO discloses one additional news item in each vesting month, and sells the vesting equity 16 days after the disclosure. Instead of using the CEO's average annual vesting equity, we could use the average annual equity sales of \$6.75 million. This would imply higher gains for the CEO.

Table 6
Reactions to news events in the vesting month

Panel A: Univariate analysis

		Abnormal returns (basis points)			Abnormal trading volume (percent)		
		[0, 1] (1)	[0, 15] (2)	[0, 30] (3)	[0, 1] (4)	[0, 15] (5)	[0, 30] (6)
Vesting months:							
Discretionary (DV)	coeff	30.90***	40.15***	25.02***	0.4462***	0.0528***	0.0062**
	t-stat	(12.65)	(9.14)	(4.15)	(53.82)	(15.18)	(2.00)
	N	61,844	61,844	61,829	61,845	61,842	61,830
Nondiscretionary (NDV)	coeff	19.78**	54.16***	56.08**	0.4555***	0.0688***	0.0165
	t-stat	(2.15)	(3.20)	(2.44)	(22.28)	(6.09)	(1.58)
	N	5,073	5,072	5,072	5,073	5,073	5,073
Non-vesting months:							
Discretionary (DNV)	coeff	15.53***	29.28***	18.82***	0.3906***	0.0426***	0.0011
	t-stat	(12.44)	(13.12)	(6.11)	(96.17)	(24.18)	(0.71)
	N	245,255	245,236	245,191	245,255	245,234	245,186
Nondiscretionary (NDNV)	coeff	16.91***	63.44***	70.13***	0.5589***	0.0884***	0.0236***
	t-stat	(3.47)	(6.72)	(5.60)	(44.55)	(14.09)	(4.10)
	N	20,429	20,425	20,423	20,429	20,424	20,422

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Table 6
(Continued)

Panel B: Multivariate analysis

	Abnormal returns (basis points)			Abnormal trading volume (percent)		
	[0, 1] (1)	[0, 15] (2)	[0, 30] (3)	[0, 1] (4)	[0, 15] (5)	[0, 30] (6)
DV	30.15***	31.21***	14.72**	0.4167***	0.0390***	0.0001
	(11.69)	(6.71)	(2.30)	(50.31)	(10.81)	(0.03)
NDV	−17.64	−16.61	30.51	−0.0231	−0.0657***	−0.0739***
	(−1.02)	(−0.53)	(0.71)	(−0.41)	(−2.70)	(−3.42)
DNV	14.46***	20.17***	8.49**	0.3606***	0.0293***	−0.0046***
	(10.39)	(8.04)	(2.46)	(80.69)	(15.06)	(−2.65)
NDNV	−21.83	−9.81	41.83	0.0486	−0.0494**	−0.0674***
	(−1.41)	(−0.35)	(1.09)	(0.97)	(−2.27)	(−3.49)
EADay	42.44***	51.92*	3.88	0.6122***	0.1123***	0.0811***
	(2.59)	(1.76)	(0.10)	(11.62)	(4.89)	(3.97)
AGMDay	23.85	8.79	−56.21	0.0677	0.0474**	0.0571***
	(1.40)	(0.29)	(−1.33)	(1.24)	(1.98)	(2.69)
BoardDay	60.21**	86.76*	45.25	0.1184	0.0646*	0.0514
	(2.31)	(1.85)	(0.70)	(1.42)	(1.77)	(1.59)
EAMonth	9.65***	47.03***	48.56***	0.2092***	0.0707***	0.0290***
	(3.27)	(8.83)	(6.63)	(22.04)	(17.07)	(7.89)
AGMMonth	0.38	19.19***	27.80***	−0.0496***	0.0072	0.0012
	(0.11)	(2.95)	(3.11)	(−4.28)	(1.42)	(0.26)
BoardMonth	−48.57***	−52.76***	−43.98*	0.0127	0.0662***	0.0636***
	(−5.17)	(−3.12)	(−1.89)	(0.42)	(5.03)	(5.44)
Observations	332,601	332,577	332,515	332,602	332,573	332,511
Test: DV-DNV=0						
F-stat	31.44***	4.79**	0.81	39.02***	6.12**	1.82
p-value	0.00	0.03	0.37	0.00	0.01	0.18
Test: NDV-NDNV=0						
F-stat	0.18	0.15	0.22	5.23**	1.41	0.28
p-value	0.67	0.70	0.64	0.02	0.23	0.60

This table reports an event study of the effect of news releases on stock returns and trading volume. We denote by DV and DNV the discretionary news released in vesting and non-vesting months, respectively, and similarly NDV and NDNV the nondiscretionary news. We use a [0, 1], [0, 15], and [0, 30] window. The cumulative abnormal return is the raw buy-and-hold return adjusted using a beta estimated over [–300, –46] with a market model. The average daily abnormal trading volume is in excess of its average value in the period [–70, –31], and excludes the CEO's own trades. Panel A reports a univariate analysis, and panel B reports a multivariate analysis that controls for other newsworthy events, described in Appendix A. Below panel B, we test for the difference in the the stock price and volume reactions between vesting and non-vesting months, after the release of discretionary (DV-DNV) and nondiscretionary (NDV-NDNV) news. *t*-statistics are in parentheses, and *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. The sample period is 2002-2011.

grants (later found by Lie 2005 to be illegal) was $11,100 ($15,600) after 20 (50) trading days. Adjusted for inflation, these numbers become $15,927 and $22,384. Thus, the returns to news timing are of similar magnitude to those from illegal insider trading and option backdating, even though news timing is not illegal and, as our results in Section 2.2 imply, do not appear to have reputational consequences for the CEO. Thus, the risk-adjusted benefit to the CEO is significantly higher. Turning to the gains from other actions, Adams and Ferreira (2008) similarly find that small amounts can have large effects: board meeting fees (which average $1,000) significantly increase director attendance.

