ABSTRACT
Prior research documents performance improvements following the implementation of pay-for-performance (PFP) bonus plans. However, bonus plans typically pay for performance relative to a goal and the manager whose performance is to be evaluated often participates in setting goals. In these settings PFP affects managers’ incentive to influence goal levels in addition to affecting performance effort. Prior field research is silent on the effect of PFP on goals, the focus of this paper. Using sales and sales goal data from 61 stores of a U.S. retail firm over 10 quarters, we find that the introduction of a performance-based bonus plan with participative goal setting is accompanied by lower goals that are more accurate predictors of subsequent sales performance. Statistical tests indicate that increased goal accuracy is attributable to managers ‘meeting-but-not-beating’ goals and to new information being impounded in goals. We further investigate how differences among managers are associated with goal levels. We find significant “manager effects” but no “supervisor effects.” In additional tests we find that cross-sectional differences among managers are related to differing marginal returns to slack-building effort. Turning to the role of new information on goals, we find that prior period performance has incremental power to explain goal levels in the post-plan period. Our results provide field-based evidence that PFP and participative goal-setting affect the level and accuracy of goals, effects that are associated with both information exchange and with managers’ incentives to influence goals.

Key words: pay-for-performance, incentives, compensation

1. Introduction

Studies have shown that firm performance improves following the implementation of a pay-for-performance (PFP) bonus plan (e.g., Banker et al. 1996a; Banker et al. 2004; Banker et al. 2000). While this research suggests that PFP produces the intended effect of motivating managers to increase effort on performance-improving tasks, for many bonus plans, this presents an incomplete analysis of the effects of PFP. Specifically, bonus plans typically pay for ‘performance-to-goal’ (PtoG, defined in this study as quarterly store sales – sales goal) rather than performance and goals are frequently set through interactions between a supervisor and the manager who is to be evaluated against the goal (Murphy 1999, 2001). Managers have both the opportunity and the incentive to influence goals, and experimental research has found that slack-building behavior is common in such settings (Young 1985; Chow et al.
An assessment of the full effects of PFP must consider jointly the effects on goals and performance because slack-building may be associated with ‘excess’ bonus payments that offset performance effects.

This paper examines effects on performance and goals of the introduction of a bonus plan that rewards managers for meeting goals set through a participative goal-setting process (hereafter, “the plan”). Using quarterly sales and sales goal data from 61 stores of a mid-sized U.S. retailer, we test whether plan introduction is associated with:

(i) increased PtoG, achieved through increased sales performance and/or lower goals;

(ii) goals that more accurately reflect actual performance in the period as a result of information exchange in participative goal-setting and/or because managers ‘meet-but-don’t-beat’ goals;

(iii) goals that are associated with the identity and characteristics of the individuals who set the goals (i.e., supervisor and manager effects); and

(iv) goals that reflect the use of prior performance information in goal-setting.

The paper contributes new evidence on how goal setting processes interact with incentive bonus plans to affect goals and performance. To our knowledge, it is the first paper to use archival data and reporting relationships between managers and supervisors to directly test the impact on goals of PFP with participative goal-setting.

Our field research site provides a nice quasi-experimental setting in which to address the research questions. Prior to the implementation of PFP, sales forecasts were developed by the corporate strategic planning office based on economic and market demographic data. The forecasts were not used as a basis for management compensation at any level of the firm. Rather, at each level of management, a manager’s annual bonus was based on a subjective rating provided by their supervisor and was expressed as a percentage increase from the preceding year’s bonus rate. Thus, even if no increase was awarded, the manager was guaranteed the previous year’s bonus rate in a system that favored tenured managers. The new incentive plan for store managers\(^1\) ties bonus payment to sales goal attainment (i.e., the bonus rate

\(^1\) In the period that we study, only the store managers’ compensation plan was altered. Compensation plans for higher level (i.e., district managers and corporate managers) and lower level (i.e., assistant store managers) bonus-eligible managers were unchanged.
varies linearly with PtoG with a floor of zero and a ceiling of twenty percent of base pay) and all bonus pay is at risk each period. Sales goals are set in meetings between store managers and their district supervisors and approved by corporate strategic planning. Thus the quasi-experiment can be described as a change from a seniority-based bonus plan to a PFP plan based on goal attainment in which the bonus-eligible managers participate in goal-setting.

Consistent with the hypothesis that firms ‘get what they pay for’, we find that, controlling for store differences and local and national market conditions, PtoG increases with the introduction of the plan. Because managers have two levers by which to increase PtoG, we examine separately the effect of plan implementation on goals and performance. Although we document a significant positive relation between store sales and contemporaneous strong economic growth of the industry, we find, on average, diminished sales and sales goal growth relative to the industry following the introduction of the new plan. That is, the marginal post-plan increase in PtoG is the result of goals increasing at a slower rate than sales.

Although firms anticipate managers’ incentives to seek lower goals, participative goal-setting is a common feature of incentive plans that reward PtoG because participation promotes information-exchange and the incorporation of store managers’ local knowledge of, for example, market conditions (e.g., Baiman and Evans 1983; Penno 1984; Reichelstein 1992; Weitzman 1976) as well as commitment to goal attainment (e.g., Locke et al. 1968). These theories predict greater goal accuracy, and indeed, we find that the distribution of post-plan PtoG has a mean that is closer to zero and is markedly less dispersed as compared to the pre-plan distribution. Of course, greater goal accuracy may arise through better goals or through managers intentionally ‘meeting-but-not-beating’ goals. In supplemental tests, we find evidence of both effects.

Experimental research on budget negotiations typically finds that both parties to the negotiation influence outcomes (e.g., Fisher et al 2000). We provide what we believe to be the first test for the presence of incremental manager and supervisor effects on post-plan goal levels using field-based data. The results indicate that supervisors do not differ systematically from each other; for example, with some supervisors accepting easy goals and others pressing for more difficult goals from their store managers. This does not mean that supervisors have no effect on goals. Rather, it means that supervisory effects are
specific to the manager-supervisor dyad and not a property of the supervisor alone. We find a significant store manager effect on post-plan goal levels.

Store manager effects could have their basis in a range of factors including personality, negotiation style, and economic incentives. We focus on economic explanations to test whether, consistent with theories of utility maximization and effort aversion, cross sectional differences in post-plan goal levels are associated with differences between individual managers’ effectiveness in influencing goals or incentives to engage in slack-building. We posit that managers with greater local store knowledge will be more effective in influencing goals. We posit that managers with a longer career horizon and whose households depend more on their income will have stronger incentives to engage in slack-building. Consistent with these predictions, we find that managers with greater local store knowledge and with a longer career horizon obtain lower goals in the post-plan period than they did in the pre-plan period. We find no association between managers’ economic dependence and goal levels. Although these three variables are far from an exhaustive set of factors that may explain store manager effects on goals (indeed, significant manager effects remain after their inclusion), we provide some of the first field-based evidence that individual manager differences that are rooted in economic theory are associated with the goals that emerge from participative goal-setting.

Finally, pursuing the earlier finding that information-exchange in goal-setting is one explanation of more accurate goals following plan introduction, we examine whether goals are affected by changes in the use of prior PtoG information. With the introduction of participative goal-setting, managers and supervisors obtained extensive structured information on a store’s past performance, information that was previously used in the relatively mechanical corporate forecasting process but not easily accessible by store managers or their supervisors. In this setting, old information takes on new meaning; in particular, past performance may serve as a benchmark that limits store managers’ slack-building. Accordingly, we predict and find that PtoG in the same quarter of the prior year is incrementally informative about goals in the post-plan period, supporting the earlier result that participative goal-setting produces different, more accurate goals, in part, due to increased use of prior PtoG information in the goal-setting process.

Taken together the results of this paper provide some of the first field evidence of how goal setting
interacts with incentive bonus plans. Prior field research that examines the performance effects of newly implemented PFP plans is silent about slack-building efforts that goal-based incentive plans elicit and rarely acknowledges that documented performance gains may be attenuated by ‘excess’ bonus payments associated with less challenging goals. While PFP tends to intensify slack-building efforts of the subordinate manager (Walker and Johnson 1999), participative goal-setting as applied in practice allows for varying degrees of participation, depending on characteristics of the PFP plan and of the subordinate manager. This paper contributes evidence that PFP with participative goal-setting is associated with lower, more accurate goals that arise with information exchange as well as with ‘meeting-but not beating’ goals. Moreover, we find that slack-building efforts vary by manager in predictable ways that are associated with managers’ marginal returns to participative goal-setting and slack-building.

The remainder of the paper is organized as follows. Section 2 develops research hypotheses and Section 3 describes the research setting. Data collection, variable measures, and estimation methods are described in Section 4, and the results are presented and discussed in Section 5. Section 6 concludes.

2. Hypotheses Development

Economic theory assumes that managers maximize utility by balancing a desire for increased wealth against the cost of effort. Increased monetary incentives of PFP plans are thus posited to lead to greater performance effort. Empirical research has documented results consistent with this in retail firms (Banker et al. 1996a; Banker et al. 2001, 2004), hospitality firms (Banker et al. 2000), manufacturing firms (Kahn and Sherer 1990), and for a postal service provider (Matsumura and Shin 2006). Although effort is not measured directly, improved performance is attributed to increased effort on productive tasks.

For many PFP plans, however, studying the effect on performance alone provides an incomplete analysis. Specifically, bonus plans typically pay for ‘performance-to-goal’ rather than performance (Murphy 1999, 2001), and managers frequently participate in setting goals. While several empirical studies of bonus plans employ settings in which goal attainment is the basis for PFP and goals are either assigned (e.g., Banker et al. 1996a; Banker et al. 1996b) or negotiated (e.g., Kahn and Sherer 1990), the absence of data on goals precludes analysis of PtoG. This is a significant limitation for assessing the total effect of PFP when the manager to be evaluated is involved in setting the goal.
Participative goal-setting processes are visible, intentional processes of the firm that have planning, coordination, and motivational benefits. Having lower-level managers participate in goal-setting promotes information exchange in decentralized firms. The goal setting process itself can also have motivational effects via the commitment to goals that participation in goal setting elicits (Locke et al. 1968).

Of course, participative goal-setting also creates a new avenue for subordinate managers to maximize their bonus payout (Weitzman 1976). By influencing goals downward managers can create ‘budgetary slack’ – the “difference between the budget amount and the best estimate” (Anthony and Govindarajan 1998, p. 383). Young (1985) provides experimental evidence that subordinate managers build slack into goals when allowed to participate in goal setting processes; however, other experimental studies find that the degree of budget slack is lower than would be predicted by economic models (e.g., Chow et al. 1988; Evans et al. 2001). Merchant and Manzoni (1989) document the prevalence of achievable goals and provide several explanations for why firms accept these goals, including improved corporate reporting and planning as well as employee motivation. Taken together, the theory and empirical evidence suggest that, in addition to effect that PFP has on performance, managerial effort is directed toward lowering performance goals and that firms are often willing to accept these goals as the basis for PFP.

