Relative Performance Evaluation and the Timing of Earnings Release

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Abstract

Relative performance evaluation (RPE) refers to compensating managers on their performance relative to the performance of a peer group. We posit that observing more peers' performance allows managers to better estimate the performance level required to achieve relative performance targets, and hence, releasing earnings later than peers facilitates managers to exploit last-minute reporting discretion to achieve targets. Consistently, we find that RPE firms are more likely to meet or barely beat accounting-based relative performance targets when they release earnings later than a significant portion of self-selected peers. This finding is more pronounced when incentives to achieve performance targets are stronger, when announcing later than peers provides managers with more information about performance targets, and when achieving performance targets through accrual manipulation is more feasible. Further, RPE managers tend to select peers that release earnings more timely and delay own firms' earnings releases to be later than peers'. Our evidence suggests strategic timing of earnings release and discretionary reporting in response to relative performance targets.

Keywords: *relative performance evaluation, accounting-based performance target, earnings release timing, earnings management.*

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1. Introduction

Relative performance evaluation (RPE) enables the principal to compensate agents based on their performance relative to the performance of a peer group. In recent years, the use of RPE in setting executive compensation has been gaining popularity among large U.S. companies (Bettis et al., 2014).[1] The purpose of this study is to better understand the implications of RPE contract design for managers' discretionary reporting decisions. Specifically, we examine whether releasing earnings late relative to peers facilitates managers to achieve accounting-based relative performance targets. We further examine whether late earnings release relative to peers reflects managers' strategic choice and possible channels through which late earnings release occurs.

Under RPE contracts, performance targets are specified relative to the performance of peers, typically in the form of ordinal ranks or relative percentiles.[2] Before the realization and release of peers' performance, managers are uncertain about the exact performance level that guarantees a certain rank or percentile. Although managers can estimate a range of peers' performance during the performance evaluation period, they lack precise information to gauge the necessity and feasibility of reporting manipulation required to achieve relative performance targets. Consequently, RPE contract design imposes considerable uncertainty on managers in deliberating reporting discretion for the purpose of achieving performance targets. Consistent with this intuition, prior evidence indicates that RPE contracts dissuade managers from manipulating reported performance.[3] For instance,

[1] According to IncentiveLab database, in 2012 about 40 percent of U.S. large companies grant RPE awards to top five executives. Approximately 40 percent of RPE grants specify performance metrics based on accounting measures (such as return-on-equity or earning growth).

[2] See Appendix 2 for examples of relative performance targets specified in RPE contracts.

[3] Bagnoli and Watts (2000) demonstrate theoretically that if the market values firms based on their relative performance, earnings manipulation arises in anticipation of peers' earnings manipulation.

Murphy (2001) documents prevalent income smoothing in firms using internal performance standards, but not in firms using external (such as RPE-based) performance standards. Bennett et al. (2016) find a "kink" surrounding accounting-based performance targets in non-RPE firms, but this "kink" disappears among RPE firms.[4]

Despite considerable uncertainty in planning reporting discretion to achieve relative performance targets, managers have strong incentives to do so. In our sample, realized payouts from RPE grants account for 32 percent of total executive compensation. Thus, missing relative performance targets would substantially reduce managers' compensation. Furthermore, one salient feature of RPE contracts is the stepwise mapping from firm performance to payout with discontinuities around each peer's performance. A majority of RPE plans (about 68 percent in our sample) also do not allow interpolation between threshold, target, and maximum performance goals. The nontrivial monetary value of RPE grants, together with significant discontinuity in the pay-for-performance scheme, generate strong incentive to meet or *marginally* beat relative performance targets.

Whether the incentive to achieve relative performance targets induces reporting manipulation critically depends on a manager's knowledge of peers' performance before the finalization of own firm's performance. Accordingly, the timing of RPE firms' earnings releases relative to their peers' is essential for the deliberation of reporting discretion.[5] When managers observe realized performance from a sufficient

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Different from their setting where RPE is implicit through market valuation, we are interested in explicit RPE in executive incentive compensation.

[4] The "kink" refers to the phenomenon that a disproportionately large number of firms exceeding their performance goals by a small margin as compared to the number that fall short of the goal by a similar margin.

[5] In addition to audited earnings numbers, firms often report non-GAAP performance measures (so called pro-forma earnings), cash flows from operations, and selected accruals information in the same earnings release. Since March 2003, the SEC requires that when a registrant presents a non-GAAP

number of peer firms, they can form reasonable estimates about the performance level required to meet relative performance targets (hereafter, target performance); this in turn facilitates managers to exploit "last-minute" reporting discretion to achieve relative performance targets. If releasing earnings late relative to peers facilitates managers to exploit reporting discretion to reap greater compensation benefits, managers would have incentive to strategically time earnings releases to be later then peers.

We note that the above reasoning applies only to RPE firms using accounting-based performance targets (hereafter, accounting-based RPE firms), rather than non-RPE firms or RPE firms using equity-based performance targets (hereafter, equity-based RPE firms). In non-RPE firms, performance targets are not affected by peer performance, while in equity-based RPE firms, firms' own performance and peers' performance (e.g., shareholder return) are realized and observed over the same calendar period, eliminating the benefit of releasing performance later than peers. Therefore, we focus on accounting-based RPE firms and examine two specific questions: 1) whether releasing earnings later than peers is associated with a higher likelihood of barely meeting/beating relative performance targets, and 2) whether and how these firms strategically time earnings releases to be later than peers.

We collect detailed information about top five executives' compensation arrangements in the 750 largest U.S. companies from 1998 to 2014, available from IncentiveLab database. Results show that accounting-based RPE firms that announce earnings later than a significant portion of peers (hereafter, late announcers) are more likely to meet or barely beat relative performance targets. The economic significance

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measure, it must present the most directly comparable GAAP financial measure in the same release and reconcile the two measures. Given relative performance metrics are not always defined over bottom-line earnings, the additional disclosures in earnings releases potentially enrich RPE firms' understanding about peers' performance in general.

is non-trivial, with the odds of barely meeting/beating relative performance targets being 82 percent higher in late announcers than the odds in non-late announcers (hereafter, early announcers). This finding is more pronounced when managers have more aligned incentives to achieve performance targets (i.e., CEOs and CFOs face the same performance targets), when missing performance targets leads to greater monetary losses (i.e., larger fair value of RPE grants, no-interpolation around performance targets, and lower CEO wealth), when late earnings releases are more useful in estimating the target performance (i.e. more stable performance ranks among peers and fewer peers with analysts following), and when it is more feasible to use accrual manipulation to achieve relative performance targets (i.e., smaller gap between actual performance and target performance over the first three quarters scaled by accrual volatility).

Further supporting the notion that late earnings release allows managers to exercise reporting discretion to catch performance targets, we find that compared with early announcers, late announcers report larger income-increasing discretionary accruals (when actual performance does not exceed the maximum performance goal) and larger income-increasing tax accruals in the last fiscal quarter (when performance metrics are tax sensitive). Collectively, these results suggest that late earnings release facilitates managers to achieve relative performance targets, possibly through accrual manipulation.

Given the informational benefit of late earnings release, accounting-based RPE contracts may motivate managers to strategically time earnings releases relative to peers. Consistent with this conjecture, accounting-based RPE firms are more likely to announce earnings later than peers, compared with matched non-RPE firms and

equity-based RPE firms.[6] Further investigation reveals two possible channels through which accounting-based RPE firms strategically time earnings releases relative to peers. First, accounting-based RPE firms tend to choose peers that release earnings more timely, with selected peers more likely (by 26 percent) to release earnings earlier than matched unselected peers. Second, accounting-based RPE firms strategically delay own firms' earnings releases. Upon the adoption of RPE plans, these firms are more likely (by 40 percent) to postpone earnings releases relative to the previous year. Furthermore, RPE firms are more likely (by seven percent) to delay earnings release when actual performance is closer to target performance over the first three quarters.

Our study extends prior literature on reporting manipulation in response to compensation contract design (in particular, the pay-for-performance scheme). It is well documented that managers exercise reporting discretion to meet or beat absolute performance goals (e.g., Bennett et al., 2016; Gaver et al., 1995; Healy 1985; Holthausen et al., 1995).[7] Extending prior research, our study provides evidence on manipulative reporting activities for the purpose of achieving *relative* performance goals. Our findings complement prior evidence that setting performance goals relative to peers on average does not induce managers to manipulate financial reporting. By revealing strategic behavior in timing earnings releases, our findings suggest that managers can still exploit reporting discretion under RPE contracts, raising public awareness over RPE firms' manipulative behavior.

[6] We acknowledge that non-RPE firms and equity-based RPE firms may as well engage in manipulative activities (such as reporting manipulation) to meet or beat performance targets. Nevertheless, our evidence indicates these firms are less likely to strategically time earnings releases for the purpose of achieving performance targets.

[7] For instance, managers use income-increasing accruals to barely meet performance threshold (Gaver et al., 1995; Holthausen et al., 1995) and income-decreasing accruals to avoid beating performance ceiling (Healy 1985). More recently, Bennett et al. (2016) report evidence of reporting manipulation around performance targets.

Our findings also have implications for the efficiency of RPE-based compensation contract design. Economic theories posit various benefits and costs of using RPE in setting executive compensation. Agency theory suggests that RPE can filter out the effect of common shocks on firm performance, leading to more efficient incentive contracting (Gibbons and Murphy 1990; Holmstrom 1982) and more idiosyncratic risk taking (Park and Vrettos 2015). Tournament theory posits that RPE can elicit greater efforts by encouraging competition among agents (Green and Stokey 1983; Lazear and Rosen 1981) and can motivate strategic competition that benefits the firms (Aggarwal and Samwick 1999; Vrettos 2013). Yet, inappropriate RPE contract design could induce destructive competition and suboptimal investment decisions (e.g., Dye 1984; Murphy and Jensen 2011).

Our findings highlight an unintended cost of relative performance evaluation in rewarding top executives. The documented manipulative behavior would reduce the overall benefits of RPE plans. In particular, the results indicate more prevalent manipulative behavior when RPE plans do not allow interpolation around accounting-based performance targets. This echoes Murphy and Jenson (2011)'s call on setting continuous, as opposed to discrete, pay-for-performance scheme in designing RPE contracts.

Finally, we contribute to the disclosure timing literature by documenting strategic timing of earnings releases in response to compensation-based incentives. Prior evidence suggests that managers have incentives to accelerate bad news release to reduce litigation risk (Skinner 1994, 1997; Donelson et al. 2012) or postpone bad news release to further validate the data with auditors, to allow insiders to sell shares, or with the hopes to obtain good news subsequently to offset the bad news (e.g., Bagnoli et al., 2002; Chambers and Penman 1984; Kross 1981; Kothari et al., 2009).

More recent studies find that firms strategically time earnings announcements to attract or avoid market/media attention (deHaan et al., 2015; So and Weber 2015). Trueman (1990) shows analytically that a manager has the incentive to delay own firm's earnings release to observe other firms' earnings for the purpose of reducing potential costs of manipulation.

We examine disclosure timing from a new perspective: a contracting-based incentive to time earnings release relative to peers. Our findings generally support Trueman (1990)'s theoretical prediction, but in a different setting where managerial incentive to gain knowledge of peer performance is driven by unique design features in RPE-based compensation contracts. Furthermore, prior studies mostly assume that managers determine the disclosure timing conditional on the realization of firm performance (or the nature of realized news). In contrast, we consider a dynamic setting where the timing decision assists reporting discretion and the need for discretionary reporting affects the timing decision. We provide the first evidence that compensation design features affect the disclosure timing decision and that timing earnings release relative to peers is critical to managers' ability to achieve accounting-based relative performance targets.

The remainder of the paper proceeds as follows. Section 2 develops testable hypotheses. Section 3 describes the sample and summary statistics. Section 4 and Section 5 report empirical findings. We provide robustness tests in Section 6, and conclude in Section 7.

2. Hypothesis Development

2.1 Timing of earnings release and achieving relative performance target

In most large U.S. firms, compensation packages for top executives include explicit performance goals that determine executive pay (Bettis et al. 2014).

Performance goals are usually linked to equity or cash payouts, and are specified based on either internal standards or external standards. While internal standards specify performance goals based on a pre-determined level of performance, external standards usually specify performance goals as ordinal ranks or relative percentiles against a chosen peer group (so-called relative performance evaluation or RPE).