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The estimated gains to the CEO are economically meaningful but also plausible. In particular, while significant for the CEO (especially because they come at little cost), they are not substantial compared with firm value, and so it is unlikely that boards would intervene to prevent such strategic timing. The main effect is on stakeholders who base their decisions on the stock price, or on the distribution of wealth between trading shareholders.

Panel A also reports the price reactions to disclosures in non-vesting months. The 2-day, 16-day and 31-day CARs for discretionary news in non-vesting months are 16, 29, and 19 bps, respectively. That these CARs are all lower than in vesting months suggests that the CEO may be releasing particularly attention-grabbing or positive news in vesting months. Panel B reports similar results after controlling for the day and month of earnings announcements, AGMs, and board meetings. The 2-day reaction to discretionary news is 16 bps higher for vesting months than non-vesting months, significant at the 1% level.

In addition to increasing the stock price, news releases can also benefit the CEO by increasing trading volume, thus reducing the price impact of equity sales. Columns (4)–(6) of panel A report that, in a vesting month, the release of discretionary news generates average daily abnormal trading volume of 0.45% of shares outstanding over 2 days, significant at the 1% level. The figure falls to 0.05% over 16 days and 0.01% over 31 days, consistent with an attention story. The average daily trading volume is 1% of shares outstanding and the CEO's average equity sale (on a sale day) is 0.045%. Thus, the 2-day abnormal trading volume is significantly higher than the average CEO equity sale, and so can provide adequate camouflage. Note that this high ratio is not because CEO sale volumes are small: the median CEO equity sale is 4.5% of the average daily trading volume. Panel B adds controls for other events and finds a similar pattern.

The greater price reaction to discretionary news releases in vesting versus non-vesting months suggests that the market does not fully take into account the CEO's greater incentives to release news in vesting months. Thus, news releases do affect stock prices, and so potentially have redistributional consequences and affect real decisions. One potential explanation for why the market does not take into account the CEO's short-term concerns is that data on equity vesting is not salient and must be hand-collected from footnotes in Form 4 filings. Von Lilienfeld-Toal and Ruenzi (2014) find long-run abnormal returns to portfolios formed on the CEO's total shareholdings. That even total shareholdings are not fully incorporated by the market is consistent with the market not taking into account the CEO's equity vesting schedule, which is much less salient. In addition, while a rational market may discount the information content of positive news releases issued by a manager with vesting equity, the positive returns to disclosures may stem from them attracting attention (rather than their information content), which is less likely to be discounted. Indeed, the greater volume reaction to discretionary news in vesting versus non-vesting months is also consistent with CEOs releasing particularly attention-seeking news in

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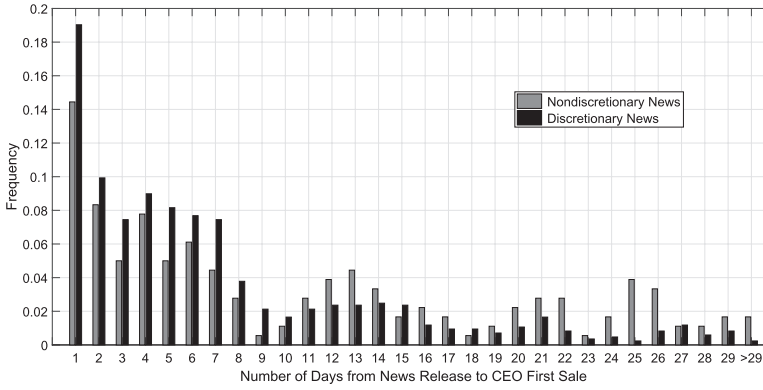

Figure 2
Number of days from news release to CEO first sale
This figure reports the distribution of the number of trading days between a discretionary or nondiscretionary news release in a vesting month and the first observed equity sale of the CEO. News items are obtained from Capital IQ for 2002–2011. We consider only news that is released within 30 days of the most recent vesting date. The data on CEO trading is extracted from Thomson Financial Insider Trading filings (SEC Form 4) for sample firms up to 36 months after the vesting month or until the CEO leaves the firm and hence stops reporting (this data covers 2002–2014).

vesting months. In contrast, Cohn, Gurun, and Moussawi (2016) find that the market reacts less positively to client and product announcements made by CEOs with more short-term concerns, and that the announcements themselves lack detail on specific positive attributes. Thus, the more muted market reaction is likely a result of the announcement itself being less positive, rather than the market taking into account the CEO's short-term concerns.

Since the stock price and volume increases are temporary, we study whether CEOs indeed take advantage of these short-term effects by selling their equity shortly after news releases in vesting months. Figure 2 illustrates the number of trading days between a news release and the first subsequent CEO equity sale. We focus on news releases that are within 30 days of the most recent vesting date, as these releases are most likely to be prompted by vesting (and thus the intention to sell) rather than other reasons. Half of the first equity sales occur within 5 days after the release of discretionary news in vesting months, compared with 7 days for nondiscretionary news.