Based on (i) prior empirical research that finds improved performance following bonus plan introduction in retail settings, and (ii) economic theory and experimental evidence that managers compensated based on PtoG have incentives to exert effort toward both performance and downward goal negotiation, we predict that PtoG will increase following the implementation of a goal-based PFP bonus plan with participative goal-setting:

**H1: Performance-to-goal increases following the introduction of a goal-based PFP bonus plan with participative goal-setting (the Plan).**

Although we hypothesize that after bonus plan introduction PtoG increases, we do not predict how this is achieved. In assuming that slack-building effects are negligible or irrelevant, prior studies suggest

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2 An appropriately designed *contract* can elicit local information from managers. Information may be derived from the subordinate manager’s budgets and prior performance (Baiman and Evans 1983; Penno 1984), or the contract may employ truth-inducing schemes in which manager’s selection from a ‘menu’ of contracts reveals private information (Reichelstein 1992; Weitzman 1976) and/or the manager’s ‘type’ (Biglaiser and Mezzetti 1993).
that the *only* effect of incentive pay is to increase performance. However, once effort toward goal reduction is allowed, PtoG increases can arise even with declining performance. That is, performance may increase or decrease and, as long as goals increase less or decrease more, PtoG will be higher. Consequently, although we examine the effects of PFP on both performance and goals, we do not hypothesize a particular combination of performance and goals that produce increased PtoG.

Theory does not provide an unambiguous prediction for the goal *level* following PFP introduction; however, it does suggest other important testable differences. First, we predict that post-plan goals will be more accurate for two reasons. On the one hand, if as economic theory and prior empirical evidence suggests, firms use participative goal-setting to elicit impacted local information, improve planning and coordination, and obtain greater commitment to meeting the goal, then post-plan goals should be more accurate than pre-plan forecasts that were based only on time series modeling of industry and economic conditions. On the other hand, improved post-plan goal accuracy could also be the unintended result of increased manager effort in the post-plan period to “meet-but-not-beat goals.” Both the intended and unintended effects described above lead to our prediction of improved post-plan goal accuracy:

**H2: Goal accuracy improves following the introduction of a goal-based PFP bonus plan with participative goal-setting (the Plan).**

While our prediction for improved goal accuracy is supported by both arguments above, arguments that are not mutually exclusive, we attempt to disentangle the reasons for improved goal accuracy in supplemental empirical analysis.

Second, in addition to being more accurate, post-plan goals are expected to reflect the influence of the local store managers and the supervisors who participate in goal-setting and who introduce both expertise and self-interested motives to the goal setting process. Indeed, experimental research on budget negotiations finds that both parties to a negotiation influence outcomes (Fisher et al. 2000). Thus, we predict that the introduction of participative goal-setting is associated with *incremental* manager and supervisor effects on the goal outcome as compared to the pre-plan period in which forecasts were established by a corporate office using econometric time series models.³

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³ We take the conservative approach of predicting an *incremental* effect in the post-plan period because store factors that are considered in the econometric forecasting process may be related to non-random assignments of managers
**H3a:** As compared to the pre-plan period, there will be an incremental *supervisor* effect on the post-plan goal level.

**H3b:** As compared to the pre-plan period, there will be an incremental *manager* effect on the post-plan goal level.

In our setting, each supervisor supervises several managers; consequently, separate hypotheses for each managerial level are needed to reflect the nested structure of reporting relationships. H3a posits a “pure” supervisory effect, in which each supervisor influences goals of all of his managers identically but differently from other supervisors. Prior studies acknowledge the possibility that supervisors affect subordinates’ performance outcomes. However, these studies often lack data on reporting relationships to facilitate tests of supervisory effects (e.g., Moers 2005, p. 79). If superior management at higher levels explains performance differences among business units, this model misspecification may lead to improper inferences (Bryk and Raudenbush 1992; Kreft and De Leeuw 1998). To our knowledge this study provides the first field-based test of the influence of supervisors and managers on goals. This is an important contribution because beyond simply relating the introduction of participative goal-setting to the average level of goals, we shed light on the mechanisms through which participation affects goals.

Hypotheses H3a and H3b test for longitudinal differences in supervisory and manager effects before and after the introduction of PFP. However, manager effects have their basis in a range of factors that differ for a cross-section of managers, including but not limited to personality traits, negotiation style, and economic incentives (Dunk 1990; Fisher et al. 2002; Fisher et al. 2000). We focus on economic incentives to test whether, consistent with theories of utility maximization and effort aversion, post-plan goal levels are associated with differences among managers’ marginal return to slack-building effort. Although the incentive system is identical for all of the store managers who we study, we posit that individual differences in slack-building effort and effectiveness are associated with cross-sectional differences in goal outcomes in the post-plan period. We provide indirect evidence on this association by examining to stores. For example, store size is a factor in corporate forecasting and larger stores, which may be more complex might be assigned a more experienced manager. Correlation between store size and manager characteristics could produce a statistical “store manager” effect in both the pre-plan and post-plan periods, even when the store manager was not involved in pre-plan goal forecasting. Consequently, we control for factors that are included in the pre-plan forecasting model and, as a conservative test of our hypothesis predict *incremental manager effects* in the post-plan period associated with additional variation in sales goals after involving managers in goal-setting.
whether post-plan goal levels vary predictably with managers’ personal returns to slack-building effort.

Consistent with economic theory that presumes effort is personally costly to managers (i.e., the ‘plain vanilla’ agency model described in Lambert 2001), we hypothesize that managers exert increased effort toward slack-building when the marginal returns to that effort are relatively high. We assume that, on average, managers’ efforts are directed at obtaining lower goals (i.e., slack-building) and, anticipating this, supervisors press for higher goals (e.g., Thompson et al. 1997). We posit that three variables that economic theory suggests will affect managers’ returns to slack-building effort are incrementally informative about goal levels in the post-plan period as compared to the pre-plan: (i) career horizon, (ii) local store knowledge, and (iii) economic dependence on the job. Clearly this is not an exhaustive set of factors that explain differences in the economic incentives that managers have to negotiate lower goals. Nonetheless, as a first inquiry, these variables provide insights into the meaning of statistical ‘manager effects’ on goals and provide a framework and research method to guide future research aimed at expanding the set of influential factors. We make the following predictions about the association between post-plan goal level and three variables that reflect the manager’s marginal returns to slack-building:

**H4: The incremental manager effect that is hypothesized in H3b is, in part, explained by cross-sectional differences among store managers; specifically, a negative association between the store manager’s:**

- **a:** career horizon and post-plan goal level.
- **b:** level of local store knowledge and post-plan goal level.
- **c:** economic dependence on the job and post-plan goal level.

We discuss each of these hypotheses in turn below.

First, we expect *career horizon* – measured as the expected length of time before retirement – to be negatively associated with post-plan goal levels as compared to pre-plan forecasts. Managers with longer career horizons are likely to be more concerned about goals increasing over time, both because goal

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4 Although Merchant and Manzoni (1989) document the prevalence of firm’s accepting achievable (i.e., lower) goals, this does not preclude tension between supervisors and subordinates. Merchant and Manzoni (1989) also describe some subordinate managers who propose difficult goals as a signal of ability. Signaling is more likely to be effective in settings with frequent exogenous shocks and where peer comparison isn’t possible because managers are able to blame failure to meet goals on unanticipated, uncontrollable events. In our setting, stores are somewhat comparable and exogenous events tend to affect many stores in a common region. Consequently, high goals are unlikely to be sustainable as a credible signal of ability.

5 We discuss variable measures and their statistical properties in Section 4. We provide extensive validity checks for the independent variables that proxy for marginal returns to slack-building in an online appendix.
achievement determines current and future bonuses and because goal achievement is an important
determinant of promotion. While all managers are attuned to the short term effect of bonus eligibility,
only managers with a relatively long career horizon will have the added motivation of promotion
prospects. Thus, their marginal return to slack-building effort is posited to be higher than those with a
shorter horizon. Since career horizon reflects private information that is at best only partially observable
by supervisors, we expect that, on average, longer career horizon will be associated with lower goals (i.e.,
successful goal reduction by the manager) in the post-plan period.

Second, we expect a store manager’s level of local store knowledge – measured as job tenure as a
store manager – to be negatively associated with post-plan goal levels as compared to the pre-plan period.
Experiments have shown that local knowledge confers bargaining power to the manager in the manager-
supervisor relationship (Fisher et al. 2000). If a manager has extensive local knowledge of store
operations and the supervisor is aware of this, information asymmetry between the manager and the
supervisor favors the manager in goal-setting because a supervisor is more likely to be swayed by the
manager’s arguments. Thus managers with greater local knowledge are likely to be more effective in
obtaining their preferred goals and to enjoy higher marginal returns to slack-building effort.

Finally, we expect a manager’s economic dependence on his job – measured as the proportion of the
manager’s annual household income coming from wages and bonus – to be negatively associated with
post-plan goal levels as compared to pre-plan forecasts. A PFP bonus plan places pay at risk. Conditional
on the performance bonus reflecting a significant part of total compensation, managers whose household
income is highly dependent on their job are likely to seek to reduce the risk of bonus loss. One way for
the manager to shield himself from increased risk is to obtain a lower goal. All else equal, marginal
returns to slack-building will thus increase with economic dependence. Since economic dependence is not
directly observable, supervisors may not fully anticipate the intensity of slack-building effort for
managers who are highly dependent on the job. Consequently, we predict that more economically
dependent managers obtain lower goals in the post-plan period.

Hypotheses H4a-c focus on the marginal returns to slack-building for subordinate managers. Our
original research design also included plans to test how cross-sectional differences in supervisors’
marginal returns to goal-setting efforts affect goal levels after plan implementation (i.e., an elaboration on H3a that would parallel the elaboration of H3b in H4a,b and c). However, incomplete survey data from supervisors precluded this. Consequently, we limit our inquiry to investigating whether supervisory effects on goal levels are present and whether they are heightened after participative goal-setting is introduced. Investigating supervisor effects, in particular, differences in supervisors’ marginal returns to participative goal-setting remains an important area for future research.

Finally, we examine the incremental effects on post-plan goals of the use of prior PtoG information in participative goal setting as compared to the role that this information had in determining pre-plan forecasts. In the pre-plan period the firm developed a forecast based on time series modeling of a store’s historical sales (not PtoG) performance, controlling for store characteristics and adjusting for anticipated future changes. A positive relation between prior period PtoG and goals for the upcoming period would reflect the statistical regularity of sales persistence. With the introduction of PFP and participative goal setting, PtoG data become a basis for evaluating both the quality of a manager’s proposed goals and their attainment of goals (Fisher et al. 2006). Prior PtoG serves as a benchmark for supervisors to use in countering slack-building efforts of managers. Consequently, although it is not new information per se, prior PtoG is expected to have an incrementally positive effect on goal levels when it is introduced as an input to a new goal-setting process in the post-plan period:

**H5: A manager’s prior period PtoG has a positive incremental association with post-plan goal level.**

3. The Field Research Site

3.1. The Company

The firm that is the subject of this study, hereafter referred to as “HKS,” is a major privately-held specialty retailer in the Southeastern United States. All stores are company-owned and the firm continues to be run by the founding family. There has been no significant change in management, product strategy, or store format in the decade preceding this study. Against this backdrop of stability, the firm has experienced significant steady growth in the last four decades. In 1973 there were approximately 10 stores, in 1990 there were nearly 30 stores and by 2003, when the PFP plan was adopted, there were 74
stores in seven states. According to company documents, significant growth in the number of stores as well as normal growth of same-store sales produced compounded annual sales growth for the firm of 17 percent during the period 1998-2008. The firm has also ranked among the highest in sales per store and sales per square foot for stores in existence for more than one year as compared to competing retailers.  

