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Subjective bonuses and target setting in budget-based incentive contracts

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ABSTRACT

Subjective bonuses can reflect implicit contracts entered at the beginning of the period when certain employees commit to more difficult targets and managers use subjective bonuses at the end of the period to reward this commitment. We examine this prediction in a budget-based incentive systems' setting. We argue that the presence of these implicit contracts allows managers to adapt targets to the individual characteristics of employees and their units with the purpose of enhancing the motivational structure of budget-based contracts. Using data from 414 branches of a large travel retailer during a four-year period, we find that managers use their discretion to set targets at different levels of difficulty across branches and subjective bonuses are sensitive to the difficulty of these targets. Branches with more difficult targets relative to their peers receive larger subjective bonuses. We also test the motivational effect of larger subjective bonuses and find that they have a positive effect on future performance. In particular, larger target increases (relative to peers) from current to the next period result in larger performance increase (relative to peers) when the branch is rewarded with higher subjective bonuses in the current period. The evidence indicates that subjective bonuses can fulfill roles beyond addressing performance measurement systems' limitations. Managers use them to reward employees' commitment to target difficulty and to motivate future performance.

1. Introduction

We examine how relative (to peers) target difficulty affects subjective bonuses—bonus payments that depend on the manager's personal assessment of employee performance at the end of the period. We analyze this relationship in a setting with multiple business units performing the same commercial tasks and working under the same budget-based incentive system but with individual targets. We argue that the relationship between subjective bonuses and relative target difficulty reflects an implicit agreement between manager and employee where the latter commits to a more difficult target, trusting that the former will reward this commitment using the discretion available to her at the end of the period. This mechanism, which we call adapted targets, is an alternative to the mechanism identified in the literature as attenuated ratcheting (Choi et al., 2012; Indjejikian and Nanda, 2002; Indjejikian et al., 2014). In this latter mechanism, managers use peer information to reward high performers by not increasing their targets and providing them with economic rents. In adapted targets, high performers are rewarded through subjective bonuses at the end of the period. While different, both mechanisms fulfill a similar motivational purpose, where contracting takes into account goal-setting motivational consequences. This use of subjective bonuses occurs in addition to their role as mechanisms to address measurement failures in objective bonuses, improving congruity and reducing noise (Bol, 2008; Bouwens and Kroos, 2017; Gibbs et al., 2004).

When facing settings with poor quality contracting measures, managers use implicit contracts (Baron and Besanko, 1987; Laffont and Tirole, 1988)—non-contractible tacit agreements entered at the beginning of the period—to commit to using non-contractible information generated through the period to enhance the measurement environment (Baker et al., 1994; Bol and Smith, 2011; Budde 2009; Gibbs et al., 2004; Merchant et al., 2010; Prendergast, 2002; Rajan and Reichelstein, 2006, 2009). This use of subjective bonuses predicts a negative relationship between the quality of contractible measures and the weight of subjective bonuses. Consistent with these predictions, the empirical literature documents that the weight of the subjective bonus increases as the quality of the objective measures decreases (Ederhof, 2011; Sloof and Sonnemans, 2011). For instance, subjective bonuses are more likely when the outcome of contractible measures in the objective bonus falls in the distribution's tails, reflecting a drop in the quality of these measures (Ederhof, 2010).

The previous line of research examines managers' discretion on year-end subjective bonuses (Bol, 2008) separately from the target-setting process. However, the budgeting process is not a set of unrelated

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activities. Rather, it is an integrated process with different points at which managers use discretion: at the beginning of the budgeting process when setting targets, during the period when revising targets and allocating additional resources and tasks, and at the end, when deciding on subjective bonuses.[1] Discretion within a period is not only used ex post when deciding bonuses but ex ante when setting targets. The ex post use of discretion depends on how it was used ex ante during target setting. Hence, subjective bonuses can reflect another aspect of these implicit contracts unrelated to the quality of the measurement environment.

Goal setting theory (Latham and Pinder, 2005) predicts that more demanding targets improve employee performance up to a point when employees believe that targets are unattainable. At this point, employees' motivation drops and they lower effort (Fisher et al., 2003; Locke and Latham, 1990). When targets are used to determine objective bonuses, managers need to balance these motivational forces and the risk embedded in variable pay. As targets become more difficult, the likelihood of missing targets increases and the probability of receiving a bonus decreases.[2] Thus, optimal targets are not just a function of the contracting environment but also a function of the personal characteristics of each employee (self-confidence, risk aversion, experience, *etc*.).

Implicit contracts can modify this balance to soften risk allocation (Höppe and Moers, 2011) while enhancing motivation. For instance, prior evidence indicates that managers do not fully adjust for permanent changes in performance when setting targets (attenuated ratcheting), and this adjustment is not homogeneous across units (Aranda et al., 2014; Choi et al., 2012; Indjejikian and Nanda, 2002; Indjejikian et al., 2014). In particular, high-profitability units see their earnings targets decrease when they fail to meet prior-year targets, but their targets are rarely increased. Conversely, low-profitability units see their earnings targets increase when they meet or exceed prior-year targets, but these units' targets are rarely decreased. Also, principals assign easier targets to units in the early stages of their life cycle, and the target revisions of these units consider primarily the performance of peers; in contrast, target setting in mature units is more demanding and is mostly based on the unit's own past performance (Aranda et al., 2017).

Bol and Lill (2015) argue that customization of targets as captured by attenuated ratcheting reflects the existence of implicit contracts between managers and employees. Through attenuated ratcheting, managers shift rents to better-performing employees, and these employees commit not to restrict the output of their units when favorable deviations are the result of structural changes in the production function.[3] This implicit contract reflects a level of trust between manager and employees and is unrelated to the measurement properties of the measures included in the explicit contract. Consistent with these arguments, when levels of trust are higher, target ratcheting (Freixas et al., 1985; Weitzman, 1980) is found to be lower than predicted (Bol and Lill, 2015). Implicit contracts (implemented as attenuated ratcheting or adapted targets—the mechanism identified in this research) lower the risk allocated to managers. However, attenuated ratcheting happens at the expense of partly forgoing the motivational power of more demanding targets for better managers. The use of adapted targets, which combine ex ante target setting with ex post (end of year) subjective bonuses, can address this tradeoff. In particular, since the managers who set the target ex ante also decide the end-of-year subjective bonus, they can set more demanding targets for some employees, as goal theory argues, without increasing risk allocation. Thus, employees commit to more demanding explicit performance targets, and managers take into account this difficulty in deciding subjective bonuses. This implicit contract rewards employees who commit to more difficult targets. For instance, an employee whom the manager believes can deliver better performance than his peers commits to a more difficult target, and this commitment (after controlling for his actual performance relative to the target) is later rewarded with a larger subjective bonus. The purpose of this alternative use of subjective bonuses is not to address measurement quality but rather to align effort and reward, which generates trust and commitment (Bol et al., 2015). As such, it is uncorrelated with the quality of the existing measurement system.[4] In other words, the existence of adapted targeting is unrelated to the use of subjective bonuses to address measurement limitations. Actually, in our research setting, we find evidence consistent with subjective bonuses fulfilling both roles.

Using a budget-based incentive setting, this paper studies how managers use their discretion to set targets and decide subjective bonuses to enhance the motivation of employees through more demanding yet achievable targets (Ioannou and Serafeim, 2014). Thus, it investigates how discretion at the beginning of the period when setting targets is related to discretion at the end of the period when deciding subjective bonuses.

We use archival data (Aranda et al., 2014 2017) to study our research question. The data set contains information from 414 retail branches of a large travel retailer during a period of four years. The branches are similar to each other, as they all fulfill the same business objective and are designed following the same guidelines. They are comparable in most dimensions, such as size, organizational structure, incentive systems, range of products sold, marketing campaigns, and employee background. The database contains the target set for each branch and each year by the regional director as well as the actual performance and the branch's objective and subjective bonuses. The former is based on a formula that links bonus payments to performance relative to targets. The regional director decides the latter based on the information available.[5]

Formula-based incentives are often identically designed across comparable units (Bol et al., 2010). In our setting, all branches share the same formula-based incentive design, but managers use discretion to set targets with different levels of difficulty across branches. Because the magnitude of objective bonuses depends on attaining targets, disparity in target difficulty can lead to lower commitment (Cohen-Charash and Spector, 2001; Colquitt et al., 2001) and can lower the effectiveness of the incentive system. We find that subjective bonuses at the end of the period are correlated with relative (to peers) target difficulty. Hence, units receiving more difficult targets are also rewarded

[1] Different budgeting processes will have different levels of discretion designed into them. Targets can be set using a formula, revisions may not be allowed, and incentives can be formula-based only. Conversely, managers can set targets freely combining the information available to them, change targets during the period, and have only subjective bonuses.

[2] Still, managers can tailor targets to the specific characteristics of each individual and his business unit. Thus, target difficulty has been shown to vary across different business units of the same company (Bol et al., 2010).

[3] Implicit contracts happen in multi-period and multi-person contracting settings where reputation and trust play a significant role. This multi-period structure adds behavioral aspects. For instance, the use of past performance as a relevant piece of information to set targets leads to the ratchet effect, where employees restrict this period's output to lower next period's target and to maximize the value of their future expected bonuses (Charness et al., 2011; Bouwens and Kroos, 2011). This effect is most salient in settings characterized by little long-term commitment, which might not be the best representation of organizational settings (Indjejikian et al., 2014).

[4] Subjective bonuses have limitations, including influencing costs (Levy and Williams, 2004), perceptions of justice (Voußem et al., 2016), and leniency and compression (Moers, 2005). Therefore, trust plays a central role in subjective bonuses being effective.

[5] Branches have an average of 2.8 full-time employees, and bonuses within the branch are mechanically allocated according to the professional category of each person in the branch. The branch manager is the employee with the greatest impact on branch performance.

with higher subjective bonuses. This finding is consistent with managers using their discretion in bonus decisions to reward employees who have had more demanding targets. Our results reinforce previous results on the use of subjective bonuses to address the measurement limitations of contracts.

Consistent with employees' enhanced target commitment when receiving a larger subjective bonus, we also find that branches' performance in the upcoming period, defined as the increase in the performance level relative to their peers from year t to year $t + 1$, is associated with the size of subjective bonuses in year t. More specifically, branches that received larger subjective bonuses show a larger association between change in target difficulty and performance increase.

Overall, these findings are consistent with goal-setting theory's prediction of a positive relationship between goal difficulty and task performance (Locke and Latham, 1990). They are also consistent with the use of subjectivity to enhance motivation (Bol, 2008; Bol and Lill, 2015; Gibbs et al., 2004), commit to harder targets (Klein et al., 1999), and improve future performance (Webb, 2004). They further document the role of implicit contracts (and the subjective bonuses linked to them) beyond addressing the measurement limitations of formula-based contracts (Ederhof, 2010; Gibbs et al., 2004; Murphy and Oyer, 2003; Nisar, 2007).

Second, previous studies exploring the determinants of subjective bonuses have used the organization as the unit of analysis to identify the contextual factors that explain the use of subjective bonuses across firms. Researchers typically use a dichotomous variable of "using" or "not using" subjective bonuses (*e.g.*, Ederhof, 2010; Nisar, 2007), or (seldom) they examine the relative weight of subjective bonuses *versus* objective bonuses (Gibbs et al., 2004). Instead, we study units within an organization, therefore controlling for confounding factors that vary across different organizations, and units that are very similar in terms of business, structure, and operations. The granularity of the information in our database allows us to examine relationships that previous work could not. For instance, rather than having a dichotomous variable on the presence of subjective bonuses, we have their actual magnitude across time and units of the same company. Certain ratcheting studies have used individual unit- (branch-) level data (Bol and Lill, 2015; Bouwens and Kroos 2011; Leone and Rock, 2002), but their focus is on target setting and the behavioral implications of ratcheting (ratchet effect) rather than subjective bonuses and their relationship with target setting.

Third, our results describe how implicit contracts complement explicit budget-based, formula-based contracts. These implicit contracts use goal-setting theory predictions to increase target difficulty beyond the optimal level if only explicit contracts were available. Previous literature identifies several reasons for firms to customize targets for each employee or unit, including: i) self-confidence in his ability to achieve the target (Locke and Latham 1990); ii) the likelihood of the ratchet effect (Aranda et al. 2014; Indjejikian et al., 2014); iii) market volatility (Bol et al. 2010); iv) life cycle (Aranda et al. 2017); and v) relative hierarchical status (Bol et al. 2010).

We extend prior research on the information content of subjective bonuses for target setting. We find that subjective bonuses are associated with target setting beyond their potential non-financial information content. Subjective bonuses have been found to have non-financial information associated with future financial performance (Bouwens and Kroos, 2017) and are thus relevant to target setting. Objective bonuses in our research setting have a component that captures the main non-financial measures. Therefore, in this particular setting, subjective bonuses are not expected to be inter-temporally related to target setting, because of their non-financial information content.

Prior experimental literature (Hales and Williamson, 2010) finds that honoring implicit contracts has a higher impact on performance in multi-period compared to single-period settings, reinforcing the value of reputation. We contribute to this literature showing that fulfilling implicit contracts is associated with improved future performance; our findings suggest that the reputation associated with honoring implicit contracts reinforces the motivational role of targets.

Finally, our results extend previous findings on the role of relative target difficulty. Prior work has examined how relative target difficulty is associated with target setting beyond past performance (ratcheting) (Aranda et al., 2014). It has also examined the learning process in target setting as branches mature (Aranda et al., 2017); in particular, how the weight of past and relative performance changes as branches mature. In this paper, we examine how target setting is associated with compensation within the context of implicit contracts and goal setting theory, a context absent in the prior papers. The target setting process includes target setting, the resource allocation that happens during the period, and compensation at the end of the period. Future research can study the resource allocation aspect; how a branch receives adequate resources and how it affects performance. In this study, we focus on the relationship between target setting and compensation. First, we document how these two aspects of the target setting process are related and, in particular, how target difficulty is associated with end-of-the-period compensation. Second, we document how this compensation affects future performance.

