Distracted Shareholders and Corporate Actions

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Abstract

Investor attention matters for corporate actions. Our new identification approach constructs firm-level shareholder "distraction" measures, by exploiting exogenous shocks to unrelated parts of institutional shareholders' portfolios. Firms with "distracted" shareholders are more likely to announce diversifying acquisitions, generating negative short-run and long-run returns. Moreover, their CEOs are more likely to receive opportunistically-timed equity grants. These patterns are consistent with a model in which the unrelated shock shifts investor attention, leading to a temporary loosening of monitoring constraints. Our results are the first to suggest that limited shareholder attention affects corporate investment and CEO pay.

Keywords: Behavioral Corporate Finance, Investor Attention, Institutional Investors

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1. Introduction

Attention is a resource in limited supply. Consumers usually do not compare *all* potential products when making choices; professors do not pay equal attention to *all* new academic papers in their research area; and mutual fund managers cannot focus equally on *all* stocks they hold or the thousands of stocks they could hold. Instead, salience matters and we often focus attention on products that are advertised prominently, papers written by high-profile authors, and stocks in industries considered either to be "hot", or in crisis. While a growing literature in economics and finance studies limited attention, the impact of limited attention on corporate actions is largely unexplored (e.g., Baker and Wurgler (2012)). Our paper aims to fill this gap by focusing on the link between managerial actions and *exogenous* variation in monitoring intensity, brought about by time-variation in how investors allocate attention across the stocks they hold in their portfolio. We exploit unique features of U.S. institutional holdings data to show that managers respond to temporarily looser monitoring, induced by investors with limited attention focusing their attention elsewhere, by engaging in investments that maximize private benefits at the expense of shareholders.

The key challenge is that distraction cannot be directly observed. Our identification strategy is designed to circumvent this difficulty. It has two main building blocks. First, we exploit data on a specific, but economically most important, set of shareholders: institutional investors that file form 13f with the SEC. As of 2012, they hold more than 70% of the aggregate market value of all NYSE/AMEX/NASDAQ stocks. In contrast to retail investors, large institutional investors are required to periodically report their portfolio holdings. We therefore observe the pool of institutional shareholders for each firm, and we observe for each institutional investor which other stocks they concurrently hold. This feature of the data enables us to capture shifts in investor attention by looking *"inside"* shareholders' portfolios. Specifically, we use exogenous shocks to unrelated industries held by a given firm's institutional shareholders to mark periods where shareholders are likely to shift attention away from the firm and towards the part of their portfolio subject to the shock. We then construct firm-level distraction measures by

aggregating information about institutional investors for each firm, and we relate those measures to corporate actions. As a second building block, we conjecture that attention is not unbounded for institutional investors. This is consistent with recent findings in the literature we cite below. It is also supported by large-scale survey evidence from the Investor Responsibility Research Center Institute (IRRC (2011)) who document a direct link between institutional investor attention constraints and monitoring activity. They write: *"three-fourths of institutions report that time is the most common impediment to engagement [with corporations], while staffing considerations rank second."*

The following thought experiment illustrates our approach. Consider two otherwise identical firms 1 and 2 in a given industry and year. Firm 1's representative shareholder holds two stocks. The first is firm 1 itself, and the second is another firm belonging to a different industry, which for the sake of this example we call "banks". The representative shareholder of firm 2 does not hold any bank stocks. Suppose now that there is an attention-grabbing event in the banking industry; for example, a banking crisis that sends prices of bank stocks falling. Assuming limited attention, the representative shareholder in firm 1 may, potentially rationally, shift attention towards banks and away from firm 1. As a result, monitoring intensity at firm 1 decreases, and the management of firm 1 has more room to pursue private benefits. In contrast, and by construction, firm 2 is not affected. We can therefore identify the impact of variation in investor attention on corporate policies by analyzing changes in policies of firm 1 relative to firm 2 around the time of the exogenous shock. Motivated by Barber and Odean (2008), we use "extreme" industry returns (both positive and negative) as our main empirical proxy for attention-grabbing events.

What happens when shareholders experience shocks to unrelated parts of their portfolio – we will call such investors "distracted" in the following – is an empirical question. One possibility, the least interesting, is that policies at firm 1 do not change. This could, for example, be due to the fact that board monitoring is all that matters; or it could indicate that lack of attention by distracted shareholders can be easily substituted by additional attention of those shareholders who are not distracted. A second possibility could be that managerial monitoring constraints

are indeed relaxed and that managers react by becoming passive and "enjoying the quiet life" (Bertrand and Mullainathan (2003)). Finally, managers might actively seek to maximize private benefits. Our results provide strong evidence for the latter scenario.

We find that, when shareholders are distracted, managers make more value-destroying acquisitions. The M&A setting is close to ideal for our study, because we can match the time-variation in our firm-level distraction measures with time-variation in merger activity, and therefore minimize endogeneity concerns, as explained in detail below. Our baseline tests show that the probability of making an acquisition increases by about 30% for a one standard deviation increase in investor distraction. All our tests use industry $\times$ quarter fixed effects, so these findings cannot be explained by any variable that does not vary across firms within a given industry and quarter, such as investment opportunities, attractiveness of other target industries, the state of the business cycle etc. The results are also robust to including firm fixed effects, so any firm-level time-invariant unobservable factor that might influence the match between a firm and its shareholders cannot impact our findings. Additional tests using lags of the distraction measure make more general selection stories highly unlikely.

If managers make more acquisitions when shareholders are distracted, are those bad deals? Our tests indicate they are. First, we find that the distraction effect is concentrated in diversifying acquisitions, which are commonly thought to disproportionally benefit managers, for reasons of empire building or job security through more stable cash flows (e.g., Amihud and Lev (1981), Morck, Shleifer, and Vishny (1990)). Second, and consistent, bidder announcement returns are 31% lower, relative to the average, when shareholders are more distracted, and so are the combined bidder and target announcement returns ("synergies"). Third, over the three-year period following the deal, bidding firm stocks earn a risk–adjusted abnormal return of –9.8% if shareholders are distracted at announcement. All these results are consistent with the idea that managers take advantage of looser monitoring by tilting capital budgets towards diversifying, value-destroying acquisitions.

While our main tests are designed to address identification issues, Figure 1 shows that we can

detect distraction effects even in the raw data. The figure plots quarterly takeover frequencies for 5-year subperiods of our 1980 to 2010 sample period when we sort shareholders for each firm into high and low distraction groups according to our new distraction measure. Firms in the "high distraction" group are more likely to announce mergers in all six subperiods. The difference is economically sizeable and statistically significant in five of these periods. Hence, even in the raw data: if shareholders are distracted, firms are consistently more likely to announce takeovers.

In a final test, we build on Bebchuk, Grinstein, and Peyer (2010) and analyze if CEOs are more likely to receive "lucky" equity grants, i.e. opportunistically-timed equity grants that coincide with days in which the share price is at a monthly low. A one standard deviation increase in distraction increases the chance of a lucky grant by 42%. As in the M&A setting, these findings are robust to industry-by-time as well as firm fixed effects, minimizing concerns about unobserved heterogeneity. This test is useful for at least three reasons. First, lucky grants are directly related to managerial wealth. Second, lucky grants are unlikely related to economic fundamentals at the granting firm. Third, lucky grants are in no obvious way related to our merger analysis, thus providing a useful "out-of-sample" test for the distraction measures used in the M&A analysis.

In sum, we conclude that managers maximize their own private benefits at the expense of shareholders at times when institutional investors experience a shock to portions of their portfolio unrelated to the firm itself. This is consistent with temporal variation in monitoring intensity brought about by investors with limited attention shifting attention to other firms.

Our paper contributes to the behavioral corporate finance literature. We directly address an important open question highlighted in the survey of Baker and Wurgler (2012): *what is the impact of limited attention on corporate finance?* Our results show that limited investor attention has tangible and economically important effects on corporate actions, and that managers are able to exploit temporal variation in attention by altering investment policy and executive pay. We also relate to a broader empirical literature in behavioral finance on distraction and limited attention (e.g., Barber and Odean (2008), DellaVigna and Pollet (2009), Hirshleifer, Lim, and

Teoh (2009)) that is, in turn, linked to theoretical work on investor inattention in finance and economics (e.g., Hong and Stein (1999), Gabaix, Laibson, Moloche, and Weinberg (2006), Peng and Xiong (2006)). While most of this work has focused on retail investors and stock prices, little work exists to-date that analyzes attention effects for institutional investors. Related papers supporting the notion that limited attention frameworks can be useful for understanding important facts about mutual fund management include Fang, Peress, and Zheng (2011), who study the impact of media coverage on investment performance, and Kacperczyk, Nieuwerburgh, and Veldkamp (2013) who empirically study optimal attention allocation over the business cycle. To the best of our knowledge, our paper is the first to relate limited attention of institutional investors to corporate investment and executive pay.

Our paper also contributes to a growing literature seeking to identify exogenous changes in monitoring. Related papers include Bertrand and Mullainathan (2003) who exploit state adoptions of antitakeover laws, and Falato, Kadyrzhanova, and Lel (2013) who exploit variation coming from director deaths. As both law changes and director deaths are infrequent events, our study contributes by providing large-sample evidence on the resulting managerial actions when monitoring constraints are temporarily relaxed.

2. Theory and Data

2.1 Theoretical Framework

To fix ideas, this section describes our theoretical framework and derives our key empirical prediction.

2.1.1 Managerial actions and shareholder monitoring

Suppose the firm is run by a manager who, absent shareholder monitoring, would maximize private benefits B and set $B = B^{max}$. For example, the manager might make privately beneficial investments or pay herself more. With shareholder monitoring of intensity K, the manager trades

off private benefits with the cost imposed via the monitoring constraint, and chooses an optimal level of shirking $B^* \mid K < B^{max}$. In general, shirking will be a decreasing function of monitoring intensity, i.e., $B^* = f(K)$ with $f' < 0$.