Under internal performance standards, managers are aware of the target performance (i.e., the performance level required to achieve performance targets) right after the compensation scheme is finalized, typically within the first quarter of the year.[8] In contrast, under RPE contracts, managers only know the relative percentile or ordinal rank against peers that is required for target payouts. Due to uncertainty regarding peers' performance, managers lack precise information to determine the target performance. Although managers can form expectations about peers' performance during the performance evaluation period, considerable uncertainty remains until a significant portion of peers release their performance. Such uncertainty increases the difficulty in planning discretionary reporting to achieve performance targets, and hence, reporting manipulation may become too costly to implement. Consistent with this intuition, existing studies find no evidence of reporting manipulation under RPE contracts (e.g. Bennett et al., 2016; Murphy 2001).

While achieving relative performance targets through reporting manipulation seems difficult, managers have strong incentive to do so. Over the past decade, there has been a shift from traditional time-vested equity grants towards performance-vested equity and cash grants (Core and Packard 2015). For our sample firms,

[8] The finalized compensation scheme is disclosed through proxy statements, which are filed in advance of annual meetings (typically held within the first quarter of the year). Under ASC 718, for an award with a performance condition that affects vesting, the performance condition is not considered in determining the award's fair value on the grant date. Performance and service conditions should be considered when a company is estimating the quantity of awards that will vest. Compensation cost will reflect the number of awards that are expected to vest and will be adjusted to reflect those awards that do ultimately vest.

managers would lose $1.9 million on average in the form of cash or equity (about 32 percent of total annual compensation) if they fail to meet relative performance targets. Hence, the potential losses due to missing relative performance targets are substantial. Furthermore, specifying performance targets based on ordinal rank or relative percentile against a limited number of peers creates significant discontinuity in the pay-for-performance scheme, strengthening the incentive to marginally achieve performance benchmarks (Murphy and Jenson 2011).[9] Importantly, a majority of RPE plans (68 percent in our sample) do not allow interpolation surrounding performance targets, which exacerbates the discontinuity around targets and makes missing targets, even by a small margin, very costly.

Besides the compensation-driven incentive discussed above, managers may have other incentives to meet or barely beat RPE targets. First, managers have incentives to avoid exceeding RPE target by a large margin because it may result in higher targets in subsequent periods (Bennett et al. 2016). Second, falling behind RPE targets may lead to non-monetary punishments (in addition to compensation losses), such as tarnished reputation or forced turnover (e.g., DeFond and Park 1999). In this study, our focus is to demonstrate the interaction of discretionary reporting and relative earnings release and thus we only examine the effect of the compensation-driven incentive (due to the discontinuity around RPE targets) but don't differentiate alternative incentives to meet the RPE targets.

Given the strong incentive to achieve relative performance targets, we conjecture that managers of RPE firms engage in reporting discretion to meet or marginally beat relative performance targets, conditional on reasonable estimates on the performance level required to achieve the targets. Whether managers can form reasonable estimates

[9] In our sample consisting of non-index-based peer groups, the median size of peer group is 10 firms.

on the target performance critically depends on the relative timing of earnings releases between RPE firms and their peers.[10] When RPE firms announce earnings later than a significant portion of peers, managers are more likely to have better knowledge of peer group's performance distribution and thus face less uncertainty in estimating the target performance. This in turn enables managers to implement last-minute reporting discretion to improve the chance of achieving relative performance targets.

In our sample, the reporting lag in earnings releases between accounting-based RPE firms and their peers who released earnings earlier is about two weeks. This time window is sufficient for managers to deliberate last-minute accounting adjustments necessary to catch relative performance targets. As noted in PricewaterhouseCoopers (2010), "companies are able to produce consolidated reports within five business days. . . [and in] many cases, this accelerated cycle is followed by a series of post-close adjusting entries that continue up to the release of earnings." These anecdotal observations suggest that accounting adjustments are common and can be quickly approved by auditors prior to earnings release.[11] Hence, late earnings releases provide opportunities for managers to adjust accounts after observing peers' performance.

Prior research suggests that reporting manipulation induces a "kink" surrounding performance benchmarks (e.g., Bennett et al., 2016; Burgstahler and Dichev 1997). Following prior research, we infer reporting discretion from the incidence of marginally or barely meeting/beating performance targets.

[10] Although RPE firms may anticipate that some of their peers may performance significantly better or worse than own firms based upon historical performance, there is still significant uncertainty regarding the RPE firms' performance ranking. In our sample, the average change (standard deviation) in percentile ranking of accounting-based RPE firms is nontrivial at 21% (18%). In later analyses, we condition on peers' analyst following and late earnings release relative to "close" peers to further explore the impact of uncertainty regarding peer performance.

[11] Firms may occasionally release earnings before the auditor's approval of earnings numbers, but the incidence of earnings revision in subsequent 10-K filing is rare (Bronsonn et al., 2011).

The above reasoning leads to the following hypothesis, stated in the alternative form.

H1: *RPE firms are more likely to meet or barely beat accounting-based relative performance targets if they announce earnings later than a significant portion of peers.*

The hypothesis above is not without counter forces. By the time RPE firms form a reasonably accurate estimate on the target performance, they may not have sufficient reporting discretion to bridge the gap between actual performance and target performance. Moreover, last-minute reporting discretion is subject to external auditors' scrutiny and may not always be approved by auditors. Furthermore, misreporting, once detected, can tarnish managers' reputation and impose considerable costs on managers, especially when the misstated numbers have inflated executive pay and clawback provisions are enforced. These potential constraints and costs may discourage managers from manipulating earnings even when both incentives and manipulating tools are available.

We also note that after RPE firms infer the target performance, they may have alternative channels to achieve the target other than inflating own firms' reported numbers through accrual discretion. In particular, managers of RPE firms may exert discretion over the definitions of own performance and peers' performance, especially when performance metrics are vaguely defined in the compensation contracts.[12] Such alternative channels presumably weaken the incentive to release earnings later than peers and we are less likely to find predicted results under H1.

2.2 Strategic timing of earnings release

We note that the information advantage gained from releasing earnings later than peers only applies to managers of RPE firms using accounting-based performance

[12] Since RPE firms rarely disclosure the exact level of peer performance when discussing the realized performance ranking, we are unable to directly test this channel.

targets (i.e., accounting-based RPE firms). Because accounting performance is measured at discrete intervals (quarterly or annually) and released with a discretionary reporting lag, late announcers are able to observe more peers' performance and make more informed decisions regarding the necessity and extent of reporting manipulation. In contrast, equity-based performance (such as shareholder return) is realized and observed continuously (i.e., on daily basis), and hence, equity-based performance is evaluated over the same calendar period for RPE firms and their peers, eliminating the benefits of reporting manipulation after observing peer performance. Managers of firms using absolute performance targets also cannot boost performance and payouts by releasing earnings later than peers, because their performance targets are unrelated to peer performance.

Prior studies suggest that releasing earnings late carries potential costs. In particular, investors seem to anticipate bad news if earnings release is postponed (e.g., Bagnoli et al., 2002; Begley and Fischer 1998; Bowen et al. 1992; Chambers and Penman 1984; Givoly and Palmon 1982; Kross 1981). Given potential costs associated with late earnings releases, we expect that non-RPE firms and equity-based RPE firms are less likely to release earnings late relative to peers, compared with accounting-based RPE-firms.

The above reasoning leads to the following hypothesis, stated in the alternative form.

H2a: *Accounting-based RPE firms are more likely to release earnings late relative to peers than non-RPE firms and equity-based RPE firms.*

Managers can strategically time earnings announcements relative to peers through two channels. First, managers can intervene with the peer-selection process to choose peers that tend to announce earnings earlier than their own firms. Second, after

the formation of peer group, managers can choose earnings release dates to be later than selected peers'.

With respect to the first channel, a RPE firm can choose peers that tend to release earnings more timely than other potential peers.[13] In practice, RPE peers are selected by the compensation committee after considering inputs from compensation consultants and management. Prior evidence suggests that managers are able to intervene with the peer-selection process for self-serving purposes (e.g., Gong et al. 2011).[14] Hence, it is possible that managers' consideration of earnings release timing affects the selection of RPE peers.

With respect to the second channel, a RPE firm can delay its own earnings release to be later than peers'. We expect to observe such delay right after the adoption of accounting-based RPE contracts because the incentive to release earnings later than peers becomes relevant only after the adoption. We also speculate that delay in earnings release is more likely when RPE firms' performance is expected to be close to the target performance and thus the benefit of gaining information about peers' performance heightens. When managers expect firm performance to deviate significantly from target performance, managers either can achieve target performance easily (without reporting discretion) or cannot rely on reporting discretion alone to reverse the performance gap, weakening managers' incentives to release earnings late relative to peers.

[13] In our sample, the incidence of interlocking RPE peers (i.e., a peer chooses the RPE firm as its peer) is rare, consistent with the evidence in De Angelis and Grinstein (2016). Among the RPE peers covered by IncentiveLab, about 26 percent of RPE peers adopt accounting-based RPE grants in the same year, and about 12 percent of RPE peers choose RPE firms as their peers. Hence, on average selected RPE peers should not have strong incentive to delay earnings releases.

[14] Gong et al. (2011) document that firms with lower projected performance are more likely to be selected as peers for RPE purpose.

Prior studies suggest that it is costly for firms to delay earnings release, either relative to previous year's release date or scheduled release date.[15] However, deHann et al. (2015) document that firms change earnings release date quite frequently, often due to innocuous reasons. This prevents investors from seeing through the intentions underlying announcement delay, which alleviates potential costs associated with delayed earnings release. Compared with releasing earnings later than prior years' or scheduled release dates, releasing earnings later than RPE peers is less likely to attract significant investor attention. First, releasing earnings later than RPE peers can be achieved through peer selection or a one-time delay in earnings release date, which is less salient than delay from prior years' or scheduled release date. Second, unaware of managers' manipulative incentives, investors may not attend to the RPE peers disclosed in proxy statements and their earnings release timing relative to the RPE firms'. Therefore, we expect relatively low costs for RPE firms to position their earnings release date later than peers.

Therefore, we conjecture that accounting-based RPE firms may choose to release earnings late relative to peers through the two channels discussed above. This leads to the following hypothesis, stated in the alternative form.

H2b: *Accounting-based RPE firms tend to select peers that release earnings more timely and/or delay own firms' earnings releases.*

3. The Sample

3.1 Sample selection

We collect detailed information about top five executives' compensation arrangements from 1998 to 2014 from IncentiveLab database. IncentiveLab reports detailed information regarding RPE grants, including award type, performance

[15] Prior studies provide ample evidence on potential reasons and costs of strategic timing in earnings releases (e.g., Bagnoli et al., 2002; Begley and Fischer 1998; Bowen et al. 1992; Chambers and Penman 1984; Givoly and Palmon 1982; Kross 1981; So and Wang 2014; So and Weber 2015).

metrics, payout scheme, and peer group composition for about 750 largest U.S. firms by market capitalization. If a firm awards multiple RPE grants in a single year, we retain the grants with unique performance metrics and payout scheme.[16] When a RPE grant specifies multiple performance metrics, we treat each performance metric as a unique grant in empirical analyses. We obtain earnings release dates and relevant firm characteristics from Compustat quarterly and annual files.

Table 1 summarizes sample selection procedures. We start with 8,394 unique RPE grants, among which 3,278 (39 percent) grants specify accounting-based performance metrics. This is comparable to De Angelis and Grinstein (2016), who also use IncentiveLab data and show that 36 percent of RPE firms use accounting-based performance metrics. Among accounting-based RPE grants, about 52 percent grants define self-selected peers as opposed to a broadly defined index.[17] We remove observations with inconsistent earnings release dates between Compustat and IBES, and further delete RPE grants that do not use ordinal rank or relative percentile to define performance targets which most likely indicate data errors.[18] After requiring non-missing information on performance metrics and performance target, we obtain a sample of 561 unique grants. When performance metrics are defined over multiple years (e.g., three-year total return on capital), we retain all years during the performance evaluation period. These procedures yield a final sample of 1,036 grant-year observations.

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[16] Payout scheme refers to performance goals (threshold, target, maximum), corresponding payouts, and whether interpolation of payouts is allowed between performance goals.

[17] We exclude accounting-based RPE firms that use a broadly defined index as the peer group, because the peer group composition is often difficult to identify from public sources (e.g., a vaguely defined transportation group). In addition, broadly defined indices usually comprise of a large number of peers, making it difficult to time earnings release relative to peers. Consistently, in untabulated results, we examine accounting-based RPE firms that use S&P500 index as the peer group, and fail to find similar results as those reported in Section 4.

[18] Among accounting-based RPE firms, about 10 percent of RPE grants do not clearly specify performance targets (comparison method is coded as "Other" in Incentivelab database), and are excluded from empirical analyses.

3.2 Summary statistics

Table 2 reports summary statistics for our sample. Panel A shows accounting-based RPE use by award type. Firms are more likely to use accounting-based RPE in setting equity compensation (54.4 percent) than cash compensation (44.4 percent). Panel B lists various accounting-based performance metrics used in RPE plans. Accounting returns, including ROE, ROIC, ROI, and ROA, are commonly used to set performance targets (about 52 percent), comparable to the usage (about 55 percent) reported in De Angelis and Grinstein (2016).