The results portray a complex use of compensation and target setting mechanisms, where managers use discretion at the beginning of the period (in target setting) and at the end of the period (subjective bonus) to enhance employee motivation within a period and across periods. Target setting and subjective compensation are jointly used by managers to motivate their employees. This finding is consistent with recent evidence on the role of long-term commitments and implicit contracts (Bol and Lill 2015; Indjejikian et al., 2014) that portray the use of budget-based incentive contracts not as detrimental to managers (ratchet effect) but as mechanisms to enhance employees' commitment.

The rest of the paper is organized as follows. The next section reviews the literature and develops the hypotheses. Section 3 describes the research design, including the research setting and variable measurement. Section 4 presents and discusses the results. Section 5 presents robustness tests, and Section 6 concludes.

2. Theory and hypotheses development

Budgets are often used for contracting (Aranda et al., 2014; Bouwens and Kroos 2011 2017; Indjejikian and Nanda, 2002; Murphy, 2000). Variable pay in these contracts is based on comparing the actual *versus* budgeted (target) performance of a combination of financial and non-financial measures. Often, the bonus kicks in when performance reaches a specified percentage of the target (floor), then increases with performance until it surpasses the target by another specific percentage (ceiling or cap), where it is capped. The floor and ceiling are designed so that the majority of employees will perform within this range and economic incentives will fulfill their motivational purpose.

Previous work has examined how to optimally design these budget-based incentive systems and their behavioral implications (Bonner and Sprinkle, 2002; Freixas et al., 1985; Keren et al., 1983; Laffont and Tirole, 1988). From an economic perspective, optimal targets balance the employee's risk-adjusted expected effort and expected payoff. From a psychology perspective, goal setting theory predicts increased motivation and, consequently, increased performance as targets become more difficult, up to the point when employees believe the target is unachievable.[6] Having a difficult but achievable target is more effective in motivating effort than asking employees to do "their best." More

[6] Employee's self-efficacy—his confidence in being able to reach the target (Webb, 2004)—mediates this relationship, and targets that are perceived as too difficult lower self-efficacy and commitment and hurt performance. Moreover, the use of targets has been proved to motivate higher performance, even when the target is not associated with any form of reward or penalty (Booner et al., 2000).

difficult targets not only direct employees' efforts towards goal-relevant activities but also improve persistence (prolonged effort) (Locke and Latham, 2002). Difficult targets also show the manager's expectations about the employees' future performance, signaling that he or she is confident that the employees are capable of achieving that performance level. Hence, difficult but achievable targets themselves encourage employees to achieve higher levels of performance.

In addition to employees' perception of the target itself, the motivational advantages of difficult but achievable targets also depend on employees' perception relative to a reference point—whether it be past performance or targets for comparable employees. One approach to enhancing commitment to difficult targets is through budget participation and truth-inducing contracts (Chow et al., 1991; Weitzman, 1976). These contracts are based on the outcome relative to the employee's target and the manager's target.[7] These schemes have been found to be effective in reducing employees' propensity to build slack into budgets (Chow et al., 1991).[8] However, they are rarely used in practice (Waller, 1994).[9]

An alternative way for employees to commit to more difficult targets is through implicit contracts: manager's informal promise to rewarding employees' effort (Hales and Williamson, 2010). While explicit contracts can be verified and enforced by a third party, implicit contracts are self-enforcing. Therefore, they rely on both parties honoring them because they choose to do so. If the employee commits to higher effort because the manager promises to reward this additional effort, the employee trusts the manager to honor this commitment at the end of the period. Therefore, implicit contracts rely on arguments provided by social psychologists examining concepts such us fairness, reciprocity, reputation, and inequity aversion. Evidence indicates that people prefer to maintain fair rather than selfish relationships (Chen and Sandino, 2012; Fehr and Schmidt, 2000). Within incentive provision, fairness reflects an employee's perception of an effort-reward relationship, in line with a reference point (such as the effort-reward relationship of comparable employees) and the manager's perception of the employee delivering the level of effort agreed upon in the implicit contract (Adams, 1965).[10]

Recent studies (Voußem et al., 2016) suggest that the emphasis on subjectivity has a U-shaped relationship with fairness perceptions. This shape reflects the benefits and costs of subjective evaluation. On the benefit side, it reduces distortions from uncontrollable factors, better reflecting the true effort of employees, and it signals benevolent intentions and the encouragement of constructive discussions. On the cost side, subjectivity can suffer from cognitive distortions of the manager, her incentives or preferences for certain employees and reductions in the clarity of performance evaluation criteria.

Implicit contracts underlie promotions and subjective bonus decisions (Campbell, 2008; Ederhof, 2011). Both rely on a subjective assessment of employees' effort and performance. This type of assessment requires a context of trust (Prendergast, 2002; Prendergast and Topel, 1993; Woods, 2012) to support the working of implicit contracts.[11] In particular, the employees' perception of their manager's trustworthiness affect their willingness to reciprocate through desired behaviors (Mayer and Davis, 1999) and to engage in behaviors that would put them at a higher level of risk (Mayer et al., 1995). Therefore, trust in leadership has been found to be associated with higher levels of job satisfaction and commitment (Dirks and Ferrin, 2002). Campbell (2008) examines the role of implicit contracts (based on subjective evaluation) in promotion decisions. Ederhof (2011) finds that objective bonuses are larger for managers who face weaker implicit incentives from being promoted to the next level. Promotion, which is typically based on subjective evaluation, is used as a supplement to objective bonuses.[12]

Implicit contracts also use subjective bonuses to address limitations in formula-based incentives. The measures used in these formulas can be too short-term focused (Bushman et al., 1996; Gibbs et al., 2004; Kaplan and Norton, 1996), be manipulated (Courty and Marschke, 2004; Holmström and Milgrom, 1991), have a low signal to noise ratio, have a weighting on multi-dimensional tasks that differs from the manager's objective (Datar et al., 2001; Murphy and Oyer, 2003), and may not allow a separation of individual contributions from team performance. As the measurement quality of objective measures deteriorates, explicit incentive contracts lower their pay-for-performance and their motivational properties (Baker et al., 1994). Subjective

[7] A typical truth-inducing contract is $B = B' + b\,(y'' - y') + a\,(y - y')$ if $y > y''$ and $B = B' + b\,(y'' - y') + c\,(y - y')$ if $y < y''$, where B is the bonus, y is the actual performance, B' and y' are the bonus and the target initially proposed by the manager, y'' is the employee's target, and a, b, and c are parameters set by the manager such that $0 < a < b < c$ (Chow et al., 1991).

[8] For instance, in an experimental setting, Fisher et al. (2002) find that using budgets for resource allocation, in addition to performance evaluation and rewards, lowers employees' propensity to build slack into budgets.

[9] Among the possible reasons, Waller (1994) argues that "the incompleteness of employment contracts indicates either that transaction costs are especially high in employment relationships, due in part to the bounded rationality of employees and employers, or that alternative social mechanisms provide comparable benefits more cheaply than exhaustive contractual specification, or both" (Waller, 1994, p. 731).

[10] Organizational justice is often separated into procedural and distributive justice. The former focuses on the perceived fairness of organizational procedures, while the latter is associated with the fairness of the outcomes (Adams, 1965; Burney et al., 2009; Leventhal et al., 1980; Libby, 1999). Employees prioritize distributive justice ahead of procedural justice; as such, they are more concerned about the result (reward) of the evaluation process than the procedures used to decide rewards. Hence, if rewards are perceived as fair, then the procedure used to decide them is of less relevance (Cropanzano and Folger, 1991; Libby, 1999). Thus, procedural justice becomes relevant when rewards are perceived as unfair.

[11] This context is weakened when powerful employees use subjective bonuses to extract rents; managers renege on their pledges (Bol et al., 2010) and bias their assessments because of favoritism and to avoid the psychological costs of communicating bad performance (Ittner et al., 2003; Prendergast and Topel, 1993). Compressed and lenient subjective ratings are often interpreted as illustrating these weaknesses. Subjective bonuses perceived as unfair limit their motivational properties (Hopwood, 1972; Lau and Buckland, 2001; Hartmann and Slapnicar, 2009; Matsumura and Shin, 2006). The empirical evidence on powerful employees extracting rents through higher subjective bonuses is mixed. While Ederhof (2010) finds no evidence of subjective bonuses being related to the power of employees in companies, Bol et al. (2010) find the power to be relevant, since in their setting, supervisors provide easier targets to store managers with relatively higher hierarchical status. Finally, subjective bonuses have also been criticized because managers can renege on the implicit contract associated with them (Baker et al., 1994) or they can show favoritism (Moers, 2005). However, their use is widespread among companies, suggesting that these potential drawbacks do not outweigh their benefits as part of implicit contracts.

[12] Explicit and implicit contracts have been argued to behave as substitutes (Ederhof, 2011). Highly variable explicit contracts crowd out implicit contracts because the gains from the latter are too small to have any motivational effect (Fehr and Schmidt, 2000; Irlenbusch and Sliwaka, 2005; Schmidt and Schnitzer, 1995; Sloof and Sonnemans, 2011). Explicit contracts with excellent measurement properties reduce the marginal gain from implicit contracts. In contrast, in poor contracting environments, the design of explicit contracts will rely on implicit contracts to a larger extent. In fact, experimental evidence indicates that if allowed to choose, employees prefer weak explicit incentives to facilitate implicit contracts (Sloof and Sonnemans, 2011). Alternative arguments suggest that explicit and implicit contracts complement each other: "If the objective measure becomes more accurate, the optimal contract not only puts more weight on the objective measure but also put more weight on the subjective measure because the improved subjective measure increases the value of the ongoing relationship and so reduces the firm's incentive to renege" (Baker et al., 1994, p. 1128). Recent research suggests that the combination of implicit and explicit contracts is contingent on the social preferences of both parties, their bargaining power, and the value of the relationship (Halac, 2012).

evaluation mitigates some of these limitations (Nisar, 2007). It can improve the congruency, sensitivity, and precision (Banker and Datar, 1989; Datar et al., 2001; Feltham and Xie, 1994) of the contract through the use of non-contractible information. Empirical studies corroborate these predictions. Murphy and Oyer (2003) and Gibbs et al. (2004) find that less complete objective performance measures are associated with greater reliance on subjective evaluation. Nisar (2007) finds that discretion is more useful in uncertain and complex work environments where job design involves multiple tasks and interdependencies.

2.1. Relative target difficulty and subjective bonuses in multi-person (multi-unit) settings

The use of subjective bonuses as a proxy for implicit contracts can extend beyond measurement limitations of formula-based contracts. In particular, managers can use them to enhance an employee's motivation and reward his commitment to additional effort.

In organizations with multiple yet similar operational units using a common explicit incentive contract (such as an objective bonus associated with the variance between actual and targeted performance), the manager can vary target difficulty to adapt the contract to the particular characteristics of each employee and the operational units for which she is responsible. Evidence and theoretical arguments support the idea that the same formula-based contract has different motivational effects across employees. For instance, Fong and Tosi (2007) find that opportunistic behavior is significantly lower among conscientious persons. Similarly, self-efficacy varies across people depending on their past experience and personal characteristics (Bandura, 1997).[13] More recently, Kunz (2015) finds that people low in autonomous motivation prefer more-objective and more-precise performance assessments, while incentive systems that include subjective components are associated with higher effort for people with higher autonomous motivation.

Discretion to adapt targets to specific employees and their units plays an important role at the beginning of the period (Dirks and Ferrin, 2002). Empirical evidence is consistent with these arguments. Bol et al. (2010) find that senior managers use discretion in adapting sales targets to individual units (stores) to mitigate compensation risk, confrontation cost, and fairness concerns. Yet, employees can assess target difficulty by comparing their target to the targets of comparable operational units (Adams, 1965; Burney et al., 2009; Colquitt et al., 2001). Fehr and Schmidt (2000, p. 1062) argue that it is "not only absolute but also relative payoffs have a strong impact on some people's well-being and behavior." Thus, target difficulty perceptions do not depend solely on employees' own target levels but also on the target level relative to those of their peers: if a target is perceived as too difficult vis-à-vis other units, increasing the target to enhance motivation can actually backfire and lower motivation.

The use of discretion at the end of the period through the use of subjective bonuses can mitigate perceptions of target difficulty. In particular, managers can support heterogeneous target difficulty across units committing to take into account the specificity of each unit's target in their subjective assessment of performance at the end of the period. This commitment to honor the implicit contract allows for customized targets while maintaining employee motivation. Managers can set more demanding targets (as goal setting theory predicts) to certain employees and, at the end of the period, honor this implicit contract through subjective bonus (adapted targeting). In doing so, managers use discretion ex ante and ex post to tailor the combination of formula-based and implicit contracts to the contracting environment of each employee and his unit. Thus, we expect the following:

H1. Subjective bonuses received at the end of the year are positively associated with the relative difficulty of the targets assigned at the beginning of the same year.

2.2. Subjective bonuses and future performance

Prior literature indicates that people have innate preferences for fairness or equitable distributions (Camerer, 2003; Hannan, 2005) and that, as H1 predicts, honoring implicit contracts is seen as contributing to a fair relationship even in a one-period setting (Sloof and Sonnemans, 2011). However, while fair concerns mitigate selfish behavior, they usually fail to induce complete cooperation (Camerer, 2003).

In the context of multi-period settings, reputation works as a proxy for future behavior. Employees and managers build their reputation as they honor implicit contracts. Conversely, the cost of failing to honor the contract is a loss in the manager's reputation and lower employee morale (Bull, 1987) and effort level. Even purely selfish managers realize the value of reputation (Kreps et al., 1982) as long as the marginal increase in future payoffs from maintaining a good reputation is higher than the incremental payoffs from deviating from a cooperative strategy. Hence, an enhanced level of trust and commitment associated with the fulfillment of implicit contracts (Bol et al., 2010; Klein et al., 1999) can further motivate the employee going forward: "(Discretionary) adjustments (…) can also be used to signal expectations or intentions, or to motivate particular efforts by subordinates in the future" (Bol et al., 2015, p. 139). Furthermore, Hales and Williamson (2010, p. 53) argue that "if reputation concerns brought on by repeated interaction are effective in mitigating the manager's commitment problem, then firm productivity should be higher when reputation formation is possible." Using an experiment, these authors find that reputation concerns lead to significantly greater firm productivity and higher payoffs for all.