We focus on monitoring from institutional investors, and there is a large theoretical literature motivating why and when institutions can be effective monitors. In this literature, different institutional monitoring mechanisms are often discussed under the headings "voice" and "exit". Voice involves direct forms of intervention, such as voting against management at the annual meeting, direct discussions with management, or taking over the company and dismissing incumbent management. The IRRC (2011) survey reports that only 15%-20% of institutional investors are not usually engaging with corporations, and that the most common forms of engagement are exchanges of letters and telephone calls, many of which are never made public. Exit proposes that institutions can also discipline managers by threatening to sell their shares in the secondary market (e.g., Admati and Pfleiderer (2009), Edmans (2009)). Survey evidence by McCahery, Sautner, and Starks (2011) suggests that this channel is empirically relevant. Edmans and Manso (2011) show that monitoring by multiple minority blockholders – as opposed to monitoring by only few large blockholders – can be an optimal equilibrium outcome. Our empirical design below will therefore allow for monitoring by minority blockholders.

2.1.2 Monitoring intensity and limited attention

For the monitor, supplied monitoring intensity is itself based on a tradeoff between benefits and costs. Numerous papers in the literature analyze versions of this tradeoff, focusing for example on the direct cost of gathering information, stock market liquidity, the degree of investor protection, the degree of asymmetric information, and complementarities between managers and blockholder effort.

The key conjecture in our paper, which is new to the best of our knowledge, is that monitoring capacity is a scarce resource that can *temporarily* lead monitors to supply less than the otherwise optimal monitoring capacity K^*. One way to think about the mechanism is to frame the

monitor's problem as optimally allocating attention subject to a limited attention constraint, in the spirit of the optimal limited attention literature in economics (e.g., Sims (2003), Kacperczyk, Nieuwerburgh, and Veldkamp (2011)).

To illustrate this in the simplest possible case, suppose that a potential monitor – in our setting an institutional shareholder – has a stake in two unrelated firms and can divide a fixed amount of attention $\bar{K}$ between them, such that $K_1 + K_2 \leq \bar{K}$. For example, a mutual fund manager decides every day how many hours to spend on obtaining information on the macroeconomy, different industries in her portfolio, or specific stocks within each industry. Assuming that the payoff to the monitor has the form $\pi = g(K_1) + h(K_2)$, where g and h are increasing concave functions, the optimal allocation (K_1^*, K_2^*) will equate the marginal benefits $\partial g/\partial K_1 = \partial h/\partial K_2$ (assuming an interior solution). Suppose now there is a positive shock to the marginal benefit of learning about firm 1. This shock could be real, and based on economic fundamentals, or merely perceived, i.e., due to psychological factors unrelated to fundamentals. In either case, the monitor would optimally shift attention towards firm 1 and away from firm 2, which, in turn, reduces the intensity of monitoring at firm 2.

2.1.3 Empirical approach and key prediction

The central idea of our empirical approach is to construct a firm-level proxy identifying temporal shifts in investor attention. In the above example, we identify times where monitors shift attention to firm 1, which decreases the supply of attention to firm 2. From firm 2's point of view, this implies a reduction in monitoring, since the new attention level K_2^{NEW} is smaller than K_2^*, which, in turn, implies a looser monitoring constraint faced by the manager, and therefore more room to maximize private benefits, i.e., $B^{NEW} = f(K_2^{NEW}) > B^* = f(K_2^*)$. With multiple shareholders, this will be true as long as a reduction in attention by one institutional shareholder cannot be instantaneously and costlessly substituted by other monitors, such as boards or other institutional shareholders. We summarize our key prediction as follows:

Distracted Shareholder Hypothesis: *If institutional shareholders shift attention away from the firm, this loosens monitoring constraints and managers have greater leeway to maximize private benefits.*

This prediction can be borne out in the data in two ways. First, managerial actions can be linked to investor attention if managers observe shareholders are distracted and then initiate private benefit maximizing projects. For instance, CEOs can obtain distraction signals by receiving fewer critical questions during scheduled analyst calls, in meetings with institutional investors, through fewer direct phone calls and meeting requests by institutional investors, in the annual meeting, through diminished news coverage, or from simply observing that many investors are focusing on "hot" industries (e.g., technology in 1999/00), or "crisis" industries (e.g., banks in 2007/08). As an alternative channel, and consistent with the large literature on managerial agency problems, managers might try to initiate bad deals even if they do not directly observe shareholder distraction. If shareholders have a higher probability of preventing a bad project when they are not distracted, we would also observe a direct link between more privately optimal managerial actions and shareholder distraction. Hence, it is a sufficient, but not a necessary condition, to assume managers notice shareholders being distracted before embarking on projects that maximize their private benefits.

2.2 Data Sources

We combine data from a number of sources. The main source is the Thomson Reuters institutional holdings database. This database covers all institutional investors required to file form 13f with the SEC, which covers all institutions with assets exceeding $100 million in market value. Every quarter, institutions are required to report the number and market value of each share they hold, unless they own less than 10,000 shares or unless the shares they hold are worth less than $200,000 at the last day of the reporting period.

We also obtain stock prices from CRSP, financial reporting data from Compustat, and merger

announcement data from SDC. We use "lucky" stock option grants information from Professor Lucian Bebchuk's website. Throughout the analysis, we exclude micro-caps, defined as stocks with market value below the 20th NYSE percentile breakpoint following Fama and French (2008), as they are not relevant for most institutional investors. Our resulting sample comprises 21,872 individual firms whose stocks are held by 6,207 institutions, over the period 1980–2010. We therefore capture essentially all of the US equity investment universe relevant for institutional investors.

3. Measuring Distraction

3.1 Variable construction

Our main variable of interest is a firm-level proxy for how much the "representative" institutional investor in a given firm f is distracted in a given period. We call this proxy *distraction*, and denote it by D. D is defined so that higher values are associated with shareholders that are more distracted. In terms of our main conjecture, a higher D implies temporarily looser monitoring constraints faced by the firm's managers.

The intuition behind D is straightforward and follows the approach in the thought experiment in the introduction: a given investor i in firm f is more likely distracted if there is an attention–grabbing event in another industry, and if that other industry is important in investor i's portfolio. We first compute an investor–level distraction score, and then aggregate across all investors in the firm. Specifically, we define D for each firm f and calendar quarter q as:

$$D_{fq} = \sum_{i \in F_{q-1}} \sum_{IND \neq IND_f} w_{ifq-1} \times w_{iq-1}^{IND} \times IS_q^{IND} \tag{1}$$

where F_{q-1} denotes the set of firm f's institutional shareholders at the end of quarter $q-1$, IND denotes a given Fama-French 12 industry, and IND_f denotes firm f's Fama-French industry. IS_q^{IND} captures whether a distracting event occurs in another industry, and w_{iq-1}^{IND} captures how

much investor i cares about the other industry. The weight w_{ifq-1} captures how important investor i is for firm f. We now explain the construction of these terms in greater detail.

First, w_{iq-1}^{IND} is defined as the weight of industry IND in the portfolio of investor i.[1] Second, IS_q^{IND} is an industry-level measure of whether something distracting is going on in industry IND in quarter q. We refer to IS as an *industry shock*. In most of our tests, we define IS as an indicator variable equal to one if an industry has the highest or lowest return across all 12 Fama-French industries in a given quarter. IS is motivated directly by Barber and Odean (2008), and can be justified on two, not mutually exclusive, grounds. On the one hand, extreme return periods are periods when learning about uncertainty can be particularly beneficial (e.g., Kacperczyk, Nieuwerburgh, and Veldkamp (2011)). Hence, there can be, all else equal, a rational incentive to shift attention towards most extreme-performing industries. On the other hand, IS could capture psychological effects. For example, retail investors and the media might focus "too much" on out- and underperformers, which, in turn, might give an incentive to institutional managers to shift some of their attention to the segment most salient to their investors. Both mechanisms suggest that IS might be effective in marking industries that are more attention-grabbing than others *in a given quarter*, which is precisely what we need for our identification strategy. An important advantage of this definition is that industry shocks used in the construction of D are not mechanically related to the fundamentals of the firm we are interested in, since the firm's own industry is excluded. Thus, IS is a plausible candidate for identifying exogenous shocks to investor attention. We also examine alternative measures of attention-grabbing events suggested by Barber and Odean (2008) in our tests below.

The two previous terms measure, for each investor i of firm f, whether something distracting is going on in an unrelated industry (IS_q^{IND}) and whether investor i cares about the unrelated industry (w_{iq-1}^{IND}). In a final step, we aggregate investors to get a firm-level distraction measure. Given the large differences between institutional investors, their holdings, and their motivation to monitor, equally weighting all investors is inappropriate. Therefore, we take a weighted average,

[1] We assign each stock in i's portfolios to one of the 12 Fama-French industries based on its historical SIC code (Compustat data item SICH). Whenever the historical SIC code is not available, following Fama and French (2008), we replace it by the CRSP SIC code (data item HSICCD).

with weights w_{ifq-1}. We give more weight to investor i if (i) firm f has more weight in i's portfolio, and (ii) if i owns a larger fraction of firm f's shares. The former captures that investors will on average spend more time and effort analyzing the biggest positions in their portfolio (Fich, Harford, and Tran (2013)). The latter captures that managers will care more about their largest shareholders, who also have the largest incentive to monitor, as suggested, for example, by the IRRC (2011) survey.

We therefore define:

$$w_{ifq-1} = \frac{QPFweight_{ifq-1} + QPercOwn_{ifq-1}}{\sum_{i \in F_{q-1}} (QPFweight_{ifq-1} + QPercOwn_{ifq-1})}. \tag{2}$$

Here, $PercOwn_{ifq-1}$ is the fraction of firm f's shares held by investor i, and $PFweight_{ifq-1}$ is the market value weight of firm f in investor i's portfolio. To minimize the impact of outliers and measurement error, we sort all stocks held by investor i in quarter $q-1$ by $PFweight_{ifq-1}$ into quintiles, denoted $QPFweight_{ifq-1}$. Similarly, we sort firm f's shareholders by $PercOwn_{ifq-1}$ into quintiles $QPercOwn_{ifq-1}$. Finally, we scale by the term in the denominator so that the weights w_{ifq-1} add up to one for each firm.