Panel C summarizes grant characteristics. The average (median) size of self-selected peer group is 12 (10) firms. Each grant on average covers four top executives, and 80.7 percent (71.1 percent) of the grants are awarded to CEO (CFO). In terms of comparison method, 75.6 percent of grants specify relative performance percentile that maps into payouts, while the rest specify ordinal ranks. The average performance measurement period lasts 27 months, comparable to 2.57 years in De Angelis and Greinstein (2016). The distributions of performance goals (including threshold, target, and maximum) and corresponding payouts are also similar to the sample in De Angelis and Grinstein (2016). In particular, for the median grant, firm performance (expressed in percentile) above 25, 50, and 80 percentile of the peer group correspond to payout of 25, 100, and 200 percent of target award. The average grant-date fair value is about $2 million, indicating significant monetary payoffs from equity-based RPE grants.[19] Moreover, about 64 percent of RPE grants do not allow

[19] The grant-date fair value takes into consideration the vesting conditions which partly depend on the likelihood of achieving targets. For cash grants, IncentiveLab database only provides total actual payout value, which can be determined by absolute performance evaluation (in addition to RPE) and often involves multiple performance metrics, making it difficult to infer the target payout for RPE-based cash grants. To avoid undue noises, we only consider RPE-based equity grants and their fair value in the cross-sectional analysis.

interpolation around targets, exacerbating the discontinuity in the mapping from performance to payouts.

Panel D provides common firm characteristics. Our final sample contains 331 firm-year observations. Due to IncentiveLab's coverage criteria, our sample includes large firms, with an average (median) size of $51 ($11.2) billion in total assets. The average (median) leverage ratio is 0.215 (0.185), while the average (median) book-to-market ratio and return-on-asset ratio are 0.559 (0.507) and 0.043 (0.033), respectively.

4. Relative timing of earnings release and barely meeting/beating RPE Target

4.1 Empirical methodology

To address our research questions, we first identify RPE firms that announce earnings later than a significant proportion of peers. Presumably, the higher the relative performance target, the larger the proportion of peers that a manager desires to observe in order to reasonably ensure achieving the target. For example, comparing two RPE firms that grant the target payout only if the firm performance beats 20 percent and 80 percent of peers, respectively. In general, managers facing 80 percent relative performance target need to observe a larger portion of peers to reasonably ensure achieving the target than managers facing 20 percent relative performance target. Accordingly, we construct an indicator variable, *Late*, that equals one if the proportion of peers announcing earnings earlier than a RPE firm is greater than the relative performance target (expressed in percentile), and zero otherwise.[20, 21] For

[20] We scale ordinal rank into percentile by taking the difference between peer group size (e.g., ten firms including the RPE firm) and target rank (e.g., 5th rank) plus one, divided by the peer group size plus one.

[21] We define *Late* based on peers with non-missing earnings announcement dates. On average, the proportion of peers with non-missing earnings announcement dates is 88%.

simplicity, we refer to RPE firms having *Late* = 1 (*Late* = 0) as late announcers (early announcers).

We next measure whether RPE firms barely meet/beat relative performance targets by constructing an indicator variable, *Barely meet/beat*, which equals one if a RPE firm's performance rank (expressed in percentile) is equal to or greater than relative performance target by less than 10 percent, and zero otherwise. For example, for a RPE firm with 50 percent relative performance target and 9 peers, if the firm's performance ranks equal or above the 5th best performing peer but below the 4th best performing peer, then *Barely Meet/Beat* is coded as one. When *Barely Meet/Beat* is coded as zero, the firm either misses the target or beat the target by a larger margin (i.e., greater than 10 percent). When comparing performance between RPE firms and peers, we use the performance metrics identified by IncentiveLab and apply consistent definitions of the performance metrics to both RPE firms and their peers. In robustness tests, we exclude special items from earnings-related performance metrics and obtain similar results.

The difference in fiscal year end between RPE firms and their peers complicates the measurement of *Barely Meet/Beat* and *Late*. In such cases, we assume that RPE firms use the most overlapping four-quarter performance in the peer firms to compare with its own annual performance in determining whether managers achieve relative performance targets. This assumption is consistent with the theoretical justification of RPE that benchmarking against *contemporaneous* peer performance can effectively screen out common shocks in rewarding managers. As an example, consider a RPE firm with December fiscal year end, and one of its peer firms has July fiscal year end. To determine managers' relative performance, we use the peer firm's four-quarter performance ended in January of the next year to compare with the RPE firm's annual

performance ended in December of the current year. Accordingly, we compare the RPE firm's annual earnings release date for the year ended in December (say, January 25th) with the peer firm's last quarterly earnings release date for the quarter ended in January of the next year (say, February 10th) to determine whether the RPE firm releases earnings later or earlier than the peer firm.[22, 23]

We specify the following multivariate logistic regression to test H1:

$$\Pr(\textit{Barely meet/beat}=1) = f(\checkmark_1 \textit{Late} + \checkmark_2 \textit{Size} + \checkmark_3 \textit{ROA} + \checkmark_4 \textit{BM} + \checkmark_5 \textit{Leverage} + \varepsilon_{it}) \quad (1)$$

H1 predicts a positive coefficient on *Late*. In addition, we follow prior studies (e.g., Cheng and Warfield 2005) to include common firm characteristics that might affect firms' meeting/beating benchmark behavior, including *Size* (logarithm of total assets), *ROA* (return on assets), *B/M* (book-to-market ratio), and *Leverage* (book leverage). We further add year fixed effects and estimate robust standard errors clustered at firm level.[24] To account for potential outliers, control variables are winsorized at top and bottom one percentiles.

4.2 The relation between *Late* and the likelihood of *Barely meet/beat*

Table 3 Panel A reports the univariate results. Among 1,036 accounting-based RPE grants, we categorize 652 cases (63 percent) as late announcers (*Late* = 1), and 384 cases (37 percent) as early announcers (*Late* = 0). Compared with early announcers, late announcers are significantly more likely to meet or barely beat

[22] In robustness checks, we examine alternative definitions of *Late* and *Barely Meet/Beat*, and obtain qualitatively similar results (see Section 6 for details).

[23] Because on average earnings announcements for quarterly earnings are only 37 days after quarter end and earnings announcements for annual earnings are 67 days after fiscal year end, RPE firms are likely to observe peers' earnings announcements before their own announcements even if peers' evaluation periods end one month after RPE firms' fiscal year end.

[24] It is conceivable that managers of RPE firms have incentives to catch other performance targets via reporting discretion, particularly analysts' forecasts. We do not control for analysts' forecasts to avoid further reducing sample size. In practice, it is unlikely that RPE-based target performance coincides with analysts' forecasts. The insignificant results in tests of absolute target meeting/beating behavior further reduce the concern that alternative performance targets may confound our main finding.

relative performance targets (17.2 percent versus 10.7 percent). Late announcers are also more likely to beat relative performance targets by a large margin (i.e., beat by more than 10 percent in relative ranking, named as *Beat*). In contrast, the likelihood of barely missing the target (i.e., miss by less than 10 percent in relative ranking, named as *Barely miss*) is similar across early and late announcers.

Figures 1 and 2 further illustrate the distinctive behavior in meeting/beating relative performance targets across early and late announcers. Specifically, we plot the histogram of the difference between actual performance and target performance (expressed in percentile) and test whether there is a point of discontinuity around zero. Following Bennett et al. (2016), we generate the histogram with bin width of 0.1 and test the discontinuity at zero using the McCrary (2008) test.

Figure 1 Panel A plots the histogram for late announcers. More than 80 observations fall in the first bin to the right of zero, while less than 70 observations fall in the first bin to the left of zero. In Panel B, the McCrary (2008) test strongly supports a significant discontinuity at zero. Figure 2 Panel A plots the histogram for early announcers. We observe contrasting results with slightly more observations falling in the first bin to the left of zero than those falling in the first bin to the right of zero. Furthermore, the McCrary (2008) test rejects a discontinuity at zero in Panel B.

Table 3 Panel B presents the multivariate logistic regression results. Under column (1), in predicting the likelihood of barely meeting/beating relative performance targets, the coefficient on *Late* is positive (0.598) and significant at less than 5% level based on one-tailed test, lending support to H1. The odds ratio on *Late*, calculated as the exponential of the coefficient, is 1.82, suggesting that the odds of barely meeting/beating relative performance targets is 82 percent higher in late announcers than that in early announcers. All the control variables are insignificant in

predicting the likelihood of barely meeting/beating performance targets. As small samples may generate biased estimators, we re-estimate the regression under column (1) using 100 bootstrap samples, and obtain qualitatively similar results (untabulated).

Under column (2), we limit to a subsample of accounting-based RPE firms with December fiscal year end.[25] For these firms, 79 percent of selected peers have the same fiscal year end (i.e., also in December). In contrast, for our sample firms with non-December fiscal year end, only 37 percent of selected peers have the same fiscal year end as the RPE firms. As inconsistent fiscal year ends (between RPE firms and their peers) require assumptions regarding peers' evaluation periods in measuring *Barely meet/beat* and *Late*, December-ending RPE firms are less subject to measurement noises induced by potential misalignment in performance evaluation periods. Indeed, the coefficient on *Late* becomes more positive (0.892) and more significant (less than 1% level based on one-tailed test), consistent with reduced measurement noises strengthening the results.

Prior literature generally considers barely meeting/beating performance benchmarks as indicative of manipulative reporting behavior (e.g., Bennett et al., 2016; Burgstahler and Dichev 1997), while meeting/beating performance targets by a *large* margin is less likely driven by reporting manipulation and is unlikely to be facilitated by RPE firms' late earnings announcements. Consistently, in column (3) we find that the coefficient on *Late* is insignificant when regressed on *Beat*.

A potential concern is that late announcers tend to have actual performance closely surrounding performance targets, leading to a spurious relation between *Late* and *Barely meet/beat*. In column (4), we examine whether late announcers are more likely marginally miss relative performance targets than early announcers. We find

[25] For the subsample of accounting-based RPE firms with December fiscal period end, the average reporting lag is ten days.

that *Late* is insignificantly related to the likelihood of barely missing target (*Barely miss*). To further address this issue, in column (5) we only compare barely meeting/beating cases with barely missing cases. We continue to observe a positive coefficient on *Late* (0.839), although the statistical significance (less than 10 percent level) is weaker than that under column (1), probably due to the smaller sample size.

Table 3 Panel C provides two falsification tests. First, we examine whether the positive relation between late announcers and barely meeting/beating performance targets holds when we define *Late* based on earnings release timing in the first three quarters (as opposed to annual earnings release). We argue that over interim periods, releasing earnings late relative to peers generates minimal benefits, because the estimation of target performance depends on peers' annual performance, as opposed to individual quarter's performance. Thus, late earnings release in the first three quarters would have a weaker relation with the likelihood of meeting or barely beating relative performance targets specified on annual performance. Consistently, results under column (1) show that the coefficient on *Late* is positive but insignificant, indicating that late earnings release (relative to peers) in the first three quarters has minimal or insignificant effect on RPE firms' tendency to meet or barely beat relative performance targets.

Second, we investigate whether the positive relation between late announcers and barely meeting/beating performance targets applies to non-RPE grants with absolute accounting performance targets. Because absolute targets are determined in the beginning of the evaluation period and unaffected by peer performance, announcing late relative to peers should not provide additional information advantage to managers, and therefore, should not affect the likelihood of meeting or beating performance targets.

Since Non-RPE firms differ systematically from RPE firms (e.g., Gong et al., 2011), we implement propensity score matching procedures to select a comparable sample of non-RPE firms to ease the comparison. Specifically, we estimate a multivariate logistic regression to predict the use of accounting-based RPE in setting executive pay, based on size, book-to-market ratio, leverage, return-on-assets, market share, consensus analyst forecast error, and industry fixed effects. The regression results and covariate balance are reported in Panel B of Appendix B. Next, for each accounting-based RPE firm in our sample, we select one non-RPE firm using accounting metrics with the closest propensity score in the same year, requiring replacement and a maximum caliper width of 0.3. The difference in propensity scores between our sample firms and matched non-RPE firms is statistically insignificant, indicating similar economic fundamentals between the two samples.

Under column (2), we examine whether late announcers among the matched non-RPE firms exhibit similar behavior as late announcers in RPE firms. To define *Late* for non-RPE firms, we assume that the matched non-RPE firms use the same set of peers as RPE firms. As expected, the coefficients on *Late* are insignificant, suggesting that late earnings announcements do not facilitate non-RPE firms to barely meet/beat absolute performance targets. These falsification tests reinforce the notion that the positive relation between *Late* and *Barely meet/beat* is driven by the unique design of RPE contracts.