4. Robustness Tests and Additional Analyses

4.1 Robustness tests

In Table 7, panel A, we examine the robustness of our main result of Table 3, Column (2) (the relationship between the number of news releases and predicted sale months) to alternative specifications. To save space, we report only the coefficient on $\widehat{SaleMonth}$.

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Table 7
Robustness tests

Panel A: Two-stage least squares model (2SLS)

		$\widehat{SaleMonth}$	$\widehat{PseudoSaleMonth}$	Fixed effects	Additional controls	Observations	R^2	F-stat
(1)	2-stage linear probability	0.0862*** (3.45)		Yes	No	111,882	0.067	89.65
(2)	S&P500	0.8436*** (2.77)		Yes	No	30,125	0.217	69.2
(3)	Equilar	0.5322*** (3.18)		Yes	No	108,733	0.171	208.5
(4)	Grant date	0.3758* (1.92)		Yes	*GrantMonth*	111,882	0.177	198.6
(5)	Performance-based vesting	0.5589*** (3.16)		Yes	No	111,882	0.175	203.2
(6)	Stock	0.2336* (1.92)		Yes	No	111,882	0.178	202.6
(7)	Options	1.0502*** (4.08)		Yes	No	111,882	0.165	203.0
(8)	Blackout firms	0.6981** (2.17)		Yes	No	19,891	0.165	60.7
(9)	Non-blackout firms	0.5837*** (2.99)		Yes	No	74,749	0.173	151.5
(10)	ITM=1	0.4702*** (3.30)		Yes	No	111,882	0.176	203.1
(11)	OTM5	48.2995 (0.19)		Yes	No	111,882	N/A	7.9
(12)	OTM10	−12.6382 (−0.43)		Yes	No	111,882	N/A	70.0
(13)	Fiscal	0.7445*** (4.18)		Yes	No	111,882	0.167	210.3
(14)	Placebo		−1.6106 (−1.23)	Yes	No	100,940	0.133	182.3
(15)	Earnings announcements as D	0.5645*** (3.35)		Yes	No	111,882	0.232	345.6
(16)	Earnings calls and release dates as ND	0.4488*** (3.06)		Yes	No	111,882	0.134	96.2

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Table 7
(Continued)

Panel B: Ordinary least squares model (OLS)

		MonthBefore	*VestingMonth*	*MonthAfter*	*PseudoVestingMonth*	Fixed effects	Additional controls	Observations	R^2
(1)	Linear probability	−0.0122***	0.0128***	−0.0119***		Yes	No	107,784	0.409
		(−3.33)	(3.39)	(−3.27)					
(2)	S&P 500	−0.1215***	0.1546***	−0.1083**		Yes	No	35,671	0.595
		(−2.66)	(2.88)	(−2.42)					
(3)	Equilar	−0.1382***	0.0718***	−0.0720***		Yes	No	123,624	0.536
		(−6.70)	(3.05)	(−3.46)					
(4)	Grant date	−0.1289***	0.0429*	−0.0758***		Yes	*GrantMonth*	130,121	0.537
		(−6.40)	(1.84)	(−3.74)					
(5)	Performance-based vesting	−0.1275***	0.0740***	−0.0837***		Yes	No	130,121	0.537
		(−6.14)	(3.14)	(−4.01)					
(6)	Stock	−0.1214***	0.0729**	−0.0378		Yes	No	130,121	0.536
		(−4.67)	(2.56)	(−1.37)					
(7)	Options	−0.1650***	0.0897***	−0.0737***		Yes	No	130,121	0.537
		(−7.16)	(3.38)	(−3.19)					
(8)	Blackout firms	−0.1558***	0.0789*	−0.1213***		Yes	No	23,159	0.565
		(−4.00)	(1.76)	(−3.05)					
(9)	Non-blackout firms	−0.1289***	0.0814***	−0.0783***		Yes	No	85,568	0.529
		(−5.28)	(2.94)	(−3.22)					
(10)	ITM=1	−0.1372***	0.0914***	−0.0397*		Yes	No	130,121	0.537
		(−6.01)	(3.70)	(−1.73)					
(11)	OTM5	−0.0720**	0.0104	−0.1655***		Yes	No	130,121	0.536
		(−2.08)	(0.25)	(−4.96)					
(12)	OTM10	−0.0825**	−0.0026	−0.1524***		Yes	No	130,121	0.536
		(−2.37)	(−0.06)	(−4.41)					
(13)	Fiscal	−0.0754***	0.0970***	−0.0715***		Yes	No	130,121	0.533
		(−3.73)	(4.16)	(−3.40)					
(14)	Placebo				−0.0216	Yes	No	109,444	0.543
					(−1.1903)				
(15)	Earnings announcements as D	−0.1310***	0.0759***	−0.0758***		Yes	No	130,121	0.557
		(−6.50)	(3.30)	(−3.73)					
(16)	Earnings calls and release dates as ND	−0.0882***	0.0582***	−0.0055		Yes	No	130,121	0.537
		(−5.03)	(2.85)	(−0.31)					