In sum, our investor distraction measure (1) depends on whether shocks occur in other industries, whether investors care about those other industries, and whether investors that are most affected by the unrelated shock are potentially important monitors.

3.2 Distraction Events and Impact on Monitoring Supply

One might ask what the economic nature of the distraction events captured by IS is, and whether the distraction events can have a prolonged impact on monitoring capacity.

The leading examples of economic fundamentals underlying distraction events are unanticipated significant industry-specific changes in the competitive landscape, technology, demand, or regulation. These events take time to unfold, and to be understood. They can thus draw on limited attention capacity for a protracted period of time, and therefore lead to looser monitoring of industries that are not in the focus. Prominent large-scale examples of longer-term distraction

events are the recent banking crisis (e.g., 2007Q4 industry return: −9.7%), the tech bubble (e.g., 2000Q1 industry return: +15.0%), or the oil spill in the Gulf of Mexico (2010Q2 industry return: −13.6%). Those events grabbed the attention of investors and the media for an extended period of time and made them focus on one specific industry.

While some distraction events may stretch over extended periods of time, this is not a necessary condition to observe a prolonged impact on monitoring capacity, for two reasons. First, it may take time to fully understand the impact of a significant unanticipated event even if the event itself is short. Examples include natural disasters, technological breakthroughs, court rulings, or new legislation. Second, even short-term distraction events can lead to temporal changes in the relative marginal benefit of supplying attention, which can lead institutions to re-optimize their attention allocation, and therefore monitoring capacity supply, across their portfolio.[2] In the limiting case, if the relative marginal benefit of obtaining information increases permanently, investors with limited attention might permanently shift attention away from an industry even if the distraction event itself is very short.[3]

In sum, we argue that our distraction measure based on quarterly industry returns can capture shifts in investor attention and therefore exogenous changes in monitoring constraints on a timescale that would be relevant for managerial actions.

4. Main Results

This section presents our main results. We focus first on the likelihood of announcing an acquisition when shareholders are distracted. We then examine whether these acquisitions are value-destroying. Finally, we analyze institutional holdings changes around announcements.

[2]This rational attention allocation mechanism is similar to Kacperczyk, Nieuwerburgh, and Veldkamp (2013) who analyze attention shifts across the business cycle, which are also longer term shifts in attention.

[3]To be sure, we would expect institutional investors to eventually adjust attention capacity, for example by hiring additional staff, if distraction events are long enough. However, hiring employees takes time, and staff with the right expertise needed after a sudden economic change is most likely in short supply then. It is therefore implausible that *all* institutional investors can adjust attention capacity quickly and easily by hiring additional staff *at the same time*.

4.1 Merger Frequency

With looser shareholder monitoring, self-interested managers have an incentive to distort investment budgets to maximize their private benefits. Acquisitions, especially diversifying ones, are leading examples of such suboptimal investment.

In this section, we document a relation between the frequency of acquisitions and investor distraction. Analyzing takeovers is interesting because they represent substantial discretionary investments, and because we can precisely observe their announcement dates. Managers decide the timing of the deal, which allows us to relate the temporal variation in merger activity to the temporal variation in our distraction measure. By contrast, most other forms of corporate investment are disclosed in one aggregate figure in the financial statements and do not allow us to see when individual investments are actually initiated. An important added advantage for identification purposes is that expenditure for takeovers is much less sticky than other forms of corporate investments.

We regress an acquisition announcement indicator on investor distraction using linear probability models. All our tests include industry $\times$ quarter fixed effects, so that we compare firms within the same industry at a given point in time, as in our motivating example in the introduction. This allows us to rule out the effect of any factors that do not vary within industry-date, such as investment opportunities, regulation, etc. Additional controls include firm size, Tobin's Q, and cash flow as in Malmendier and Tate (2008), as well as institutional ownership and institutional ownership concentration ("Top 5 share") as in Hartzell and Starks (2003). We also control for the level of the firm's cash holdings. We provide a complete list of variable definitions in the Appendix. Standard errors are clustered at the firm level in all regressions.

Table 2 presents the results. In Panel A, we find that the probability of announcing a merger is higher when shareholders are distracted. One standard deviation increase in the distraction measure D is associated with a 29% ($= 0.052 \times 0.07/1.24\%$) higher merger probability. The effect is in the same order of magnitude as the effect of institutional ownership and ownership concentration, which are both significant and yield a change of 16% and –42% relative to the

mean for a one standard deviation shift in ownership or concentration, respectively. Hence, investor distraction has an economically significant impact on takeover activity, over and above that of well-known institutional ownership characteristics.

We next test a finer prediction of the distracted shareholder hypothesis, and distinguish between within-industry and diversifying deals, defined on the basis of 2–digit SIC codes. The literature suggests that diversifying deals, in particular, can increase managerial private benefits at the expense of shareholder value because they can reduce CEO human capital risk, and because they offer a chance to venture into industries that are considered fashionable, glamorous, reputable etc. (e.g., Amihud and Lev (1981), Morck, Shleifer, and Vishny (1990)). We should thus expect a stronger impact of shareholder distraction on diversifying deals. The estimates in Table 2, column 2, support this hypothesis. The impact of shareholder distraction on diversifying deals is nearly twice as strong as on acquisitions in general: A one standard deviation increase in distraction increases the chance of a diversifying deal by 53% ($= 0.036 \times 0.07/0.48\%$). Further, while the effect of shareholder distraction is strongly significant for diversifying deals, it is weaker for within-industry transactions which are less likely motivated by managerial private benefits (column 3). Interestingly, the impact of institutional ownership and ownership concentration is, if anything, stronger for within-industry deals, highlighting again that we are capturing a different effect with our distraction measure.

Our results in Panel A relate acquisition announcements to institutional shareholder distraction *in the deal quarter*, because this allows us to most cleanly identify the effect of interest. In general, the assumption that managers could act upon shareholder distraction by announcing a takeover within (at a maximum) a three-month period is not unreasonable, as typical transactions take about ten weeks from first contact between bidder and target to finally announcing the takeover (e.g., Fruhan (2012)). Still, the process will often take longer than one quarter. To allow for this, we repeat our analysis from Panel A, but now average D over quarters -2 to 0 relative to the deal quarter. The underlying assumption is that there are a number of critical steps in the takeover process, and that a deal initiated when the shareholders are distracted has

a greater chance of being continued in the next quarter, even if investors are now less distracted. Panel B shows that our results become even stronger when we allow for this alternative timing convention.

In sum, the results in this section provide strong support for the Distracted Shareholder Hypothesis: limited shareholder attention allows distraction shocks to translate into more privately optimal managerial actions via temporarily looser monitoring constraints. Moreover, they are inconsistent with monitoring by the boards or other shareholders being a perfect substitute for distracted institutional shareholders, nor are they are consistent with the "quiet life" alternative hypothesis.

4.2 Alternative Explanations and Unobserved Heterogeneity

Our results in Table 2 are in line with the idea that limited investor attention relaxes managerial monitoring constraints. In this section, we discuss necessary conditions for alternative explanations and argue why we believe unobserved heterogeneity is unlikely to induce our results.

We first emphasize that any alternative story has to explain a number of facts simultaneously. First, because we compare firms within industry and date, it would have to explain why a "shock", i.e. *either* extreme positive *or* negative returns in an unrelated industry would increase takeover activity in some firms but not others. Second, it would also have to explain why the affected firms are precisely the ones whose institutional shareholders are exposed to the shock industry. Third, it would need to be unrelated to institutional ownership or institutional ownership concentration. Fourth, it would need to explain why we see more diversifying deals. In this section we add two additional pieces of evidence that further raise the bar for a feasible alternative hypothesis.

First, we include firm fixed effects to control for time-invariant unobserved heterogeneity. Columns 4 to 6 in Panels A and B in Table 2 show that our results are not affected. This rules out, for example, selection stories in which some unobservable, time-invariant, variable matches firms that – for whatever reason – are more likely to do diversifying takeovers with investors exposed to "shock" industries.

Second, we exploit time-variation in shareholder distraction, and estimate regressions including four lags of D. The top panel of Figure 2 summarizes the results. Shareholder distraction in the current quarter as well as in the prior two quarters has a significant effect, while additional lags of D fall to essentially zero once we go beyond $q = -2$. This pattern is consistent with the view that it can often take more than one quarter from deal initiation to announcement, but likely not much longer than three quarters. It seems non-trivial to explain these patterns with plausible alternative stories based on unobservable time-varying variables.

In sum, we conclude that unobservables, both time-invariant and time-varying, are unlikely to be inducing our results.

4.3 Robustness and Alternative Specifications

Table 3 presents a number of robustness tests. Unless otherwise mentioned, we report results for the specification in Table 2, Panel A, column 2 on diversifying deals, and suppress all control variables for brevity.

Panel A shows results for alternative investor distraction proxies. Our main measure is based on extreme industry returns, and motivated by Barber and Odean (2008). They propose two alternative ways to measure attention-grabbing events: trading volume and news. For trading volume we follow Barber and Odean (2008) and define the shock industry to be the one with the highest current-quarter trading volume normalized by the average trading volume over the previous 4 quarters. For news, we use Factiva to count newspaper articles about a given industry. To remove the effect that some industries might be in general more in the news than others, we follow a similar approach in Da, Engelberg, and Gao (2011) and calculate the abnormal increase in news articles as the log difference of the number of news articles reported in Factiva in a given quarter, normalized by the median number of news articles during the previous 4 calendar quarters. Panel A shows that both alternative definitions of attention-grabbing events, based on trading volume and based on news, produce results similar to our baseline. Therefore, we conclude our results are not mechanically induced by looking at industry returns.

Next, we define distraction based on *either* extreme positive *or* extreme negative returns alone, whereas our main measure looks at both. We find that our results hold for both alternatives. Finding action in both extremes is useful, because it is consistent with the attention-grabbing nature of extremes, and suggests again that we are not capturing something fundamental about either firms or investors picking good or bad industries.

We then restrict our distraction measure to only the largest five investors by percentage of shares owned in the firm and find that our results are robust. Especially when we measure distraction over three quarters, the results become even more significant. They also indicate that looking at institutional investors beyond the top five, as suggested by the work on minority blockholders cited above, is beneficial for the power of tests that try to detect monitoring effects.