4.3 Cross-sectional results

In this subsection we conduct cross-sectional tests to provide further evidence that the association between late earnings releases and barely meeting/beating relative performance targets results from managerial discretionary reporting driven by compensation considerations.

4.3.1 Incentives to achieve relative performance targets

We expect a stronger positive relation between *Late* and *Barely meet/beat* when managers have stronger incentives to catch the performance targets. Given that CEOs and CFOs have greater influence over financial reporting, we expect that the incentive to achieve targets via discretionary reporting is more aligned and thus stronger when both CEOs and CFOs are covered in the same RPE grants. We also predict that managers have stronger incentives to catch relative performance targets when failing to do so leads to greater compensation losses, as indicated by larger fair value of RPE grants,[26] no interpolation surrounding the target, and lower CEO wealth (proxied by stocking holding). In Panel A of Table 4, we observe consistent evidence that late announcers are more likely to barely meet/beat relative performance targets when both CEOs and CFOs are covered in the RPE grants and when compensation losses associated with missing the targets are relatively larger (i.e., higher grant fair value, no interpolation around targets, and lower CEO stock holding).

4.3.2 Information advantage gained through late earnings release

Estimating the performance level required to catch relative performance targets necessarily involves uncertainty, as managers usually cannot observe realized performance for the entire peer group before releasing own firms' performance. The key premise underlying H1 is that late earnings release allows managers to observe more peers' performance that enables them to better estimate the level of performance required to achieve relative targets. However, when peers' performance ranks are highly unpredictable, it is difficult for managers to estimate relative performance targets even after observing a significant portion of peer performance. We thus expect

[26] A more accurate measure for the monetary incentive to achieve target is the dollar amount of target payout (conditional on the target being achieved). However, such information is not available from IncentiveLab database and it is difficult to estimate target payout for RPE-based equity and cash grants using proxy disclosures. Therefore, we rely on fair value for RPE-based equity grants as the proxy for the incentive to achieve relative performance target.

a stronger relation between *Late* and *Barely meet/beat* when peers' performance ranking is relatively stable inter-temporally and thus more predictable to RPE managers.

In Panel B of Table 4, we partition the sample based on the intertemporal absolute change in relative ranks within peer group. The average absolute change expressed in percentile for Low (High) Change subsample is 12.6% (25%) in median. A smaller change in relative ranks indicates more stable performance ranks among peers. Consistent with our expectation, the coefficient on *Late* is significantly positive only when the relative ranks of peers are relatively stable.

In reality, alternative information sources (such as financial analysts) may dilute the benefit of late earnings release in facilitating managers to estimate the target performance. Presumably, when alternative information sources are limited and thus managers have less accurate expectations about peer performance, late earnings release enables managers to gain greater knowledge about peer performance. We use the percentage of peers that have analysts following as a proxy for alternative information sources, and predict a stronger relation between *Late* and *Barely meet/beat* for RPE firms with a lower percentage of analyst-following peers. Percentage of peers with analyst following in the low (high) following subsample is 75% (92%) in median. Consistent with our expectation, *Late* is significantly positive in explaining *Barely meet/beat* only for RPE firms with a lower percentage of analyst-following peers.

4.3.3 Feasibility in discretionary accrual reporting

Whether discretionary reporting is feasible to implement for the purpose of achieving performance targets depends on the performance gap (between pre-managed performance and target performance) relative to managers' flexibility in

reporting discretion. Intuitively, the smaller the performance gap and the greater the reporting flexibility, the more feasible for managers to undertake discretionary reporting to achieve targets. We use the realized performance gap over the first three quarters to proxy for expected performance gap, and accrual volatility over the past five years to proxy for the flexibility in reporting discretion. We construct *Feasibility* as -1 times the absolute value of performance gap over the first three quarters scaled by accrual volatility over the past five years. Our measure of feasibility is -0.01 in median for high feasibility subsample while it is -0.97 in median for low feasibility subsample, indicating that reporting discretion is highly feasible to implement for RPE firms in the high feasibility subsample. We expect a stronger positive relation between *Late* and *Barely meet/beat* when *Feasibility* is higher. Results in Panel C of Table 4 confirms our expectation.

In summary, the cross-sectional results reveal that the association between announcing late relative to peers and barely meeting/beating RPE targets is more pronounced when managers have stronger incentives to achieve relative performance targets, when managers gain greater information advantage from announcing late relative to peers, and when reporting discretion is more feasible to implement for the purpose of achieving relative performance targets. These findings provide further support to H1 that announcing late relative to peers facilitates managers to achieve relative performance targets through discretionary accounting choices.

4.4 Late earnings release and reporting discretion

In this subsection, we examine RPE firms' reporting discretion directly and test whether late announcers engage in greater accrual manipulation. If announcing earnings later than peers provides RPE firms with better knowledge of the performance gap between actual performance and target performance, we expect that

late announcers engage in greater income-increasing accrual manipulation when doing so leads to higher payouts, but greater income-decreasing accrual manipulation when overstating accruals no longer brings higher payouts.

In Panel A of Table 5, we examine accrual manipulation (proxied by discretionary accruals estimated using performance-adjusted Modified Jones model) conditional on whether realized performance is greater or less than the maximum performance goal. The maximum performance goal imposes an upper limit of payout when realized performance exceeds the maximum goal, thus weakening managerial incentive to inflate earnings and even inducing downward earnings management when performance is higher than maximum (e.g., Healy 1985). Only when firm performance falls below the maximum performance goal, managers can potentially increase their payouts by inflating reported performance. Consistent with our expectation, the coefficient on *Late* is insignificant and negative for above-maximum-goal performance, but significantly positive for below-maximum-goal performance.

In Panel B of Table 5, we focus on a specific accrual component, tax accruals, which has been shown to be a convenient and effective channel for last-minute reporting discretion (e.g., Dhaliwal et al. 2004). Following Dhaliwal et al. (2004), we measure last-minute tax accruals based on the change in effective tax rate (defined as year-to-date tax expense divided by pre-tax income) from the first three quarters to the fourth quarter. A negative change in effective tax rate would improve earnings performance. However, such performance improvement only benefits managers whose RPE-based payouts are tax-sensitive (i.e., performance metrics linked with bottom-line earnings, including accounting returns, net income, profit margin), but not managers whose RPE-based payouts are tax-insensitive (i.e., performance metrics immune to tax accrual reporting, including sales, cash flow, EBIT, and EBITDA). We

find a significantly negative coefficient on *Late* only among tax sensitive grants, consistent with late announcers reporting lower tax expenses to improve bottom-line performance. The contrasting evidence between tax-sensitive and tax-insensitive grants lends further credence to H1 that late announcers are more likely to exploit last-minute reporting discretion to boost the chance of achieving relative performance targets.[27]

5. Strategic Timing of Earnings Release

Given that announcing earnings late relative to peers allows RPE managers to better estimate target performance, these managers may strategically time earnings releases relative to peers to facilitate last-minute reporting discretion and enhance the chance of meeting/beating performance targets. In this section, we first compare the likelihood of late earnings release between accounting-based RPE firms and alternative matched control samples (testing H2a) where managers do not benefit from releasing earnings relatively late. We then explore specific channels through which accounting-based RPE firms can time earnings release relative to peers (testing H2b).

5.1 The likelihood of releasing earnings late relative to peers

In developing H2a, we argue that compensation-related benefits of late earnings releases do not apply to equity-based RPE firms or non-RPE firms. Thus, if late earnings release is a strategic choice by accounting-based RPE firms, we would observe a higher likelihood of late earnings release in accounting-based RPE firms compared with equity-based RPE firms and non-RPE firms.

[27] We do not further partition the tax-sensitive subsample based on whether actual performance exceeds or falls below maximum performance goal, because only 86 observations in this subsample exceed maximum performance goal (out of 785 observations).

As accounting-based RPE firms may differ systematically from equity-based RPE firms or non-RPE firms, any observed differences in the timing of earnings release might be attributable to different firm fundamentals, as opposed to the design of performance targets. To ease comparison, we match each accounting-based RPE grant with an equity-based RPE grant or an accounting-based non-RPE grant using propensity score matching approach.

Specifically, we start with 675 grant-year observations by removing grants with identical peer groups in the same firm year. We then combine with equity-based RPE firms (or accounting-based non-RPE firms) to estimate a multivariate logistic regression to predict the incidence of accounting-based RPE grant, based on size, book-to-market ratio, leverage, return-on-assets, market share, consensus analyst forecast error, and industry fixed effects. The regression results and covariate balances are reported in Appendix B. Next, for each RPE grant in our sample, we select one equity-based RPE grant (or one accounting-based non-RPE grant) with the closest propensity score in the same year, requiring replacement and a maximum caliper width of 0.3. We observe statistically insignificant differences in propensity scores between treatment sample and matched control samples, indicating similar economic fundamentals across the samples.

Table 6 Panel A compares the relative timing of earnings releases between the treatment sample and matched equity-based RPE sample. Consistent with H2a, late announcers are significantly more prevalent and the proportion of early-announcing peers (i.e., peers announcing earnings earlier than the RPE firm) is significantly higher in the treatment sample (0.583 and 0.624, respectively) than the matched equity-based RPE sample (0.504 and 0.550, respectively). Panel B compares the relative timing of earnings releases between the treatment sample and matched non-

RPE sample. Assuming that matched non-RPE grants use the same set of peers as the RPE grants, we find that the proportion of early-announcing peers is significantly higher in the treatment sample (0.622) than the matched non-RPE sample (0.591).

Collectively, results in Table 6 support H2a that releasing earnings late relative to peers reflects a strategic decision by accounting-based RPE.

5.2 Channels to facilitate strategic timing of earnings release

In H2b, we postulate two channels that facilitate accounting-based RPE firms to release earnings late relative to peers: selecting early-announcing peers and delaying own earnings releases. In Table 7, we examine whether accounting-based RPE firms are more likely to choose peers with the tendency to announce earnings more timely. Peer selection involves various considerations, with industry and size being the most important criteria (Albuquerque 2009). We thus construct a matched sample of unselected peers, by matching each selected peer firm with one unselected firm from the same two-digit SIC industry, with the same fiscal year end, and having the closest firm size (1-to-1 match). Alternatively, we perform a 1-to-N match by matching each selected peer firm with a group of unselected firms in the same two-digit SIC industry, with the same fiscal year end, and falling into the same size decile.

We define an indicator variable, *Early*, that equals one if a selected peer releases earnings earlier than the matched unselected peer in the previous year, and zero otherwise. Suppose RPE firms select peers without considering the timing of earnings releases, we expect *Early* to be indifferent from 50 percent. However, Table 7 Panel A shows that about 63.3 percent of selected peers announce earnings earlier than matched unselected peers under 1-to-1 match, which is 26 percent (i.e., (0.63-0.5)/0.5) greater than the 50-percent benchmark. Results under 1-to-N match are qualitatively

similar. These results are consistent with the notion that accounting-based RPE firms tend to choose early-announcing firms as RPE peers.

Moreover, selection of early-announcing peers is mostly relevant when the peer firm has the same fiscal year end as the RPE firm. When a peer firm has different fiscal year end, the RPE firm's evaluation period ends either one month before or one month after the peer's, and the timeliness of earnings release is less relevant in peer selection.[28] As mentioned earlier, in our sample December-ending RPE firms have a majority of their peers also ending with December (79 percent), while non-December-ending RPE firms have a majority of their peers with different fiscal year ends (63 percent). In Panel B of Table 7, we find that December-ending RPE firms are significantly more likely to choose early announcing peers (*Early* = 63.6 percent) than non-December-ending RPE firms (*Early* = 58.8 percent). This finding further supports H2b that accounting-based RPE firms release earnings late through selecting peers that release earnings more timely.

Next, we examine whether RPE firms delay earnings announcements upon the initial adoption of accounting-based RPE grants and when its relative performance is closer to target. We first identify 113 RPE firms that adopted accounting-based RPE grants during our sample period. We construct an indicator variable, *Delay*, that equals one if the reporting lag (i.e., the period between fiscal year end and earnings release date) is longer in the current year than that in the previous year, and zero otherwise. In Panel A of Table 8, we compare *Delay* between the one year after RPE adoption and the one year before RPE adoption. We find that after RPE adoption, firms are significantly more likely to delay earnings announcements (*Delay* = 37.2

[28] It is possible that RPE firms intentionally choose peers with unaligned fiscal year end, so that it is easier to observe peers' earnings releases before own firms' earnings release. However, in untabulated results, we find contradictory results that the proportion of selected peers with unaligned fiscal year end is actually smaller (28.4 percent) than matched unselected peers (29.9 percent).

percent) than before RPE adoption (*Delay* = 26.5 percent). Further, this evidence is more prominent among December-ending RPE firms, where a majority of their peers also have December fiscal year end, making it more relevant to strategically time earnings releases to observe peer performance.