Stores are organized into eight districts. Store managers (SMs) report to a supervising district manager (DM). DMs report to the Director of Operations, who is a member of top management and reports directly to the President and CEO. Although many aspects of the business are controlled at the corporate level (e.g., purchasing, product mix, pricing, national advertising, store hours and layout), individual SMs have responsibility and authority for decisions about store-level operations such as: staff hiring and scheduling, maintaining store cleanliness, ensuring that shelf stock is adequate and properly presented, and identifying and executing local product promotion opportunities. According to surveys of the DMs, SMs have significant autonomy (indeed, DMs visit the local stores, on average, only once per quarter). Asked to describe the employment culture of the firm, top managers emphasize the ‘HKS family’ and respecting employees’ time with their families. As compared to other retailers, the firm pays approximately the industry average total compensation, but requires fewer hours and little overtime or weekend work from their SMs. HKS managers report that their employee turnover rate is lower than the national and regional average for retail firms and attribute this to attracting SMs who seek a career with a firm that supports work-life balance. Most SMs have relatively long experience with the firm and prior retail experience, and most obtained their position from promotion within the firm. In our SM surveys, a large majority of SMs reported high job satisfaction and little intention to leave the firm.

3.2. Previous Bonus Plan for Store Managers

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6 Growth has continued since the conclusion of our data collection, and mid-2008 the firm had more than 100 stores in 11 states and employed almost 15,000 associates. Note, however, that these aggregate facts do not include any claim that firm sales growth, while high in absolute terms, is greater than that of the industry. Indeed, as we shall see, industry growth was high during this period and, in spite of earning strong ratings for the efficiency of existing stores, much of HKS growth was related to new stores.

7 The average SM in our dataset has a tenure as SM between two and five years (mean scale value = 2.83, where 3 reflects 2-5 years; see also Table 1), while total HKS tenure is significantly longer (mean = 3.66, where 4 reflects 6-10 years). In addition, most SMs have extensive prior retail experience (mean = 4.23, where 4 reflects 6-10 years).
Under the old system (i.e., prior to 2003\(^8\)), SM compensation included a base salary and an annual bonus. SMs with good performance (subjectively determined by the DM) typically were guaranteed 5%-7% of the base salary in bonus compensation in their first year of employment. In subsequent years, DMs made an overall subjective assessment of performance (a process that was unstructured, without standardization in evaluation criteria, and without systematic comparison to pre-established goals) and assigned to each SM a one to five rating that corresponded to a *percentage increase* of the prior year bonus rate. There was no fixed bonus pool and no ‘forced curve’ (i.e., relative performance evaluation) at either the district or the firm level, so managers’ bonuses were independent of one another’s performance. Cumulative prior year bonuses were not at risk; thus, in the worst case the manager received no bonus increase and retained the bonus rate of the prior year. This resulted in an increasing share of the total bonus dollars paid being determined by prior years’ bonus rates (and conversely a decreasing share related to current year performance). The system clearly favored tenured employees.\(^9\) In 2002, the average (and median) bonus as a percent of salary was approximately 7 percent (minimum of 1 percent for an employee with less than a year of service and maximum of 23 percent).

Prior to adoption of the new bonus plan, the corporate strategic planning department generated sales forecasts using an econometric forecasting model. Although we were not allowed access to this model, we interviewed the manager responsible for its development, who described it as a model for projecting seasonal and annual trends for stores in one of three size classes based on past store sales and national industry sales (lagged by one or two quarters). Typical of many forecasting models, the results were reasonably accurate at forecasting firm sales, but were less accurate predictors of individual store results. Typical of closely-held firms, *firm-level* sales forecasts, sales results, and profits were not shared with SMs or DMs. *Store-level* forecasts and sales for the same quarter in the prior year were available to the DMs for the store(s) for which they were responsible (however, to this day store profits are still not

\(^8\) Typical of U.S. retailers, HKS has a February-January fiscal year, with four quarters comprised of 13 weeks each. For reader convenience, we refer to calendar years (e.g., 2002) that correspond to the predominant year of the fiscal year. Thus for example, 2002 will refer to the fiscal year that includes February 2002 through January 2003.

\(^9\) As an example, a second-year SM (with a prior year bonus rate of 5%) whose performance warranted a 10% increase in the bonus rate would receive a bonus of 5.5% of base salary; a similarly performing tenured SM (with a prior year bonus rate of, e.g., 15%) would receive a bonus of 16.5% of base salary.
shared). The culture of closely controlling sales and profit data in the pre-plan period reflected senior management’s view that store managers were primarily responsible for efficient store operations and cost control, while the corporate office was responsible for managing revenue through marketing and product mix decisions. Understandably, in this setting sales forecasts were not used in any systematic way by DMs in SM evaluations. According to the Director of Strategic Planning: “The old program was more based on a subjective grade… [the SMs’ grade] came down to how their DM felt that [SMs] were managing their store, but on a very subjective basis… [Sales performance] might go in there, but it was a very subjective basis of how this would go in. … And so a lot of it was just, is your store clean? ... are you hopefully trying to minimize [staff] turnover, do I feel like you're a capable manager.” The Director of Strategic Planning reported that she never gave serious consideration to using the forecasting model to ‘assign’ sales goals in the new PFP program. Rather, by letting SMs and DMs participate in setting goals and rewarding attainment of those goals, she hoped to improve on store-level forecasts while also transferring some responsibility for revenues to the stores and engendering commitment to a sales goal.

3.3. Changing the Bonus Plan: Motivation and Method

Significant growth since 1973 was accompanied by promotions, hiring new employees and dispersion in the bonus rates of new SMs as compared to senior SMs that was unrelated to performance. The 1990’s were a period of strong performance in same-store-sales and sales per square foot for HKS and its retail competitors. However, the Director of Strategic Planning was concerned that opportunity for promotion to DM was declining and that the bonus plan, which rewarded SM seniority, threatened retention of newer store managers in a competitive labor market. In 2001 she enlisted a consultant to review current compensation practices and to benchmark HKS against comparable retail firms. The consultant concluded that a performance-based bonus plan was appropriate and a more structured, objective basis for bonus determination was needed.\(^{10}\) HKS was also encouraged to increase the frequency of bonus payout from an annual to a quarterly basis to provide more timely performance feedback.

Following an initial introduction and revisions based on SM and DM feedback, a new SM bonus plan

\(^{10}\) The authors were not members of the consulting team (i.e., had no advising role, paid or otherwise, for the design or implementation of the plan) and did not become involved with the firm until well after the report was finalized.
was implemented in 2003. The new bonus plan was not associated with any change to base salary. Nor was the plan associated with a change in the firm’s philosophy about goal levels. That is, pre-period forecasts were intended to be the best time series forecast of future sales based on information at hand. Post-period goal levels were intended to differ only in the incorporation of local market information of DMs and SMs. In an interview with the researchers, the Director of Strategic Planning explicitly rejected the idea that there was an explicit or implicit policy of either ‘stretch’ or ‘easy’ goals. In company documents that describe the proposed program for top management, the expectation was that, on average, managers would meet goals and this assumption was used to quantify the cost of the bonus program.

Because of the time used to establish participative goal-setting processes, the first bonus was paid at mid-year with the payout covering two quarters. Importantly, the bonus plan for DMs was not changed; rather, DMs continued to be compensated under the old bonus plan in which annual bonuses were set as a percentage increase from the preceding year’s bonus based on a subjective rating by the Director of Operations. According to the Director of Operations, the DMs’ incentives to obtain higher goals from their SMs (and to refrain from colluding with SMs on easy goals) result primarily from their desire to compare favorably to their peers in same store sales and sales per square foot --- absolute instead of relative (i.e., PtoG) measures of financial performance, as well as in nonfinancial metrics related to employee retention and customer satisfaction.

3.4. The New Bonus Plan for Store Managers

The compensation plan that was introduced in 2003 sought to replace seniority-based bonuses with PFP. The plan was formula-based, with 40% of the bonus payout contingent on sales.\(^\text{11}\) As before, there was no fixed bonus pool, nor was the bonus payout based on relative performance evaluation. At the beginning of the month, SMs and DMs receive a (new) standardized report from corporate headquarters with data for

\(^{11}\) The remaining 60% was contingent on productivity (25%), the DM’s subjective score which was now to be based on a standard checklist that was developed by the Director of Operations in conjunction with the bonus plan (25%), and expense control (10%). Importantly, the productivity component (sales per hour) employs the same sales goal and sales performance as the sales portion of the bonus, and to set the target, the monthly sales goal is divided into weekly goals based on the proportion of sales days in the calendar week. There also is a significant positive correlation between sales performance and the subjective performance score assigned by DMs. Thus, sales is a significant component of the bonus with 90% (40% sales + 25% productivity + 25% subjective) of the bonus depending either directly or indirectly on sales. For this reason, and because sales is the only component with participative goal-setting, we focus only on the sales component.
the SM’s store on weekly sales in that month from the two preceding years and sales growth for the current year-to-date as compared to the previous year. The SMs and DMs use this information in conjunction with information about upcoming local events and promotions to set sales goals for the coming month. The monthly sales goals are sent to corporate headquarters, where, continuing the pre-plan practice of forecasting for three groups of similar stores, goals are compared within three groups of stores that share similar local market demographics, competitive circumstances, and store size and age. The Director of Strategic Planning and the Director of Operations review the data, if needed discuss discrepancies with DMs, and approve a final sales goal for each store. For bonus determination, the monthly sales goals are aggregated to the quarterly level, and compared to quarterly sales performance.

DMs are an important intermediary between the corporate strategic planning group and SMs. In evidence of this role, survey data collected from six (out of eight) DMs indicate that they have greater responsibility for SM performance in the post-plan period than they had previously. Furthermore, the DMs strongly agree that the primary purpose of the plan was to improve their monitoring of SM performance (mean 6.33, where 7=strongly agree), and that, as compared to the old plan, the new plan facilitates this monitoring (mean 5.6). On a range of questions about the goal-setting process, both DMs and SMs report that the plan introduced meaningful discussion of goal levels. DMs further report significant differences among the SMs that they supervise in the extent to which the SMs seek lower, less challenging goals (i.e., slack-building effort).