Reputation's effect on performance has been argued to be driven by enhanced cooperation, information sharing, coordination, and decision making (Brown et al., 2004).[14] Commitment underlies these drivers of the association between reputation and performance; honoring implicit contracts enhance reputational capital and the commitment of people to the organization. Commitment is "the determination to try for a goal" (Hollenbeck et al., 1989, p. 18), which is different from "trying to do ones' best." Hence, higher levels of commitment are especially effective within the context of challenging targets: "(…) high performance comes about only when goal difficulty and goal commitment are both high. Difficult goals do not lead to high performance when commitment is low and high levels of commitment to easy goals also fail to generate high performance. Stated differently, a strong linear relationship should be evident between goal difficulty and performance when commitment is high, and goal difficulty should be unrelated with performance when commitment is low" (Klein et al., 1999, p. 186). One of the outcomes of this commitment is target difficulty. Employees who trust managers are ready to increase their effort and commit to more difficult targets. Subjective bonuses reflect the honoring of implicit contracts, thus performance will improve to a larger extent for more committed employees.

Prior work (Bouwens and Kroos, 2017) has found a positive and significant association between subjective bonuses and future targets. This association reflects the incremental information content of

[13] Social arguments also support adapting target difficulty to employees' capabilities. Allowing employees who are performing below average to know their relative position can lead them to reduce their effort (Prendergast and Topel, 1993). Managers can withhold this information or, alternatively, adjust target difficulty to employee capabilities and disclose variations *versus* individual targets instead of actual relative performance.

[14] However, the effectiveness of the reputation is said to be contingent upon factors such as the structure of managers' reward system and the length of the relationship (which suggests that the parties accumulate reputational capital in the course of long-term relations) (Brown et al. (2004).

subjective bonuses that capture non-financial information uncorrelated with financial performance. In our research setting, objective bonuses already consider the main non-financial performance measures, so from an information content perspective, subjective bonuses are not expected to be correlated with future targets. Yet, if an increase in the trustworthiness of the manager-employee relationship (*i.e.* reputation) is associated with enhanced commitment to targets going forward, then employees who receive higher subjective bonuses (as a sign of having strong implicit contract with their managers) are expected to have higher targets, reflecting this commitment. Thus, the presence of implicit contracts and reputation effects is also consistent with a positive association between subjective bonuses and future targets.

Furthermore, if reputation increases commitment to difficult targets, the same increase in target difficulty is expected to improve performance to a larger extent for employees having strong rather than weak implicit contract-based relationships with managers. The fulfillment of implicit contracts as reflected in the association between more difficult targets and subjective bonuses (Hypothesis 1) is justified not only by people's innate preferences for fairness or equitable distributions but also by the impact that reputation has in the performance improvement in the following periods. Then, we expect the following:

H2. Subjective bonuses received at the end of the year increase the effect of target increases on performance improvements for the upcoming year.

3. Research setting

3.1. Description of the research site

We test our hypotheses using archival data from the vacation division of a large European travel agency (2006 revenues of €444 million). A single organization provides a homogenous environment in terms of contracting, product-market, and organizational characteristics. The division has between 238 (2003) and 390 (2006) retail branches that only sell vacation products. The division is organized into 13 geographic areas (each one managed by a regional director) and each one treated as a separate responsibility center.[15] Branches are located in urban areas, and regional directors visit approximately four branches per day. The company has a flat structure, with the divisional manager having 13 regional directors reporting to him and each branch reporting to one of them. Branches average 2.80 employees, and promotions are rare. Only one branch manager was promoted to regional director during the observation period, and only to replace one who retired. Incentive systems at the branch level rely on cash bonuses based on performance relative to targets set at the beginning of the year. These bonuses account for 10 to 20% of branch employees' total compensation.[16]

We examine two aspects of the budget-based incentive system: target setting and bonus decisions. Targets are set for what the company refers to as "guided sales." These are sales of products from other divisions in the company (tour operator, airline, receiving agencies, and hotels) plus sales of products from specific suppliers deemed as strategic. Over this period of time, guided sales average 75% of total sales and are an increasing proportion of total sales. The rest of the operating budget—total sales, expenses and operating profit—is linked to guided sales through common ratios: setting the guided sales' target automatically defines the rest of the budget. Thus, the "guided sales" target for each branch has a corresponding target profit that is mechanically obtained. All branches share the same ratio of guided sales to total branch sales (a ratio that has been increasing over time) as well as expense ratios, such as personal expenses over sales and representation expenses over sales. Hence, a branch that beats its guided sales target but does so with a less profitable mix of products or by offering customers more discounts or incurring more office expenses than expected can miss its profit targets.

Targets are set at the beginning of the year. Regional directors gather information from branches through their daily interactions but also through specific discussions about target setting with branch managers. This information considers the previous year's performance, expected changes in the industry and general economic conditions, changes specific to the particular geographic area of the branch, the number and competitiveness of the products developed for the upcoming year, advertising and promotional plans for the division to support branches' commercial efforts, personal resources assigned to the branch, and any relevant unique issues the branch may face.[17] Once initial targets have been set for all branches, regional directors review the overall target with the general manager of the division to ensure that the branches' targets reach the financial objectives of the division. Regional directors then inform branch managers of their final financial targets.

The branches' annual bonus has two components, one objective ("*Objective Bonus*") and one subjective ("*Subjective Bonus*") (Fig. 1). The objective component is determined as follows. First, the bonus includes a percentage of "guided sales" (the "*Base Bonus*"). This part is akin to a commission: it is paid from the first guided sale and has no floor and no ceiling.[18] Fifty percent of the "Base Bonus" is paid bimonthly as an advanced bonus. The remaining 50% is paid at the end of the year. This second half is adjusted according to profit performance against the target. If the actual profits are between 70% and 130% of the profit target, this second half of the "guided sales" bonus ("*Base Bonus*") is lineally adjusted. This part has a floor (at 70%) and a ceiling (at 130%). At 130%, the *Base Bonus* is the guaranteed 50% (paid bimonthly) plus the 50% "at risk" times 130%. Beyond 130%, there is no additional increase. If profits drop below 70%, this second part drops to zero. After adjusting for profits, the *Base Bonus* ranges from 50% of the total "guided sales" commission (50% + 50% * 0% = 50%) to 115% of the total "guided sales" commission (50% + 50% * 130% = 115%).

The final step to calculate *Objective Bonus* is to further adjust the *Base Bonus* according to non-financial measures considered critical to long-term economic success. First, branches have a 10% bonus penalty for each internal audit assessed as "poor" instead of "acceptable." Second, branches have a 10% bonus penalty if the annual mean of customers' outstanding debt over total sales is higher than 15%. Finally, regarding customer information quality, branches have a 10% bonus penalty if the percentage of customers' names, addresses, phone numbers, e-mails, *etc.*, included in the database is lower than the preset level.

The incentive system has an additional *Subjective Bonus* component.

[15] Some offices were opened and closed throughout the observation period. Table 1 explains the number of branches that had the information needed to be included in the sample for each analysis.

[16] An open question is whether bonuses of this magnitude have any motivational effect on employees. The company believed so, used them, and took them seriously. Moreover, bonuses were constantly present throughout the year because of the particular structure of the compensation system, with an advanced bonus paid bimonthly.

[17] We ran an ANOVA comparing level of competition, age, and guided sales per employee within and between regions with the objective of examining whether grouping branches into regions captured comparable groups. The ANOVA results indicate that variation within and in-between are significantly different. We also asked the company how they grouped branches under regional managers; the most important grouping criteria was similarity across branches and geography was secondary.

[18] Targets for "guided sales" mechanically set the targets for total sales and profits. Sales other than "guided sales" are not part of the commission because the company wants to set incentives for branches to commercialize products from other divisions. Yet sales other than guided sales are important to achieve profit targets and provide a better service to the customer.

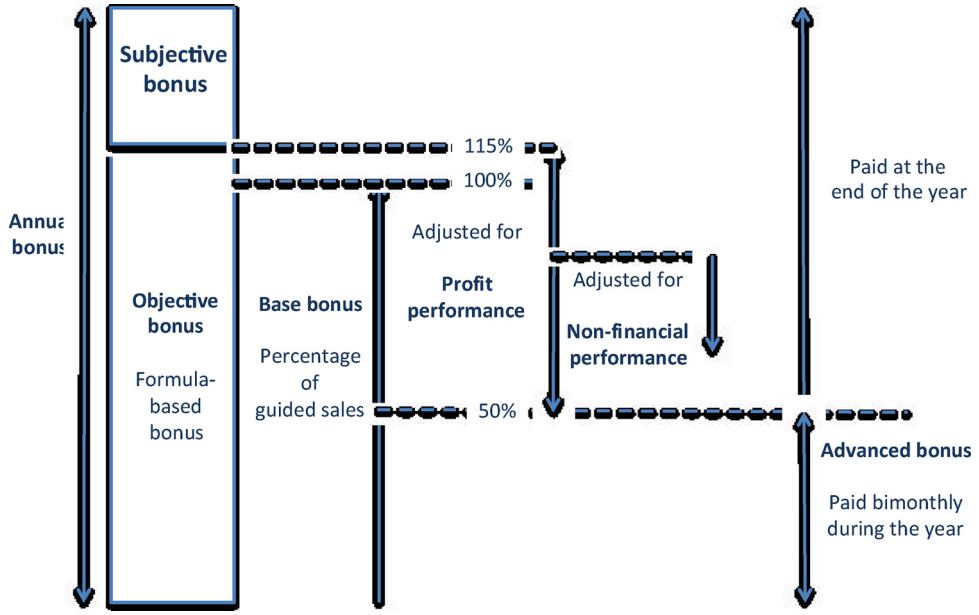

Fig. 1. Calculation of Annual Bonus for Branches.

The purpose of this component is "to account for exceptional events in a particular branch that may have affected its overall performance." Regional directors propose subjective bonuses at the end of the year that are then authorized at the divisional level. Subjective bonus is used to compensate branches for relevant changes in any of the conditions foreseen when setting targets. Examples of reasons for giving a subjective bonus are a long illness of one or more employees at the branch, unexpected road construction in the vicinity of the branch that restricts access of customers to the store, outstanding performance, *etc*. Subjective bonuses are at the discretion of the regional director. However, the divisional manager needs to approve the total subjective bonus for the region (much like he approves the target for the region) to ensure comparability across regions in using the incentive system, but he does not approve or discuss the branches' bonuses. There is no limit to subjective bonuses, and there is no fixed pool to draw from. Traditionally, subjective bonuses have moved around 10%–30% of total bonuses.

The bonus payouts are as follows: 50% of the *Base Bonus* (based on "guided sales") is paid bimonthly. This part of bonuses paid during the year is called the *Advanced Bonus*. The remaining bonus (the difference between the *Annual Bonus* and the *Advanced Bonus*) is paid at the end of the year.

3.2. Data collection and variable descriptions

The study is based on budgeted and actual data of a vacation business unit from 2003 to 2006. We examine these four years because the incentive system and target setting process remained unchanged during these years. The data include branches for which budget and actual data on guided sales, along with information on subjective and objective bonus, are available for each of the years of the study. Panel A of Table 1 describes how the final sample is determined.

Table 1, Panels B and C, provide descriptive statistics from 2003 to 2006 on budgeted and actual average branch "guided sales." The study took place during a period of economic growth and commercial expansion. The number of branches increased from 238 to 390 during those years, and the actual average "guided sales" per branch grew from €739,311 to €879,257, with annual growth rates between 0.3% (2005) and 14.5% (2004). The budgeted annual increase for "guided sales" varied from -3.1% (2006) to 12.3% (2004).

In total, 39.5% of the year-branches exceed the "guided sales" budget, and this percentage varies between 24.4% (2005) and 50.3% (2004); 507 branch-years observations (out of 1283) have favorable guided sales variance, and 438 of these also have favorable profit variance; and 372 branch-years do not reach the 50% *Base Bonus* (the *Objective Bonus* is lower than the *Advanced Bonus*) because they do not reach 70% of the target profit, and their non-financial performance is lower than expected. The average budget-guided sales (€869,462) is above the actual value (€837,438); both variables have similar distributions.

Table 1, Panel D, provides descriptive statistics on the different components of the bonus. The mean *Advanced Bonus*$_{i,t}$ is €857.07, which is below the *Objective Bonus*$_{i,t}$ mean of €1479.87. However, *Objective Bonus*$_{i,t}$ has a much higher dispersion than *Advanced Bonus*$_{i,t}$, On average, *Base Bonus*$_{i,t}$ is larger than *Objective Bonus*$_{i,t}$, reflecting the company's demanding conditions for attaining profit targets and non-financial standards. Subjective bonuses are predicted to be larger when objective performance measures are less complete, more open to manipulation, or fail to capture strategic (long-term) performance (Murphy and Oyer, 2003). Similarly, subjective bonuses are more relevant for complex jobs, at higher organizational levels, or for areas with large organizational interdependences (Nisar, 2007). In this particular setting, sales and profits capture a large portion of the commercial effort, with few discretionary expenses and small organizational interdependencies. Therefore, *Subjective Bonus*$_{i,t}$ is not predicted to be too large, and yet it accounts for 32% of *Total Bonus*$_{i,t}$ at the mean. Moreover, the company includes performance dimensions that are often qualitatively assessed (such us procedural rigor or customer information improvements) as part of *Objective Bonus*$_{i,t}$. Finally, subjective bonuses are more relevant under risky settings where failing to attain the goals leads to significant economic consequences for employees (Gibbs et al., 2004). In our setting, the profit component of *Objective Bonus*$_{i,t}$ kicks in when actual profits hit 70% of the target.