Corporate earnings releases become less timely in recent years (Arif et al. 2016), which may confound the analysis in Panel A. To control for the time trend in earnings release timing, in Panel B of Table 8, we compare earnings release timing between RPE firms and their peers over the same time period. Before the adoption of RPE grants, we find that *Late* is about 50 percent, indicating that RPE firms and their peers tend to release earnings at the same time. In contrast, *Late* is about 54.7 percent after RPE adoption, suggesting that more RPE firms start to release earnings late relative to peers. Further, the proportion of early-announcing peers is significantly higher after the adoption of RPE grants (60.9 percent) than before the adoption (54.1 percent), and this contrast is driven by December-ending RPE firms.

When the expected performance is closer to the target, knowing peers' performance is critical and thus announcing late becomes more beneficial to managers. Empirically, we measure managers' expected performance gap based on the difference between realized performance percentile and targeted performance percentile over the first three quarters. We expect that close-to-target firms (defined as firms barely beating, meeting, or barely missing relative performance targets in the first three quarters) are more likely to release the last quarter's earnings late relative to peers.

In Panel C of Table 8, we find that about 69.4 percent of close-to-target firms are categorized as late announcers, while for non-close-to-target firms, only 62.2 percent are classified as late announcers. This difference is statistically significant at less than

5 percent level. The difference in the proportion of early-announcing peers is also consistent with expectation, albeit statistically insignificant. Furthermore, these differences are driven by RPE firms with December fiscal year end. These findings reinforce H2b that late earnings release reflects managers' strategic choice for the purpose of achieving relative performance targets.[29]

The overall findings in Table 7 and Table 8 lend strong support to H2b that accounting-based RPE firms tend to release earnings later than peers through selecting early-announcing peers and delaying their own earnings releases.

6. Robustness Tests

As we mentioned earlier, our empirical methodology relies on simplified assumptions to facilitate empirical analysis, and the construction of *Late* and *Barely meet/beat* may involve measurement errors. In particular, we define *Late* and *Barely meet/beat* based on the simplified assumption that RPE firms benchmark against peer performance over the most overlapping four quarters. In addition, we use bottom-line earnings to define *Barely meet/beat* as long as earnings is part of the performance metrics, although special items are often excluded from actual performance when comparing with targets (Potepa 2014). Further, for RPE grants using multiple performance metrics or multi-year performance metrics (such as three-year cumulative sales growth), we assume that managers desire to meet/beat the target for each individual performance metrics or individual year during the multi-year evaluation period. In this section, we check the robustness of our main findings by relaxing the above assumptions.

[29] We find that the composition of peer group is relatively stable and thus if a RPE firm is close to target in one year, it tends to be close to target in adjacent years. For this reason, we expect the influence of "close-to-target" on announcement timing to be a long-term policy effect instead of a year-to-year discretion.

Tables 9 report results on robustness tests. Panel A presents robustness tests on alternative cutoffs and alternative evaluation period alignments to define *Late* and/or *Barely meet/beat*. We find qualitatively similar results on the association between *Late* and *Barely meet/beat* using the following alternative design choices: 1) using 50 percent, instead of the exact performance percentile specified in RPE grants, as the cutoff to define *Late*; 2) using peer firms' most overlapping fiscal *year*, instead of the most overlapping four quarters, in defining *Late* and *Barely meet/beat*; 3) using peer firms' most *recent* four quarters in defining *Late* and *Barely meet/beat*; 4) using only four peers with the closest performance ranking to the RPE firm (based on *ex post* realized performance) in defining *Late* and *Barely meet/beat*; 5) deducting special items from earnings of both RPE firms and peer firms when constructing *Barely meet/beat*; and 6) using 20 percent in relative percentile, instead of 10 percent, in defining *Barely meet/beat*.

Panel B presents robustness tests on alternative design choices to treat RPE grants having multiple performance metrics or multi-year evaluation periods. Our baseline results are robust when we use the following alternative design choices: 1) only keeping grants with annual performance metrics; 2) constructing *Barely meet/beat* based on cumulative performance over the entire evaluation period; 3) replacing performance target of multi-period grants with performance target of annual grant in the same year; and 4) for grants with multiple performance metrics, defining *Barely meet/beat* as one when the firm meet or barely beat *all* the performance metrics, and zero otherwise.

7. Conclusion

Relative performance evaluation (RPE) is gaining popularity among large U.S. firms, yet our understanding about its implication for financial reporting is still

limited. According to preliminary evidence in prior research, incorporating peers into performance evaluation exposes managers to greater uncertainty concerning the performance level required to achieve performance targets, which effectively dissuades managers from manipulating performance. We point out that the significant value of RPE grants and the unique features of RPE contracts motivate managers to time earnings releases to assist discretionary reporting for the purpose of achieving relative performance targets. Specifically, we hypothesize and find that RPE firms who announce earnings later than a large proportion of peers are more likely to barely meet/beat accounting-based relative performance targets, and these firms engage in greater last-minute reporting discretion. Furthermore, accounting-based RPE firms tend to choose peers that release earnings more timely and postpone own firms' earnings releases to be later than peers'.

The overall evidence questions prior belief that the inherent uncertainty in relative performance evaluation prevents managers from manipulating firm performance. Rather, managers under RPE contracts recognize the informational benefits of late earnings release, and actively seek ways to enhance the likelihood of achieving relative performance targets. Future research can extend the scope of analysis to other features of RPE contracts and examine the implications of relative performance evaluation for a broader set of managerial decisions.

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Appendix A: Variable Definition

Variables	Definition
Barely meet/beat	Equals one if a RPE firm's performance is greater than performance target by 10% (in percentile) or less than 10% of total number of peers (in ordinal rank), and zero otherwise. For instance, if the performance target is 50% (relative to peers' performance), we code *Barely meet/beat* as one if the RPE firm's performance is between 50% and 60% relative to peers, and zero otherwise. If the peer group has 9 peer firms and RPE target is the 5th rank, we code *Barely meet/beat* as one if the RPE firm's performance equals or exceeds the peer ranked in the 5th place but worse than the peer ranked in the 4th place, and zero otherwise.
Beat	Equals one if a RPE firm beat, but not barely beat, performance target, and zero otherwise.
Barely miss	Equals one if a RPE firm barely miss performance target by 10% (in percentile) or less than 10% of total number of peers (in ordinal rank), and zero otherwise.
Late	Equals one if the proportion of peers announcing earnings earlier than a RPE firm is greater than the performance target (expressed in percentile), and zero otherwise. We assume that RPE firms compare own firms' annual performance with peer performance over the most recent overlapping four quarters. Accordingly, we compare RPE firms' annual earnings announcement dates with the last quarterly earnings announcement dates (over the most recent overlapping four quarters) of peer firms to define *Late*.
Size	Logarithm of market value of equity as the end of the fiscal year.
B/M	Book value of equity divided by market value of equity.
Leverage	Book value of long-term debt and short-term debt divided by total assets.
ROA	Earnings before extraordinary items divided by total assets.
Discretionary accrual	Performance-adjusted discretionary accruals.
ΔETR	Change in effective tax rate from the third quarter to the fourth quarter. Effective tax rate is defined as year-to-date tax expense divided by accumulated pre-tax income.
Close to target	Equals one if a RPE firm's performance over the first three quarters meet, beat, or miss RPE target by less than 10% of target performance or less than 10% of total number of peers, and equals zero otherwise.

Appendix B: Examples of relative performance evaluation scheme

Example 1: Semtech Corporation proxy statement, May 18 2010

CEO Bonus Plan
Under the CEO Bonus Plan, the CEO has a target bonus potential expressed as a percentage of salary, which the CEO is able to receive based on the achievement of certain absolute and relative financial goals and on the Board's assessment of the CEO's overall performance. The CEO Bonus Plan provides that, depending on performance, the bonus payout in any year may range from 0% to 200% of the target bonus… For fiscal year 2010 the target bonus for Mr. Maheswaran was 125% of his base salary.

The CEO Bonus Plan contained four weighted factors: (i) Operating Income performance, (ii) Net Revenue Growth (year over year), (iii) Earnings Per Share ("EPS") Growth and Net Revenue Performance as compared to the CEO Bonus Peers(defined below), and (iv) the evaluation of the CEO's individual performance by the Board of Directors. These factors and their weighting are described below:
…
• EPS and Net Revenue Performance compared to CEO Bonus Peers -20% of the target bonus was based on the Company's achievements in revenue growth and EPS growth, as measured relative to such growth at the following companies (collectively the "CEO Bonus Peers"), which were selected and established as the CEO Bonus Peers by the Compensation Committee at the start of fiscal year 2010:

> Fairchild Semiconductor; Integrated Device Technology, Inc.; Intersil Corporation; Linear Technology Corporation; Maxim Integrated Products, Inc.; Micrel, Incorporated; Microsemi Corporation; Monolithic Power Systems, Inc.; ON Semiconductor Corporation; and Texas Instruments Incorporated.

These fiscal year 2010 CEO Bonus Peers were specifically selected for use in relation to our CEO based on similarities to the Company in terms of industry focus, business unit product lines, business characteristics, and status as a competitor of the Company in whole or in material part... Attainment of this portion of the CEO Bonus Plan is calculated by reference to the following chart indicating the level of Company performance and the corresponding percentage of attainment:

Revenue Growth Relative to CEO Bonus Peers	**Earnings Per Share rowth Relative to EO Bonus Peers**	**Percentage of Attainment**
Below 50th percentile	Below 50th percentile	0%
Below 50th percentile	50th percentile or better	50%
50th percentile or better	Below 50th percentile	50%
At or above 50th percentile but below 75th percentile	At or above 50th percentile but below 75th percentile	100%
75th percentile or better	At or above 50th percentile but below 75th percentile	150%
At or above 50th percentile but below 75th percentile	75th percentile or better	150%
75th percentile or better	75th percentile or better	200%

Example 2: National Fuel Gas Company proxy statement, Jan 21, 2011

Performance Incentive Program
The Performance Incentive Program is the Company's cash based, long-term incentive program. This program was adopted to complement the equity based programs, under which future awards have been limited due to their dilutive nature.

The Committee has granted awards under the Performance Incentive Program based on three-year performance periods, with the performance condition being the Company's total return on capital as compared to the same metric for peer companies in the Natural Gas Distribution and Integrated Natural Gas Companies group as calculated and reported in the Monthly Utility Reports (each, a "Monthly Utility Report") of AUS, Inc., a leading industry consultant ("AUS"). The natural gas distribution and integrated natural gas companies reported in the December 2010 Monthly Utility Report are:

AGL Resources Inc., Atmos Energy Corporation, Chesapeake Utilities Corporation, Delta Natural Gas Company, El Paso Corporation, Energen Corporation, EQT Corporation, Gas Natural Inc., Laclede Group Inc., National Fuel Gas Company, New Jersey Resources Corp., NICOR Inc., Northwest Natural Gas Co., ONEOK Inc., Piedmont Natural Gas Co. Inc., Questar Corporation, RGC Resources Inc., South Jersey Industries Inc., Southern Union Company, Southwest Gas Corporation, UGI Corporation WGL Holdings Inc., Williams Companies Inc.

The Committee selected this financial metric because it reflects how profitably management is able to allocate capital to its operations and also because it provides a performance metric of relevance to all participants, regardless of the business segment(s) for which they provide services. Based on the level of performance at the end of the applicable three-year performance period a cash bonus may be paid, ranging from 0% to 200% of the portion of each executive officers' target incentives allocated to the Performance Incentive Program awards.

The target awards established for the current named executive officers for the October 1, 2009 through September 30, 2012 performance period are:

Mr. Smith	$ 700,000
Mr. Tanski	$ 400,000
Mr. Bauer	$ 40,000
Mr. Cabell	$ 300,000
Mrs. Cellino	$ 225,000
Mr. Pustulka	$ 120,000

Payment on awards made under the Performance Incentive Program will be made at the levels specified below, if the Company achieves performance as detailed below over the applicable three-year performance period:

National Fuel Rank as a Percentile of Peer Group	Percentage of Target Incentive Payable
Less than 45.01%	0 %
45.01%	50 %
60%	100 %
75%	150 %
100%	200 %

For threshold levels of performance between two established performance levels, the amount of target incentive payable will be determined by mathematical interpolation. Ranking of the companies in the Monthly Utility Reports is determined by calculating the average return on capital for each company for the three-year performance period and sorting the companies from highest to lowest.