In Panel B we add additional control variables and restrictions. First, we investigate if industry misclassification could be related to our results. In most of our tests we use 12 Fama-French industries. A potential concern may be that, within a given FF12 industry, some firms are mechanically related to the shock industry because they are misclassified. We define a variable *Relatedness to shock industry* as the percentage of firms which operate in the shock industry out of the total sample of closely related firms, where the latter are defined using the Hoberg and Phillips (2010) text-based industry classification. The relatedness variable can be interpreted as a proxy for the severity of the misclassification problem for a given firm-industry-shock combination. The results in Panel B show that, while we lose many of our observations, our results become, if anything, stronger when we control for potential misclassification.

In the next two tests, we investigate whether our effects are robust to controlling for additional institutional investor characteristics. First, we control for the share of institutional ownership by independent and long-term institutions (ILTIs) following Chen, Harford, and Li (2007). Second, we control for the combined share of ownership by non-transient investors following Bushee (1998). Our results in Panel B show that the temporal variation in investor distraction is largely unrelated to investor type – presumably because the fraction of ILTIs and non-transient investors is much less variable over time. In other words, these findings suggest that our earlier results

are driven by a temporary lack of shareholder attention, rather than a change in the kind of shareholders faced by the firm. Consistent with this view, Panel B also shows that our results become, if anything, stronger when we directly control for average investor size or average investor portfolio concentration.

We check next if our results are related to deals done in the shock industries themselves. Panel C shows that our results remain essentially unchanged if we exclude deals where the target belongs to either a positive or negative shock industry. While the coefficient estimates are slightly lower, the economic effect remains statistically and economically very significant at 46% and 44%, respectively, relative to the mean announcement probability. We therefore conclude that deals in shock industries are not responsible for our findings. Moreover, our results are robust to restricting our merger sample to completed deals. Lastly, in Panel D, we test whether our results are robust to the use of an alternative estimation method, the conditional Logit model, and find even higher statistical significance.

We conclude that our main results are robust to different definitions of attention-grabbing events, additional control variables related to investor types, different takeover subsets, and alternative estimation methods.

4.4 Merger Performance

In the previous sections, we have documented that firms are more likely to make an acquisition, especially a diversifying one, if their institutional investors experience shocks to unrelated parts of their portfolios. In this section, we show that those deals are value destroying.

Before presenting results, we emphasize again what we do and do not assume. We do not assume that *all* shareholders are distracted when D is high. We do assume that higher D proxies for times when the *representative* shareholder is distracted – that is, we assume that lack of attention by one investor cannot be costlessly and instantaneously compensated for by increased attention by other investors. In the takeover context, this has two implications. First, we may observe a short-term stock price reaction even when shareholders are distracted. Second,

if shareholders are distracted when the announcement is made, not all information about the merger might be instantaneously incorporated into the stock price, and there could be long-run abnormal stock returns. We provide evidence supporting both predictions.

4.4.1 Announcement effects

Table 4 presents results for short-term effects around the merger announcement date. We regress 3-day $(-1, +1)$ bidder abnormal announcement returns on a set of control variables capturing deal, bidder, and target characteristics following Moeller, Schlingemann, and Stulz (2004) and Baker, Pan, and Wurgler (2012). Control variables also include institutional ownership, the Top 5 share, an indicator for new economy firms, and the log of the number of deals in the industry to capture times of heightened M&A activity. As before, we are interested in comparing acquirers with and without distracted shareholders within industry and quarter, so we include acquirer industry $\times$ quarter fixed effects in all regressions. We also present results that additionally control for the target industry. All regressions are estimated using weighted least squares, where the weights are inversely proportional to the estimation variance of the abnormal returns. Standard errors are clustered by announcement month.

Specifications (1) and (2) in Panel A of Table 4 show that higher shareholder distraction during the quarter of the merger announcement is associated with lower abnormal returns. In the three days around the announcement, bidders lose an additional 41 basis points $(= 0.07 \times 0.058)$ when the shareholders are distracted, which, relative to the average announcement return of -131 basis points, is an economically large effect.

Specifications (3) and (4) in Table 4, Panel A, repeat the analysis for synergies, defined as the weighted average (by market capitalization) of bidder and target announcement returns as in Bradley, Desai, and Kim (1988). Our results indicate that synergies are lower in deals announced when the shareholders are distracted, consistent with the view that such acquisitions are of lower quality. If the marginal deal in the absence of distracted shareholders has zero synergies, the results indicate that the marginal deal with distracted shareholders is overall value-destroying.

Panel B repeats our analysis when we measure distraction over quarters $q = -2$, 1, and 0. As in our earlier tests, results tend to get stronger in economic terms, especially for synergies, where the coefficients now more than double. As before, these results indicate that using the longer window to measure distraction is capturing more of the relevant variation in investor distraction.

4.4.2 Long-run effects

If not all information is impounded in the price at the announcement date, or if managers can successfully hide some adverse information about the deal initially, we might expect negative long-run abnormal returns for takeovers announced when investors are distracted. We analyze long–run return using Ibbotson's (1975) returns across time and security (IRATS) method combined with the Fama and French (1993) three-factor model, as in Peyer and Vermaelen (2009), as well as the calendar-time approach (Fama (1998)).

In both tests, we split the sample into high and low distraction bidders within each industry as follows. We first compute for each bidder the average distraction over quarters $q = -2$, 1, and 0, the long-window distraction measure used in Tables 2 and 4, as our earlier tests indicates it has more power to capture investor distraction relevant for M&A deals. We then define high and low distraction bidders as those bidders with above (below) median distraction values in a given bidder industry and announcement year.

Figure 3 presents results based on the IRATS approach. While the low-distraction group exhibits a modest downward trend in their abnormal returns, the bidders with distracted shareholders experience substantially negative abnormal returns over the 36 months following the deal. Over this three-year period, the cumulative abnormal risk-adjusted return for high distraction bidders is a negative 9.8%, and the high minus low difference is 7.2%. Hence, the effect is economically large. As indicated by the grey bars, the difference between the two groups is highly statistically significant for most of the sample period. We also find that the cumulative return for the high distraction group presented in Figure 3 is significantly different from zero at the 1% level in almost all post-event months. By contrast, we cannot reject the null hypothesis that the

low distraction cumulative returns are zero in *any* post-event month even at the 10% significance level, except for month 1 where the return is actually positive. Importantly, the figure also shows that there is little sign of a difference before the announcement month, thus reinforcing a causal interpretation of our effects.

We also use the calendar-time portfolio approach to complement our findings from the IRATS method. Specifically, we compute the returns on a long-short distraction portfolio using all sample firms that have announced an acquisition in the previous 6, 12, 18, 24, or 36 months. The strategy buys high-distraction bidder stocks, sells low-distraction bidder stocks, and equal-weights stocks within the long and short legs of the portfolio. Table 5, Panel A presents the average monthly abnormal returns using the Fama and French (1993) three-factor model. For high distraction bidders, abnormal returns in the 36 months following the announcement are always negative and significant. In contrast, the abnormal returns of low distraction bidders are always small and insignificant. Over the full 3-year period, high-distraction bidder stocks underperform low-distraction bidder stocks by a risk-adjusted 5.8% ($= 0.16 \times 36$). Panel B adds the Carhart (1997) momentum factor. While both high and low distraction portfolios perform somewhat better then, the results for the difference between the portfolios become even stronger. We obtain a risk-adjusted 36-month return on the high-minus-low portfolio of 6.8% ($= 0.19 \times 36$), which is again highly significant ($t = 2.50$).

While there is a long-standing debate in the literature about whether event-time or calendar-time approaches are more appropriate when analyzing long-run returns, the above results show this is not a big issue in our setting. Both methods yield very similar results suggesting that deals initiated when shareholders are distracted are performing significantly worse than deals when shareholders are not distracted. These findings further support the hypothesis that managers pursue their private benefits at the expense of shareholders when monitoring constraints are temporarily relaxed.

4.5 Holdings Changes around Announcements

As final step in this section, we take a closer look at the mechanism underlying our findings by analyzing investor behavior directly. Institutional investors can influence corporate choices via "voice" or "exit". The voice channel may be important, but, as discussed above, it is largely unobservable. We can, however, use holdings data to investigate the exit channel. Specifically, we test whether distracted investors are less likely to sell their stakes in the firm when the firm announces a bad deal. If investors are less likely to sell ex post, this will weaken the disciplining role of exit ex ante. Hence, this test is also a consistency check on the Distracted Shareholder Hypothesis.

We define bad deals as takeovers with a 3-day bidder announcement return in the bottom quintile in a given year (our results are not materially affected if we use alternative cut-off points to identify bad deals). Further, we define a high-distraction indicator, HD, based on sorting institutional investors into high and low distraction groups by splitting at the industry-median each quarter. We then run the following investor-level regression:

$$Exit_{ifq} = \beta_1 HD_{iq} + \beta_2 BadDeal_{fq} + \beta_3 HD_{iq} \times BadDeal_{fq} + \beta_4' X_{ifq} + \varepsilon_{ifq}, \tag{3}$$

where $Exit$ refers to three different measures of selling for investor i in firm f in quarter q. The first definition follows Parrino, Sias, and Starks (2003) and uses a dummy variable *Large decrease* which indicates whether the holdings change is in the bottom quintile of the full-sample distribution. The second definition, $Negative\ \Delta Holdings$, equals the percentage change in the fraction of the firm's stock held by investor i in firm f in quarter q if that change is negative, and zero otherwise. The third measure is an indicator variable *Sell all*, equal to one if the investor sells her entire stake in the firm. X_{ifq} are firm-level control variables following Chen, Harford, and Li (2007), including current and lagged stock returns, current, lagged, and one-year lagged turnover, the firm's book-to-market ratio, and the number of days between the announcement date and quarter end. We also control for the lagged fraction of shares in a firm held by a given investor,

the lagged weight of the stock in the investor's portfolio, and lagged investor size. We further include industry × quarter as well as investor fixed effects in all regressions. Our main prediction is that β_3 is negative, i.e. that selling around bad deals is less likely if shareholders are distracted. Note that because shocks underlying our distraction definition can be either positive or negative return events, we do not have a prediction for the baseline effect on HD.