The payout associated with PtoG is linear with a floor (i.e., sales 88.4% of the goal) and ceiling (i.e., 100%

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12 To ensure that SMs do indeed have reasonable influence over their goal setting, we asked DMs their general reflections on the goal setting process (N=6). DMs indicate that when disagreements arise with their SMs about the sales goal, they prefer a compromise (mean score 5.8, where 7=strongly agree). And although variation exists, DMs also generally indicate they do not insist on SMs accepting the goal they would prefer (mean 3.7, max. 5) or enforce acceptance of their goal (mean 2.5, max. 5), but also do not give in easily in the discussions (mean 2.0, max. 3). These data provide compelling evidence of meaningful participative goal-setting, where both DM and SM have substantial influence on outcomes. As evidence of this, it is noteworthy that the goals set between the DMs and SMs typically are accepted by upper management without further discussion.

13 Note that while the three groups are used to conduct a general check of goal accuracy, these groupings are not used in bonus determination (i.e., there is no formal relative performance evaluation or ‘forced curve’). Despite the availability of historical sales data, before and after the new plan, these data were not used for comparative analysis. As the Director of Operations commented: “there was no sharing of information between DMs, or DMs [inquiring] ‘how are my stores in relation to other stores in the chain?’ This new program is definitely based on everyone being graded against their own past performance, but there is obviously an ability to compare across the chain.”
sales 107% of the goal), like typical bonus plans documented by Murphy (1999). The program uses 10% of base salary as the “baseline” bonus for meeting goals; however, exceptionally good performance (i.e., achieving the ceiling on all four dimensions of performance) allows a manager to earn up to 20% of base salary and unusually poor performance (i.e., achieving the floor performance on all four dimensions) can cause all bonus payment to be withheld. Six very senior managers, for whom this would have constituted a large decrease in total compensation, have a base bonus of 20% and a payout range of zero to 40%. In 2003, the average bonus for SMs was almost 13% of salary with a minimum of 5% and a maximum of 22%. Compared to the bonuses paid under the old system in 2002, the new system led to an almost 80% increase in the average bonus level.\textsuperscript{14}

4. Method

4.1. Data Collection

We collect data from four sources. First, we collect actual sales and sales goal data from the HKS accounting system. As compared to earlier studies, the availability of sales goal data is unique and allows for the examination of goal outcomes resulting from the participative goal-setting process. Second, we collect market demographic and store characteristic data (e.g., size and age) from the corporate strategic planning group. Third, we collect data from a national retail sales market index of the International Council of Shopping Centers (2005) to control for sales growth that would have been expected even without the introduction of the plan. This is particularly important since we have no control group of stores that do not adopt the plan, and thus provides a benchmark against which the marginal effects of the plan on sales growth can be estimated. Finally, in the early stages of the plan implementation (early Q3 2003), we conducted surveys of SMs and DMs. The SM surveys include measures of career horizon, local store knowledge, and economic dependence on the job that we use to test the hypothesis that goal levels are associated with cross-sectional differences in managers’ returns to slack-building effort. We administered the survey after the introduction of the new bonus plan and just before the first bonus payout. This timing was chosen to mitigate the likelihood that survey responses are biased by

\textsuperscript{14} Noteworthy is that under the new plan the distribution of 2003 bonuses as percentage of base salary are normally distributed; under the prior system it was skewed with a few (senior) SMs receiving relatively high bonuses.
performance realizations and actual bonus payments while still allowing participants to first observe and participate in goal setting. We obtain survey data for 61 of the 74 SMs (82.4%) and six of the eight DMs, of which five also completed additional surveys about the 45 SMs they supervise. Owing to the lower response rate of the DMs and the effect on the number of SMs that would be studied (only 38 of the 45 completed an SM survey), we do not include data from the DM surveys in our analysis, using it instead to verify attributes of the research setting and as a validity check on SM responses.

Ten SMs subsequently left the firm (six during the period of our analysis and four in the quarter immediately following) and one was promoted to DM; however, our results are qualitatively unchanged if they are excluded or if an indicator variable is used to identify them. In the year prior to plan introduction, eleven SMs left the firm, so there is no evidence of heightened turnover after plan introduction. In both the pre- and post-plan period, several of the departing SMs worked for the firm for only one or a few quarters; consistent with the more typical profile of retail workers and with more common retail turnover rates.

Key variables are defined in the following section and in Table 1; descriptive statistics are presented in an online appendix. We also provide in the online appendix extensive validity checks to affirm that the measures are suitable proxies for the theoretical variables that they are intended to represent. The univariate correlations indicate that the three variables capturing managers’ personal returns to slack-building effort—career horizon, local store knowledge, and economic dependence on the job—are largely uncorrelated with one another and with the store and market control variables.

4.2. Dependent Variables

For the tests of H1 and H2, \( PtoG \) is measured as the difference between sales and goals: 

\[
PtoG_q = Sales_{q,sm,dm} - \text{Goal}_{q,sm,dm}
\]

for quarter q, store manager SM, and district manager DM. We further investigate

15 Although this modest number of managers precludes statistical analysis, comparisons of survey responses from departing SMs with those who remained indicate no important differences in their career horizon, job satisfaction, perception of the DM, or performance and bonus achievement. The SMs that left had, on average, less retail experience and shorter job tenure. They were somewhat less positive about the relevance and fairness of the new incentive system in spite of being somewhat more favorably disposed toward variable compensation and feeling more strongly that sales is the most appropriate basis for contingent pay.

16 \( PtoG \) correlates highly (\( r = 0.96 \)) with the percent difference between sales and goals (i.e. \( PtoG/\text{Goal} \)). Results are qualitatively similar when using this as the dependent variable.
how PtoG changes by disaggregating PtoG into its components, Sales$_{q,sm,dm}$ and Goal$_{q,sm,dm}$. The latter of these two variables, Goal$_{q,sm,dm}$, is the primary focus of this paper and is used for the tests of H3 to H5.

The pre-plan period consists of Q1 2001 to Q1 2003. The first quarter of 2003 is treated as a pre-plan quarter since goals were not yet set through participation and the bonus payment was not yet based on sales performance. The post-plan period consists of the five quarters from Q2 2003 to Q2 2004. Since we use the four quarters of 2001 to compute our measure of prior-year PtoG, the data available for hypothesis testing includes 10 quarterly observations (Q1 2002- Q2 2004). An indicator variable, Plan, is set equal to one for observations in the post-plan period, and zero otherwise. New store openings and SMs joining or leaving the firm cause the sample size to differ somewhat for each quarter.

4.3. Estimation Methods

To test hypothesis H1 we estimate, using pooled pre- and post-plan data, a model in which PtoG is the dependent variable and Plan the independent variable. We control for store characteristics, local market demographics, national retail industry sales growth, and movements of SMs to other stores within quarters. To examine how SMs increase PtoG (i.e., by reducing goals, increasing sales or both), we estimate equivalent models using goal level and sales level as the dependent variables (DV). Since hypotheses 3, 4 and 5 relate to plan influences on goals, we focus our discussions on the goal-level model but also report the sales-level model for completeness.

Because the quarterly panel data observations are nested first within SMs (or stores) and then within DMs, we use a multilevel model specification (Kreft and De Leeuw 1998), modeling a multilevel structure of 405 quarterly observations (Level-1) nested within 61 SMs (Level-2), which in turn are nested within 8 DMs (Level-3) (6.6 quarterly observations per SM on average). This multilevel specification allows us to model not only time-varying variables (e.g., the plan introduction and variables affecting sales growth; Level-1), but also random and fixed SM effects (Level-2), store characteristics and local market demographics (Controls, Level-2), and random DM effects (Level-3). The multilevel model that we use to examine H1 is specified as (cf., Bryk and Raudenbush 1992):

**Level-1:** $DV_{q,sm,dm} = \alpha_{0,sm,dm} + \alpha_{1,sm,dm} (Plan_{q,sm,dm}) + \sum_{p=2}^{6} \alpha_{p,sm,dm} (Control_{p,q,sm,dm}) + e_{q,sm,dm}$
for quarter \(q\), store manager SM, district manager DM. In this specification, \(\alpha_{1,sm,dm}\), the Level-1 effect of Plan, provides our test of \(H1\) and is predicted to be positive. The incremental SM and DM effects predicted in \(H3a\) and \(H3b\) are modeled as random effects and are measured by the variance of error terms \(u\) (SM level) and \(v\) (DM level).\(^{17}\) At Level-1, we control for five variables that vary across quarters. Industry Sales \(\left(\alpha_{2,sm,dm}\right)\) controls for the growth in sales and sales goals that would have ensued absent the new plan. This variable is an industry index of sales growth and, because it is seasonally un-adjusted, it simultaneously controls for seasonality. Note that Industry Sales is unobservable to the SM and DM at the time of goal determination and, hence, serves only as an ex post control for exogenous growth prospects. Cannibalization \(\left(\alpha_{3,sm,dm}\right)\) is the extent to which a store is expected to be “cannibalized” by new HKS stores in a quarter. Cannibalization is an ex ante estimate by top managers of the percentage of sales expected to be lost by the cannibalized store. Store Age \(\left(\alpha_{4,sm,dm}\right)\) measures how long the store has been in operation at the start of the quarter (in days). Since young stores may deviate from established stores in growth and because of startup issues, we also include an indicator variable for stores that are less than 365 days old (New Store, \(\alpha_{5,sm,dm}\)) in a particular quarter. Finally, there are several movements of SMs from one store to another during the test period. In order to appropriately match SM data to store data, we track movements of SMs between stores over time and based on their quarterly store location match store data with SMs. We include an indicator in the quarter of SM movement as an additional control \(\left(\alpha_{6,sm,dm}\right)\). All SM movements occurred within DM districts.

In Level-2 we introduce contextual variables that vary across SMs but are constant across quarters for a given SM. Four market demographic variables control for the store environment and sales growth unrelated to the bonus plan implementation. These include Store Size \(\left(\beta_{0,1,DM}\right)\) (square feet), the number

\(^{17}\)This modeling approach differs from a fixed effect approach—the inclusion of SM- and DM- specific indicator variables—which essentially models a deterministic intercept shift for each SM or DM. Random effects, on the other hand, indicate how much variation in the dependent variable is caused by differences between DMs and between SMs. \(H3a\) and \(H3b\) do not predict that specific SMs or DMs will have higher or lower means in the post-plan period; instead they predict greater SM and DM influence (i.e., variation induced) in goal levels in the post-plan period. Thus, random effect modeling is more appropriate than a fixed effect approach.
($\beta_{0.2, dm}$) (Num HH) and median income ($\beta_{0.3, dm}$) (Med HH Inc) of the households in the local geographic area around the store, and the percentage of families with children ($\beta_{0.4, dm}$) (%Fam Kids), a particularly important type of customer for HKS. These market demographic data are collected from a third party data source and are used by HKS’ corporate strategic planning group to estimate the effects of cannibalizing existing stores when new stores are opened and to facilitate site selection for new stores.