Example 3: Target Corporation proxy statement, June 13, 2012

Long-term Incentives

We believe consistent execution of our strategy over multi-year periods will lead to an increase in our stock price. Stock options, PSUs and RSUs are the variable equity instruments we use to incent our executive officers to maintain this long-term focus and as a reward vehicle for their efforts, if successful, over the long-term. In addition to alignment with shareholder interests, the use of multiple equity-based LTI award vehicles supports our pay for performance philosophy:

> Stock options provide a strong incentive for stock price appreciation, as without stock price appreciation these instruments do not provide any value to the executive officer. To emphasize stock price growth, 50% of the LTI award value as of the grant date is delivered as stock options, 25% as PSUs and 25% as RSUs.
>
> RSUs facilitate retention and cliff vest three years from the date of grant.
>
> PSUs focus on measures directly aligned with profitable market share growth relative to peers over a three-year time horizon. Above-median performance is required to earn the goal level payment.

Payouts of PSUs are based on our relative performance within our 15 company retail peer group (including Target) for two performance metrics:

> **Market Share**—This measurement is designed to incent continued market share gains and measures the domestic net sales growth captured relative to peers. One-half of the PSU awards are based on our ability to deliver incremental market share over a three-year performance period.
>
> **EPS**—This measurement focuses on achieving sufficiently high growth in EPS over a sustained period, generating substantial value for shareholders over the long term. One-half of the PSU awards are based on our three-year EPS growth relative to peers.

The companies included in the market comparisons are listed below.

Retail Peer Group	
Best Buy	Lowe's
Costco	Macy's
CVS Caremark	Safeway
Home Depot	Sears
J.C. Penney	Supervalu
Kohl's	Walgreens
Kroger	Walmart

The following table summarizes the performance requirements that will determine PSU payouts using the relative measurements for the 2009, 2010 and 2011 PSU grants:

	Rankings Required for Payout At		
Performance Measure	**Threshold**	**Goal**	**Maximum**
Compound EPS Growth Rate Ranking Relative to Retail Peers	12th	6th	3rd
Market Share Growth of Domestic Net Sales Ranking	12th	6th	3rd
Payout Levels (number of units/shares)	0% for 13th	100%	150%

Appendix C: Covariate balance of PSM procedure

Panel A reports the covariate balance between accounting-based RPE firms (treatment sample) and matched equity-based RPE firms (matched control sample), together with the first-stage regression results to generate propensity scores. Panel B reports the covariate balance between accounting-based RPE firms (treatment sample) and matched accounting-based non-RPE firms (matched control sample), together with the first-stage regression results to generate propensity scores. In both Panel A and Panel B, we match each accounting-based RPE firm with one equity-based RPE firm (with self-selected peers) or one accounting-based non-RPE firm that has the closest propensity score in the same year and a maximum caliper width of 30%. *Market share* is defined as the proportion of a firm's market capitalization in the two-digit industry. *Analyst forecast error* is forecast errors of the last consensus forecast for current year's earnings. See Appendix A for the other variables' definitions. **/*** indicates significance level at less than 5%/1% for two tailed t-tests or Wilcoxon-tests.

Panel A: Covariate balance between accounting-based RPE firms and matched equity-based RPE firms

	Predicting the use of accounting-based RPE	Mean			Median		
		Treatment Sample	Control Sample	t-test	Treatment Sample	Control Sample	Wilcoxon-test
Size	0.170*** (<0.01)	9.249	9.503	0.03**	9.332	9.574	0.03**
B/M	0.103 (0.54)	0.575	0.497	0.01***	0.511	0.453	0.02**
ROA	-2.007*** (<0.01)	0.034	0.047	0.39	0.042	0.045	0.92
Leverage	-1.927*** (<0.01)	0.216	0.247	0.02**	0.200	0.233	0.01***
Market share	-1.269 (0.27)	0.022	0.024	0.68	0.004	0.011	<0.01
Analyst forecast error	-1.011 (0.32)	0.009	0.007	0.84	0.001	0.001	0.59
Intercept	-5.273*** (0.01)						
Industry fixed effects	Included						
Propensity Score		0.082	0.082	0.91	0.072	0.071	0.83

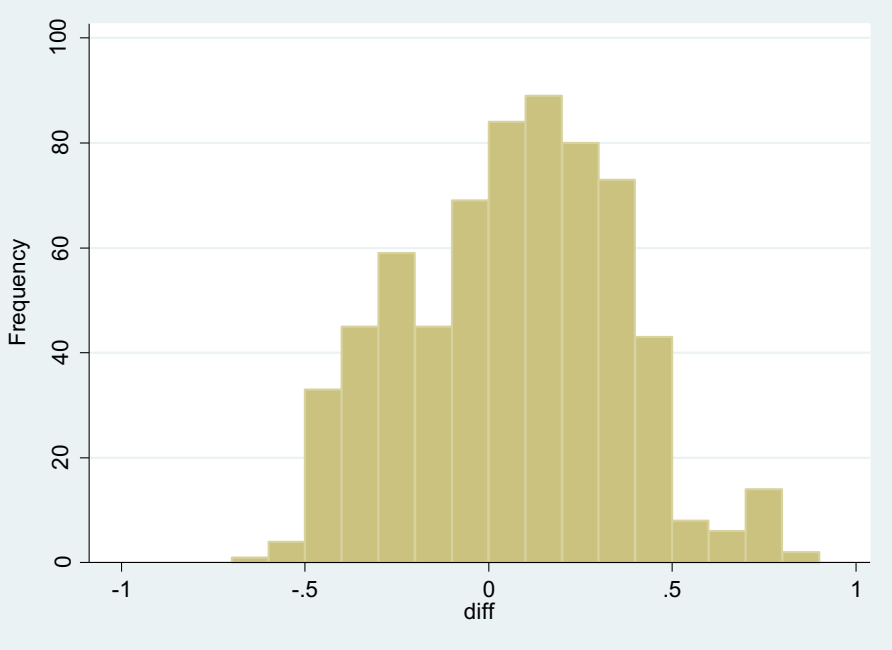
Panel B: Covariate balance between accounting-based RPE firms and accounting-based non-RPE firms

	Predicting the use of accounting-based RPE	Mean			Median		
		Treatment Sample	Control Sample	t-test	Treatment Sample	Control Sample	Wilcoxon-test
Size	0.170*** (<0.01)	9.249	9.503	0.03**	9.332	9.574	0.03**
B/M	0.103 (0.54)	0.575	0.497	0.01***	0.511	0.453	0.02**
ROA	-2.007*** (<0.01)	0.034	0.047	0.39	0.042	0.045	0.92
Leverage	-1.927*** (<0.01)	0.216	0.247	0.02**	0.200	0.233	0.01***
Market share	-1.269 (0.27)	0.022	0.024	0.68	0.004	0.011	<0.01
Analyst forecast error	-1.011 (0.32)	0.009	0.007	0.84	0.001	0.001	0.59
Intercept	-5.273*** (0.01)						
Industry fixed effects	Included						
Propensity Score		0.082	0.082	0.91	0.072	0.071	0.83

Figure 1: Difference between realized performance and target performance for late-announcing accounting-based RPE firms

This figure illustrates the discontinuity around zero in the density of the difference between realized performance and target performance for 652 late-announcing accounting-based RPE grants (i.e., *Late* = 1, see Appendix A for detailed definition of *Late*). The difference between realized performance and target performance is expressed in percentile (with ordinal rank scaled to percentile). Figure (a) shows the histogram plot with bin width set as 0.1. Figure (b) reports McCrary (2008) test results on a discontinuity in the empirical density around zero.

Panel A: Histogram plot



Panel B: McCrary (2008) test of discontinuity around zero

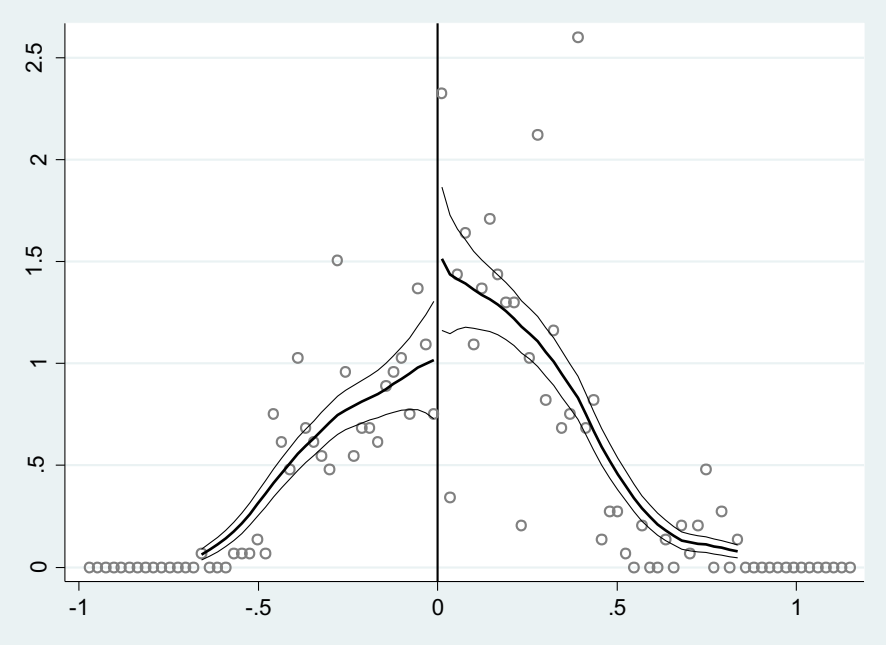
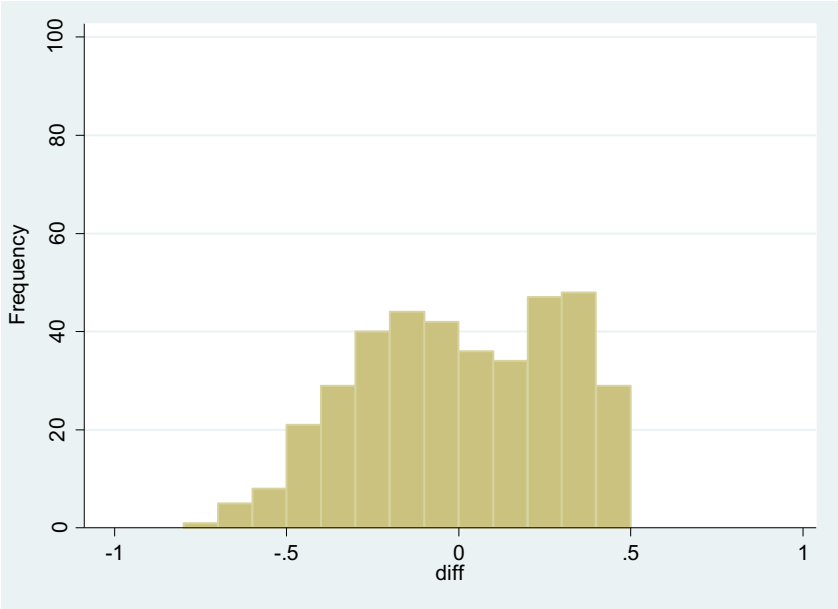


Figure 2: Difference between realized performance and target performance for early-announcing accounting-based RPE firms

This figure illustrates the discontinuity around zero in the density of the difference between realized performance and target performance for 384 early-announcing accounting-based RPE grants (i.e., *Late* = 0, see Appendix A for detailed definition of *Late*). The difference between realized performance and target performance is expressed in percentile (with ordinal rank scaled to percentile). Figure (a) shows the histogram plot with bin width set as 0.1. Figure (b) reports McCrary (2008) test results on a discontinuity in the empirical density around zero.