This table reports robustness tests to alternative samples and measurement choices. Panel A reports 2SLS results, and panel B reports OLS results. Row (1) reports the results of a two-stage (single-stage) linear probability model in panel A (panel B). The remaining rows are similar in both panels. Row (2) restricts the sample to firms that were part of the S&P 500 at some point over 1994–2011. Row (3) restricts our sample to firms covered in the Equilar database, which covers Russell 3000 firms over 2006–2011. Row (4) controls for grant award months. Row (5) excludes all equity-based grants with a performance-based vesting provision. Row (6) (Row (7)) redefines a vesting month as a month in which only stock vests (options vest). Row (8) (Row (9)) considers only firms estimated to have (not have) a blackout policy in place. Row (10) classifies a month in which only out-of-the-money options vest as a non-vesting month. Row (11) considers only vesting months in which only options that are at least 5% out-of-the-money vest in that month, and Row (12) considers only vesting months in which only options that are at least 10% out-of-the-money vest in that month. In Row (13) we replace the calendar year and month dummies with their fiscal equivalents. Row (14) runs a placebo test that uses a pseudo-vesting month that is 6 months after the actual vesting month. In Row (15) we reclassify earnings announcements as discretionary, and in Row (16) we reclassify earnings calls and earnings release dates as nondiscretionary. *t*-statistics are in parentheses, standard errors are corrected for heteroscedasticity and clustered at the firm level, and *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively. The sample period is 2002–2011.

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In Row (1), we conduct a two-stage LPM regression, where the dependent variable in the second stage is an indicator for whether news was released in a given month. It thus captures the extensive margin only, being unaffected by the actual number of news items in the month, and so is unaffected by skewness. The results are similar to Table 3. In terms of economic significance, the CEO is 8.6% more likely to release some news in a predicted sale month. This magnitude is lower than the 20% under the 2SLS specification as it only captures the extensive margin. Moreover, in untabulated results, we have re-run all other analyses using LPM and find that they all remain robust (i.e., $\widehat{SaleMonth}$ is positive and significant only for discretionary news and not nondiscretionary news, and only for positive news and not neutral nor negative news).

In Row (2), we restrict our sample to firms that were part of the S&P 500 at some point between 1994 and 2011. This restriction excludes small firms in the Russell 3000 covered by Equilar, to study whether our results are driven exclusively by small firms. In Row (3), we restrict our sample to firms covered in the Equilar database (i.e., consider only observations within 2006–11), which reduces the effect of any inaccuracy in our hand-collected data from 1994 to 2005.[14] In both rows, the coefficient on $\widehat{SaleMonth}$ remains positive and significant at the 1% level.

Aboody and Kasznik (2000) and Daines, McQueen, and Schonlau (2018) argue that CEOs release more negative news before the award date of an option grant, and more positive news after the award date. In Row (4), we control for $GrantMonth$, an indicator for the award date of (actual) stock and option grants. The coefficient is significant at the 6% level (t-statistic of 1.92).

Bettis et al. (2010) find that performance-based vesting provisions have become increasingly common in equity grants. Such grants will not vest on their scheduled vesting date if certain performance thresholds have not been met, and so may provide weaker incentives to release news. Row (5) excludes from our sample all grants with performance-based vesting provisions; this information is available in Equilar and the footnotes of Form 4 filings and proxy statements. All coefficients remain significant at the 1% level.

The award of restricted stock to CEOs has become more common than options recently (Frydman and Jenter 2010), in part due to the option backdating scandal. In Rows (6) and (7), we limit our sample to stock and options, respectively. Specifically, in Row (7), the first stage now defines $VestingMonth$ as a month in which stock is vesting—that is, we remove any months in which only options vest; Row (8) studies option vesting months and removes any months in which only stock vests. The coefficient on $\widehat{SaleMonth}$

[14] Note that some hand-collected data will still be used in this subsample, because grants vesting from 2006 onwards may still be awarded prior to 2006.

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remains significant at the 1% level for options; for stock, the coefficient is significant at the 6% level (t-static of 1.92).

The next analyses investigate whether our results are affected by blackout policies, which restrict CEOs from selling equity except for in a short window (e.g., after an earnings announcement or other news event). Such policies may affect the incentives to strategically time news releases in two conflicting ways. First, the CEO may not be free to sell equity upon vesting if the vesting date falls within a blackout period, and thus has less incentive to release news upon vesting. Second, some blackout policies allow the CEO to trade after a major news event, since the news release reduces information asymmetry.[15] Thus, the CEO has an additional incentive to release news over and above the stock price and volume boost—it creates a window during which the CEO can sell. Either way, we wish to ensure that our results are not driven exclusively by firms with (or without) blackout policies.

We identify firms that are likely to have blackout periods using a methodology similar to Roulstone (2003). We gather the open-market purchases, sales, and option exercises made by officers and directors of the firms in our sample from the Thomson Reuters Insider Trading filings. We calculate, for each firm-year, the percentage of trades that are made 20 days or fewer after an earnings announcement. If this percentage is 75% or more, we consider that firm to have a blackout policy. We drop observations for which trading data is missing from Thomson Reuters.[16] Rows (8) and (9) show that the coefficients on the vesting and adjacent months are significant in both subsamples and in both specifications. The significance of $\widehat{SaleMonth}$ is 5% for blackout firms and 1% for non-blackout firms. Thus, our results are not driven by firms with (or without) blackout policies. Similarly, the median interval between a discretionary disclosure in a vesting month and first sale by the CEO is 6 days when excluding firms without blackout policies, close to what Figure 2 shows for the full sample.

While $VestingSensitivity$ takes the moneyness of options into account, the next analyses do so directly. We hypothesize that options that are sufficiently out-of-the-money are unlikely to be exercised upon vesting, and thus provide the CEO with no incentives to release news. In Row (10), we define a vesting month as one in which either stock and/or in-the-money options vest, and thus exclude months in which only out-of-the-money options vest. The coefficient on $\widehat{SaleMonth}$ remains significant at the 1% level. Rows (11)–(12) reclassify $VestingMonth$ in the first stage as months in which only options that are at

[15] For example, the blackout policy of Monster Worldwide prevents the CEO from trading when the board possesses "information which, if made public, could have a material impact on the price of the shares of the Company's Common Stock," but the blackout period ends 10 days after the information is made public.