All bonus figures are non-negative. Consistent with Merchant et al. (2010), the distribution of *Subjective Bonus*$_{i,t}$ is not more compressed than that of *Objective Bonus*$_{i,t}$. Subjective evaluation has an incentive

power comparable to objective evaluation, and both discriminate performance to a similar extent (Ahn et al., 2010).

The branches are similar in terms of the mix of products they sell, their target customers, and their structure. The branches are of similar size—between two and three full time equivalent employees, including temporary personnel hired for specific peaks during the year. The hours these temporary employees work are added to those of fixed employees to measure the size of the branch, since they too receive their share of the bonus. Employees within the same category have similar compensation levels across branches. Hence, we define the number of employees as the total number of hours worked divided by the working hours of a full-time employee. Bonus figures per employee reduce the dispersion of the data by eliminating the effect of branch size.

3.3. Variable definitions and preliminary analysis

We hypothesize a positive relationship between target difficulty and subjective bonus. We define *Performance Deviation*$_{i,t}$ as the difference between actual and budgeted guided sales for branch i in year t; it measures the performance of a branch vis-à-vis expectations as reflected in its targets. Objective bonus is based on performance deviation. Two branches having similar outcomes in terms of sales and profits have different objective bonuses if the targets have different levels of difficulty. We measure relative target difficulty as branch's guided sales target per employee compared to the average actual guided sales per employee for the branches in its region:

$$Relative\_Target\_Difficulty_{i,t} = \frac{Budget\_Sales_{i,t}/Budget\_Employees_{i,t} - \left(\sum_{j=1}^{n} Actual\_Sales_{j,t-1}/Employees_{j,t-1}\right)/n}{\left(\sum_{j=1}^{n} Actual\_Sales_{j,t-1}/Employees_{j,t-1}\right)/n}$$

Where *Budget Sales*$_{i,t}$ is target guided sales for branch i in year t, *Budget Employee*$_{i,t}$ is the budgeted number of employees of branch i in year t, *Actual Sales*$_{j,t-1}$ is actual guided sales for branch j in year t-1, *Employee*$_{i,t-}$

Table 1
Descriptive Statistics.

Panel A: Sample Construction

	Total # of obs.	2003	2004	2005	2006
# of branches with Subjective Bonus, Budget guided sales and actual guided sales for current year[a]	1283	238	294	361	390
# of branches for which there is no information for next year's Budget and Actual guided sales	414	4	11	9	390
# of branches with Subjective Bonus, Budget guided sales and actual guided sales for current year and Budget and Actual guided sales for the next year[b]	869	234	283	352	0

Panel B: Guided Sales over Time[c]

		2003	2004	2005	2006
Budget					
Average guided sales per branch	€	748,013	839,818	934,473	905,746
Average increase in guided sales	%		12.27%	11.27%	−3.07%
Actual					
Average guided sales per branch	€	739,311	846,741	849,377	879,257
Average increase in guided sales	%		14.53%	0.31%	3.52%
Actual vs. Budget					
Percentage of branches that exceeded guided sales budget	%	44.54%	50.34%	24.38%	42.31%

Panel C: Descriptive Statistics on Sales and Profits[d]

Variable		Mean	Std. Dev.	Q1	Median	Q3
Budget Sales$_{i,t}$	€	869,462	368,925	612,929	781,538	1,049,094
Actual Sales$_{i,t}$	€	837,438	404,243	566,578	760,804	1,029,089
Sales Deviation$_{i,t}$ (*Performance Deviation*$_{i,t}$)	€	−32,023	157,299	−124,356	−32,745	54,529
Change Budget Sales$_{i,t+1}$[e]	€	64,859	172,527	−27,122	67,637	151,574
Budget Profits$_{i,t}$	€	20,538	28,231	2,960	18,551	34,289
Actual Profits$_{i,t}$	€	13,641	33,028	−7,321	10,547	30,970
Profit Deviation$_{i,t}$	€	−6,896	21,547	−19,958	−8,071	5,244
Change Profit Target$_{i,t+1}$[e]	€	3,104	17,824	−6,697	2,948	12,334

Panel D: Bonus Variables[d]

Variable		Mean	Std. Dev.	Q1	Median	Q3
Advanced Bonus$_{i,t}$	€	857.07	621.83	392.38	731.58	1,167.78
Base Bonus$_{i,t}$	€	1615.70	1,229.78	697.82	1,371.42	2,247.86
Objective Bonus$_{i,t}$	€	1479.87	1,692.54	180.34	718.16	2,521.44
Subjective Bonus$_{i,t}$	€	380.33	758.66	1.42	137.82	372.14
Total Bonus$_{i,t}$	€	1860.22	1,743.39	459.75	1,232.68	2,911.89
Subjective Bonus/Total Bonus$_{i,t}$		0.32	0.35	0.01	0.19	0.59
Actual Employees$_{i,t}$	Full time equivalent employees	2.80	0.90	2.02	2.67	3.21
Objective Bonus per Employee$_{i,t}$	€	520.78	557.12	71.76	251.03	968.15
Subjective Bonus per Employee$_{i,t}$	€	128.81	226.16	0.57	57.73	133.43
Total Bonus per Employee$_{i,t}$	€	649.59	543.22	183.98	438.09	1,087.17

(*continued on next page*)

Table 1 (*continued*)

Panel E: Remaining Variables

Variable		Mean	Std. Dev.	Q1	Median	Q3
Relative Target Difficulty$_{i,t}$		0.10	0.24	−0.050	0.08	0.24
Δ Relative Target Difficulty$_{i,t+1}$ [f]		0.01	0.24	−0.13	0.02	0.15
Actual Employees$_{i,t}$ - *Budget Employees*$_{i,t}$	Full time equivalent employees	−0.05	0.35	−0.17	0.00	0.05
Density $_{j,t}$	Branches in region/ million people	346.80	134.48	260.74	337.95	392.58
Density Change$_{j,t}$		0.05	0.04	0.02	0.07	0.08
Δ Relative Outcome$_{i,t+1}$		0.00	0.21	−0.12	0.01	0.12

The total number of branches for which we have information at some point in time is 414. These are the branches in 2006 for which we have data (390) plus the number of branches closed (24). Descriptive statistics for the remaining panels of Table 1 have been calculated for the first model's sample (1282 observations in Model 1 in Table 4), unless otherwise noted.

***Budget Sales*$_{i,t}$** (or ***B*$_{i,t}$**) is budgeted guided sales for branch *i* in year *t*.

***Actual Sales*$_{i,t}$** (or **A$_{i,t}$**) is actual guided sales for branch *i* in year *t*.

***Sales Deviation*$_{i,t}$**, is Actual Guided Sales - Budget Guided Sales, that is, $A_{i,t} - B_{i,t}$.

Change Budget Sales$_{i,t+1}$ is Budget Guided Sales$_{i,t+1}$ - Budget Guided Sales$_{i,t}$.

***Budget Profits*$_{i,t}$** Budgeted profit for branch *i* in year *t*.

***Actual Profits*$_{i,t}$** Actual profit for branch *i* in year *t*.

***Profit Deviation*$_{i,t}$**, is Actual Profits$_{i,t}$ - Budget Profits$_{i,t}$.

***Change Profit Target*$_{i,t+1}$** is Budget Profits$_{i,t+1}$ - Budget Profits$_{i,t}$.

***Base Bonus*$_{i,t}$** is Base Bonus for branch *i* in year *t*.

***Objective Bonus*$_{i,t}$** is Objective Bonus for branch *i* in year *t*.

***Subjective Bonus*$_{i,t}$** is Subjective Bonus for branch *i* in year *t*.

***Employees*$_{i,t}$** is the actual full time equivalent employees for branch *i* in year *t*.

***Total Bonus*$_{i,t}$** is Total Bonus for branch *i* in year *t*.

***Advanced Bonus*$_{i,t}$** is Advanced Bonus (bonuses paid bimonthly throughout the year) for branch *i* in year *t*.

***Objective Bonus per Employee*$_{i,t}$** is Objective Bonus$_{i,t}$ / Employees$_{i,t}$.

***Subjective Bonus per Employee*$_{i,t}$** is Subjective Bonus$_{i,t}$ / Employees$_{i,t}$.

***Total Bonus per Employee*$_{i,t}$** is Total Bonus$_{i,t}$ / Employees$_{i,t}$.

***Relative Target Difficulty*$_{i,t}$** is the relative difficulty of branch *i*'s target in year *t* relative to the average target difficulty for a region in year *t*, *n* is the number of branches in the region:

$$\frac{B_{i,t}/employees_{i,t} - \left(\sum_{j=1}^{n} A_{j,t-1}/employees_{j,t-1}\right)/n}{\left(\sum_{j=1}^{n} A_{j,t-1}/employees_{j,t-1}\right)/n}$$

Δ *Relative Target Difficulty*$_{i,t+1}$ is the change in Relative Target Difficulty for branch i from year t to year t + 1.

$$\frac{B_{i,t+1}/employees_{i,t+1} - \left(\sum_{j=1}^{n} A_{j,t}/employees_{j,t}\right)/n}{\left(\sum_{j=1}^{n} A_{j,t}/employees_{j,t}\right)/n} - \frac{B_{i,t}/employees_{i,t} - \left(\sum_{j=1}^{n} A_{j,t-1}/employees_{j,t-1}\right)/n}{\left(\sum_{j=1}^{n} A_{j,t-1}/employees_{j,t-1}\right)/n}$$

***Employees*$_{i,t}$** is the actual full time equivalent employees for branch *i* in year *t*.

***Budget Employees*$_{i,t}$** is the budgeted number of employees in year *t* for branch *i*.

***Density*$_{j,t}$** is the density of travel agencies' branches (number of branches divided per million people) for region *j* in year *t*.

***Density Change*$_{j,t}$** is the change in the density of branches in region *j* from the previous to current year in relative terms.

Δ *Relative Outcome*$_{i,t+1}$ is the change in *Relative Outcome* for branch *i* from year *t* to year *t + 1*:

$$\frac{A_{i,t+1}/employees_{i,t+1} - (\sum_{j=1}^{n} A_{j,t+1}/employees_{j,t+1})/n_{t+1}}{(\sum_{j=1}^{n} A_{j,t+1}/employees_{j,t+1})/n_{t+1}} - \frac{A_{i,t}/employees_{i,t} - (\sum_{j=1}^{n} A_{j,t}/employees_{j,t})/n_t}{(\sum_{j=1}^{n} A_{j,t}/employees_{j,t})/n_t}$$

[a] This is the number of observations on the first row of Table 2 in Aranda et al. (2014). 1283 is the final sample for the estimation of Subjective Bonus regression (Table 4). There is a missing observation for a control variable.

[b] This is the final sample for the motivational effect of Subjective Bonus (Table 5). There is a missing observation for a control variable.

[c] Calculated for branches with subjective bonus, budget and actual guided sales for current year (1283 obs).

[d] Calculated for branches with subjective bonus, budget and actual guided sales for current year (1283 obs). A constant has been added to preserve confidentiality.

[e] Calculated for branches with subjective bonus, budget and actual guided sales for current and next year (869 obs).

[f] Calculated for branches with subjective bonus, budget and actual guided sales for current and next year (869 obs).

$_{t}$ is the actual number of employees of branch *i* in year *t-1*, and *n* is the number of branches in the region of branch *i*. A positive *Relative_Target_Difficulty*$_{i,t}$ indicates a target that is more difficult than those of other branches in the same region.[19]

We include additional variables to control for the role of subjective bonuses as supplements to measurement limitations associated with objective bonuses (Ederhof, 2010). First, we control for number of employees in the branch. Regional directors may use subjective bonuses to compensate branches with fewer resources than expected. Since the main resource in travel retail is the number of people, we measure the shortfall of branch resources as the difference between the actual and budgeted number of full time employees. Second, we control for

[19] We use average actual performance in *t-1* as the reference to measure *relative target difficulty*, because it captures employees' perception of target difficulty. Employees know actual performance in *t-1* at the beginning of year *t*, and they can judge the difficulty of their target. An alternative reference point is the average actual performance in *t*; this alternative measures difficulty from the perspective of the manager who decides the subjective bonus at the end of the year. When the period is finished, actual performance is available to managers who will likely use this information to evaluate difficulty. However, information known at the end of a year is of no use to employees in their decision of the effort to exert throughout the year. To be consistent with our Hypothesis 1, which is based on employee perception, we use actual performance in *t-1*, rather than in *t*. We thank an anonymous referee for suggesting the use of *t-1* as the reference period. Results are robust to the alternative definition of the *relative target difficulty*.

Table 2
Pearson Correlations^.

	Relative Target Difficulty$_{i,t}$	*Δ Relative Target Difficulty*$_{i,t+1}$	*Employees*$_{i,t}$	*Density Change*$_{j,t}$	*Objective Bonus*$_{i,t}$	*Subjective Bonus*$_{i,t}$
Δ Relative Target Difficulty$_{i,t+1}$	−0.50***					
Employees$_{i,t}$	0.20***	0.02				
Density Change$_{j,t}$	0.11***	−0.05	−0.03			
Objective Bonus$_{i,t}$	0.14***	0.21***	0.30***	−0.06*		
Subjective Bonus$_{i,t}$	0.17***	−0.04	0.25***	−0.03	−0.17***	
Δ Relative Outcome$_{i,t+1}$	−0.19***	0.05	0.04	0.02	−0.11***	−0.06*

^Calculated for branches with subjective bonus, budget and actual guided sales for current year (1283 obs).
*, **, *** Statistically significant at 10%, 5% and 1%, respectively.