We start with estimating a ‘null-model’ that includes only Level-2 (SM) and Level-3 (DM) random effects (Kreft and De Leeuw 1998). This model provides an intercept ($\alpha_{0, sm,dm}$), and the Level 1, 2 and 3 variation around the intercept (i.e., $e_{q, sm, dm}$, $u_{0, sm, dm}$ and $v_{0, 0, dm}$). The SM and DM random effects ($u$ and $v$) indicate how much variation is associated with differences between DMs and between SMs, and indicate the need to add explanatory variables at these levels. To determine the need to add explanatory variables at higher levels, we compute intra-class correlation (ICC) coefficients that indicate how large differences between groups (e.g., SMs or DMs) are relative to differences within groups.\footnote{The ICC coefficients are calculated as (adapted from Kreft and De Leeuw 1998): Level-2 ICC = $u/\tau$, and Level-3 ICC = $v/\tau$, where: $\tau = e + u + v$, with $e$ = Level-1 variance (model residual), $u$ = Level-2 variance (SM random effect), and $v$ = Level-3 variance (DM random effect). Acknowledging the existence of an intra-class is important since dependencies between individuals belonging to the same group violate the assumption of independence of observations in traditional regression models. Intra-class correlation changes the error variance and makes tests of significance too liberal (Kreft and De Leeuw 1998).}

The estimates of residual and group variation further serve as benchmarks for the subsequent models in which control variables and explanatory variables are added at the various levels (H4-H5). Since the explanatory variables are hypothesized to reduce residual and random variation, we use the random effect estimates to evaluate the explanatory power of added variables. Specifically, we compute an estimate of incremental $R^2$ (i.e., the proportion of residual and random variation that is explained by the added variables), by comparing the coefficients of variation before and after adding explanatory variables (Kreft and De Leeuw 1998). For instance, in our model that includes the plan effect and both Level-1 and Level-2 control variables, the Level-1 $R^2$ is computed as ($e_0 - e_1$)/$e_0$, and the Level-2 $R^2$ is computed as ($u_0 - u_1$)/$u_0$. We additionally compute ($\tau_0 - \tau_1$)/$\tau_0$ as a combined test of the model’s explanatory power. To assess the improvement in overall model fit we compute a chi-square ($\chi^2$) test of the change in the -2 Log Likelihood function (\Delta-2LL) relative to the additional degrees of freedom (\Delta df) used. We also report
Akaike’s Information criterion (AIC), which adds a penalty to -2LL for using additional explanatory variables. A significant $\chi^2$ and smaller AIC values indicate a better fit with the data.

To test H3a and H3b, we interact the DM and SM random effects with the Plan indicator (i.e. $u_1*Plan$ and $v_1*Plan$) to estimate whether the introduction of the bonus plan increased the SM- and DM-induced variation in goal levels. Hypotheses H4a,b,c and H5 are tested by adding measures of career horizon, local store knowledge, economic dependence on the job and prior period PtoG (prior quarter and same quarter prior year) to the model and interacting these with the Plan indicator. Hypotheses H4a, H4b and H4c predict that the interactions: [Career Horizon*Plan], [Local Store Knowledge*Plan], and [Dependence*Plan] will be negative and significantly different from zero. Hypothesis H5 predicts that that the interactions: [Prior Qtr PtoG*Plan] and [Prior Yr PtoG*Plan] will be positive and significantly different from zero.

To avoid multicollinearity in the models that include interactions and to ease interpretation, the independent variables that are not indicator variables are centered around the sample mean (Kreft and De Leeuw 1998). We use the Linear Mixed Models procedure in SPSS 15.0 and maximum likelihood (ML) estimation for our analysis. ML estimation is most appropriate for our sample size and facilitates comparisons of model fit. In addition, linear mixed modeling allows us to model covariation between repeated observations (i.e., quarterly observations of sales and goal levels likely are correlated over time). Nine influential observations with standardized residuals >3.0 were omitted from the analysis.

5. Results
5.1. Analysis of Plan Effects

Table 2 presents the coefficient estimates and fit statistics of the model estimated for PtoG, Goal level and Sales level. We begin with a comparison of model fit between the estimated model (B, equation (1)) and a reference model (A) that includes only SM and DM random effects. The reference model estimates indicate that substantial error variance remains in PtoG, goal level, and sales level after controlling for SM and DM random effects (respectively 2.39, 0.31 and 0.31; all $p<0.01$). For the PtoG model, the SM and DM random effects are small ($\mu=0.18$ and $\nu=0.15$), and provide relatively low ICCs: 0.07 for the SM level ($0.18/(2.39+0.18+0.15)$) and 0.06 for the DM level ($0.15/(2.39+0.18+0.15)$). Accordingly, the variation in
PtoG can be only marginally explained by differences among SMs and DMs. The goal and sales level models also show small and insignificant random DM effects, which provide small DM ICCs (0.11 and 0.09, respectively), indicating that little of the variation in sales goals and sales relates to DM differences. Random SM effects, however, are substantial and highly significant and the SM ICCs are 0.63 and 0.65, indicating that most of the variance in goal and sales levels relates to differences among SMs. The reference model thus indicates that both goal and sales levels are substantially associated with random SM effects, but are only marginally associated with DM effects. PtoG is not greatly influenced by either SM or DM differences, which likely is caused by offsetting random effects on goals and sales.

Models B in Table 2 add to the reference model the Plan effect and the Level-1 and Level-2 store environment control variables. For all three DVs, the added variables significantly reduce AIC and -2LL, as indicated by the significant $\chi^2$ difference measures. These model improvements are also evident in the incremental $R^2$ of 8.8% for PtoG, 20.2% for goal level and 19.3% for sales level. Decomposing the incremental $R^2$ of the goal model (i.e., 20.2%) into the two most significant elements of variance, $\epsilon$ and $\mu$, shows that most of the goal variance is explained at Level-1 (i.e., Level-1 $R^2 = 41.9\%$ (0.31-0.18/0.31)) as compared to Level-2 (i.e., Level-2 $R^2 = 4.0\%$ (0.75-0.72/0.75)).

The upper part of Table 2 presents the coefficient estimates (intercepts are not reported for sales and goals for reasons of confidentiality). Both goal and sales levels are strongly associated with contemporaneous industry sales; thus, this measure controls well for growth in sales performance that would be expected in the absence of PFP implementation. Since industry sales is more highly correlated with goal levels than with actual sales levels, this results in a negative association with PtoG. As expected, cannibalization is associated with lower goal and sales levels, with the larger effect in sales

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$^{19}$ Although the corporate forecasting model that predates the plan also uses industry data, it does so with a 3 to 6 month lag. Thus the research value that we obtain from using contemporaneous industry sales to control for growth that is unrelated to the plan was not available to the firm as an input to forecasting. Excluding Industry Sales causes a substantial worsening of model fit for both goal and sales level (model residual 0.28 and 0.28; AIC 827.6 and 821.6, $\chi^2$ 143.3 and 134.3 (both $p<0.01$)), indicating that Industry Sales provides an effective benchmark against which growth in sales and goals can be compared. As an alternative benchmark, we collect from the U.S. Census Bureau monthly estimates retail sales at the 5-digit NAICS industry code and aggregate this to the quarterly level. This measure correlates 0.97 ($p<0.01$) with the reported measure and provides qualitatively the same results.
resulting in a negative effect on PtoG. In addition, the models show that goals and sales are higher for older stores and for larger stores. The significant, negative New Store indicator controls for new stores that have relatively low sales and goal levels. The other variables related to the store environment (number of households, average household income and percent of families with children) do not contribute significantly to explaining variation in PtoG, goal levels, or sales levels.

We now turn to the test of H1 that predicts an increase in PtoG following the introduction of the Plan. The significant positive coefficient for Plan (0.48, \( t = 2.32 \)) documents that, on average and consistent with H1, PtoG increases in the five quarters that SMs are subject to the new bonus plan. Estimating the model without the plan coefficient provides a significant decrease in model fit, with residual \( (e) = 2.35 \), AIC = 1535.3, \(-2LL = 1509.3 \) (\( \chi^2 = 5.4, \Delta df=1, p<0.01 \)). The significant negative coefficients for Plan in the goals and sales level model, however, document diminished sales and sales goal growth relative to the industry following the introduction of the new plan (and controlling for the store environment).

Importantly, the increase in post-plan PtoG documented in model B is the result of a larger decline in goal level growth (-0.49) than the decline in sales growth (-0.43). Thus, the observed post-plan PtoG increase is partially attributable to slack-building effort. We discuss the negative marginal effect of the Plan on sales growth at the end of this section and first focus on goals and PtoG.

To test H2, that post-plan goals are more accurate than pre-plan goals, we test whether the distribution of PtoG (i.e., mean and standard deviation) differs in the pre- and post-plan. Specifically, we test whether the post-plan distribution of PtoG has (i) a mean closer to zero, and (ii) a lower standard deviation. We find that the mean of PtoG in the post-plan period is closer to zero (-0.08 versus -0.24) and that the standard deviation is lower (1.4 versus 1.9, Levene’s test of equality of variance, \( p < 0.01 \)) than in the pre-plan period. Thus, post-plan goals are more accurate predictors of sales performance. While this may indicate the intended information-exchange value of goal participation, it is also consistent with the unintended consequence of SMs managing sales performance to meet-but-not-beat goals.

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20 The extent of cannibalization is low, on average, for the full sample period (i.e., 2% of sales, relating to 16 stores), but was increasing (2.3% post-plan vs. 1.7% pre-plan). The results suggest that the firm experienced difficulties in accurately estimating its impact, which is consistent with what we were told in interviews.
We explore these alternatives by repeating the analysis, substituting for actual sales in the PtoG calculation a prediction for sales that takes into account only the control variables in our analysis. This admittedly noisy proxy for ‘unmanipulated’ sales allows us to isolate the information exchange argument from the sales manipulation argument. Repeating the analysis, changes to the distribution of PredictedPtoG exhibit the same pattern as PtoG; the mean is closer to zero and the standard deviation is significantly lower in the post-plan period. This suggests that the plan is associated with greater goal accuracy; however, it does not preclude managers also overtly meeting-but-not-beating the goal. To provide insight on this possibility we compare the mean value of PredictedPtoG to that of PtoG in the post period. The mean of PredictedPtoG is positive while the mean of PtoG in the post period is near zero and the difference is statistically significant ($p < 0.01$). This difference is consistent with meeting-but-not-beating goals since it indicates that for a given goal level, the (unmanipulated) predicted sales would have been higher than observed.\footnote{In addition, the difference between PredictedPtoG and PtoG is positive for the post-plan period and negative for the pre-plan period (with the difference between periods significant at $p < 0.01$). This indicates a significant increase in managers’ inclination to meet-but-not-beat goals after plan implementation.} In sum, it is the combination of improved goal accuracy (i.e., mean closer to zero and lower standard deviation) and a predicted (i.e., unmanipulated) PtoG greater than actual PtoG that is suggestive of behavior to meet-but-not-beat goals. Note, however, that improved accuracy is likely the result of both the unintended consequence of meet-but-not-beat behavior and the intended informational benefits of goal participation – that is, these effects are not mutually exclusive.