[16] The only difference with Roulstone (2003) is that he identifies blackout firms, since he has a short time period; we identify blackout firm-years, to allow for the fact that blackout policies have become more popular over time. Thus, a firm may be classified as having a blackout policy for some years but not others.

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least 5% and 10% out-of-the-money (respectively) are vesting.[17] $\widehat{SaleMonth}$ is insignificant in both specifications. Overall, the results of Rows (10)–(12) find that the incentives to strategically release news come from stock and in-the-money options, but not out-of-the-money options. These results also help address any concern that our results are driven by blackout periods.

In Row (13), we use fiscal year and month dummies, instead of calendar year and month dummies, to address the potential concern that the granting of stock options and restricted shares is seasonal and a function of a firm's fiscal year end. The coefficient on $\widehat{SaleMonth}$ remains significant at the 1% level.

While (calendar or month) fixed effects control for market-wide seasonalities, a remaining concern is that seasonalities may be firm-specific. In Row (14), we run a placebo test similar to Daines, McQueen, and Schonlau (2018). We create a pseudo-vesting month 6 months after the actual vesting month. The coefficient is insignificant, suggesting that the result is not driven by other spurious events with a cyclical pattern.

Rows (15) and (16) verify robustness to reclassification of discretionary and nondiscretionary news. Our main specification classifies earnings calls and earnings release dates as discretionary since there are no regulatory restrictions on these dates, and there is evidence of strategic timing for them (e.g., Boulland and Dessaint 2017). In contrast, we classify earnings announcement dates as nondiscretionary since the SEC requires firms to report earnings within 35 (60) days after quarter (year) end. Given our monthly unit of analysis, it is difficult to shift announcements into a different month, at least for quarterly disclosures. In addition, prior research finds little flexibility: Bagnoli, Kross, and Watts (2002) find that only 1.8% (1.6%) of firms are more than 7 days late (early) compared with their pre-announced release dates, and that being late leads to a negative market reaction.[18] Nevertheless, it is still useful to check whether our results are robust to how we classify earnings announcements. A second motivation for this robustness check is that Edmans, Fang, and Lewellen (2017) show that vesting equity leads to positive earnings announcements (that is underpinned by cuts in investment growth), and we wish to check that our results are not driven by this earlier finding. In Row (15) we thus classify earnings announcements as discretionary (to be consistent with earnings calls and earnings release dates), and in Row (16) we classify all three as nondiscretionary. The coefficient on $\widehat{SaleMonth}$ remains significant at the 1% level.

[17] For comparison, a 10% stock return is the 82nd percentile, i.e., a stock would have to experience an 82nd percentile return for an option that is 10% out-of-the-money at the start of the month to become at-the-money by the end.

[18] One may think that companies still have flexibility because, even if in the past they have released annual earnings (say) 10 days after year-end, they could switch for this year to (say) 55 days after year-end if they pre-announce that they are doing so. However, Chambers and Penman (1984) find that, even using prior earnings announcement dates (rather than firms' pre-announced dates), earnings announcement dates can be predicted within a few days and annual earnings announcement dates within a week, and that being late leads to a negative stock market reaction.

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Panel B conducts the same robustness checks using the OLS specification of Table 4, Column (1). The coefficient on $VestingMonth$ is significant in all specifications except for the placebo test in Row (5), and Rows (12) and (13), which include only months with out-of-the-money options vesting. The coefficient on $MonthBefore$ is significant in all specifications, and the coefficient on $MonthAfter$ is significant in all specifications except for Row (16).

4.2 Additional analyses

This section discusses additional analyses that are reported in the Online Appendix. Table OA2 studies whether the market learns about CEOs' tendency to time news from their past behavior, and discounts the news releases of CEOs who have acted particularly strategically in the past. To estimate a CEO's past strategic behavior, we first conduct an OLS regression similar to Table 3, Column (2), that is, the second stage with news releases as the dependent variable, except that we do not include $\widehat{SaleMonth}$. This yields the "normal" number of news releases in a particular month in the absence of strategic behavior. Then, for a particular CEO, we calculate the residuals (actual minus predicted news items) in each vesting month over the past year, and aggregate them over the year. This aggregate residual, $Timer$, measures the extent to which the CEO engaged in particularly high news releases in vesting months over the past year.[19] We add $Timer$ and $DV \times Timer$ as additional explanatory variables to the market reaction regression of Table 6, panel B, to test whether the market reaction to discretionary news releases depends on the extent of past strategic behavior. The coefficient on $DV \times Timer$ is insignificant across all three event study windows, inconsistent with learning.

Second, in panel B, we perform the analysis separately on subsamples where the CEO's tenure is below or above 3 years. Learning may be stronger at the start of a CEO's tenure; we use a 3-year cutoff since Pan, Wang, and Weisbach (2015) find that most learning occurs in the CEO's first 3 years. Thus, if the market reacts less (more) positively to discretionary news releases by strategic CEOs, this should particularly be the case for low-tenure CEOs. The coefficient on $DV \times Timer$ is insignificant for both low- and high-tenure CEOs. Overall, the results in Table OA2 suggest that the market does not learn from past strategic behavior. This is consistent with Von Lilienfeld-Toal and Ruenzi (2014), who find that the market does not take into account even standard measures of CEO incentives, as discussed earlier. It is also consistent with Table 6, which

[19] We use the entire data set to estimate the "normal" number of news items in a particular month, to obtain precise estimates. This approach does not suffer from look-ahead bias since we do not assume that the market uses the entire data set to estimate the normal number of news items. Instead, we posit that the market already has in mind a model for what determines the normal number of news items, which they use to discern whether the actual level of disclosure by a CEO is unusual. As econometricians, we are attempting to estimate this model, and so use the full sample.