***Relative Target Difficulty*$_{i,t}$** is the relative difficulty of branch *i*'s target in year *t* relative to the average target difficulty for a region in year *t*, *n* is the number of branches in the region:

$$\frac{B_{i,t} / employees_{i,t} - \left(\sum_{j=1}^{n} A_{j,t-1} / employees_{j,t-1}\right) / n}{\left(\sum_{j=1}^{n} A_{j,t-1} / employees_{j,t-1}\right) / n}$$

Δ *Relative Target Difficulty*$_{i,t+1}$ is the change in Relative Target Difficulty for branch i from year t to year t + 1:

$$\frac{B_{i,t+1} / employees_{i,t+1} - \left(\sum_{j=1}^{n} A_{j,t} / employees_{j,t}\right) / n}{\left(\sum_{j=1}^{n} A_{j,t} / employees_{j,t}\right) / n} - \frac{B_{i,t} / employees_{i,t} - \left(\sum_{j=1}^{n} A_{j,t-1} / employees_{j,t-1}\right) / n}{\left(\sum_{j=1}^{n} A_{j,t-1} / employees_{j,t-1}\right) / n}$$

***Employees*$_{i,t}$** is the actual full time equivalent employees for branch *i* in year *t*.

***Density Change*$_{j,t}$** is the change in the density of branches in region *j* from year *t-1* to year *t*.

***Objective Bonus*$_{i,t}$** is Objective Bonus of branch *i* in year *t*.

***Subjective Bonus*$_{,t}$** is Subjective Bonus for branch *i* in year *t*.

Δ ***Relative Outcome*$_{i,t+1}$** is the change in *Relative Outcome* for branch *i* from year *t* to year *t + 1*:

$$\frac{A_{i,t+1} / employees_{i,t+1} - (\sum_{j=1}^{n} A_{j,t+1} / employees_{j,t+1}) / n_{t+1}}{(\sum_{j=1}^{n} A_{j,t+1} / employees_{j,t+1}) / n_{t+1}} - \frac{A_{i,t} / employees_{i,t} - (\sum_{j=1}^{n} A_{j,t} / employees_{j,t}) / n_{t}}{(\sum_{j=1}^{n} A_{j,t} / employees_{j,t}) / n_{t}}$$

changes in the level of competition in the market, measured as the change in the number of branches of travel agencies (of our company as well as its competitors) per million people from the previous to the current year. These data come from the government and are measured at the regional level. Third, we control for changing economic conditions across time using yearly dummy variables. Fourth, we control for objective bonus awarded and include a dummy ($N_{i,t}$) to identify the cases in which actual sales of branch *i* fall below the threshold of 70% of targeted sales in year *t*. Finally, we also include a dummy for each region to control for the potential effect associated with the regional director who decides on subjective bonuses.

Table 1, Panel E provides descriptive statistics on explanatory as well as control variables. On average, the budgeted and actual number of employees are comparable (Panel E). Change in competition (*Density Change*$_{j,t}$) increases, consistent with a context of economic growth (with an average yearly rate of 5.2%), but it also shows significant differences across regions. *Relative Target Difficulty*$_{i,t}$ varies between -0.05 in its first quartile and 0.24 in its third quartile, indicating sizeable variation. This range is approximately 25% of average actual sales per employee (€837,438 / 2.80 = €299,085). Change in *Relative Target Difficulty* over time (*Δ Relative Target Difficulty*) has a standard deviation of 0.244, indicating that it is not sticky over time but changes with branches' previous performance (the correlation between *Δ Relative Target Difficulty* and *Performance Deviation* is 0. 35, not tabulated).

The correlation between *Relative Target Difficulty*$_{i,t}$ and actual guided sales per employee (*Actual Sales per Employee*$_{i,t}$) is 0.55 (not tabulated). Meta-analyses indicate that the correlation between goal difficulty and performance ranges between 0.52 and 0.82 (Locke and Latham, 1990). Thus, better-performing branches are given goals that are more challenging. This observation is consistent with challenging goals having a motivational function (Presslee et al., 2013), where managers signal to employees that they believe the employees have the skills and attitude to meet the target (Locke and Latham, 2002).

Table 2 reports pairwise correlations. *Relative Target Difficulty*$_{i,t}$ might lower the likelihood of achieving targets (Hollenbeck et al., 1989). Yet, *Relative Target Difficulty*$_{i,t}$ is positively correlated with *Objective Bonus*$_{i,t}$ (0.14). This observation is consistent with subjective bonuses enhancing target commitment and targets being perceived as difficult yet achievable. *Relative Target Difficulty*$_{i,t}$ is significantly correlated with *Subjective Bonus*$_{i,t}$ (0.17). Subjective and objective bonuses are negatively correlated (-0.17). Theoretical arguments make no prediction about the correlation between these two types of bonus, as they rely on different information sets (Merchant et al., 2010). Table 3 provides summary statistics of *Subjective Bonus*$_{i,t}$ as a function of *Relative Target Difficulty*$_{i,t}$; the mean of *Subjective Bonus* for the branches in the same decile of *Relative Target Difficulty* increases as we move up in the deciles. Furthermore, the mean of *Δ Subjective Bonus*$_{i,t+1}$ increases with *Δ Target Difficulty*$_{i,t+1}$.

Table 3
Summary Statistics on Subjective Bonuses as a Function of Relative Target Difficulty.

Relative Target Difficulty$_t$ Deciles	*Subjective Bonus*$_t$ Mean[a]	*Δ Subjective Bonus*$_{t+1}$ Mean[b]	*Δ Relative Target Difficulty*$_{t+1}$ Deciles
1 (easiest)	210.79	−58.00	**(lowest) 1**
2	245.49	−26.02	**2**
3	287.93	−91.13	**3**
4	260.67	−30.92	**4**
5	304,41	−44.45	**5**
6	389.13	−83.45	**6**
7	535.19	33.92	**7**
8	507.03	36.74	**8**
9	544.82	39.99	**9**
10 (more difficult)	622.21	72.45	**(Highest) 10**

[a] Calculated for branches with subjective bonus, budget and actual guided sales for current year (1283 obs).
[b] Calculated for branches with subjective bonus, budget and actual guided sales for current and next year (869 obs).

4. Results

We study how ex ante performance targets relate to ex post subjective bonuses. Calibrating performance targets is a subjective process, as is determining end-of-year subjective bonuses. Hence, Hypothesis 1 predicts an association of subjective bonus with target difficulty

(*Relative Target Difficulty*$_{i,t}$).[20] We use the following equations (Eq. (1)), and we expect a positive β_1:

$$Subjective\ Bonus_{i,t} = \alpha_0 + \beta_1 Relative\ Target\ Difficulty_{i,t} + \alpha_1 Employee\ Deviation_{i,t} + \alpha_2 Employees_{i,t\ t} + \alpha_3 Density\ Change_{i,t} + \alpha_4\ Objective\ Bonus_{i,t} + \alpha_5 Mature_{i,t} + \alpha_6 N_{i,t} + \alpha_7 Year\ 04 + \alpha_8 Year\ 05 + \alpha_9 Year\ 06 + \Sigma\eta jZj + \varepsilon_{i,t} \quad (1)$$

The following are included as control variables: branch formula bonus (*Objective Bonus*$_{i,t}$), a dummy variable that takes the value of 1 if the branch failed to obtain an objective bonus and 0 otherwise ($N_{i,t}$),[21] number of employees (*Employees*$_{i,t}$), resource shortage (*Employee Deviation*$_{i,t}$) (actual minus budgeted employees) and change in local competition (*Density Change*$_{i,t}$). We estimate an OLS model controlling for region (Z_j) and year and with robust standard errors clustered by branch.

Table 4, Model 1 reports the results. *Relative Target Difficulty*$_{i,t}$ is positive and significant, indicating an association between subjective bonus and target difficulty (Hypothesis 1). *Employee*$_{i,t}$ has a positive and significant coefficient, indicating that *Subjective Bonus*$_{i,t}$ captures branch size. The number of actual and budgeted employees are both sticky over time, which might explain *Employee Deviation*$_{i,t}$ being non-significant. *Objective Bonus*$_{i,t}$ has a negative and significant coefficient, consistent with managers giving more subjective bonuses to branches with lower objective bonuses after controlling for *Relative Target Difficulty*$_{i,t}$. This result is consistent with previous findings where subjective bonuses capture non-contractible information generated through the period to enhance the measurement environment (Baker et al., 1994; Budde, 2009; Gibbs et al., 2004; Merchant et al., 2010; Pendergarst, 2002; Rajan and Reichelstein, 2006 2009).

However, if employees who receive more difficult targets expect to be awarded subjective bonuses regardless of their actual performance relative to that target, there is no reason for them to provide high effort. Honoring the contract by the manager should be conditioned to the previous honoring by the employee. Hence, for the commitment to unfold, units with difficult targets have to perform vis-à-vis the target to be awarded subjective bonuses, as this signals their prior commitment to make the difficult target.[22] Thus, the association between subjective bonuses and target difficulty will depend on achieving a minimum level of performance. To test this prediction we use the following equations (Eq. (2)), and we expect a positive β_1 and a negative β_2:

$$Subjective\ Bonus_{i,t} = \alpha_0 + \beta_1 Relative\ Target\ Difficulty_{i,t} + \beta_2 Relative\ Target\ Difficulty_{i,t} * N_{i,t} + \alpha_1 Employee\ Deviation_{i,t} + \alpha_2 Employees_{i,t\ t} + \alpha_3 Density\ Change_{i,t} + \alpha_4\ Objective\ Bonus_{i,t} + \alpha_5 Mature_{i,t} + \alpha_6 N_{i,t} + \alpha_7 Year\ 04 + \alpha_8 Year\ 05 + \alpha_9 Year\ 06 + \Sigma\eta jZj + \varepsilon_{i,t} \quad (2)$$

We use the same other controls used in Eq. (1). The results indicate that the effect of relative target difficulty for branches meeting the floor for receiving objective bonuses ($\beta_1 = 0.42$) remains positive and significant, yet the coefficient for branches with no objective bonus is not statistically different from zero ($\beta_1 + \beta_2 = 0.42\text{-}0.35 = 0.07$, $p > 0.69$). Thus, branches with more demanding targets (that exceed the average target of their region) receive a higher end-of-year subjective only if they have reached an acceptable performance level.

Subjective bonuses for year *t* are decided almost simultaneously with year *t + 1* targets. Thus, they may also capture a forward-looking component, *i.e.*, information regarding targets for year *t + 1* (Bouwens and Kroos, 2017). Alternatively, top managers can wait to reward branches for this additional difficulty at the end of year *t + 1* (Hypothesis 1). To test this argument, we proceed as follows. First, we regress target revision from year *t* to year *t + 1* (*Target Revision*$_{t+1}$) defined as $(B_{i,t+1}–B_{i,t})/B_{i,t}$, on past information of each branch available at the end of *t*, *i.e.*, the previous year's performance (*Performance Deviation*$_{i,t}$) and the previous year's relative target difficulty (*Relative Target Difficulty*$_{i,t}$) (Aranda et al., 2014; Indjejikian et al., 2014; Leone and Rock, 2002), and we use the same control variables as in Model 1. The residuals of this regression represent the change in targets that cannot be explained by objective information at *t*. We then include these residuals in Model 1 and 2. The new models (Model 3 and 4) are:

$$Subjective\ Bonus_{i,t} = \alpha_0 + \beta_1 Relative\ Target\ Difficulty_{i,t} + \beta_3\ Target\ Revision\ Residuals_{i,t+1} + \alpha_1 Employee\ Deviation_{i,t} + \alpha_2 Employees_{i,t\ t} + \alpha_3 Density\ Change_{i,t} + \alpha_4 Objective\ Bonus_{i,t} + \alpha_5 Mature + \alpha_6\ N_{i,t} + \alpha_7 Year\ 04 + \alpha_8\ Year\ 05 + \alpha_9\ Year\ 06 + \Sigma\eta jZj + \varepsilon_{i,t} \quad (3)$$

$$Subjective\ Bonus_{i,t} = \alpha_0 + \beta_1 Relative\ Target\ Difficulty_{i,t} + \beta_2 Relative\ Target\ Difficulty_{i,t} * \boldsymbol{N_i t} + \beta_3\ Target\ Revision\ Residuals_{i,t+1} + \alpha_1\ Employee\ Deviation_{i,t} + \alpha_2\ Employees_{i,t\ t} + \alpha_3 Density\ Change_{i,t} + \alpha_4\ Objective\ Bonus_{i,t} + \alpha_5\ Mature_{i,t} + \alpha_6\ N_{i,t} + \alpha_7\ Year\ 04 + \alpha_8\ Year\ 05 + \alpha_9\ Year\ 06 + \Sigma\eta jZj + \varepsilon_{i,t} \quad (4)$$

Table 4, Models 3 and 4 report the results. Subjective bonuses are unrelated to changes in targets from *t* to *t + 1*.[23] Thus, relative change in targets from year *t* to year *t + 1* is not considered when deciding subjective bonuses for year *t*. The coefficient for the residuals is not significant, suggesting that subjective bonuses do not reflect changes to future targets.

As a robustness test we examine the association between changes in subjective bonuses and changes in target difficulty. We test a model similar to model 1, but using changes rather than levels. Model 4 is:

$$\Delta\ Subjective\ Bonus_{i,t+1} = \alpha_0 + \beta_1 \Delta\ Relative\ Target\ Difficulty_{i,t+1} + \alpha_2 \Delta\ Employees_{i,t+1} + \alpha_3 Density\ Change_{i,t+1} + \alpha_4\ \Delta\ Objective\ Bonus_{i,t+1} + \alpha_5 Mature_t + \alpha_6 Year\ 05 + \alpha_7 Year\ 06 + \alpha_8\ N_{i,t} + \Sigma\eta jZj + \varepsilon_{i,t} \quad (5)$$

The results in Table 4, Panel B confirm the significance of the change of relative target difficulty in explaining the change in subjective bonuses from year *t* to year *t + 1*. In an untabulated analysis, we alternatively defined *Target Revision* as growth rate over actual sales (*Budget_Sales*$_{i,t+1}$ /*Actual_Sales*$_{i,t}$) and obtained comparable results.