Merchant and Manzoni (1989) document the prevalence of achievable (i.e., lower) goals in practice and provide reasons why firms often allow relatively achievable (i.e., with goals achieved regularly more than 50 percent of the time) goals to persist. The Director of Strategic Planning rejected the idea that this philosophy was employed by HKS and the DM surveys provide some confirming (albeit perhaps self-serving) evidence that goals were set to be challenging but achievable. Specifically, when asked about the extent to which they agreed with the propositions that they “demand” or “insist” that SMs (i) give their best effort, (ii) work hard, and (iii) do high quality work, the average DM response for each question was 6 (where 7 indicates “strongly agree”) and responses ranged from 4-7. We conclude from this that DMs
believe they are demanding significant effort of their SMs and that there is no overt strategy of intentionally setting easily achievable goals.

Although the primary focus of this paper is the effects of PFP and participative goal setting on goals, naturally we were surprised to find diminished sales growth relative to the industry following the introduction of the new plan. On closer examination we found no evidence of the result being driven by a small number of outlier stores or districts or by earlier as compared to later time periods. For example, to test whether the plan effect persists over time, we replaced the plan indicator by separate indicators for all post-plan quarters. Except for the first quarter, which is negative but insignificant ($p=0.32$), all subsequent quarters are negative and significant ($p<0.01$). Thus, diminished sales growth, relative to the industry, is not a transitory effect. The online appendix provides graphical evidence of observed and expected goals and sales before and after plan adoption.

A PFP bonus plan that is not accompanied by performance improvements (as opposed to PtoG improvements) would seem unsustainable. And indeed it may have been in a climate of industry sales decline. However, when we presented our results to the top four managers of the firm, the general reaction was mild disbelief. The ensuing brief conversation revolved around the outsized gains in sales at existing stores as well as the growth of new store sales. Our statistical analysis indicates that strong sales growth was primarily associated with an economic climate that benefited all retailers; however, managers tended to view the gains in conjunction with the introduction of PFP. In reflecting on managers’ ambivalence to the negative effect of plan on sales, it is important to note that the CEO’s objective for supporting this research was not to evaluate whether the plan “worked” in the sense of obtaining better performance. Although we requested goal and sales data as a condition of our interest in the research, we were told at the outset by the CEO that he believed that PFP was “the right thing to do.” He supported this research because he valued having a neutral party collect data on managers’ satisfaction with the new program (much as the consultants collected data on dissatisfaction with the old program, but at no cost other than manager time). We documented widespread support for the plan among store and district managers and provided detailed feedback that was used in subsequent (to our study) revisions to the plan.

Our statistical analysis is far more sophisticated than the econometric forecasting that the firm
employs. Moreover, attribution theory posits a managerial bias toward framing ‘good news’ as evidence of managerial skill rather than the unavoidable consequence of exogenous forces. We conclude that managers of HKS were unmoved by our findings because of the difficulty of distinguishing the confounded effects of a new plan from firm and industry growth, the natural bias toward attributing sales growth to internal management actions (i.e., the adoption of PFP), and a strongly-held belief that PFP was the right way to compensate store managers in the interest of employee retention. Our research did not cause managers to revise their views about PFP “working” to achieve sales performance, nor did it raise concerns about the lower goals obtained by some managers; however, it did serve the firm’s purpose. Our findings are consistent with Ittner et al. (2002), who identify increasing morale, improving employee relations, and reducing entitlements as important reasons that firms introduce PFP plans. This points to a limitation of some research on the effects of PFP; researchers focus on short-term financial effects, often failing to consider long-term and indirect effects (exceptions include Banker et al. 2001, 2004). For example, increased employee satisfaction may translate into future sales through indirect avenues such as lower turnover, greater experience and expertise, and enhanced productivity. If this is true, our finding of diminished sales growth relative to the industry in the five quarters following plan adoption may be premature.

5.2. Analysis of SM and DM Random Effects on Goals Following Plan Introduction

H3a and H3b posit that the introduction of the PFP plan is associated with incremental DM and SM effects on goal levels in the post-plan period as compared to the forecasts of the pre-plan period. We test these expectations by interacting the SM and DM random effects with the Plan indicator variable.\(^{22}\) The (untabulated) results show that, consistent with the insignificant overall DM random effect in Table 2, the incremental post-plan DM random effect is also small and insignificant (0.02; Wald Z = 0.93; \(p > 0.10\)). Thus H3a is not supported; that is, variation in sales goals after PFP implementation cannot be attributed to structural DM differences.\(^ {23}\) In contrast, H3b is strongly supported by a significant incremental post-

\(^{22}\) The model used for this analysis includes the random SM and DM effects as in reference model A (Table 2), and, to test for incremental post-period random variation, adds interactions of the random effects with the Plan indicator.

\(^{23}\) Note that this finding does not mean that DMs do not influence sales goals in negotiation with individual SMs (Level-2) but that DMs do not differ systematically from other DMs in relation to all SMs they supervise (Level-3).
plan SM random effect (0.53; Wald Z = 3.88; \(p<0.01\)). Jointly with the significant main SM random effect (0.96; Wald Z = 3.61; \(p<0.01\)), this result documents that, while pre-plan forecast levels differed structurally between SMs, the plan introduction is associated with significant incremental variation in goal levels related to SM differences. The statistics for the Sales model show the same pattern; that is, a significant main SM random effect (1.07; Wald Z = 3.61; \(p<0.01\)), an incremental post-plan SM random effect (0.57; Wald Z = 3.93; \(p<0.01\)) and no significant DM random effects. Thus, SM-induced variation in sales levels increases in the post-plan period.

In sum, although the plan indicator and control variables for the store environment contribute significantly to explaining variation in sales goals, the significant main and incremental SM random effects indicate that a substantial level of variation in goals is related to SM-level variables.

5.3. Analysis of SMs’ Marginal Returns to Slack-building Effort and Prior PtoG Information

To test H4a,b,c and H5, we add to the model (i) three SM characteristics that proxy for marginal returns to slack-building effort: career horizon (H4a), local store knowledge (H4b), and economic dependence on the job (H4c), and (ii) two measures of prior performance (H5), PtoG in the prior quarter and PtoG in the same quarter of the prior year (both as % deviation from goal). The prior performance variables are added at Level-1 because they vary by quarter; SM characteristics are added at Level-2 because they vary by SM, but not by quarter.\(^{24}\) The full multilevel model is (cf. Bryk and Raudenbush 1992):

\[DV_{q,sm,dn} = \alpha_{q,sm,dn} + \alpha_{1,sm,dn}(Plan_{q,sm,dn}) + \sum_{p=2}^{6} \alpha_{p,sm,dn}(Control_{p,q,sm,dn}) + \alpha_{7,sm,dn}(priorQtrPtoG_{q,sm,dn}) + \alpha_{8,sm,dn}(priorYrPtoG_{q,sm,dn}) + \alpha_{9,sm,dn}(priorQtrPtoG_{q,sm,dn} * Plan_{q,sm,dn}) + \alpha_{10,sm,dn}(priorYrPtoG_{q,sm,dn} * Plan_{q,sm,dn}) + \epsilon_{q,sm,dn};\]

\[\alpha_{0,sm,dn} = \beta_{0,0,dn} + \sum_{i=1}^{4} \beta_{0,i,dn}(Control_{i,sm,dn}) + \beta_{0,5,dn}(CareerHorizon_{sm,dn}) + \beta_{0,6,dn}(LocalStoreKnowledge_{sm,dn}) + \beta_{0,7,dn}(Dependence_{sm,dn}) + \alpha_{0,sm,dn};\]

\[\alpha_{1,sm,dn} = \beta_{1,0,dn} + \beta_{1,1,sm,dn}(CareerHorizon_{sm,dn}) + \beta_{1,2,sm,dn}(JobTenure_{sm,dn}) + \beta_{1,3,sm,dn}(Dependence_{sm,dn});\]

\[\beta_{0,0,dn} = \gamma_{0,0,0} + \nu_{0,0,dn}\] (2)

\(^{24}\) Because career horizon and local store knowledge (i.e., job tenure) change at a constant rate for all SMs, and thus provide information only on cross-sectional SM differences, they are Level-2 variables.
where the intercept, $\alpha_{0, sm, dm}$, varies non-randomly with store and local market characteristics and randomly with SM and DM; the coefficient on Plan, $\alpha_{1, sm, dm}$, varies non-randomly with SM characteristics (career horizon, bonus dependence, and local store knowledge); and the remaining Level-1 coefficients are fixed at the same value for all quarters, SMs and DMs. Evidence for H4a-c is provided by a significant reduction in the overall SM random effect as compared to the estimated model reported in Table 2, and significant negative coefficients for $\beta_{1.1, dm}, \beta_{1.2, dm}$ and $\beta_{1.3, dm}$, respectively. Evidence for H5 is provided by significant positive coefficients for $\alpha_{9, sm, dm}$ and $\alpha_{10, sm, dm}$. Since H4a,b,c and H5 examine goal levels, we focus on the goal level model reported in Table 3; for completeness we also estimate (2) for the sales level and PtoG.  

As before, we first examine fit statistics for the estimated models (model C) in Table 3. Starting with the model C results for PtoG, the fit statistics indicate that the additional variables provide no significant improvement over the estimated model in Table 3. The increase in AIC indicates that the penalty for the added variables is higher than their incremental explanatory power. The $\chi^2$ difference between model C and B is also insignificant (although the $\chi^2$ difference to the reference model A (42.5, $p<0.01$) is significant). The slightly decreased model residual provides an incremental $R^2$ of 1.2% (9.9% to reference model A), and the model coefficients in Table 3 show two marginally significant effects; including the interaction between Plan and Dependence ($t = 1.82$). Thus SMs who are more dependent on their HKS income realized a higher PtoG in the post-plan period, which is consistent with incentive effects of the plan (reflected by the larger coefficient on sales than on sales goals).