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documents more positive market reactions to news releases in vesting than non-vesting months, suggesting that the market is taking news at face value rather than considering the CEO's incentives to release it.

Table OA3 investigates whether strategic news timing is mitigated by superior governance. We conduct the OLS regression of Table 4, interacting both $VestingMonth$ and $VestingSensitivity$ with four governance variables: analyst coverage ($Analyst$), institutional ownership (IO), board independence ($Insiders$, the percentage of insiders on the board), and the Gompers, Ishii, and Metrick (2003) governance index (G).[20] We find that seven out of the eight interactions are insignificant, suggesting that governance does not mitigate strategic news timing. This could be for two reasons. First, as discussed in Section 3, strategic timing is not illegal. Second, governance is endogenous: for example, it may be that CEOs who are more likely to act strategically require greater governance.

Finally, Table OA4 verifies robustness to a weekly analysis. Under OLS, discretionary news is significantly higher in the vesting week, both weeks before, and both weeks after. This is consistent with the monthly results of Table 3, that discretionary news is significantly higher in the vesting month. Note that we do not predict a negative coefficient for weeks adjacent to the vesting week, unlike for the monthly analysis. Since the positive returns associated with discretionary news releases are strongest in the [0, 15] window, before attenuating in the [0, 30] window, the positive effect of news released in the two weeks before will still exist on the vesting date. The Poisson results are slightly weaker, with significance in the vesting week and two weeks after, but not in the weeks before or one week after.

Consistent with the significant negative coefficient on $MonthBefore$ in the main specification, discretionary news releases are significantly lower five weeks before a vesting week under both OLS and Poisson. Consistent with the significant negative coefficient on $MonthAfter$ in the main specification, the likelihood of discretionary news releases is significantly lower five weeks after a vesting week under Poisson.[21]

5. Conclusion

This paper shows that managers often strategically time the disclosure of discretionary corporate news to coincide with the scheduled vesting of their equity grants. Discretionary disclosures are significantly higher when regressing on both predicted sale months and vesting months, and lower in

[20] We perform the interaction analysis using OLS rather than 2SLS since, with 2SLS, $VestingMonth$ is such a strong predictor that all the interactions are removed in the first stage.

[21] Vesting dates are approximately evenly distributed between the first, 15th, and last days of the month. Thus, on average, the vesting date will be in the middle of a month, and so the month before (after) the vesting month will include up to six weeks before (after) the vesting week.

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the months before and after vesting. Predicted sale months and vesting months are also associated with significantly more positive news, but not negative or neutral news. The news releases lead to temporary increases in the stock price and trading volume, which some CEOs exploit: the median CEO who sells vesting equity does so within five days of a discretionary news release in a vesting month.

Our results have two main implications. First, they suggest that CEO compensation can have a causal effect on firm outcomes, using a measure of compensation that is likely exogenous to the current contracting environment. Moreover, CEO incentives affect not just corporate decisions (as typically studied by the corporate finance literature) but also the firm's information environment. This result links corporate finance to financial markets. Second, CEOs strategically time the release of news. Information does not just flow mechanically to financial markets when events occur, but instead the timing of news releases can be strategically chosen by the CEO. These news releases in turn affect stock prices, and thus may have distributional consequences on shareholders who trade, and efficiency consequences on stakeholders who base their decisions on corporate news or stock prices.

Appendix A Variable Definitions

Variable	Definition
AGM	An indicator function that equals one if a particular month coincides with the firm's annual general meeting, and zero otherwise.
AGMDay	An indicator function that equals one if a particular day coincides with the firm's annual general meeting, and zero otherwise.
Analyst	The number of analysts following a particular stock, from I/B/E/S.
Board	An indicator that equals one if a particular month coincides with a board meeting, and zero otherwise.
BoardDay	An indicator that equals one if a particular day coincides with a board meeting, and zero otherwise.
DivYield	The dividend yield measured at the end of the prior fiscal year, calculated as (common dividend [DVC] plus preferred dividend [DVP]) divided by (market value of equity plus book value of preferred stock), where book value of preferred stock is defined as the first non-missing value of its redemption value (PSTKRV), or its liquidating value (PSTKL), or its carrying value (PSTK).
EADay	An indicator function that equals one if a particular day coincides with the firm's earnings announcement, and zero otherwise.