Panel A: Histogram plot



Panel B: McCrary (2008) test of discontinuity around zero

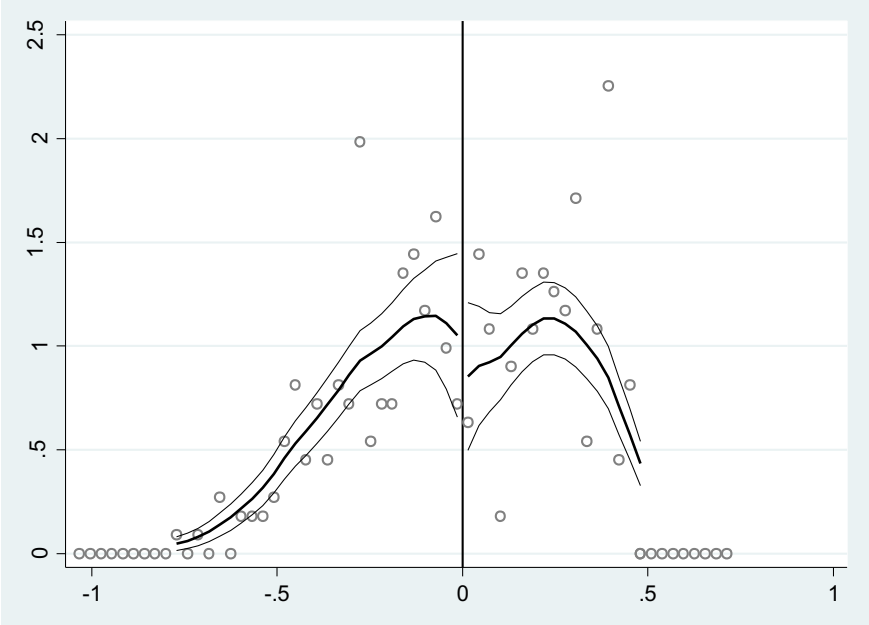


Table 1: Sample selection procedure

This table summarizes the sample selection procedure. We obtain executive compensation information from IncentiveLab database. IncentiveLab covers 750 largest public U.S. companies from 1998 to 2014. Our sample starts with 8,394 unique RPE grants with distinct performance metrics and payout scheme. The final sample has 561 unique RPE grants. For grants with performance metrics measured over multiple years, we keep all years during the performance measurement period, yielding 1,036 grant-year observations.

	Number of Grants
Unique RPE grants	8,394
Requiring accounting-based performance metrics	(5,116)
Requiring non-missing self-selected peer group	(1,570)
Requiring non-missing earnings announcement dates(contradictory dates between Compustat and IBES are removed)	(100)
Requiring RPE targets defined as relative percentile or ordinal rank[30]	(267)
Requiring non-missing performance targets	(638)
Requiring non-missing performance metrics	(142)
Primary sample (numbers of unique grants)	561
Primary sample (number of grant-year observations)	1,036

[30] In IncentiveLab database, the compare method to specify RPE targets is coded as "Rank", "Percentile" or "Other". We remove grants with compare method coded as "Other". If compare method is "Rank" and the maximum performance goal is greater than the total number of peers, then we treat this observation as a data error and remove it from the sample.

Table 2: Summary statistics

This table reports summary statistics for the primary sample. Panel A reports the distribution of different payout forms. Panel B reports the distribution of different accounting-based metrics. Panel C reports relevant grant characteristics, and Panel D reports common firm characteristics.

Panel A: Payout forms

	Number of grants	Percentage
Restricted Stock (RSU)	305	54.4%
Cash	249	44.4%
Other[31]	7	1.2%
Total	561	100%

Panel B: Accounting-based performance metrics

Performance metrics	Number of grants	Percentage
ROE	100	18.1%
ROIC	93	17.7%
Earnings Growth[32]	83	14.4%
Sales Growth	59	11.8%
EPS Growth	77	11.2%
ROI	44	9.2%
ROA	48	7.1%
Cash Flow	35	5.4%
Profit Margin	22	5.0%
Total	561	100%

[31] "Other" includes option, phantom stock and stock appreciation right (SAR).
[32] "Earnings" includes net income, EBIT, EBITDA, EBT and operating income.

Panel C: Grant characteristics (561 grants)

	Mean	1st quartile	Median	3rd quartile	Standard deviation
Number of peers	11.979	7	10	15	7.416
CEO grant	0.807	1	1	1	0.395
CFO grant	0.711	1	1	1	0.454
Compare method = percentile or rank	0.756	1	1	1	0.430
Performance measurement period (in months)	27.318	12	36	36	12.342
Performance threshold	0.269	0.200	0.250	0.332	0.139
Performance target	0.505	0.550	0.5	0.6	0.100
Performance maximum	0.823	0.750	0.800	0.900	0.126
Payout threshold	0.277	0	0.25	0.5	0.215
Payout target	0.999	1	1	1	0.064
Payout max	1.829	1.5	2	2	0.408
Fair value (in thousands of dollars)	1,921	481	1,218	2,485	2,142
Interpolation around performance target	0.357	0	0	1	0.480

Panel D: Firm characteristics (331 firms)

	Mean	1st quartile	Median	3rd quartile	Standard deviation
Asset (in millions of dollars)	51,388	4,130	11,200	30,460	169,993
Leverage	0.215	0.074	0.185	0.332	0.161
B/M	0.559	0.321	0.507	0.739	0.321
ROA	0.043	0.010	0.033	0.074	0.046

Table 3: Late earnings release and barely meet or beat relative performance target

This table reports the univariate results and logistic regression results on the relation between releasing earnings late relative to peers and the likelihood of barely meeting or beating relative performance targets. In Panels A and B, the full sample has 1,036 grant-year observations for accounting-based RPE grants. In Panel C, we conduct falsification tests. In column (1), we define *Late* based on earnings release timing in the first three quarters. In columns (2) and (3), the sample has 999 grant-year observations for accounting-based non-RPE grants. We match each accounting-based RPE firm with one accounting-based non-RPE firm that has the closest propensity score in the same year and a caliper width of 30%. We then assume that matched non-RPE firms use the same set of peers as RPE firms. See Appendix A for variable definitions. See Appendix C for the propensity score matching results. Standard errors are clustered by firm. *, **, and *** denote significance level at less than 10%, 5% and 1%, respectively. P-values are reported in parentheses and are based on one-tailed (two-tailed) tests for coefficients with (without) predicted signs.

Panel A: Univariate results for accounting-based RPE grants

	Number grants	*Barely meet/beat*	*Beat*	*Barely miss*
Overall sample	1,036	0.148	0.438	0.117
Late = 1	652	0.172	0.460	0.114
Late = 0	384	0.107	0.401	0.122
Late=1 v.s. *Late*=0				
t-statistics		2.86	1.85	-0.43
p-value		<0.01	0.06	0.67

Panel B: Logistic regression results for accounting-based RPE grants

Dependent variable =	*Barely meet/beat*		*Beat*	*Barely miss*	*Barely meet/beat*
	Full sample (1)	December fiscal year end (2)	Full sample (3)	Full sample (4)	Barely meet/beat/miss grants (5)
Late	0.598**	0.892***	0.144	0.020	0.839*
	(0.04)	(0.01)	(0.59)	(0.96)	(0.07)
Size	0.065	-0.036	-0.016	0.101	-0.124
	(0.39)	(0.73)	(0.90)	(0.34)	(0.47)
ROA	1.522	0.052	0.169	1.892	0.817
	(0.38)	(0.98)	(0.79)	(0.42)	(0.78)
B/M	-0.040	-0.003	-0.117	-0.042	0.577
	(0.69)	(0.98)	(0.73)	(0.64)	(0.41)
Leverage	0.977	0.609	-1.546**	1.557	-0.478
	(0.25)	(0.60)	(0.03)	(0.13)	(0.72)
Intercept	-2.555***	-2.350*	-1.576	-3.991***	0.795
	(0.01)	(0.07)	(0.39)	(0.00)	(0.60)
Year fixed effects	Included	Included	Included	Included	Included
Pseudo R^2	0.03	0.05	0.04	0.03	0.05
Number of obs.	1,036	765	1,036	1,036	260

Panel C: Falsification tests

	Define *Late* based on earnings release timing in the first three quarters	Accounting-based non-RPE grants
Dependent variable =	*Barely meet/beat*	*Barely meet/beat*
	(1)	(2)
Late	0.133	-0.350
	(0.61)	(0.15)
Size	0.043	0.066
	(0.58)	(0.58)
ROA	1.929	0.879
	(0.27)	(0.70)
B/M	-0.038	-0.406
	(0.73)	(0.42)
Leverage	1.048	-2.461
	(0.20)	(0.24)
Intercept	-2.597***	-1.133
	(<0.01)	(0.45)
Year fixed effects	Included	Included
Pseudo R^2	0.02	0.05
Number of obs.	3,062	999

Table 4: Cross-sectional tests on late earnings release and barely meet or beat relative performance target

This table reports logistic regression results on the relation between releasing earnings late relative to peers and the likelihood of barely meeting or beating relative performance targets, conditional on proxies for managerial incentives to achieve performance targets (Panel A), information advantage from releasing earnings late relative to peers (Panel B), and the feasibility of using accrual management to achieve performance targets (Panel C). The full sample includes 1,036 grant-year observations for accounting-based RPE grants. In Panel A, the full sample is partitioned based on whether RPE grants relate to CEO and CFO pay (columns (1) and (2)), the median fair value of RPE grants (columns (3) and (4)), whether RPE grants allow interpolation surrounding targets (columns (5) and (6) and the median stock holding of CEO (columns (7) and (8)). In Panel B, the full sample is partitioned based on the median change in the average relative ranking among earlier peers in the previous year (columns (1) and (2)) and the median proportion of peers with analyst following (columns (3) and (4)). In Panel C, the full sample is partitioned based on *Feasibility*, defined as -1 times the absolute difference between actual performance and target performance over the first three quarters (growth or ratio metrics are transformed into the level of related earnings components) deflated by the standard deviation of accruals over the past five years. The sample size varies depending on the availability of partitioning variables. See Appendix A for variable definitions. Standard errors are clustered by firm. *, **, and *** denote significance level at less than 10%, 5% and 1%, respectively. P-values are reported in parentheses and are based on one-tailed (two-tailed) tests for coefficients with (without) predicted signs. P-values for the coefficient difference in *Late* across subsamples are based on one-tailed Fisher's permutation test.

Panel A: Managerial incentive to achieve relative performance target

Dependent variable =	*Barely meet/beat*							
Partition variables	CEO and CFO grants		Fair value of grants		Interpolation around performance target		CEO stock holding	
	Yes	No	High	Low	Yes	No	High	Low
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Late	0.876***	0.000	0.805**	0.269	0.107	0.900**	0.168	0.881*
	(0.01)	(0.50)	(0.03)	(0.33)	(0.88)	(0.02)	(0.31)	(0.06)
Size	0.097	0.049	0.052	0.087	-0.045	0.241*	-0.004	0.068
	(0.27)	(0.74)	(0.68)	(0.48)	(0.76)	(0.06)	(0.97)	(0.61)
ROA	3.646	1.024	0.603	0.259	2.402	3.252	4.796	0.004
	(0.16)	(0.31)	(0.55)	(0.70)	(0.39)	(0.39)	(0.16)	(1.00)
B/M	0.154	-1.343	-1.069*	-0.167	-1.029	0.191	-1.188**	0.590
	(0.74)	(0.10)	(0.09)	(0.77)	(0.11)	(0.76)	(0.03)	(0.31)
Leverage	0.885	-0.071	0.408	0.061	-0.463	1.343	0.842	1.511
	(0.37)	(0.96)	(0.85)	(0.97)	(0.81)	(0.21)	(0.43)	(0.26)
Intercept	-3.802***	-1.484	-3.689**	-2.234*	-1.112	-4.887***	-1.743*	-3.588**
	(0.00)	(0.36)	(0.02)	(0.07)	(0.54)	(0.00)	(0.08)	(0.02)
Year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included

p-value of the difference in *Late* coeff.	<0.01		0.06		0.03		0.02	
Pseudo R^2	0.04	0.06	0.07	0.02	0.06	0.08	0.05	0.06
Number of obs.	716	320	330	329	272	577	514	515

Panel B: Information advantage gained from releasing earnings late relative to peers

Dependent variable =	*Barely meet/beat*			
Partition variables	Change in relative ranking among peers		Proportion of peers with analyst following	
	High (1)	Low (2)	High (3)	Low (4)
Late	0.424	0.886*	0.417	0.950**
	(0.11)	(0.08)	(0.18)	(0.03)
Size	0.116	0.001	0.097	0.140
	(0.24)	(0.99)	(0.46)	(0.18)
ROA	3.021	0.320	-2.392	5.468**
	(0.28)	(0.59)	(0.36)	(0.01)
B/M	-0.440	0.036	-0.670	0.109
	(0.50)	(0.70)	(0.29)	(0.77)
Leverage	1.781*	-0.693	-0.486	2.427**
	(0.07)	(0.72)	(0.71)	(0.04)
Intercept	-3.668***	-2.271	-2.544**	-4.707***
	(0.00)	(0.14)	(0.01)	(0.00)
Year fixed effects	Included	Included	Included	Included
p-value of the difference in *Late* coeff.	0.07		0.06	
Pseudo R^2	0.07	0.04	0.03	0.07
Number of obs.	521	515	523	513

Panel C: Feasibility of using accrual management to achieve relative performance targets

Dependent variable =	*Barely meet/beat*	
Partition variable	*Feasibility*	
	High (1)	Low (2)
Late	0.981**	0.133
	(0.02)	(0.41)
Size	-0.060	0.239*
	(0.59)	(0.06)
ROA	4.050	-3.838
	(0.23)	(0.24)
B/M	-0.619	0.069
	(0.41)	(0.56)
Leverage	0.131	0.814
	(0.92)	(0.59)
Intercept	-1.306	-5.406***
	(0.29)	(<0.01)
Year fixed effects	Included	Included
p-value of the difference in *Late* coeff.	<0.01	
Pseudo R^2	0.09	0.05
Number of obs.	454	454

Table 5: Late earnings release and accrual management

This table reports regression results on the relation between releasing earnings late relative to pees and accrual management. In Panel A, the dependent variable is performance-adjusted discretionary accrual. In Panel B, the dependent variable is the change in effective tax rate from the third quarter to the fourth quarter (following Dhaliwal et al. 2004). Tax sensitive grants refer to grants with performance metrics defined on after-tax earnings (e.g. ROA, ROE, Net Income). Tax insensitive grants refer to grants with performance metrics that are not defined on after-tax earnings. See Appendix A for variable definitions. Standard errors are clustered by firm. *, **, and *** denote significance level at less than 10%, 5% and 1%, respectively. P-values are reported in parentheses and are based on one-tailed (two-tailed) tests for coefficients with (without) predicted signs. P-values for the coefficient difference in *Late* across subsamples are based on one-tailed Fisher's permutation test.