Hypothesis 2 predicts an association between subjective bonuses and next year's performance improvements when targets are more difficult. We measure performance improvement relative to peers as *Δ Relative Outcome*$_{i,t+1}$, defined as:

$$\frac{A_{i,t+1}/employees_{i,t+1} - (\sum_{j=1}^{n} A_{j,t+1}/employees_{j,t+1})/n_{t+1}}{(\sum_{j=1}^{n} A_{j,t+1}/employees_{j,t+1})/n_{t+1}} - \frac{A_{i,t}/employees_{i,t} - (\sum_{j=1}^{n} A_{j,t}/employees_{j,t})/n_t}{(\sum_{j=1}^{n} A_{j,t}/employees_{j,t})/n_t}$$

We examine the relationship between *Δ Relative Outcome*$_{i,t+1}$ and *Δ Relative Target Difficulty*$_{i,t+1}$ (defined as the change in relative target difficulty for branch *i* from year *t* to year *t + 1)*:

[20] *t+1* period targets and *t* period subjective bonuses are both determined around the same time. Ultimately, it is an empirical issue whether a subjective bonus for period *t* (determined around the end of period *t*) is more closely associated with targets for period *t* (set at the beginning of period *t*) or targets for period *t+1* (set at the beginning of period *t+1*).

[21] We use the direct measure of objective bonuses rather than performance, since we are interested in controlling for other performance-based rewards. *Performance Deviation*$_{i,t}$ and *Objective Bonus*$_{i,t}$ have a 0.63 correlation (rather than a perfect correlation) because of the thresholds and the profit-linked formula and non-financial measures.

[22] We thank an anonymous referee for suggesting the inclusion of this condition.

[23] We also examined the residuals of regressing *Relative Target Increase*$_{i,t+1}$ instead of *Target Revision*$_{t+1}$ in the first auxiliary regression. The coefficient of the residuals in Eq. (2) is again positive but still not significant.

$$\frac{B_{i,t+1}/employees_{i,t+1}-\left(\sum_{j=1}^{n}A_{j,t}/employees_{j,t}\right)/n}{\left(\sum_{j=1}^{n}A_{j,t}/employees_{j,t}\right)/n} - \frac{B_{i,t}/employees_{i,t}-\left(\sum_{j=1}^{n}A_{j,t-1}/employees_{j,t-1}\right)/n}{\left(\sum_{j=1}^{n}A_{j,t-1}/employees_{j,t-1}\right)/n}$$

Hence, we examine whether the increase target difficulty from year t to year $t+1$ is associated with performance for branches receiving higher subjective bonuses at the end of year t. We define a dummy (*Large Subjective Bonus*$_{i,t}$) that takes the value of 1 for branches whose subjective bonuses in t were in the upper quartile, as proxy for having a strong implicit contract-based relationship.[24] We control for market variables and for the branch's previous target difficulty. Specifically, we use a dummy named *Difficult Target*$_{i,t}$ that takes a value of one for those branch-years with targets above the average target of its region:[25]

$$\Delta\,Relative\ Outcome_{i,t+1} = \alpha_0 + \beta_1 \Delta\ Relative\ Target\ Difficulty_{i,t+1} + \beta_2 Large\ Subjective\ Bonus_{i,t} + \beta_3 Relative\ Target\ Revision_{i,t+1} * Large\ Subjective\ Bonus_{i,t} + \alpha_1 Density\ Change_{i,t+1} + \alpha_2 Mature_{i,t+1} + \alpha_3 Difficult\ Target_{i,t} + \alpha_4 Year\ 04 + \alpha_6\ Year\ 05 + \Sigma\eta jZj + \varepsilon_{i,t} \quad (6)$$

Table 5 shows the results. The interaction between Δ*Relative Target Difficulty*$_{i,t+1}$ and *Large Subjective Bonus*$_{i,t}$ is positive and significant, consistent with Hypothesis 2. Increases in target difficulty are associated with (relative) increases in performance only for branches receiving higher subjective bonuses. Similarly, decreases in target difficulty are not associated with changes in performance unless employees receive a high subjective bonus at the end of previous year.[26] This result suggests that subjective bonuses facilitate the acceptance of more-demanding targets, strengthening their motivational power. Finally, mature branches improve significantly less than do young branches.

Table 4
The Reward Function of Subjective Bonuses.

Panel A: Levels

Variable	Coefficient & (Predictions)	Estimated Coefficients (Model 1)	Estimated Coefficients (Model 2)	Estimated Coefficients (Model 3)	Estimated Coefficients (Model 4)
Intercept	α_0 (?)	−0.13	−0.13	−0.25*	−0.24*
		(-1.17)	(-1.17)	(-1.90)	(-1.84)
Relative Target Difficulty$_{i,t}$	β_1 (+)	0.40***	0.42***	0.54***	0.57***
		(4.13)	(4.18)	(4.17)	(4.22)
Relative Target Difficulty$_{i,t}$ * $N_{i,t}$	β_2 (+)		−0.35*		−0.54**
			(-1.68)		(-2.20)
Target Revision Residuals$_{i,t+1}$	β_3 (+)			−0.04	−0.02
				(-0.32)	(-0.11)
Employee Deviation$_{i,t}$	α_1 (-)	−0.16	−0.15	−0.14	−0.14
		(-1.22)	(-1.18)	(-0.81)	(-0.83)
Employees$_{i,t}$	α_2 (+)	0.29***	0.29***	0.28***	0.28***
		(6.21)	(6.20)	(4.92)	(4.87)
Density Change$_{j,t}$	α_3 (+)	−0.46	−0.42	−0.25	−0.20
		(-0.74)	(-0.68)	(-0.35)	(-0.27)
Objective Bonus$_t$	α_4 (?)	−0.14***	−0.14***	−0.13***	−0.13***
		(-9.74)	(-9.75)	(-7.47)	(-7.49)
Mature$_{i,t}$	α_5 (?)	0.05	0.05	0.05	0.05
		(1.30)	(1.32)	(1.11)	(1.12)
$N_{i,t}$	α_6 (?)	0.12	0.12	0.11	0.11
		(0.86)	(0.91)	(0.70)	(0.75)
N		1282	868	868	868
Adjusted R^2		19.58%	19.67%	22.31%	22.50%

Panel B: Changes

Variable	Coefficient & (Predictions)	Estimated Coefficients (Model 5)
Intercept	α_0 (?)	−10.14
		(−0.86)
Δ *Relative Target Difficulty*$_{i,t+1}$	β_1 (+)	21.17**
		(2.12)
Δ *Employees*$_{i,t+1}$	α_2 (+)	12.62

(*continued on next page*)

5. Robustness tests

To control for potential branch characteristics being correlated with our measure of relative target difficulty, we ran an auxiliary regression of *Relative Target Difficulty*$_{i,t}$ on *Relative Location Value*$_{i,t}$ and the dummy

[24] Endogeneity concerns prevent us from taking *Subjective Bonus*$_{i,t}$ as an exogenous variable in Model 4. An alternative way to test Hypothesis 2 is to build a system of structural equations with Models 2 and 5. Estimation is via two-stage least squares, in which the dependent variables of both models and *Relative Target Difficulty*$_{i,t}$ are explicitly taken to be endogenous to the system and are treated as correlated with the disturbances. The results of this robustness check also show a positive and significant effect between the estimated subjective bonuses and the level of outcome of branches from t to $t+1$.

[25] The results are robust, albeit less significant, when *Large Subjective Bonus*$_{i,t}$ is defined for branches with subjective bonuses above the mean.

[26] Similar results are obtained when using a dummy that takes the value of 1 for branches with an outcome level (outcome per employee) above the average of its region.

Table 4 (*continued*)

Panel B: Changes

Variable	Coefficient & (Predictions)	Estimated Coefficients (Model 5)
		(1.50)
Density Change$_{j,t+1}$	α_3 (+)	139.9
		(1.06)
Δ Objective Bonus$_{t+1}$	α_4 (?)	−0.001
		(-0.02)
Mature$_{i,t}$	α_5 (?)	0.19
		(0.07)
N		739
Adjusted R^2		3.18%

*, **, *** Statistically significant at 10%, 5% and 1%, respectively. *t*-statistics are in parentheses.

The models are:

(1) $\text{Subjective Bonus}_{i,t} = \alpha_0 + \beta_1 \text{Relative Target Difficulty}_{i,t} + \alpha_1 \text{ Employee Deviation}_{i,t} + \alpha_2 \text{ Employees}_{i,t\ t} + \alpha_3 \text{Density Change}_{i,t} + \alpha_4 \text{ Objective Bonus}_{i,t} + \alpha_5 \text{ Mature}_{i,t} + \alpha_6 \text{ N}_{i,t} + \alpha_7 \text{ Year 04} + \alpha_8 \text{ Year 05} + \alpha_9 \text{ Year 06} + \Sigma\eta jZj + \varepsilon_{i,t}$

(2) $\text{Subjective Bonus}_{i,t} = \alpha_0 + \beta_1 \text{Relative Target Difficulty}_{i,t} + \beta_2 \text{Relative Target Difficulty}_{i,t}{}^* \text{ N}_{i,t} + \alpha_1 \text{ Employee Deviation}_{i,t} + \alpha_2 \text{ Employees}_{i,t\ t} + \alpha_3 \text{Density Change}_{i,t} + \alpha_4 \text{ Objective Bonus}_{i,t} + \alpha_5 \text{ Mature}_{i,t} + \alpha_6 \text{ N}_{i,t} + \alpha_7 \text{ Year 04} + \alpha_8 \text{ Year 05} + \alpha_9 \text{ Year 06} + \Sigma\eta jZj + \varepsilon_{i,t}$

(3) $\text{Subjective Bonus}_{i,t} = \alpha_0 + \beta_1 \text{Relative Target Difficulty}_{i,t} + \beta_3 \text{ Target Revision Residuals}_{i,t+1} + \alpha_1 \text{ Employee Deviation}_{i,t} + \alpha_2 \text{ Employees}_{i,t\ t} + \alpha_3 \text{Density Change}_{i,t} + \alpha_4 \text{ Objective Bonus}_{i,t} + \alpha_5 \text{ Mature}_{i,t} + \alpha_6 \text{ N}_{i,t} + \alpha_7 \text{ Year 04} + \alpha_8 \text{ Year 05} + \alpha_9 \text{ Year 06} + \Sigma\eta jZj + \varepsilon_{i,t}$

(4) $\text{Subjective Bonus}_{i,t} = \alpha_0 + \beta_1 \text{Relative Target Difficulty}_{i,t} + \beta_2 \text{Relative Target Difficulty}_{i,t}{}^* \text{ N}_{i,t} + \beta_3 \text{ Target Revision Residuals}_{i,t+1} + \alpha_1 \text{ Employee Deviation}_{i,t} + \alpha_2 \text{ Employees}_{i,t\ t} + \alpha_3 \text{Density Change}_{i,t} + \alpha_4 \text{ Objective Bonus}_{i,t} + \alpha_5 \text{ Mature}_{i,t} + \alpha_6 \text{ N}_{i,t} + \alpha_7 \text{ Year 04} + \alpha_8 \text{ Year 05} + \alpha_9 \text{ Year 06} + \Sigma\eta jZj + \varepsilon_{i,t}$

(5) $\Delta \text{ Subjective Bonus}_{i,t+1} = \alpha_0 + \beta_1 \Delta \text{Relative Target Difficulty}_{i,t+1} + \alpha_2 \Delta \text{Employees}_{i,t+1} + \alpha_3 \text{Density Change}_{i,t+1} + \alpha_4 \Delta \text{Objective Bonus}_{i,t+1} + \alpha_5 \text{Mature}_t + \alpha_6 \text{Year 05} + \alpha_7 \text{Year 06} + \Sigma\eta jZj + \varepsilon_{i,t}$

Where:

Subjective Bonus$_{i,t}$ is subjective bonuses for branch *i* in year *t*, measured in thousands.

Relative Target Difficulty$_{i,t}$ is the relative difficulty of branch *i*'s target in year *t* relative to the average outcome for a region in year *t*, *n* is the number of branches in the region:

$$\frac{B_{i,t} / employees_{i,t} - \left(\sum_{j=1}^{n} A_{j,t-1} / employees_{j,t-1}\right) / n}{\left(\sum_{j=1}^{n} A_{j,t-1} / employees_{j,t-1}\right) / n}$$

Employees$_{i,t}$ is the number of Employees for branch *i* in year *t*.

Employee Deviation$_{i,t}$ is the difference between the actual and the budgeted number of employees for branch *i* in year *t*.

Density Change$_{j,t}$ is the change in the density of branches in region *j* from year *t-1* to year *t*.

Objective Bonus$_{i,t}$ is objective bonuses for branch *i* in year *t*.

Mature $_{i,t}$ is 1 if branch *i* at time *t* is 5 years old or older, 0 otherwise.

N$_{i,t}$ is 1 if actual guided sales of branch *i* at year *t* fall below 70% of budgeted guided sales, *i.e.*, if the branch received no objective bonuses in year *t*, 0 otherwise.

Year_0x is 1 if observation year corresponds to year 200 × . These three variables are included but not reported.

Zx is 1 if branch belongs to region *x*. These thirteen variables are included but not reported.

Target Revision Residuals$_{i,t+1}$ is the residuals of the following equation:

$\text{Target Revision}_{i,t+1} = \alpha_0 + \beta_1 \text{ Performance Deviation}_{i,t} + \beta_2 \text{ D}_i * \text{Performance Deviation}_{i,t} + \beta_3 \text{ Relative Target Difficulty}_{i,t} + \beta_4 \text{ Performance Deviation}_{i,t} * \text{Relative Target Difficulty}_{i,t} + \beta_3 \text{ D}_i * \text{Performance Deviation}_{i,t} * \text{Relative Target Difficulty}_{i,t} + \alpha_1 \text{ Employees}_{i,t\ t} + \alpha_2 \Delta \text{ Budget Employees}_{i,t\ t} + \alpha_3 \text{Relative Density Change}_{i,t} + \alpha_4 \text{ Mature} + \alpha_5 \text{ Year 05} + \alpha_{76} \text{ Year 06} + \Sigma\eta jZj + \beta_2 \text{ D}_i + \varepsilon_{i,t}$

Target Revision$_{i,t+1}$ is the change in budgeted guided sales for branch *i* from year *t* to year *t + 1*, calculated as: (*Budget Sales$_{i,t+1}$-Budget Sales$_{i,t}$)/Budget Sales$_{i,t}$*.