For the goal (and sales) level model, the decrease in AIC and the significant $\chi^2$ values indicate that the added variables have significant incremental explanatory power. The estimated goal (sales) model provides a total $R^2$ of 48.7% (48.8%) over reference model A, and an overall incremental $R^2$ of 35.8% (36.5%) over estimated model B. The results in Table 3 document that although the Plan coefficients remain significant in both the goal and sales level models, they are lower in magnitude following the introduction of the SM and prior performance variables. The control variable coefficients are largely

---

25 With the sales data ending Q2 2004, we also received the sales goals for Q3 2004. Adding these observations to the panel data provides similar results as in Tables 2 and 3.
similar to those reported in Table 2. We further observe that local store knowledge and career horizon have positive and significant main effects.\(^{26}\)

For our tests of H4a-c, we first assess whether the introduction of the SM characteristics causes the SM random effect to decrease (Table 3). The SM random effect is substantially smaller than in Model B (incremental Level-2 \(R^2=40.3\%\) for goal level and 41.3\% for sales level) after introducing the SM characteristics. Turning to the tests of the coefficients, we find a significant negative interaction between career horizon and Plan. This provides evidence that the incremental SM random effect is significantly associated with SM career horizon, and consistent with H4a, indicates that managers with longer career horizons obtain lower post-plan goals. We also find a significant negative interaction between local store knowledge and Plan, which is consistent with H4b and with the notion that the information asymmetry associated with local store knowledge favors the SM in goal setting, resulting in lower goals as compared to less-tenured SMs. In sum, longer tenured SMs and SMs further away from retirement received relatively lower goals than their peers following plan introduction, supporting the notion that career horizon and local store knowledge are associated with increased slack-building effort and greater influence on goals in the post-plan period.\(^{27}\)

We observe no significant interaction effect of economic dependence on sales goals, inconsistent with H4c. However, the positive effect of dependence on the sales level is stronger (0.08, \(t = 1.45\)) than that on the goal level (0.04, \(t = 0.74\)), which results in a positive and marginally significant effect on PtoG. Thus, in contrast to the effects of tenure and horizon, dependence is associated with bonus achievement, but does not appear to affect goal setting.

With respect to H5, the model residual (\(e\)) decreases slightly as a result of the introduction of the Level-1 prior PtoG variables (from 0.18 to 0.17; incremental Level-1 \(R^2=5.6\%\)), and the main effect of Prior Year PtoG on goal level is insignificant. However, consistent with H5, we observe a significant

\(^{26}\) As there is no basis in theory or the facts of the research setting for predicting \textit{ex ante} these main effects (recall, the pre-plan period forecasting model was based on nothing overtly and directly related to the manager, only on store properties and past sales), this result is likely due to spurious correlation between time-based characteristics of a manager and store characteristics that were incorporated into the forecast. Note, however, that any such spurious correlation would persist through the pre- and post-plan periods and thus does not limit our ability to test the relation of interest which is the \textit{incremental effect} of these variables in the post-plan period.

\(^{27}\) The sensitivity of our results to alternative measures and interpretations of job tenure and career horizon (e.g., manager competence and promotion prospects) is evaluated in tests described in the online Appendix. All results are robust to these tests.
positive interaction between Prior Year PtoG and Plan. Thus, after plan implementation prior PtoG information is increasingly used during goal setting, while the influence of this information is insignificant for the pre-plan period when forecasts were based on historical sales information and store characteristics, not PtoG). The positive coefficient suggests that, consistent with expectations, the information is most useful for the DM in countering slack-building efforts of SMs. Neither the main effect of Prior Qtr PtoG nor its interaction with Plan is significantly different from zero.28

6. Conclusion

This paper contributes to the literature that examines the effects of pay-for-performance by explicitly examining the impact on goals. Prior field research implicitly assumes that PFP-induced effort is focused only on improving performance. However, when pay is for performance relative to a goal that is set through a participative process that involves the manager being evaluated, the effects of PFP are more complex. We provide evidence that the PtoG increase that we document is at least partially attributable to slack-building effort. Specifically, goals are more accurate predictors of performance in the post-plan period than in the pre-plan period and the data are consistent with this being related to information exchange during goal-setting as well as managers ‘meeting-but-not-beating’ goals.

Drawing on insights from the budget negotiation literature, we test whether the parties to participative goal setting exert systematic influence on goal levels. We document significant ‘manager effects’ that emerge following the introduction of the Plan. Although a variety of factors (e.g., personality, management style, economic incentives) may explain these effects, we focus on economic explanations related to cross-sectional differences in managers’ marginal returns to slack-building effort. We find that differences among managers in goal outcomes are associated with their differing marginal returns to slack-building effort; namely, career horizon and local store knowledge. We also find that, consistent with supervisors using prior PtoG to counter managers’ incentives to build slack, prior period PtoG has incremental explanatory power for goals and performance in the post-plan period. In a seminal paper,

28 An exploratory analysis of the asymmetric (i.e., “ratcheting”) variant of this hypothesis (Weitzman 1980), in which exceeding the goal results in subsequent goal increases that are larger than goal decreases associated with falling short of the goal, reveals no evidence of an asymmetric response. Details are available in the online appendix.
Hopwood (1972, p. 174) notes:

“Although accounting data are often the most important formal sources of information in an organization… they are usually incomplete and even biased indicators of managerial performance… the data in [the managers’] appraisal is potentially inequitable, and may encourage defensive behavior which is contrary to the very goals of the organization the accounting system was designed to serve.”

This study contributes evidence of some of these behaviors in the context of using accounting data in performance evaluation.

A distinguishing feature of this study is integration of objective data from the firm’s financial accounting systems and from third party data providers (e.g., local market demographic data and national retail industry sales index) with data from surveys of store and district managers. Experimental research that examines the association between attributes of the goal setting process (i.e., budget participation) and self-reported, and sometimes subjective, assessments of performance has been criticized for failing to employ an objective, external, measure of performance (Merchant et al. 2003). Similarly, empirical studies of PFP have been criticized for focusing on performance and failing to consider performance-to-goal. This study is unique in its use of archival accounting data on both performance and goals. We augment the accounting data with data on the reporting relationships and organizational structure that define the dyad of the manager and supervisor who participate in setting sales goals. In addition, we use survey data to provide insights into goal-setting processes and to develop measures of managers’ returns to slack-building effort. These data enable an integrated analysis of how the introduction of a PFP bonus plan and participative goal-setting affect PtoG and its constituent elements, performance and goals.

Our study examines one retail firm’s experience with implementing pay-for-performance for mid-level store managers. A number of prior studies document performance improvement in similar circumstances (i.e., new bonus plan with participative goal setting) and in similar industries (i.e., retail). The unique contribution of this research is evidence that performance improvements may be attenuated by managerial efforts at slack-building in participative goal setting contexts. While this casts participative goal-setting in a negative light, it is important to recognize that goal setting may serve purposes that are outside of the purview of this study. Past studies of the effects of PFP were incomplete in failing to
examine effects on goals; however, this study and past studies are also incomplete assessments of PFP effects because they do not examine intermediate outcomes of participative goal-setting (i.e., employee satisfaction, information exchange) that may contribute to greater performance and even better PtoG in the long-term. In sum, although our findings provide a more complete picture of short-term effects of introducing PFP and participative goal-setting, additional research is needed to provide a system wide assessment of the long-term effects of these programs.

Our field research design is not without limitations. Like similar studies (e.g., Banker et al. 2001; Banker et al. 2000), we use data from one firm, so limits on generalizing our results must be considered. Our research setting has relatively low turnover and managers with relatively long career horizons (on average 16-20 years) as compared to other retailers. These characteristics increase the likelihood of information asymmetry deriving from local knowledge and exacerbate managerial concerns for goal achievement (the motivation for the career concern hypothesis). In addition, our firm has a differentiation strategy and experienced significant growth both before and during the period of study, together providing more leeway for undetected slack creation as compared to other settings (Van Der Stede 2000). So, while HKS’ plan adoption provides an effective quasi-experimental research design and significant statistical power for testing the hypothesized effects of managers and supervisors on goals, our results may not generalize to firms in settings with less leeway for slack creation or to firms with high employee turnover and limited local knowledge. Finally, although the management of the firm has been very satisfied with the program, we cannot verify that the firm employed “best practices” in goal setting or in compensation plan design. That said, as of late 2006, the program had been expanded to include assistant store managers and hourly employees, and top managers claim that with each extension, sales performance has increased with virtually no change in the share of sales used for bonus compensation.

References


### Table 1: Variable Definitions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>PtoG</td>
<td>Performance-to-goal in the quarter, computed as: ( \text{Sales} - \text{Goal} )</td>
</tr>
<tr>
<td>Sales</td>
<td>Store sales in the quarter, expressed in millions of dollars</td>
</tr>
<tr>
<td>Goal</td>
<td>Store sales goal that was set at the start of the quarter, expressed in millions of dollars</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Plan</td>
<td>Indicator variable: 1=post-plan observation, 0=pre-plan observation</td>
</tr>
<tr>
<td>Career</td>
<td>Categorical response (7-point Likert scale) to the statement: Based on my current circumstances, I expect to retire in: 1=less than one year, 2=one year, 3=2-5 years, 4=6-10 years, 5=11-15 years, 6=16-20 years, 7=21 or more years</td>
</tr>
<tr>
<td>Horizon</td>
<td>Manager’s tenure as an HKS SM (on a 7-point scale: 1=less than one year, 2=one year, 3=2-5 years, 4=6-10 years, 5=11-15 years, 6=16-20 years, 7=21 or more years)</td>
</tr>
<tr>
<td>Local Store</td>
<td>Percent of SM’s household income accounted for by his base salary: 1=less than 20%, 2=21-39%, 3=40-69%, 4=70-99%, 5=100%</td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
</tr>
<tr>
<td>Dependence</td>
<td>Prior Qtr PtoG</td>
</tr>
<tr>
<td>Prior Yr PtoG</td>
<td>PtoG in the same quarter of the prior year, computed as: ( \frac{\text{Sales} - \text{Goal}}{\text{Goal}} )</td>
</tr>
<tr>
<td><strong>Industry, store and Market Control Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Industry Sales</td>
<td>Quarterly measure of retail chain store sales in the US (index with 1977 = 100, not seasonally adjusted) from the International Council of Shopping Centers (2005)</td>
</tr>
<tr>
<td>Cannibalize</td>
<td>% sales loss expected by corporate planners when a new HKS store is opened nearby</td>
</tr>
<tr>
<td>Store Age</td>
<td>Age of store in days at the start of the relevant quarter</td>
</tr>
<tr>
<td>New Store</td>
<td>Indicator variable equal to one if in the quarter the store is less than one year old</td>
</tr>
<tr>
<td>SM change</td>
<td>An indicator variable equal to one for any quarter in which a SM changes stores</td>
</tr>
<tr>
<td>Store Size</td>
<td>Store size in square feet (in 1000s)</td>
</tr>
<tr>
<td>Num HH</td>
<td>Square root of the number of households in the local geographic area</td>
</tr>
<tr>
<td>HH Income</td>
<td>Median household income of the households in the local geographic area (in 1000s)</td>
</tr>
<tr>
<td>%Fam Kids</td>
<td>Square root of the percentage of families in the local geographic area with children</td>
</tr>
</tbody>
</table>
Table 2: The effect of the Plan on Performance-to-Goal, Goals and Sales

Assessment of coefficient estimates (t-statistics in parentheses), and model fit for reference Model A (including SM and DM random effects only) and B (estimation of equation (1)).