Panel A: Releasing earnings late relative to peers and discretionary accrual

Dependent variable =	*Discretionary accrual*	
	Realized performance <= performance maximum (1)	Realized performance > performance maximum (2)
Late	0.015*	-0.019
	(0.06)	(0.23)
Size	-0.002	0.005
	(0.60)	(0.38)
ROA	-0.021	-0.015**
	(0.81)	(0.03)
B/M	0.002	0.173**
	(0.27)	(0.05)
Leverage	0.066***	0.062*
	(<0.01)	(0.07)
Intercept	-0.045	-0.170***
	(0.20)	(<0.01)
Year fixed effects	Included	Included
p-value of the difference in *Late* coeff.	<0.01	
Adjusted R^2	0.05	0.22
Number of obs.	622	129

Panel B: Releasing earnings late relative to peers and changes in effective tax rate

Dependent variable =	ΔETR	
	Tax sensitive grants (1)	Tax insensitive grants (2)
Late	-0.107**	-0.037
	(0.02)	(0.36)
Size	0.013	0.064
	(0.47)	(0.26)
ROA	0.683*	-0.053
	(0.06)	(0.54)
B/M	-0.029	-1.025**
	(0.23)	(0.02)
Leverage	-0.061	-0.394
	(0.78)	(0.27)
Intercept	-1.548***	-0.610
	(0.01)	(0.22)
Year fixed effects	Included	Included
p-value of the difference in *Late* coeff.	0.14	
Adjusted R^2	0.09	0.18
Number of obs.	785	244

Table 6: Strategic timing of earnings releases among RPE firms

This table compares the timing of earnings releases among accounting-based RPE grants with equity-based RPE grants (Panel A) and accounting-based non-RPE grants (Panel B). In Panel A, we match each accounting-based RPE firm with one equity-based RPE firm (with self-selected peers) that has the closest propensity score in the same year and a caliper width of 30%. In Panel B, we match each accounting-based RPE firm with one accounting-based non-RPE firm that has the closest propensity score in the same year and a caliper width of 30%. We then assume that matched non-RPE firms use the same set of peers as RPE firms. See Appendix C for the propensity score matching results.

Panel A: Late earnings releases between accounting-based RPE grants and equity-based RPE grants

	Number of grants	*Late* (mean)	Proportion of peers releasing earnings earlier than RPE firm
Accounting-based RPE grants	408	0.583	0.624
Equity-based RPE grants	408	0.504	0.550
t-statistics		2.29	4.09
p-value		0.02	<0.01

Panel B: Late earnings releases between accounting-based RPE grants and non-RPE grants

	Number of grants	*Late* (mean)	Proportion of peers releasing earnings earlier than RPE firm
Accounting-based RPE grants	559	0.599	0.622
Accounting-based non-RPE grants	559	0.555	0.591
t-statistics		1.67	2.02
p-value		0.10	0.04

Table 7: Channels of strategic timing of earnings releases—peer selection

This table reports results on strategic timing of earnings releases through peer selection among accounting-based RPE firms. Panel A compares earnings release timing between selected peers and matched unselected peers. Under 1-to-1 match, each selected peer firm is matched with a firm in the same industry (two-digit SIC code), with the same fiscal year end, and with the closest size (based on market capitalization). Under 1-to-N match, each selected peer firms is matched with a group of firm in the same industry (two-digit SIC code), with the same fiscal year end, and within the same size decile. We define *Early* as one if a selected peer releases earnings earlier than the matched unselected peer in the previous year, and zero otherwise. Panel B reports the proportion of peers releasing earnings earlier than matched unselected peers between accounting-based RPE firms with versus without December fiscal year end. The sample includes 655 RPE grants after deleting duplicate RPE grants with identical peer group in the same year.

Panel A: Selecting peers with the tendency to release earnings early

	Number of pairs	*Early* (mean)	Compare *Early* with 50% (t-statistics)	Compare *Early* with 50% (p-values)
1-to-1 match	5,497	0.633	20.439	<0.01
1-to-N match	161,572	0.610	90.7	<0.01

Panel B: Peer selection between December-ending versus non-December-ending accounting-based RPE firms

	Number of grants	*Early* (mean)
December fiscal year end	478	0.636
Non-December fiscal year end	177	0.588
t-statistics		3.22
p-value		<0.01

Table 8: Channels of strategic timing of earnings releases—delaying announcement

This table reports results on strategic timing of earnings releases through delay earnings release among accounting-based RPE firms. Panel A compares the delay in earnings release before and after the initial adoption of RPE grants. We exclude initial adoption in 2006 to alleviate potential errors induced by expanded disclosure rules in 2006. We define *Delay* as one if the reporting lag (i.e., the lag between earnings release date and fiscal year end) in the current year is longer than the reporting lag in the previous year. Panel B compares the timing in earnings release relative to peers before and after the initial adoption of RPE grants. Before RPE adoption, we use the same set of peers to define late earnings release (*Late*) and the proportion of peers releasing earnings earlier. Panel C reports the timing in earnings release relative to peers conditional on whether first three quarters' performance is close to relative performance target (barely beats or misses relative performance target). The sample includes 945 accounting-based RPE grants that have non-missing performance over the first three quarters.

Panel A: Earnings release timing relative to fiscal year end before and after RPE adoption

	Delay (mean)		
	Full sample	December fiscal year end	Non-December fiscal year end
Before RPE adoption	0.265	0.261	0.276
After RPE adoption	0.372	0.393	0.310
Number of obs.	113	84	29
t-statistics	1.68	1.74	0.30
p-value	0.10	0.09	0.77

Panel B: Earnings release timing relative to peers before and after RPE adoption

	Late (mean)			Proportion of peers releasing earnings earlier than RPE firm		
	Full sample	December fiscal year end	Non-December fiscal year end	Full sample	December fiscal year end	Non-December fiscal year end
Before RPE adoption	0.500	0.430	0.703	0.541	0.497	0.669
After RPE adoption	0.547	0.481	0.741	0.609	0.580	0.693
Number of obs.	106	79	27	106	79	27
t-statistics	0.69	0.64	0.30	1.91	1.97	0.41
p-value	0.49	0.53	0.77	0.06	0.05	0.69

Panel C: Earnings release timing relative to peers conditional on performance gap

		Late (mean)			Proportion of peers releasing earnings earlier than RPE firm		
	Number of grants	Full sample	December fiscal year end	Non-December fiscal year end	Full sample	December fiscal year end	Non-December fiscal year end
Close *to target* = 1	229	0.694	0.722	0.644	0.662	0.666	0.653
Close *to target* = 0	716	0.622	0.592	0.690	0.644	0.648	0.634
t-statistics		2.00	3.05	-0.66	1.00	0.87	0.58
p-value		0.05	<0.01	0.51	0.32	0.38	0.56

Table 9: Robustness tests

This table reports regression results on the relation between releasing earnings late relative to peers and barely meet/beat relative performance target using alternative design choices. Dependent variables are *Barely meet/beat.* Panel A presents robustness tests on alternative cutoffs and alternative evaluation period alignment to define *Late* and *Barely meet/beat*. Under column (1), *Late* is coded as one if the proportion of peers releasing earnings earlier than the RPE firm is greater than 50%, and zero otherwise. Under column (2), we define *Late* (*Barely meet/beat*) by comparing RPE firms' annual earnings release date (annual earnings) with peers' *annual* earnings release date (annual earnings) for the same fiscal year. Under column (3), we define *Late* (*Barely meet/beat*) by comparing RPE firms' earnings release date (annual earnings) with peers' earnings release date (earnings) for the most *recent* four quarters. Under column (4), we define *Late* by comparing RPE firms' earnings release date with earnings release dates from the four peers with the closest ranking to RPE firms (based on *ex post* realized performance). Under column (5), we exclude special items from earnings in measuring actual performance and performance target. Under column (6), we define *Barely meet/beat* as one if a RPE firm's performance is greater than performance target by 20% (in percentile), and zero otherwise. Panel B presents robustness tests on alternative design choices to handle RPE grants having multi-year evaluation periods or multiple performance metrics. Under column (1), we only keep grants with annual performance metrics. Under column (2), we construct cumulative performance over the entire performance evaluation period to benchmark against the performance target. Under column (3), performance target of multi-period grant is replaced with performance target of annual grant (requiring the same performance metric) in the same year. Under column (4), we define *Barely meet/beat* for grants with multiple metrics as one only when the firm meet or barely beat all the performance metrics, and zero otherwise. See Appendix A for variable definitions. Standard errors are clustered by firm. *, **, and *** denote significance level at less than 10%, 5% and 1%, respectively. P-values are reported in parentheses and are based on one-tailed (two-tailed) tests for coefficients with (without) predicted signs.

Panel A: Alternative cutoffs and alternative evaluation period to define *Late* and *Barely meet/beat*

	Benchmark against 50% of peers' earnings releases	Benchmark against peers' annual (fiscal year) performance	Benchmark against peers' most recent four-quarter performance	Benchmark against the four peers with the closest ranking	Removing special items from earnings	Define *Barely meet/beat* based on 20% cutoff
	(1)	(2)	(3)	(4)	(5)	(6)
Late	0.409*	0.414*	0.972***	0.286*	0.645**	0.410*
	(0.09)	(0.08)	(0.01)	(0.10)	(0.03)	(0.06)
Size	0.048	0.003	0.091	0.053	0.094	-0.005
	(0.52)	(0.98)	(0.31)	(0.48)	(0.28)	(0.95)
ROA	1.529	0.823	2.624	1.886	0.229	1.575
	(0.40)	(0.33)	(0.25)	(0.28)	(0.92)	(0.27)
B/M	-0.046	-0.021	-0.059	-0.036	-0.338	-0.033
	(0.65)	(0.86)	(0.54)	(0.75)	(0.48)	(0.75)
Leverage	0.939	0.554	0.692	0.897	0.553	-0.273
	(0.26)	(0.55)	(0.47)	(0.27)	(0.54)	(0.71)
Intercept	-2.806***	-1.884***	-3.891***	-2.754***	-3.400***	-1.109
	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(<0.01)	(0.13)
Year fixed effects	Included	Included	Included	Included	Included	Included
Pseudo R^2	0.03	0.03	0.04	0.02	0.03	0.02
Number of obs.	1,036	1,036	961	1,036	1,027	1,036

Panel B: Alternative treatments of grants with multi-year evaluation periods or multiple performance metrics

	Keep annual grants only	Cumulative multi-period performance	Use performance target of annual grant as the target for multi-period grant in the same year	Denote *Barely meet/beat* as one for grants with multiple metrics when all the performance metrics are barely meet or beat
	(1)	(2)	(3)	(4)
Late	0.793**	0.419*	0.667**	0.572*
	(0.02)	(0.09)	(0.03)	(0.07)
Size	0.131	0.127	0.109	0.139
	(0.22)	(0.21)	(0.20)	(0.21)
ROA	0.431	1.438	2.070	2.250
	(0.41)	(0.51)	(0.30)	(0.33)
B/M	-0.517	-0.332	-0.030	0.375
	(0.42)	(0.51)	(0.79)	(0.41)
Leverage	1.328	0.705	1.391	1.202
	(0.19)	(0.44)	(0.12)	(0.31)
Intercept	-3.818***	-3.220***	-3.780***	-4.220***
	(<0.01)	(<0.01)	(<0.01)	(<0.01)
Year fixed effects	Included	Included	Included	Included
Pseudo R^2	0.06	0.03	0.03	0.03
Number of obs.	375	561	1,036	806