Performance Deviation$_{i,t}$ is the difference between the actual and budgeted guided sales for branch *i* in year *t*. (*Actual Sales$_{i,t}$-Budget Sales$_{i,t}$)/Budget Sales$_{i,t}$*.

D $_{i,t}$ is 1 if Actual guided sales for branch *i* at time *t* is below its budgeted guided sales, *i.e.*, if (*Actual Sales$_{i,t}$-Budget Sales$_{i,t}$)/Budget Sales$_{i,t}$* is < 0, 0 otherwise.

Δ *Budget Employees$_{i,t+1}$* is the change in the budgeted number of employees from year *t to year t + 1* for branch *i*.

Δ ***Subjective Bonus$_{i,t}$*** is the change ***Subjective Bonus$_{i,t}$*** from year t to year t + 1,.

ΔRelative Target Difficulty$_{i,t}$ is the change in Relative Target Difficulty$_{i,t}$ from year t to year t + 1.

Δ***Employees$_{i,t}$*** is the change in the number of employees for branch *i* from year *t* to year *t + 1*.

Shopping Center$_{i,t}$. *Relative Location Value* controls for the affluence of the neighborhood of each branch, and *Shopping Center* controls for those branches located in shopping centers.[27] We then used its residuals as *Relative Target Difficulty$_{i,t}$* to estimate Model 1 and 2. The explanatory power of the auxiliary regression is low (R^2 = 3.67%), suggesting that these specific characteristics of the branches are not the main causes of the variability of *Relative Target Difficulty*. The estimated coefficients for Models 1 and 2 using residuals from this first-stage regression are consistent with those reported in Table 4. We also ran Models 1 and 2 with variables defined per employee (deflated by employees) and removed 0.5% of the observations in both tails to assess the importance of outliers. The results are consistent with those reported in Table 4. Finally, the estimated coefficients remained very similar in size and significance.

Furthermore, specific branch characteristics (such as the specific management talent at the branch) are stable over time; thus, if *Relative Target Difficulty* were to capture these characteristics, then it would be sticky over time. We provide evidence that this is not the case. First, the variation of *Relative Target Difficulty* from year *t* to year *t + 1* (*Δ Relative Target Difficulty*) has a standard deviation of 0.24 (Table 1 Panel E). In

[27] *Relative Location Value$_{i,t}$* is measured as the difference between the value of a square foot within a radius of 1,500 feet of branch i and the average value of a square foot in the region as measured in 2006. $SquareFoot_{i,t} - (\sum_{j=1}^{n} SquareFoot_{j,t}/n)$. Shopping Center is a dummy variable that takes the value of one if a branch is located in a shopping center and zero otherwise.

Table 5
The motivational effect of subjective bonuses.

Variable	Coefficient & (Predictions)	Estimated Coefficients (Model 6)	Estimated Coefficients (Model 7)
Intercept	α_0 (?)	0.111***	0.114***
		(4.69)	(4.76)
Δ Relative Target Difficulty$_{i,t+1}$	β_1 (+)	0.007	−0.04
		(0.15)	(−0.89)
Large Subjective Bonus$_t$	β_2 (+)	−0.004	−0.003
		(−0.28)	(−0.27)
Δ Relative Target Difficulty$_{i,t+1}$ * *Large Subjective Bonus*$_t$	β_3 (+)		0.175***
			(2.58)
Density Change$_{j,t+1}$	α_1 (-)	0.162	0.158
		(0.49)	(0.48)
Mature$_{i,t+1}$	α_2 (-)	−0.055***	−0.056***
		(−4.29)	(−4.40)
Difficult Target$_{i,t}$	α_3 (-)	−0.048***	−0.048***
		(-3.12)	(-3.28)
N		868	868
Adjusted R^2		6.76%	7.54%

*, **, *** Statistically significant at 10%, 5% and 1%, respectively. *t*-statistics are in parentheses.
The models are:
(5) $\Delta\ Relative\ Outcome_{i,t+1} = \alpha_0 + \beta_1 \Delta\ Relative\ Target\ Difficulty_{i,t+1} + \beta_2 Large\ Subjective\ Bonus_{i,t} + \alpha_1 Density\ Change_{i,t+1} + \alpha_2 Mature_{i,t+1} + \alpha_3 Difficult\ Target_{i,t} + \alpha_4 Year\ 04 + \alpha_5\ Year\ 05 + \Sigma\eta jZj + \varepsilon_{i,t}$
(6) $\Delta\ Relative\ Outcome_{i,t+1} = \alpha_0 + \beta_1 \Delta\ Relative\ Target\ Difficulty_{i,t+1} + \beta_2 Large\ Subjective\ Bonus_{i,t} + \beta_3 \Delta\ Relative\ Target\ Difficulty_{i,t+1} * Large\ Subjective\ Bonus_{i,t} + \alpha_1 Density\ Change_{i,t+1} + \alpha_2 Mature_{i,t+1} + \alpha_3 Difficult\ Target_{i,t} + \alpha_4 Year\ 04 + \alpha_5\ Year\ 05 + \Sigma\eta jZj + \varepsilon_{i,t}$
Δ ***Relative Outcome***$_{i,t+1}$ is the change in *Relative Outcome* for branch *i* from year *t* to year *t + 1*:

$$\frac{A_{i,t+1}/employees_{i,t+1} - (\sum_{j=1}^{n} A_{j,t+1}/employees_{j,t+1})/n_{t+1}}{(\sum_{j=1}^{n} A_{j,t+1}/employees_{j,t+1})/n_{t+1}} - \frac{A_{i,t}/employees_{i,t} - (\sum_{j=1}^{n} A_{j,t}/employees_{j,t})/n_t}{(\sum_{j=1}^{n} A_{j,t}/employees_{j,t})/n_t}$$

Δ ***Relative Target Difficulty***$_{i,t+1}$ is the change in Relative Target Difficulty for branch i from year t to year t + 1:

$$\frac{B_{i,t+1}/employees_{i,t+1} - \left(\sum_{j=1}^{n} A_{j,t}/employees_{j,t}\right)/n}{\left(\sum_{j=1}^{n} A_{j,t}/employees_{j,t}\right)/n} - \frac{B_{i,t}/employees_{i,t} - \left(\sum_{j=1}^{n} A_{j,t-1}/employees_{j,t-1}\right)/n}{\left(\sum_{j=1}^{n} A_{j,t-1}/employees_{j,t-1}\right)/n}$$

Large Subjective Bonus$_{i,t}$ 1 if subjective bonuses for branch *i* in year *t* was in the upper 75th quartile.
Density Change$_{j,t+1}$ is the change in the density of branches in region *j* from previous to current year.
Mature$_{i,t}$ is 1 if branch *i* at time *t* is 5 years old or older, 0 otherwise.
Difficult Target$_{i,t}$ is 1 if ***Relative Target Difficulty***$_{i,t} > 0$, 0 otherwise. Where ***Relative Target Difficulty***$_{i,t}$ is the relative difficulty of branch *i*'s target in year *t* relative to the average outcome for a region in year *t*, *n* is the number of branches in the region:
Year_0x is 1 if observation year corresponds to year 200 × . These two variables are included but not reported.
Zx is 1 if branch belongs to region *x*. These thirteen variables are included but not reported.

fact, none of the 868 branch year observations in the sample maintains the same position in the ranking of branches in terms of budget difficulty from year *t* to year *t + 1*. Table 6, Panels A and B further show how the *Relative Target Difficulty* of individual branches changes over time.

6. Conclusions

This paper examines the role of target setting and subjective bonuses in budget-based incentive systems. Our results indicate that more difficult targets are rewarded with higher subjective bonuses at the end of the period. This mechanism takes into account the motivational consequences of contracting and provides an alternative to attenuated ratcheting. Thus, discretion appears to play a backward-looking role in enhancing the perceived fairness of budget-based contracts. Discretion also appears to generate commitment going forward, as those branches that receive a higher subjective bonus improve their performance to a greater extent. However, subjective bonuses for year *t* are not used to motivate employees in advance to accept more-difficult targets for year *t + 1*. The picture that emerges identifies discretion in bonus decisions as being used to honor an implicit contract by rewarding employees' efforts (a backward-looking role) and building reputational capital to enhance future employees' commitment (a forward-looking motivational role).

Our research findings present a more complex use of subjectivity in budget-based incentive settings. Discretion is used at the beginning of the period when setting targets and at the end of the period, when deciding on subjective bonuses. This association allows managers to customize targets to the personal characteristics of employees and their units. This customization gives managers the possibility of setting targets closer to the optimal level from a goal setting theory perspective rather than being limited to the alternatives available in formula-based contracts. These findings support a different role for implicit contracts beyond their use to complement measurement failures in formula-based contracts. They further inform existing evidence on implicit contracts in target setting. Prior research has used these arguments to explain the evidence associated with attenuated ratcheting. Our results indicate that these implicit contracts are also observable in linking targets and their associated subjective bonus. The findings are also informative for practitioners; they illustrate how the combination of different tools—target setting and subjective bonuses—open up new alternatives to enhance the motivational environment of employees.

The findings also show an association between subjective bonus this period and performance improvements next period. This association is consistent with these bonuses having a long-term effect on employee commitment. However, we do not find that subjective bonuses are related to next-period target revision. Future research could extend these findings and examine discretion during the period when managers allocate resources. Future research could also examine the interaction between subjective bonuses and attenuated ratcheting as two forms of implicit contracting.

Formula-based bonuses (objective bonuses) are often standard across time and employees, so they are difficult to adapt to specific characteristics. When formula-based bonuses are associated with a target, the target-setting process facilitates some adaptation through target difficulty. This design feature of budget-based incentive systems provides flexibility to improve the motivational effect of economic

Table 6
Target Revisions and Target Difficulty Changes.

		Δ ***Relative Target Difficulty***$_{i,t+1}$	
		Above zero (> 0)	Below zero (< 0)
Relative Target Difficulty$_{i,t}$	Above zero (> 0)	242	347
	Below zero (< 0)	220	59

0 branch year observations have Δ ***Relative Target Difficulty***$_{i,t+1}$ equal to zero. Therefore, none of the branches maintains the same position in the ranking of branches in terms of budget (relative) difficulty from year t to year t + 1.
Targets increase in (relative) difficulty for 462 branch year observations, 242 (upper right quadrant in Panel B) of which already had (relatively) difficult targets in period t.
Targets decrease in (relative) difficulty for 406 branch year observations, 59 (lower left quadrant) of which already had (relatively) easy targets in period t.
Panel B: Plot of Relative Target Difficulty in *t* and *t + 1*.

incentives. Yet, different levels of target difficulty across employees can lead to motivational problems. Managers can also use discretion as part of the bonus to complement the objective component.

The specific setting used in this study may limit the generalizability of the results. For instance, the specific structure of the incentive system, with 50% of the sales-related bonus paid out during the year generates end-of-year bonus expectations that will not happen if these monthly bonuses were absent. The incentive system is also designed with a floor and a cap: 50% of objective bonuses disappear if actual profits do not reach 70% of the target, and they are capped if they exceed 130%. Moreover, this range and the associated payoff have an implicit pay-for-performance slope. The percentage of total bonus to salary is approximately 10–20%; the findings may be different if the pay-for-performance has a different relationship. The results can also differ if the ratio of subjective to total bonus is different from the 30% in our research setting. The behavior can also be different depending on the level of total compensation. In our setting the level of employees' salary is low enough to make any additional income (in the form of bonuses) significant. We examine subjective bonuses that are used in addition to objective ones. Thus, while subjective bonuses can be an opportunity to improve distributive justice, it can also hurt procedural justice. Different structures change the risk perception and the relative importance of fairness perceptions. The period of time studied is one of stable growth, a period different from the uncertainties characterizing the years after the 2008 crisis. Finally, the proxies used in the empirical specification representing the theoretical concepts in the hypotheses may be noisy, and future research can identify better ones to test the behavioral aspects of target setting and incentive provision. Furthermore, our proxies measure the realization of certain variables, but the interpretation of each employee of each of these variables is what drives the behavior of employees. A better proxy would be to measure how each person perceives these variables. Nevertheless, our results provide strong support for the association between target difficulty and subjective bonuses as interrelated processes in target setting.