Results are reported in Table 6. Specification (1) shows that distracted investors are 24% less likely than non-distracted investors to reduce their holdings by a large amount when the firm announces a bad acquisition. Specification (2) shows that the effect becomes even stronger once we exclude "dedicated" investors, according to the Bushee (1998) classification, who, by definition, are less likely to exit. Specifications (3) to (6) show that we obtain similar results for the other two exit measures. In particular, distracted investors are 30% less likely than non-distracted shareholder to liquidate their entire stake after bad M&A announcements.

In sum, the effect of investor distraction on the propensity to sell after a bad takeover announcement is economically meaningful. Results are consistent with the Distracted Shareholder Hypothesis and the ex-ante motivation of managers to engage in privately optimal deals.

5. Lucky Option Grants as an "Out-Of-Sample" Test

Our results so far provide evidence for limited attention affecting corporate investment in the form of takeovers. The aim of this section is to go "out-of-sample" in the following sense: does shareholder distraction impact corporate actions also in settings other than M&A? An ideal alternative corporate action would be one that (i) shows sufficient temporal variation, (ii) can benefit managers, (iii) is unlikely to benefit shareholders, (iv) reflects a deliberate choice by the firm's managers, and (v) is of interest to institutional shareholders. We propose opportunistically-timed stock option grants as such an alternative variable, and show below that we find very similar patterns as for takeovers.[4] This is reassuring, because it indicates our findings are not specific

[4]According to the IRRC (2011) survey, compensation is one of the top items that prompts institutional shareholders to engage with corporations.

to mergers, but rather capture the link between distracted shareholders and corporate actions more generally.

We build on work by Yermack (1997) and Bebchuk, Grinstein, and Peyer (2010) who show that managers can extract rents by opportunistically timing their equity grants. Specifically, the latter authors, somewhat euphemistically, define "lucky grants" as stock option grants awarded on days with the lowest stock price in a given month. For a pre-specified number of stock options, such a timing pattern maximizes the value of the grant and therefore benefits managers at the expense of shareholders. We obtain data on lucky grants for the 1996 to 2005 period from Professor Lucian Bebchuk's website. Following Bebchuk, Grinstein, and Peyer (2010) we use as dependent variable a dummy equal to one if there was at least one lucky grant in the last fiscal year and control for a number of firm characteristics, CEO tenure, a dummy equal to one if CEOs were hired from the outside, and two variables capturing CEO ownership. We also control for the level of institutional ownership and ownership concentration. As before, we include industry $\times$ year fixed effects, so that we compare lucky grants at firms with and without distracted shareholders within the same year and industry. We use a linear probability model to estimate the probability of receiving a lucky grant, and cluster standard errors by firm. As our dependent variable is a yearly measure, we average the quarterly distraction measure D for each firm and year.

The estimates reported in Table 7 show that the probability of receiving a lucky grant increases when shareholders are distracted. This increase is economically large: a one standard deviation change in distraction increases the chance of a lucky grant by about 41.6% relative to the baseline ($= 0.05 \times 1.081/13\%$). Specifications (2) and (3) show that including firm fixed effects does not meaningfully alter the size or significance of our results, suggesting that we are not capturing some time-invariant unobserved factor. Interestingly, while the distraction variable is related to lucky grants, institutional ownership and ownership concentration are not, again reinforcing our earlier conclusion that we are capturing a different effect. As before, we can further strengthen our case for identification by looking at lags of the distraction measure. The bottom

panel of Figure 2 shows that we do not observe action in the lags of the distraction measure, which again minimizes concerns about unobserved variables spuriously inducing our results.

Specifications (4) to (6) repeat the exercise for lucky director grants, denoted by a dummy equal to one if at least one director received a lucky grant. The results show that distraction also tends to increase the incidence of lucky director grants. While statistical significance is not overwhelming, these findings suggest one channel that can enhance the ability of CEOs to benefit from shareholder distraction: the willingness of directors to provide additional monitoring capacity can be adversely affected by the potential for maximizing their own private benefits. Because statistical significance is weak, however, we do not want to overemphasize this point.

Overall, these findings on lucky grants provide additional evidence strongly consistent with the notion that self-interested managers maximize private benefits when investor distraction temporarily loosens monitoring constraints. Our findings are not M&A specific. Rather, the evidence in this section suggests that limited investor attention can impact corporate actions more broadly.

6. Conclusion

This paper advances and tests a new hypothesis on the link between limited shareholder attention and corporate actions. The *Distracted Shareholder Hypothesis* holds that monitoring intensity faced by corporate managers is time-varying because institutional investors with limited attention may temporarily, and potentially rationally, shift attention to other segments of their portfolio. We construct a firm-level proxy for shareholder distraction, by identifying times when institutional investors experience shocks in unrelated parts of their portfolios.

We find strong evidence suggesting that managers can exploit shareholder distraction by engaging in privately optimal corporate actions. Specifically, investor distraction has economically important effects on the likelihood of announcing a merger, on merger performance, as well as on CEO pay.

Our paper is, to the best of our knowledge, the first to link limited investor attention to

corporate actions such as investment and executive compensation. Our findings have potentially important implications for future research on limited attention, corporate governance, and stock returns.

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Table 1: Summary statistics

The table presents summary statistics. Panel A provides descriptive statistics for the full sample comprising all non-microcap stocks with a non-missing quarterly distraction measure over the period 1980-2010. Panel B reports descriptive statistics for our merger sample, which consists of 3,240 majority-stake acquisitions with a minimum deal value of $1 million announced between 1980 and 2010. Descriptive statistics for the lucky grants sample, spanning years 1996-2005, are shown in Panel C. Distraction is the weighted average exposure of firm shareholders to the shock industries. Institutional ownership is the fraction of the firm's stock owned by institutional investors. Top 5 share is the share of institutional ownership controlled by the five largest investors. Institutional holdings are measured at the quarter-end prior to the acquisition announcement or option grant period. A complete list of definitions of our dependent and control variables is provided in the Appendix.

Panel A: Full sample (10,007 firms)

	N	Mean	Std. Dev.	0.25	Median	0.75
Dependent variables						
Merger (%)	251,447	1.24	11.05	0.00	0.00	0.00
Diversif. merger (%)	251,447	0.48	6.88	0.00	0.00	0.00
Within-industry merger (%)	251,447	0.77	8.75	0.00	0.00	0.00
Key independent variables						
Distraction	251,447	0.16	0.07	0.11	0.15	0.21
Control variables						
Institutional ownership (IO)	245,389	0.43	0.28	0.20	0.43	0.65
Top 5 share of IO	251,447	0.53	0.21	0.37	0.48	0.67
Log size	240,685	7.17	1.80	5.89	7.06	8.27
Tobin's Q	236,848	1.92	1.57	1.08	1.37	2.07
Cash flow	221,723	0.10	0.12	0.04	0.09	0.15
Cash holdings	235,479	0.32	0.23	0.14	0.27	0.46

Panel B: Merger sample (1,697 firms, 3,240 acquisitions)

	N	Mean	Std. Dev.	0.25	Median	0.75
Dependent variables						
Acquirer CAR(-1,+1)	3,014	-0.013	0.06	-0.04	-0.01	0.01
Synergies (-1,+1)	2,574	0.014	0.06	-0.02	0.01	0.04
Key independent variables						
Distraction	3,240	0.16	0.07	0.11	0.15	0.21
Control variables						
Institutional ownership (IO)	3,197	0.50	0.23	0.34	0.51	0.67
Top 5 share of IO	3,240	0.43	0.17	0.30	0.39	0.51
Acquirer RoA	3,233	0.04	0.08	0.01	0.04	0.08
Acquirer B/M	3,212	0.56	0.40	0.30	0.48	0.73
Acquirer mktcap ($m)	3,240	9,559.98	32,001.40	548.91	1,508.57	5,005.77
Relative size	3,240	0.41	0.69	0.05	0.16	0.48
Cash	3,240	0.26	0.44	0.00	0.00	1.00
Stock	3,240	0.33	0.47	0.00	0.00	1.00
Tender	3,240	0.20	0.40	0.00	0.00	0.00
Hostile	2,922	0.07	0.25	0.00	0.00	0.00
Conglomerate	3,240	0.38	0.49	0.00	0.00	1.00
Competed	3,240	0.08	0.27	0.00	0.00	0.00
Target RoA	2,794	0.00	0.14	0.00	0.02	0.06
Target B/M	2,763	0.68	0.50	0.36	0.57	0.87
Target mktcap ($m)	2,850	979.35	3,812.44	54.43	171.83	623.94
New economy	3,240	0.14	0.34	0.00	0.00	0.00
Number of deals	3,240	19.20	20.75	4.00	10.00	26.00

Panel C: Lucky grants sample (3,576 firms, 992 CEO lucky grants)

	N	Mean	Std. Dev.	0.25	Median	0.75
Dependent variables						
CEO luck	7,678	0.13	0.34	0.00	0.00	0.00
Director luck	9,350	0.10	0.30	0.00	0.00	0.00
Key independent variables						
Distraction	12,474	0.17	0.05	0.13	0.16	0.21
Control variables						
Institutional ownership (IO)	12,055	0.56	0.23	0.39	0.59	0.74
Top 5 share of IO	12,225	0.46	0.15	0.35	0.43	0.54
Relative size	12,474	2.11	1.29	1.11	1.81	2.82
New economy	12,474	0.16	0.36	0.00	0.00	0.00
CEO outsider	4,277	0.30	0.46	0.00	0.00	1.00
CEO tenure	4,337	2.46	0.91	1.79	2.64	3.22
CEO ownership $> 5\%$ and $< 25\%$	7,838	0.10	0.30	0.00	0.00	0.00
CEO ownership $> 25\%$	7,838	0.01	0.12	0.00	0.00	0.00
Total assets	12,473	9,239.95	51,400.22	473.02	1,275.94	3,852.60
Tobin's Q	11,992	2.30	1.89	1.18	1.60	2.59
Leverage	12,105	0.23	0.20	0.05	0.20	0.36
Tangibility	11,964	0.47	0.19	0.37	0.49	0.58
Firm age	12,306	16.07	15.59	5.00	10.00	25.00

Table 2: Distraction and merger announcement frequency

The table reports results from a linear probability model which regresses the probability of announcing an acquisition on our measure of shareholder distraction. The dependent variable is equal to one if the firm announces at least one merger bid in a given quarter, and zero otherwise. Diversifying deals are identified based on 2-digit SIC codes. In Panel A, distraction is measured during the quarter of the merger announcement. In Panel B, distraction is measured during the 3 quarters including and preceding the announcement quarter. Reported T-statistics are robust to clustering by firm.