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Variable	Definition
EAQuarterly	An indicator function that equals one if a particular month coincides with the firm's announcement of quarterly earnings, and zero otherwise.
EAYearly	An indicator function that equals one if a particular month coincides with the firm's announcement of annual earnings, and zero otherwise.
EarningsSurprise	The earnings surprise measure from the I/B/E/S database, and zero if there is no earnings announcement that month.
GrantMonth	An indicator variable that equals one if there is an equity grant award in that month, and zero otherwise.
IdioVol	The standard deviation of the residuals from a market model on daily returns from the past one year.
Liquidity	The Amihud (2002) illiquidity ratio multiplied by –1, where the ratio is calculated as the daily price response associated with one dollar of trading volume, averaged over the prior fiscal year.
MarketCap	The logarithm of the market value of equity (CSHO × PRCC_F) measured at the end of the prior fiscal year.
MonthAfter	An indicator variable that equals one if a given month is immediately after a vesting month, and zero otherwise.
MonthBefore	An indicator variable that equals one if a given month is immediately prior to a vesting month, and zero otherwise.
NewsEvents	The number of news items released in a given month.
PastReturn	The past 12-month return of each firm.
PseudoVestingMonth	An indicator for a pseudo-vesting month that is exactly 6 months after the actual vesting month.
Q	The ratio of market to book value of equity of a given firm at the end of the prior fiscal year.
SaleMonth	An indicator variable that equals one if there is a CEO equity sale in a given month, and zero otherwise.
SalesGrowth	The sales growth rate measured at the end of the prior fiscal year, and is calculated as sales minus lagged sales divided by lagged sales.
UnvestedSensitivity	The dollar sensitivity of the CEO's unvested equity to a 100% change in the stock price.
VestedSensitivity	The dollar sensitivity of the CEO's already-vested equity to a 100% change in the stock price.
VestingMonth	The calendar month in which stock and option grants are pre-scheduled to vest according to the Equilar database and manual identification.
VestingSensitivity	The dollar sensitivity of the CEO's newly vesting equity to a 100% change in the stock price.

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Appendix B Distribution of Corporate News Events

Panel A: Discretionary news items		
	Proportion of all items	
	Vesting months	Non-vesting months
Company conference presentations	14.07%	14.27%
Conferences	11.65%	11.68%
Earnings calls	8.57%	8.35%
Earnings release date	8.03%	7.83%
Product-related announcements	7.33%	7.43%
Client announcements	6.78%	6.91%
Executive/board changes - other	5.10%	5.04%
Corporate guidance - new/confirmed	4.14%	3.96%
Buyback update	3.57%	3.73%
Dividend affirmations	3.11%	2.95%
M&A transaction closings	2.59%	2.67%
M&A transaction announcements	1.52%	1.58%
Shelf registration filings	1.47%	1.43%
Business expansions	1.36%	1.42%
Debt financing related	1.22%	1.26%
Fixed income offerings	1.20%	1.27%
Buybacks	1.08%	1.05%
Changes in company bylaws/rules	0.99%	0.95%
Strategic alliances	0.99%	1.01%
Impairments/write offs	0.79%	0.74%
Lawsuits & legal issues	0.78%	0.80%
Dividend increases	0.77%	0.69%
Shareholder/analyst calls	0.59%	0.61%
Private placements	0.59%	0.60%
Executive changes - CFO	0.44%	0.44%
Follow-on equity offerings	0.43%	0.43%
Preferred dividend	0.40%	0.39%
Dividend	0.39%	0.38%
Special calls	0.35%	0.36%
Seeking acquisitions/investments	0.32%	0.31%
Executive changes - CEO	0.30%	0.29%
Analyst/investor day	0.25%	0.24%
Sales/trading statement calls	0.20%	0.21%
M&A calls	0.20%	0.21%
Subtotal	91.54%	91.49%

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Panel A: Discretionary news items (cont.)

	Proportion of all items	
	Vesting months	Non-vesting months
Guidance/update calls	0.11%	0.12%
Corporate guidance - raised	0.11%	0.12%
M&A transaction cancellations	0.11%	0.10%
Delayed SEC filings	0.11%	0.11%
Business reorganizations	0.10%	0.10%
Corporate guidance - lowered	0.10%	0.11%
Labor-related announcements	0.07%	0.06%
Special dividend announced	0.06%	0.07%
Dividend decreases	0.04%	0.04%
Restatements of operating results	0.03%	0.03%
Seeking to sell/divest	0.03%	0.03%
Delayed earnings announcements	0.03%	0.03%
Address changes	0.02%	0.02%
Spin-off/split-off	0.02%	0.02%
Seeking financing/partners	0.02%	0.02%
Composite units offerings	0.01%	0.01%
Potential buyback	0.01%	0.01%
M&A rumors and discussions	0.01%	0.01%
Fiscal year end changes	0.01%	0.01%
Dividend initiation	0.01%	0.01%
Name changes	0.01%	0.01%
Dividend cancellation	0.01%	0.01%
IPOs	0.01%	0.01%
Ticker changes	0.01%	0.01%
Exchange changes	0.01%	0.01%
Debt defaults	0.00%	0.00%
Legal structure changes	0.00%	0.00%
Subtotal	1.05%	1.07%
Total discretionary	92.59%	92.56%

Panel B: Nondiscretionary news items

	Proportion of all items	
	Vesting months	Non-vesting months
Announcements of earnings	4.29%	4.36%
Annual general meeting	2.29%	2.26%
Board meeting	0.31%	0.28%
Auditor changes	0.22%	0.23%
End of lock-up period	0.19%	0.20%
Delistings	0.09%	0.09%
Regulatory agency inquiries	0.02%	0.02%
Total Nondiscretionary	7.41%	7.44%
Overall total	100.00%	100.00%

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Appendix C Examples of Capital IQ Items for Wal-Mart in Q1 2012