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References

Adams, J.S., 1965. Inequity in social exchange. In: Berkowitz, L. (Ed.), Advances in Experimental Social Psychology. Academic Press, New York (2), 267–299.
Ahn, T.S., Hwang, I., Kim, M., 2010. The impact of performance measure discriminability on rate incentives. Account. Rev. 85 (2), 389–417.
Aranda, C., Arellano, J., Davila, A., 2014. Ratcheting and the role of relative target setting. Account. Rev. 89 (4), 1197–1226.
Aranda, C., Arellano, J., Davila, A., 2017. Organizational learning in target setting. Acad. Manage. J. 60 (3), 1189–1211.
Baker, G., Gibbons, R., Murphy, K., 1994. Subjective performance measures in optimal incentive contracts. Q. J. Econ. 109, 1125–1156.
Bandura, A., 1997. Self-efficacy: the Exercise of Control. Freeman, New York.
Banker, R.D., Datar, S.M., 1989. Sensitivity, precision, and linear aggregation of signals for performance evaluation. J. Account. Res. 27, 21–39.
Baron, P.D., Besanko, D., 1987. Commitment and fairness in a dynamic regulatory relationship. Rev. Econ. Stud. 54 (3), 413–436.
Bol, J.C., 2008. Subjectivity in compensation contracting. J. Account. Lit. 27, 1–24.
Bol, J.C., Keune, T.M., Matsumura, E.M., Shin, J.Y., 2010. Supervisor discretion in target setting: an empirical investigation. Account. Rev. 85 (6), 1861–1886.
Bol, J.C., Smith, S.D., 2011. Spillover effects in subjective performance evaluation: bias and the asymmetric influence of controllability. Account. Rev. 86 (4), 1213–1230.
Bol, J.C., Hecht, G., Smith, S.D., 2015. Managers' discretionary adjustments: the influence of uncontrollable events and compensation interdependence. Contemp. Account. Rev. 32 (1), 139–159.
Bol, J.C., Lill, J.B., 2015. Performance target revisions in incentive contracts: Do information and trust reduce ratcheting and the ratchet effect? Account. Rev. 90 (5), 1755–1778.
Bonner, S.E., Sprinkle, G.B., 2002. The effects of monetary incentives on effort and task performance: theories, evidence, and framework for research. Account. Organ. Soc. 27 (4), 303–345.
Booner, S.E., Hastie, R., Sprinkle, G.B., Young, S.M., 2000. A review of the effects of financial incentives on performance in laboratory tasks: implications for management accounting. J. Manage. Account. Res. 13, 19–64.
Bouwens, J., Kroos, P., 2011. Target ratcheting and effort reduction. J. Account. Econ. 51 (1), 171–185.
Bouwens, J., Kroos, P., 2017. The interplay between subjective performance assessments and target setting. Manage. Sci. 63 (9), 2868–2884.
Brown, M., Falk, A., Fehr, E., 2004. Relational contracts and the nature of market interactions. Econometrica 72 (3), 747–780.
Budde, J., 2009. Variance analysis and linear contracts in agencies with distorted performance measures. J. Manage. Account. Res. 20 (3), 166–176.
Bull, C., 1987. The existence of self-enforcing implicit contracts. Q. J. Econ. 147–159.
Burney, L.L., Henle, C.A., Widener, S.K., 2009. A path model examining the relations among strategic performance measurement system characteristics, organizational justice, and extra- and in-role performance. Account. Organ. Soc. 34 (3), 305–321.
Bushman, R.M., Indjejikian, R.J., Smith, A., 1996. CEO compensation: the role of individual performance evaluation. J. Account. Econ. 21 (2), 161–193.
Camerer, C.F., 2003. Behavioral Game Theory. Princeton University Press, Princeton, NJ.
Campbell, D., 2008. Nonfinancial performance measures and promotion-based incentives. J. Account. Res. 46 (2), 297–332.
Charness, G., Kuhn, P., Villeval, M.C., 2011. Competition and the ratchet effect. J. Labor Econ. 29 (3), 513–547.
Chen, C.X., Sandino, T., 2012. Can wages buy honesty? The relationship between relative wages and employee theft. J. Account. Res. 50 (4), 967–1000.
Choi, H.C., Kim, J., Merchant, K.A., 2012. Firms' commitment to mitigate the ratchet effect under annual bonus plans with multiple performance measures. AAA 2013 Management Accounting Section (MAS) Meeting Paper. https://doi.org/10.2139/ssrn.2108368. Available at SSRN: https://ssrn.com/abstract=2108368.
Chow, C.W., Cooper, J.C., Haddad, K., 1991. The effect of pay schemes and ratchets on budgetary slack and performance: a multiperiod experiment. Account. Organ. Soc. 16 (1), 47–60.
Cohen-Charash, Y., Spector, P.E., 2001. The role of justice in organizations: a meta-analysis. Organ. Behav. Hum. Decis. Processes 86 (2), 278–321.
Colquitt, J.A., Colon, D.E., Wesson, M.J., Porter, C.O.L.H., Yee Hg, K., 2001. Justice at the millennium: a meta-analytic review of 25 years of organizational justice research. J. Appl. Psychol. 86 (3), 425–445.
Courty, P., Marschke, G., 2004. An empirical investigation of gaming responses to explicit performance incentives. J. Labor Econ. 22 (1), 23–56.
Cropanzano, R., Folger, R., 1991. Procedural justice and worker motivation. In: Straw, R.M., Porter, L.W. (Eds.), Motivation and Work Behavior. McGraw-Hill, New York, pp. 131–143.
Datar, S., Kulp, S., Lambert, R., 2001. Balancing performance measures. J. Account. Res. 29 (1), 75–92.
Dirks, K.T., Ferrin, D.L., 2002. Trust in leadership: meta-analytic findings and implications for research and practice. J. Appl. Psychol. 87, 611–628.
Ederhof, M., 2010. Discretion in bonus plans. Account. Rev. 85 (6), 1921–1949.
Ederhof, M., 2011. Incentive compensation and promotion-based incentives of mid-level managers: evidence from a multinational corporation. Account. Rev. 86 (1), 131–153.
Fehr, E., Schmidt, K.M., 2000. Fairness, incentives, and contractual choices. Eur. Econ. Rev. 44 (4), 1057–1068.
Feltham, G.A., Xie, J., 1994. Performance measure congruity and diversity in multi-task principal/agent relations. Account. Rev. 69 (3), 429–453.
Fisher, J.G., Maines, L.A., Peffer, S.A., Sprinkle, G.B., 2002. Using budgets for performance evaluation: effects of resource allocation and horizontal information asymmetry on budget proposals, budget slack, and performance. Account. Rev. 77 (4), 847–865.
Fisher, J., Peffer, S., Sprinkle, G., 2003. Budget-based contracts, budget levels, and group performance. J. Manage. Account. Res. 15 (1), 71–94.
Fong, E.A., Tosi, H.L., 2007. Effort, performance, and conscientiousness: an agency theory perspective. J. Manage. 33 (2), 161–179.
Freixas, X., Guesnerie, R., Tirole, J., 1985. Planning under incomplete information and the ratchet effect. Rev. Econ. Stud. 52 (2), 173–191.
Gibbs, M., Merchant, K.A., Van der Stede, W.A., Vargus, M.E., 2004. Determinants and effects of subjectivity in incentives. Account. Rev. 79 (2), 409–436.
Halac, M., 2012. Relational contracts and the value of relationship. Am. Econ. Rev. 102 (2), 750–779.
Hales, J., Williamson, M.G., 2010. Implicit employment contracts: the limits of management reputation for promoting firm productivity. J. Account. Res. 48 (1), 51–80.
Hannan, R.L., 2005. The combined effects of wages and firm profit on employee effort. Account. Rev. 80 (1), 167–188.
Hartmann, F., Slapnicar, S., 2009. How formal performance evaluations affects trust between superior and subordinate managers. Account. Organ. Soc. 34 (6), 722–737.
Hollenbeck, J.R., Williams, C.R., Klein, H.J., 1989. An empirical examination of the antecedents of commitment to difficult goals. J. Appl. Psychol. 74 (1), 18.
Holmström, B., Milgrom, P., 1991. Multitask principal-agent analyses: incentive contracts, asset ownership, and job design. J. Law Econ. Organ. 7 (2), 24–53.
Höppe, F., Moers, F., 2011. The choice of different types of subjectivity in CEO annual bonus contracts. Account. Rev. 86 (6), 2023–2046.
Hopwood, A.G., 1972. An empirical study of the role of accounting data in performance evaluation. J. Account. Res. 10, 156–182.
Indjejikian, R.J., Nanda, D.J., 2002. Executive target bonuses and what they imply about

performance standards. Account. Rev. 77 (4), 793–819.
Indjejikian, R., Matejka, M., Merchant, K.A., Van der Stede, W.A., 2014. Earning targets and annual bonus incentives. Account. Rev. 89 (4), 1227–1256.
Ioannou, I., Serafeim, G., 2014. The consequences of mandatory corporate sustainability reporting: evidence from four countries. Harvard Business School Research Working Paper No. 11-100. https://doi.org/10.2139/ssrn.1799589. Available at SSRN: https://ssrn.com/abstract=1799589.
Irlenbusch, B., Sliwaka, D., 2005. Incentives decision frames, and motivation crowding out: an experimental investigation. IZA Discussion Paper No. 1758. Available at SSRN: https://ssrn.com/abstract=822866.
Ittner, C.D., Larcker, D.F., Meyer, M., 2003. Subjectivity and the weighting of performance measures: evidence from a balanced scorecard. Account. Rev. 78 (3), 725–758.
Kaplan, R.S., Norton, D.P., 1996. The Balanced Scorecard: Translating Strategy into Action. Harvard Business School Press, Boston Massachusetts.
Keren, M., Miller, J., Thornton, J.R., 1983. The ratchet: a dynamic managerial incentive model of the Soviet enterprise. J. Comp. Econ. 7 (4), 347–367.
Klein, H., Wesson, M., Hollenbeck, J., Alge, B., 1999. Goal commitment and the goal setting process: conceptual clarification and empirical synthesis. J. Appl. Psychol. 84 (6), 885–896.
Kreps, D.M., Milgrom, P., Roberts, J., Wilson, R., 1982. Rational cooperation in the finitely repeated prisoners' dilemma. J. Econ. Theory 27 (2), 245–252.
Kunz, J., 2015. Objectivity and subjectivity in performance evaluation and autonomous motivation: an exploratory study. Manage. Account. Res. 27, 27–46.
Laffont, J.J., Tirole, J., 1988. The dynamics of incentive contracts. Economet.: J. Econometr. Soc. 1153–1175.
Latham, G.P., Pinder, C.C., 2005. Work motivation theory and research at the dawn of the twenty-first century. Annu. Rev. Psychol. 56, 485–516.
Lau, C., Buckland, C., 2001. Budgeting—role of trust and participation: a research note. Abacus 37 (3), 369–388.
Leone, A.J., Rock, S., 2002. Empirical tests of budget ratcheting and its effect on managers' discretionary accrual choices. J. Account. Econ. 33 (1), 43–67.
Leventhal, G.S., Karuza, J., Fry, W.R., 1980. Beyond fairness: a theory of allocation preferences. In: In: Mikula, G. (Ed.), Justice and Social Interaction, vol. 3. pp. 167–218 1.
Levy, P.E., Williams, J.R., 2004. The social context of performance appraisal: a review and framework for the future. J. Manage. 30 (6), 881–905.
Libby, T., 1999. The influence of voice and explanation on performance in a participative budgeting setting. Account. Organ. Soc. 24 (2), 125–137.
Locke, E.A., Latham, G.P., 1990. A Theory of Goal Setting and Task Performance. Prentice-Hall, Inc.
Locke, E.A., Latham, G.P., 2002. Building a practical useful theory of goal setting and task motivation. Am. Psychol. 57 (9), 705–717.
Matsumura, E.M., Shin, J.Y., 2006. An Empirical analysis of an incentive plan with relative performance measures: evidence from a postal service. Account. Rev. 81 (3), 533–566.
Mayer, R.C., Davis, J.H., 1999. The effect of the performance appraisal system on trust for management: a field quasi-experiment. J. Appl. Psychol. 84, 123–136.
Mayer, R.C., Davis, J.H., Schoorman, F.D., 1995. An integrative model of organizational trust. Acad. Manage. Rev. 20, 709–734.
Merchant, K.A., Stringer, C., Theivananthampillai, P., 2010. Relationships between Objective and Subjective Performance Ratings. University of Southern California. Department of Accountancy and Business Law Working paper series number 17.
Moers, F., 2005. Discretion and bias in performance evaluation: the impact of diversity and subjectivity. Account. Organ. Soc. 30 (1), 67–80.
Murphy, K., 2000. Performance standards in incentive contracts. J. Account. Econ. 30 (3), 245–278.
Murphy, K., Oyer, P., 2003. Discretion in Executive's Incentive Contracts: Theory and Evidence. Working paper. University of Southern California and Stanford University.
Nisar, T.M., 2007. Evaluation of subjectivity in incentive pay. J. Financ. Serv. Res. 31 (1), 53–73.
Prendergast, C., 2002. The tenuous trade-off between risk and incentives. J. Polit. Econ. 110 (5), 1071–1102.
Prendergast, C., Topel, R., 1993. Discretion and bias in performance-evaluation. Eur. Econ. Rev. 37 (2-3), 355–365.
Presslee, A., Vance, T.W., Webb, R.A., 2013. The effects of reward type on employee goal setting, goal commitment, and performance. Account. Rev. 88 (5), 1805–1831.
Rajan, M.V., Reichelstein, S., 2006. Subjective performance indicators and discretionary bonus pools. J. Account. Res. 44 (3), 585–618.
Rajan, M.V., Reichelstein, S., 2009. Objective versus subjective indicators of managerial performance. Account. Rev. 84 (1), 209–237.
Schmidt, K.M., Schnitzer, M., 1995. The interaction of explicit and implicit contracts. Econ. Lett. 48 (2), 193–199.
Sloof, R., Sonnemans, J., 2011. The interaction between explicit and relational incentives: an experiment. Games Econ. Behav. 73 (2), 573–594.
Voußem, L., Kramer, S., Schäffer, U., 2016. Fairness perceptions of annual bonus payments: the effects of subjective performance measures and the achievement of bonus targets. Manage. Account. Res. 30, 32–46.
Waller, W., 1994. Discussion of motivating truthful subordinate reporting: an experimental investigation in a two-subordinate context. Contemp. Account. Res. 10 (2), 721–734.
Webb, R.A., 2004. Managers' commitment to goals contained in a strategic performance measurement system. Contemp. Account. Res. 21 (4), 925–958.
Weitzman, M.L., 1976. The new soviet incentive model. Bell J. Econ. 7, 251–257.
Weitzman, M.L., 1980. The "ratchet principle" and performance incentives. Bell J. Econ. 11, 302–308.
Woods, A., 2012. Subjective adjustments to objective performance measures: the influence of prior performance. Account. Organ. Soc. 37 (6), 403–425.