Panel A: Distraction measured over one quarter

	Merger	Diversifying merger	Within-industry merger	Merger	Diversifying merger	Within-industry merger
Distraction t	0.052	0.036	0.019	0.045	0.029	0.018
	(3.77)	(3.78)	(1.80)	(3.09)	(3.00)	(1.60)
IO	0.007	0.003	0.004	0.005	0.000	0.004
	(3.95)	(2.67)	(3.03)	(1.66)	(0.05)	(2.20)
Top 5 share	-0.025	-0.010	-0.015	-0.014	-0.006	-0.007
	(-11.91)	(-8.03)	(-9.05)	(-5.15)	(-3.87)	(-3.47)
Log size	0.004	0.002	0.002	0.000	0.001	0.000
	(11.17)	(8.39)	(8.62)	(0.08)	(0.77)	(-0.43)
Tobin's Q	0.000	0.000	0.000	0.001	0.000	0.001
	(0.99)	(2.02)	(-0.13)	(2.29)	(0.49)	(2.62)
Cash flow	0.006	0.001	0.005	0.021	0.008	0.014
	(2.11)	(0.43)	(2.38)	(4.85)	(3.01)	(3.97)
Cash holdings	0.019	0.004	0.016	0.014	0.007	0.007
	(8.60)	(3.14)	(8.63)	(3.27)	(2.44)	(2.40)
Industry × quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes	Yes	Yes
N	208,755	208,755	208,755	208,755	208,755	208,755
R^2	0.020	0.010	0.010	0.070	0.060	0.070

Panel B: Distraction measured over three quarters

	Merger	Diversifying merger	Within-industry merger	Merger	Diversifying merger	Within-industry merger
Distraction MA(-2,0)	0.092	0.062	0.032	0.101	0.062	0.041
	(4.68)	(4.66)	(2.25)	(4.66)	(4.34)	(2.53)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry × quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes	Yes	Yes
N	208,755	208,755	208,755	208,755	208,755	208,755
R^2	0.020	0.010	0.010	0.070	0.060	0.070

Table 3: Robustness

This table presents robustness checks. The baseline regression refers to column (2) from Table 2. For brevity we only report coefficients of interest and suppress control variables. In Panel A, we use alternative definitions of industry shocks. Trading volume defines the shock industry to be the one with the highest trading volume normalized by the average trading volume during the previous 4 calendar quarters, as in Barber and Odean (2008). The news-based distraction measure assigns a shock to the industry with the highest abnormal increase in news articles, which we define as the log difference of the number of news articles reported in Factiva in a given quarter, normalized by the median number of news articles during the previous 4 calendar quarters, following Da, Engelberg, and Gao (2011). Extreme negative (positive) returns only considers the industry with the lowest (highest) quarterly return as a shock industry. In Panel B, the baseline regression is rerun with additional controls. Relatedness to shock industry is defined as the % of firms which operate in the shock industry out of the total sample of closely related firms, where the latter are defined as in Hoberg and Phillips (2010). ILTI ownership refers to the share of institutional ownership by independent and long-term institutions, as defined in Chen, Harford, and Li (2007). Non-transient ownership controls for the ownership by dedicated and quasi-indexing investors as defined in Bushee (1998). Investor concentration is measured using the Herfindahl index. In Panel C, we restrict the mergers (i) to takeovers where the target is not in a negative (positive) shock industry, and (ii) to deals which eventually get completed. In Panel D, we estimate the baseline regression using a conditional Logit model.

	Coeff.	T-stat	N
Baseline	0.036	3.78	208,755
Panel A: Alternative measures of distraction			
Trading volume	0.035	2.91	193,125
News	0.040	2.52	190,297
Extreme negative returns	0.027	1.99	208,755
Extreme positive returns	0.046	3.04	208,755
Only Top 5 investors	0.011	2.40	208,864
Only Top 5 investors MA(-2,0)	0.038	5.36	208,864
Panel B: Additional controls and restrictions			
Relatedness to shock industry	0.048	2.18	80,786
ILTI ownership	0.036	3.79	208,299
Non-transient ownership (Bushee (1998))	0.040	3.33	173,856
Avg. investor size	0.039	4.10	208,755
Avg. investor concentration	0.037	3.87	208,755
Panel C: Sample restrictions			
Exclude if target is in negative shock industry	0.030	3.31	208,755
Exclude if target is in positive shock industry	0.028	3.08	208,755
Only completed deals	0.029	3.63	208,755
Panel D: Estimation method			
Conditional Logit	7.893	3.85	126,816

Table 4: Merger performance

The table presents regressions of acquirer announcement returns and synergies on investor distraction and control variables. In Panel A, distraction is measured during the merger announcement quarter. In Panel B, distraction is measured during the 3 calendar quarters including and preceding the merger announcement quarter. Cumulative abnormal announcement returns (CARs) are calculated using the Fama-French (1993) model estimated over trading days (-280,-31) and are measured over a (-1,+1) event window. Synergies are defined following Bradley, Desai, and Kim (1988) as the weighted sum (by market capitalisation) of the bidder and target cumulative abnormal announcement returns. All regressions are estimated using Weighted Least Squares where weights are equal to the inverse of the estimation variance of the abnormal returns. Acquirer industries are defined based on the 12 Fama-French industries. Acquirer controls include institutional ownership, the Top 5 share, return on assets, book-to-market ratio, and log market capitalization. Deal controls consist of relative deal size and a list of dummy variables indicating whether the deal is a cash deal, a stock deal, a tender offer, hostile, a conglomerate merger, or competed. Target controls are return on assets, book-to-market ratio, log market capitalization, a new economy dummy, and the log number of deals announced in the same year and target industry (identified by 2-digit SIC codes). All dependent and control variables are defined in the Appendix. Reported T-statistics are robust to clustering by announcement month.

Panel A: Distraction measured over one quarter

	Acquirer CAR(-1,+1)		Synergies(-1,+1)	
	(1)	(2)	(3)	(4)
Distraction t	-0.051	-0.058	-0.033	-0.036
	(-2.96)	(-3.03)	(-1.77)	(-1.83)
Acquirer and deal controls	Yes	Yes	Yes	Yes
Target controls	No	Yes	No	Yes
Acquirer industry × year FE	Yes	Yes	Yes	Yes
Target industry dummies	No	Yes	No	Yes
N	2,665	2,267	2,300	2,210
R^2	0.17	0.25	0.27	0.32

Panel B: Distraction measured over three quarters

	Acquirer CAR(-1,+1)		Synergies(-1,+1)	
	(1)	(2)	(3)	(4)
Distraction MA(-2,0)	-0.062	-0.089	-0.089	-0.098
	(-1.60)	(-1.97)	(-2.14)	(-2.29)
Acquirer and deal controls	Yes	Yes	Yes	Yes
Target controls	No	Yes	No	Yes
Acquirer industry × year FE	Yes	Yes	Yes	Yes
Target industry dummies	No	Yes	No	Yes
N	2,665	2,267	2,300	2,210
R^2	0.17	0.25	0.27	0.32

Table 5: Calendar-time portfolios

The table reports results from the calendar-time portfolio approach. At the end of each calendar month we form a long-short distraction portfolio using all firms that have announced an acquisition in the previous 6 (12, 18, 24, 36) months. The strategy purchases high distraction stocks and sells low distraction stocks, where high (low) distraction stocks are those with above (below) median distraction values in a given bidder industry and announcement year and distraction is measured during the 3 calendar quarters including and preceding the merger announcement quarter. Returns are equally weighted within the constituent portfolios and we require a minimum of 3 stocks in each portfolio. Panel A calculates the average monthly abnormal returns of this long-short strategy using the Fama-French (1993) 3-factor model. Panel B uses the Fama-French (1993) and Carhart (1998) 4-factor model.

Panel A: Fama-French 3-factor model

	6m	12m	18m	24m	36m
High distraction	-0.340	-0.360	-0.350	-0.330	-0.270
	(-2.20)	(-2.89)	(-3.19)	(-3.24)	(-2.89)
Low distraction	-0.240	-0.150	-0.100	-0.110	-0.100
	(-1.54)	(-1.29)	(-0.92)	(-1.11)	(-1.10)
High - Low	-0.200	-0.200	-0.210	-0.220	-0.160
	(-1.01)	(-1.61)	(-2.14)	(-2.47)	(-2.11)
N	355	371	377	383	383

Panel B: Fama-French and Carhart 4-factor model

	6m	12m	18m	24m	36m
High distraction	-0.180	-0.200	-0.180	-0.160	-0.110
	(-1.11)	(-1.66)	(-1.78)	(-1.71)	(-1.29)
Low distraction	-0.140	0.010	0.080	0.090	0.090
	(-0.84)	(0.05)	(0.82)	(0.96)	(1.06)
High - Low	-0.110	-0.190	-0.230	-0.250	-0.190
	(-0.53)	(-1.53)	(-2.29)	(-2.80)	(-2.50)
N	355	371	377	383	383

Table 6: Holdings changes around announcements

The table reports results from our analysis of holdings changes during the quarter of an M&A announcement. *Large decrease* is a dummy variable equal to one if the percentage change in the fraction of the firm's stock held by the investor is in the bottom quintile of the full-sample distribution, and zero otherwise. *Negative* $\Delta Holdings$ is defined as the absolute percentage change in the fraction of the firm's stock held by the investor if that change is negative, and zero otherwise. *Sell all* is a dummy variable equal to one if the investor sells its entire stake in the firm, and zero otherwise. We sort institutional investors into high and low distraction groups (above/below the median) within a given industry and quarter, and define a high-distraction indicator HD. *Bad deal* refers to M&A announcements with an abnormal announcement return in the lowest quintile of the distribution within a given announcement year. Our definition of dedicated investors, which are excluded in columns (2) and (4), follows Bushee (1998). Control variables are the lagged fraction of shares in a firm held by a given investor, the lagged weight of the stock in the portfolio, lagged investor size (log of total assets), current and lagged stock returns for the stock, current and lagged turnover, turnover in the same quarter one year ago, the firm's book-to-market ratio, and the number of days between the announcement date and quarter end. Reported T-statistics are robust to clustering at the investor × date level.