GVKEY	Year	Month	Day	Event type	Title	Source
11259	2012	1	2	M&A Transaction Closings	Stichting Pensioenfonds ABP sold its stake in Wal-Mart Stores Inc. (NYSE: WMT).	Capital IQ Transaction Database
11259	2012	1	4	Lawsuits & Legal Issues	Keller Rohrback L.L.P. Announces Preliminary Approval of Class Action Settlement against Wal-Mart Stores Inc., BofA Merrill Lynch, Pierce, Fenner & Smith Incorporated, Merrill Lynch Trust Company of America, and Merrill Lynch & Co. Inc	Business Wire
11259	2012	1	16	Executive/Board Changes - Other	Wal-Mart Stores Inc. Announces Executive Changes	PR Newswire
11259	2012	1	19	Lawsuits & Legal Issues	Wal-Mart Women Plaintiffs File Expanded Texas Class Action against Wal-Mart Stores Inc	PR Newswire
11259	2012	1	22	Conferences	Retail Industry Leaders Association, RILA's Leadership Forum 2012, Jan 22, 2012 through Jan 24, 2012	Company Website
11259	2012	1	23	Company Conference Presentations	Wal-Mart Stores Inc. Presents at RILA's Leadership Forum 2012, Jan-23-2012 02:30 PM	Company Website
11259	2012	2	6	Lawsuits & Legal Issues	MacroSolve, Inc. Files Patent Infringement Suit Against Wal-Mart Stores Inc	Market Wire
11259	2012	2	9	Client Announcements	MMA Elite Supplements Powered by Muscle Pharm Corp. Available at Wal-Mart Stores	PR Newswire
11259	2012	2	18	Private Placements	Yishiduo E-Commerce announced that it expects to receive funding from Wal-Mart Stores Inc.	Capital IQ Transaction Database
11259	2012	2	20	Earnings Calls	Wal-Mart Stores Inc., Q4 2012 Pre Recorded Earnings Call	Business Wire; Company Website
11259	2012	2	21	Announcements of Earnings	Wal-Mart Stores Inc. Announces Unaudited Consolidated Earnings Results for the Fourth Quarter and Full Year Ended January 31, 2012; Provides Earnings Guidance for the First Quarter and Full Year of 2013	Business Wire
11259	2012	2	21	Buyback Tranche Update	Update to Wal-Mart Stores Inc.'s Equity Buyback Plan	Capital IQ Buybacks Database

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GVKEY	Year	Month	Day	Event type	Title	Source
11259	2012	2	21	Corporate Guidance - New/Confirmed	Wal-Mart Stores Inc. Announces Unaudited Consolidated Earnings Results for the Fourth Quarter and Full Year Ended January 31, 2012; Provides Earnings Guidance for the First Quarter and Full Year of 2013	Business Wire
11259	2012	2	21	Earnings Release Date	Wal-Mart Stores Inc. to Report Q4, 2012 Results on Feb 21, 2012	Company Website
11259	2012	2	28	Private Placements	Yishiduo E-Commerce announced that it has received funding from Wal-Mart Stores Inc.	Capital IQ Transaction Database
11259	2012	3	1	Dividend Increases	Wal-Mart Stores Inc. Increases Annual Dividend for the Fiscal Year Ending Jan. 31, 2013	Business Wire
11259	2012	3	4	Conferences	Raymond James & Associates, Inc., Raymond James & Associates's 33rd Annual Institutional Investors Conference, Mar 04, 2012 through Mar 07, 2012	PR Newswire; Business Wire; GlobeNewswire; Company Website; Market Wire; Regulatory News Service; SEDAR
11259	2012	3	6	Conferences	Merrill Lynch & Co., Inc., Bank of America Merrill Lynch 2012 Consumer & Retail Conference, Mar 06, 2012 through Mar 08, 2012	PR Newswire; Business Wire; GlobeNewswire; Company Website
11259	2012	3	7	Company Conference Presentations	Wal-Mart Stores Inc. Presents at Bank of America Merrill Lynch 2012 Consumer & Retail Conference, Mar-07-2012 08:00 AM	PR Newswire; Business Wire; GlobeNewswire; Company Website
11259	2012	3	7	Company Conference Presentations	Wal-Mart Stores Inc. Presents at Raymond James & Associates's 33rd Annual Institutional Investors Conference, Mar-07-2012 11:35 AM	PR Newswire; Business Wire; GlobeNewswire; Company Website; Market Wire; Regulatory News Service; SEDAR
11259	2012	3	28	Company Conference Presentations	Wal-Mart Stores Inc. Presents at CIBC Retail and Consumer Conference, Mar-28-2012 11:30 AM	Business Wire; GlobeNewswire; Canada News Wire; Company Website; Market Wire

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Appendix D Distribution of Events in the Calendar Year

Calendar Month	Vesting Month	EAYearly	EA-Quarterly	AGM	Board	Grant Month	Discret.	Non-discret.
1	12%	19%	6%	2%	9%	14%	7%	5%
2	17%	44%	10%	2%	12%	23%	8%	8%
3	12%	15%	5%	2%	8%	14%	8%	5%
4	6%	1%	9%	13%	6%	6%	8%	10%
5	9%	3%	15%	50%	12%	7%	9%	22%
6	6%	2%	2%	16%	5%	5%	8%	7%
7	6%	2%	11%	2%	8%	5%	8%	9%
8	6%	4%	14%	3%	9%	5%	9%	10%
9	5%	2%	2%	2%	4%	4%	8%	2%
10	5%	2%	12%	2%	11%	4%	9%	9%
11	6%	4%	13%	3%	10%	6%	9%	10%
12	9%	2%	2%	2%	7%	9%	8%	3%

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