	Large decrease		**Negative Δ Holdings**		**Sell all**	
	(1)	(2)	(3)	(4)	(5)	(6)
HD	0.122	0.135	0.088	0.081	0.060	0.050
	(0.86)	(0.91)	(0.97)	(0.87)	(1.00)	(0.81)
Bad deal	2.091	2.118	1.726	1.747	1.210	1.233
	(8.93)	(8.48)	(11.04)	(10.51)	(9.81)	(9.49)
Bad deal × HD	-0.496	-0.661	-0.405	-0.475	-0.325	-0.368
	(-1.84)	(-2.30)	(-2.28)	(-2.53)	(-2.39)	(-2.59)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry × quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Investor FE	Yes	Yes	Yes	Yes	Yes	Yes
Exclude dedicated investors	No	Yes	No	Yes	No	Yes
N	543,404	486,470	543,404	486,470	543,404	486,470
R^2	0.090	0.090	0.110	0.120	0.120	0.120

Table 7: Investor distraction and lucky equity grants

The table reports results from a linear probability regression of lucky grants on the average investor distraction during the fiscal year. CEO (Director) lucky grant is a dummy variable equal to one if the CEO (a director) received an option grant on the date where the lowest price of the month prevailed and zero otherwise as in Bebchuk, Grinstein, and Peyer (2010). All dependent and control variables are defined in the Appendix. Reported T-statistics are robust to clustering at the firm level.

	CEO lucky grant			**Director lucky grant**		
	(1)	(2)	(3)	(4)	(5)	(6)
Distraction t	1.081	0.956	1.004	0.432	0.613	0.578
	(3.16)	(2.18)	(2.26)	(1.57)	(1.84)	(1.71)
Institutional Ownership	-0.032	0.043	0.114	0.038	-0.055	-0.030
	(-0.77)	(0.44)	(1.12)	(1.09)	(-0.72)	(-0.37)
Top 5 share	-0.042	-0.121	-0.163	-0.057	-0.023	-0.067
	(-0.60)	(-1.07)	(-1.34)	(-1.12)	(-0.27)	(-0.71)
Relative size	-0.010	0.005	-0.003	-0.004	0.012	0.023
	(-1.60)	(0.24)	(-0.13)	(-0.77)	(0.73)	(1.28)
New economy	0.031	0.235	0.220	0.030	-0.023	-0.016
	(1.02)	(1.49)	(1.38)	(1.15)	(-0.20)	(-0.13)
CEO outsider	0.004	-0.041	-0.031	0.010	0.009	0.003
	(0.20)	(-0.95)	(-0.71)	(0.66)	(0.26)	(0.09)
CEO tenure	0.012	-0.030	-0.025	-0.005	-0.024	-0.026
	(1.38)	(-1.79)	(-1.44)	(-0.65)	(-1.66)	(-1.77)
CEO ownership $> 5\%$ and $< 25\%$	0.042	0.060	0.005	0.036	0.018	0.021
	(1.59)	(1.04)	(0.08)	(1.59)	(0.39)	(0.44)
CEO ownership $> 25\%$	0.083	0.212	0.151	0.012	0.005	0.039
	(1.22)	(1.88)	(1.30)	(0.28)	(0.06)	(0.43)
Tobin's Q			0.010			-0.013
			(1.00)			(-1.80)
Leverage			0.235			-0.005
			(2.08)			(-0.06)
Asset tangibility			-0.070			0.142
			(-0.54)			(1.37)
Log book value			-0.004			-0.012
			(-0.13)			(-0.48)
Firm age			-0.094			-0.037
			(-1.62)			(-0.76)
Industry × year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	No	Yes	Yes
N	2,511	2,510	2,395	3,046	3,048	2,905
R^2	0.060	0.407	0.406	0.040	0.375	0.384

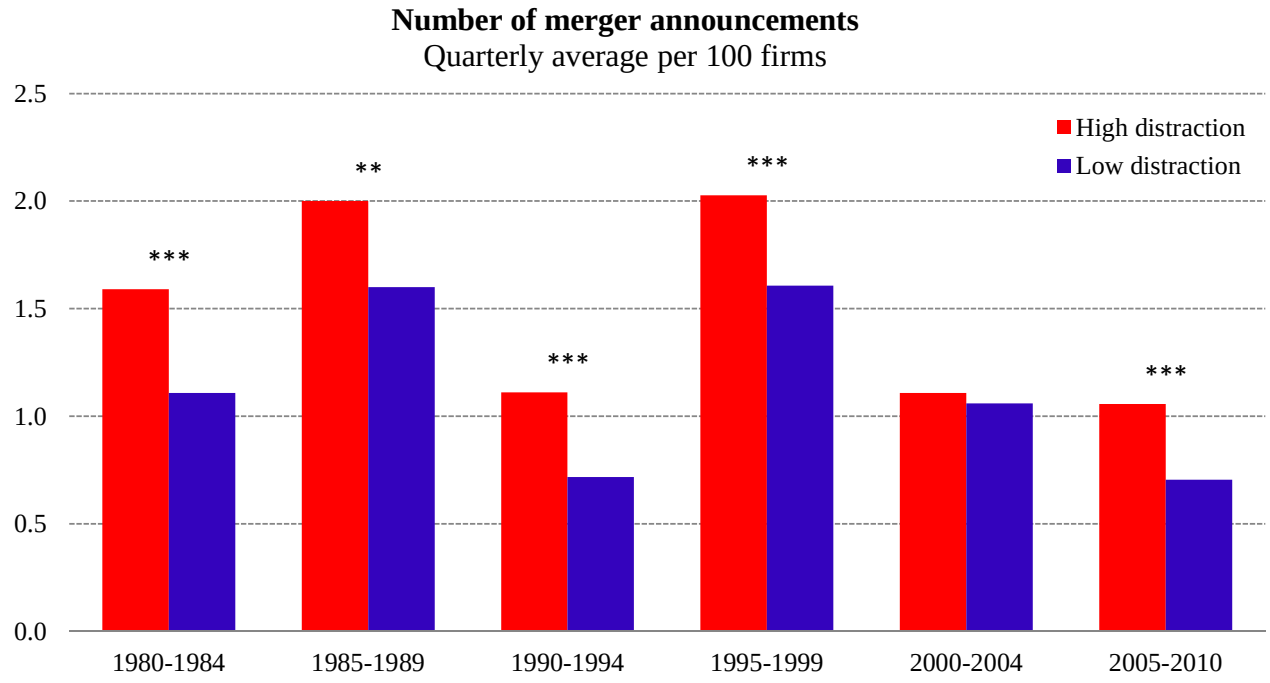

Figure 1: Merger frequency and distraction

The graph plots the average quarterly number of merger announcements for the subgroups of high and low distraction firms over time. High (low) distraction firms are defined as those with above (below) median shareholder distraction within a given industry and quarter. Asterisks ***, **, * indicate statistical significance of the difference between the high and low groups on the 1%, 5%, and 10% level, and are based on standard errors that allow for clustering at the firm level.

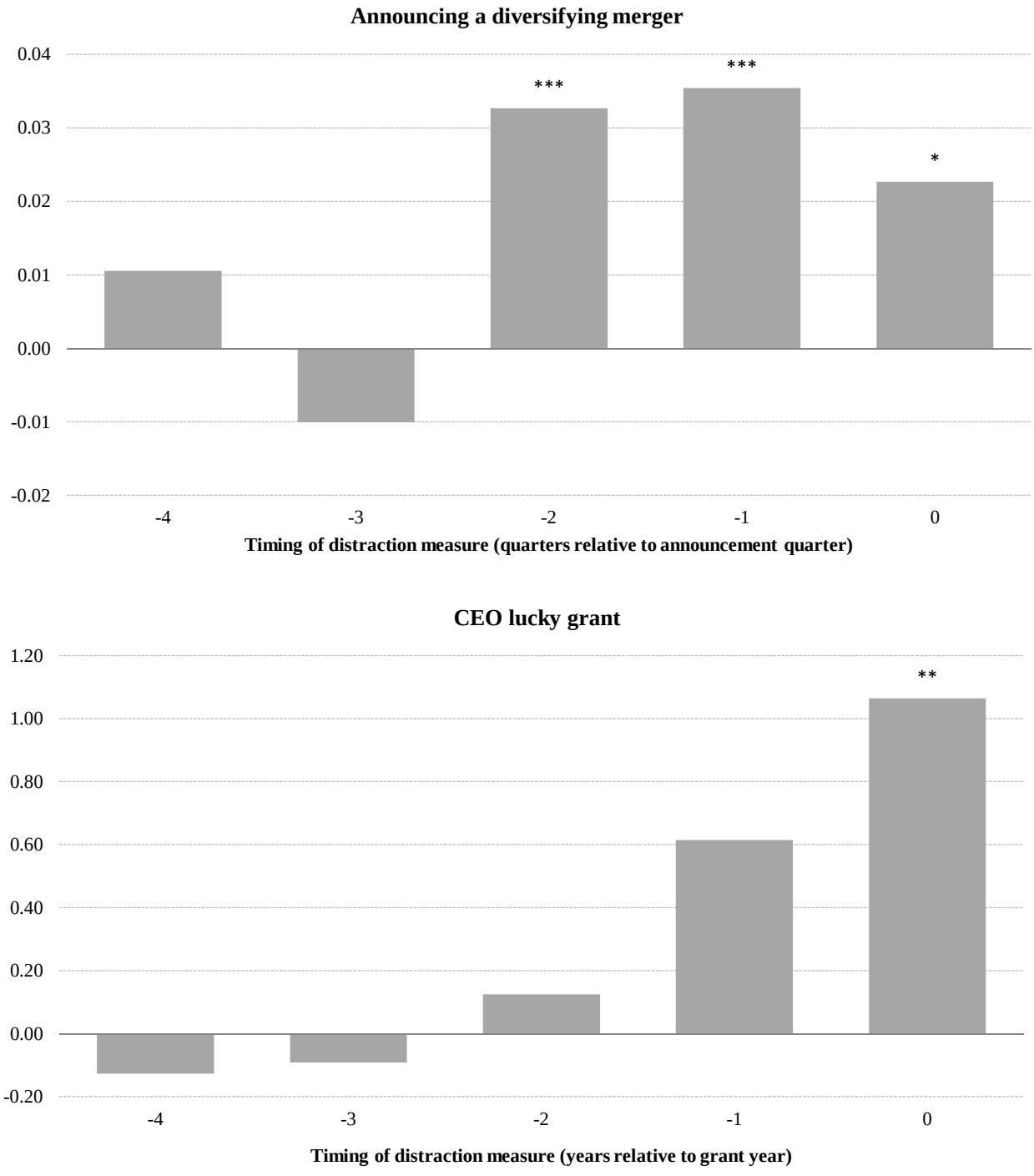

Figure 2: Timing of distraction

The graph plots the coefficient estimates from our baseline regressions reported in column (2) of Table 2 and in column (3) of Table 7 if we simultaneously include four lags of shareholder distraction. Asterisks ***, **, * indicate statistical significance on the 1%, 5%, and 10% level.

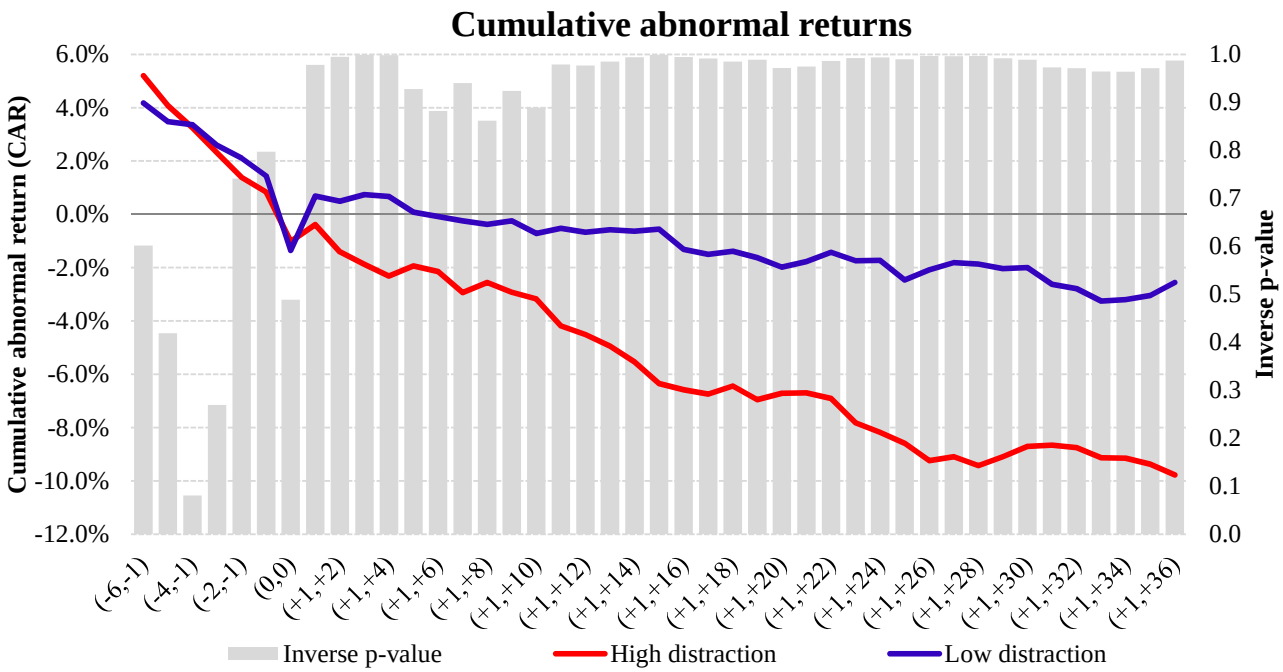

Figure 3: Stock performance around merger announcements (IRATS)
The graph plots the long-run (cumulative) abnormal returns of bidder stocks for the subgroups of high and low distraction. High (Low) distraction stocks are those with above (below) median distraction values in a given bidder industry and announcement year, where distraction is measured during the 3 calendar quarters including and preceding the merger announcement. Abnormal returns are calculated using Ibbotson's (1975) returns across time and security (IRATS) method combined with the Fama-French (1993) three-factor model for different event time windows (event time 0 is the month of the merger announcement). The following regression is run for each subsample and each event month j: $(R_{it}-R_{ft}) = a_j+b_j(R_{mt}-R_{ft})+c_jSMB_t+d_jHML_t+\varepsilon_{it}$ where R_{it} is the monthly return on security i in the calendar month t relative to event month j. R_{ft}, R_{mt}, SMB_t, and HML_t are the monthly risk-free rate, the monthly return on the value-weighted CRSP index, and the monthly return on the size, and book-to-market factor in the calendar month t corresponding to event month j, respectively. Cumulative abnormal returns (CAR) are sums of the intercepts of cross-sectional regressions over the relevant event-time periods. The secondary axis shows the inverse p-value (= (1 – p)) of the Chi-squared test for the hypothesis that CARs for the high and low distraction portfolios are equal.

A Appendix

Table A.1: Variable descriptions

Variable	Description
Dependent variables	
Merger	Dummy variable equal to one if a firm announces an M&A transaction in a given calendar quarter and zero otherwise. We consider all majority-stake acquisitions recorded in SDC Platinum between 1980 and 2010 with a minimum deal value of $1 million.
Diversifying merger	Dummy variable equal to one if a firm announces a diversifying M&A transaction in a given calendar quarter and zero otherwise. An M&A deal is considered to be diversifying if the acquirer operates in a different 2-digit SIC code industry than the target company.
Within-industry merger	Dummy variable equal to one if a firm announces a within-industry M&A transaction in a given calendar quarter and zero otherwise. An M&A deal is considered to be within-industry if the acquirer operates in the same 2-digit SIC code industry as the target company.
Acquirer CAR(-1,+1)	Cumulative abnormal announcement returns of the acquirer are calculated using the Fama-French (1993) model estimated over trading days (-280,-31) and are measured over a (-1,+1) event window around the announcement date.
Synergies (-1,+1)	The weighted sum (by market capitalisation) of the bidder and target cumulative abnormal announcement returns, following Bradley, Desai, and Kim (1988).
CEO (Director) luck	Dummy variable equal to one if the CEO (a director) received an option grant on the date where the lowest price of the month prevailed and zero otherwise, as in Bebchuk, Grinstein, and Peyer (2010).
Control variables - all regressions	
Institutional ownership (IO)	Fraction of the firm's stock owned by institutional investors as reported in the Thomson Reuters 13f database, measured at the quarter-end prior to the acquisition announcement or option grant period.
Top 5 share of IO	Fraction of the firm's stock owned by the five largest institutional investors as reported in the Thomson Reuters 13f database, measured at the quarter-end prior to the acquisition announcement or option grant period.
Log size	Logarithm of total book assets as of prior year end.
Tobin's Q	Ratio of the market value of assets over the book value of assets as of prior year end.
Control variables - Merger frequency	
Cash flow	Earnings before extraordinary items plus depreciation, normalized by lagged assets.
Cash holdings	Cash plus receivables, normalized by lagged assets.

Continued on next page

Table A.1 – continued

Variable	Description
Control variables - M&A announcement returns	
Acquirer (Target) RoA	Net income over assets.
Acquirer (Target) B/M	Book value of equity divided by market capitalization.
Relative size	Total deal value divided by acquirer market capitalization.
Cash	Dummy variable equal to one if the deal is 100% cash financed and zero otherwise.
Stock	Dummy variable equal to one if the deal is 100% equity financed and zero otherwise.
Tender	Dummy variable equal to one if the deal is a tender offer and zero otherwise.
Hostile	Dummy variable equal to one if the deal is hostile and zero otherwise.
Conglomerate	Dummy variable equal to one if the acquirer operates in a different 2-digit SIC code industry than the target company and zero otherwise.
Competed	Dummy variable equal to one if a bid gets announced by a competing bidder and zero otherwise.
New economy	Dummy variable equal to one for target firms with SIC codes as defined in Murphy (2003), and zero otherwise.
Number of deals	The number of transactions announced in the target's 2-digit SIC code industry and a given year.
Control variables - Lucky grants	
Relative size	Logarithm of the ratio between the previous-year-end market capitalization of the firm and the median market capitalization of the firms in the sample for that year.
New economy	Dummy variable equal to one for firms with SIC codes as defined in Murphy (2003), and zero otherwise.
CEO outsider	Dummy variable equal to one if the CEO was not employed in the firm before becoming the CEO, and zero otherwise.
CEO tenure	Logarithm of one plus the number of years that the CEO served in the company.
CEO ownership $> 5\%$ and $< 25\%$	Dummy variable equal to one if the CEO holds between 5-25% of the firm's stock, and zero otherwise.
CEO ownership $> 25\%$	Dummy variable equal to one if the CEO holds more than 25% of the firm's stock, and zero otherwise.
Leverage	Ratio of the book value of long-term debt over total assets.
Tangibility	Defined following Berger, Ofek, and Swary (1996) as $0.715 \times receivables + 0.547 \times inventory + 0.535 \times capital + cash$, normalized by total assets.
Firm age	Logarithm of one plus the number of years since the firm appears on CRSP.