<table>
<thead>
<tr>
<th>Coefficient estimates</th>
<th>PtoG</th>
<th>Goal level</th>
<th>Sales level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept ($\gamma_{0,0,0}$)</td>
<td>-0.32</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Plan ($\alpha_{1,sm,dm}$)</td>
<td>(+) 0.48</td>
<td>-0.49</td>
<td>-0.43</td>
</tr>
<tr>
<td>H1</td>
<td>(2.32)**</td>
<td>(-7.45)***</td>
<td>(-6.54)***</td>
</tr>
</tbody>
</table>

**Level-1 Control variables**

1. Industry Sales ($\alpha_{2,sm,dm}$) | -5.07 E-04 | 1.12 E-03 | 1.02 E-03 |
| H1 | (-1.83)* | (13.42)*** | (12.91)*** |
2. Cannibalize ($\alpha_{3,sm,dm}$) | -0.05 | -0.02 | -0.02 |
| | (-3.31)*** | (-2.27) ** | (-3.53)*** |
3. Store Age ($\alpha_{4,sm,dm}$) | -3.3 E-05 | 3.07 E-04 | 2.91 E-04 |
| | (-0.44) | (4.30) *** | (4.06) *** |
4. New Store ($\alpha_{5,sm,dm}$) | 0.44 | -0.36 | -0.31 |
| | (1.28) | (-2.99)*** | (-2.61)*** |
5. SM store change ($\alpha_{6,sm,dm}$) | -0.52 | 0.15 | 0.09 |
| | (-1.37) | (1.25) | (0.81) |

**Level-2 Control variables**

6. Store Size ($\beta_{0,1,dm}$) | 2.09 E-05 | 5.45 E-05 | 5.78 E-05 |
| H1 | (1.10) | (3.82)*** | (4.03)*** |
7. Num HH ($\beta_{0,2,dm}$) | -1.94 E-03 | 1.70 E-03 | 1.52 E-03 |
| | (-1.51) | (1.37) | (1.22) |
8. HH Income ($\beta_{0,3,dm}$) | -3.3 E-06 | -2.8 E-06 | -3.3 E-06 |
| | (-0.38) | (-0.31) | (-0.36) |
9. %Fam Kids ($\beta_{0,4,dm}$) | 0.04 | 0.01 | 0.03 |
| | (0.56) | (0.18) | (0.49) |

**Model fit estimates**

<table>
<thead>
<tr>
<th>Reference Model A</th>
<th>Estimated Model B</th>
<th>Reference Model A</th>
<th>Estimated Model B</th>
<th>Reference Model A</th>
<th>Estimated Model B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level-1 Model Residual $e$ and Wald Z-statistic</td>
<td>2.39</td>
<td>2.30</td>
<td>0.31</td>
<td>0.18</td>
<td>0.31</td>
</tr>
<tr>
<td>Incremental Level-1 $R^2$ [$\Delta(e)$]</td>
<td>(13.20)***</td>
<td>(13.09)***</td>
<td>(13.15)***</td>
<td>(12.93)***</td>
<td>(13.15)***</td>
</tr>
<tr>
<td>3.8%</td>
<td>41.9%</td>
<td>41.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level-2 Model: SM random effect $\mu$ and Wald Z-statistic</td>
<td>0.18</td>
<td>0.04</td>
<td>0.75</td>
<td>0.72</td>
<td>0.77</td>
</tr>
<tr>
<td>Incremental Level-2 $R^2$ [$\Delta(\mu)$]</td>
<td>(1.67) *</td>
<td>(0.46)</td>
<td>(4.85)***</td>
<td>(4.37)***</td>
<td>(4.85)***</td>
</tr>
<tr>
<td>78.7%</td>
<td>4.0%</td>
<td>2.6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level-3 Model: DM random effect $\nu$ and Wald Z-statistic</td>
<td>0.15</td>
<td>0.14</td>
<td>0.13</td>
<td>0.05</td>
<td>0.11</td>
</tr>
<tr>
<td>Incremental Total $R^2$ [$\Delta(e+\mu+\nu)$]</td>
<td>(1.39)</td>
<td>(1.40)</td>
<td>(1.07)</td>
<td>(0.53)</td>
<td>(0.97)</td>
</tr>
<tr>
<td>8.8%</td>
<td>20.2%</td>
<td>19.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akaike Information Criterion</td>
<td>1542.9</td>
<td>1531.9</td>
<td>857.9</td>
<td>686.3</td>
<td>856.1</td>
</tr>
<tr>
<td>- 2 Log Likelihood (-2LL)</td>
<td>1534.9</td>
<td>1503.9</td>
<td>849.9</td>
<td>658.3</td>
<td>848.1</td>
</tr>
<tr>
<td>$\chi^2$ (Adf = 10)</td>
<td>31.0***</td>
<td>191.6***</td>
<td>186.8***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***, **, * indicates significance at the 1%, 5%, 10% respectively (two-tailed). The estimations include 8 DMs (Level 3), 61 SMs (Level 2) and 405 quarterly observations (Level 1, involving 10 quarters).

* $R^2$ is not computed for insignificant DM random effects.
Table 3: The effects of SM characteristics on Performance-to-Goal, Goals and Sales
Assessment of coefficient estimates (t-statistics in parentheses), and model fit for Model C (equation (2)).

<table>
<thead>
<tr>
<th>Coefficient estimates</th>
<th>PtoG</th>
<th>Goal level</th>
<th>Sales level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept ($\beta_0$)</td>
<td>-0.29</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>(-1.32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plan ($\beta_{1,0,dm}$)</td>
<td>(+) 0.41 (1.89)*</td>
<td>(-5.89)**</td>
<td>(-5.13)**</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Industry Sales ($\alpha_{2,sm,dm}$)</td>
<td>-4.1 E-04 (1.46)</td>
<td>1.01 E-03 (12.83)**</td>
<td>9.85 E-04 (12.35)**</td>
</tr>
<tr>
<td>2. Cannibalize ($\alpha_{3,sm,dm}$)</td>
<td>-0.05 (-3.14)**</td>
<td>-0.02 (2.54)**</td>
<td>-0.02 (3.51)**</td>
</tr>
<tr>
<td>3. Store Age ($\alpha_{4,sm,dm}$)</td>
<td>-2.1 E-05 (0.29)</td>
<td>3.14 E-04 (5.13)***</td>
<td>2.97 E-04 (4.83)***</td>
</tr>
<tr>
<td>4. New Store ($\alpha_{5,sm,dm}$)</td>
<td>0.36 (1.04)</td>
<td>-0.37 (-3.22)**</td>
<td>-0.32 (-2.69)**</td>
</tr>
<tr>
<td>5. SM store change ($\alpha_{6,sm,dm}$)</td>
<td>-0.32 (-0.83)</td>
<td>0.11 (0.97)</td>
<td>0.08 (0.67)</td>
</tr>
<tr>
<td>6. Store Size ($\beta_{0,1,dm}$)</td>
<td>2.7 E-05 (1.41)</td>
<td>5.53 E-05 (4.28)**</td>
<td>6.02 E-05 (4.63)**</td>
</tr>
<tr>
<td>7. Num HH ($\beta_{0,2,dm}$)</td>
<td>-2.3 E-03 (1.79)</td>
<td>2.19 E-03 (2.07)**</td>
<td>1.93 E-03 (1.81)*</td>
</tr>
<tr>
<td>8. HH Income ($\beta_{0,3,dm}$)</td>
<td>-3.3 E-06 (0.39)</td>
<td>-9.00 E-06 (1.18)</td>
<td>-9.10 E-06 (1.19)</td>
</tr>
<tr>
<td>9. %Fam Kids ($\beta_{0,4,dm}$)</td>
<td>0.059 (0.74)</td>
<td>-1.07 E-04 (0.00)</td>
<td>-9.20 E-03 (0.16)</td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prior Qtr PtoG ($\alpha_{7,sm,dm}$)</td>
<td>3.29 (1.36)</td>
<td>0.81 (1.5)</td>
<td>0.71 (0.98)</td>
</tr>
<tr>
<td>Prior Qtr PtoG * Plan ($\alpha_{9,sm,dm}$)</td>
<td>-1.87 (-0.59)</td>
<td>(+) -0.11 (H5 -0.12)</td>
<td>-0.47 (-0.49)</td>
</tr>
<tr>
<td>Prior Yr PtoG ($\alpha_{8,sm,dm}$)</td>
<td>-0.61 (-0.24)</td>
<td>0.56 (0.76)</td>
<td>0.53 (0.70)</td>
</tr>
<tr>
<td>Prior Yr PtoG * Plan ($\alpha_{10,sm,dm}$)</td>
<td>-1.97 (-0.63)</td>
<td>(+) 1.70 (H5 1.83)*</td>
<td>1.16 (1.23)</td>
</tr>
<tr>
<td>Career Horizon ($\beta_{0,5,dm}$)</td>
<td>-0.06 (-0.48)</td>
<td>0.18 (2.06)**</td>
<td>0.18 (2.10)**</td>
</tr>
<tr>
<td>Career Horizon * Plan ($\beta_{1,1,dm}$)</td>
<td>0.20 (1.33)</td>
<td>(-) -0.12 (H4a -2.67)***</td>
<td>-0.10 (-2.18)**</td>
</tr>
<tr>
<td>Local Store Knowledge ($\beta_{0,6,dm}$)</td>
<td>3.3 E-03 (0.02)</td>
<td>0.65 (6.73)***</td>
<td>0.65 (6.73)***</td>
</tr>
<tr>
<td>Local Store Knowledge * Plan ($\beta_{1,2,dm}$)</td>
<td>0.05 (0.29)</td>
<td>(-) -0.15 (H4b -2.68)***</td>
<td>-0.15 (-2.64)**</td>
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<tr>
<td>Dependence ($\beta_{0,7,dm}$)</td>
<td>-0.05 (-0.37)</td>
<td>-7.4 E-03 (H4c -0.00)</td>
<td>-0.03 (-0.25)</td>
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<tr>
<td>Dependence * Plan ($\beta_{1,3,dm}$)</td>
<td>0.33 (-1.82)*</td>
<td>0.04 (H4c -0.74)</td>
<td>0.08 (1.45)</td>
</tr>
</tbody>
</table>

Level-1 Residual e (Wald Z) 2.25 (12.49)** 0.17 (12.93)*** 0.17 (12.95)***

Incremental Level-1 $R^2$ [Δ(e)] to Model A (B) 5.9% (2.2%) 45.2% (5.6%) 45.2% (5.6%)

Level-2 SM random effect $\mu$ (Wald Z) 0.01 (0.06) 0.43 (4.35)*** 0.44 (4.78)***

Incremental Level-2 $R^2$ [Δ(μ)] to Model A (B) 97.0% (86.0%) 42.7% (40.3%) 42.9% (41.3%)

Level-3 DM random effect $\nu$ (Wald Z) 0.19 (1.47) 0.01 (0.21) 0.00 (0.00)

Incremental Total $R^2$ [Δ(ε+μ+ν)] to Model A (B) 9.9% (1.2%) 48.7% (35.8%) 48.8% (36.5%)

Akaike Information Criterion / -2LL 1540.4 / 1492.4 645.5 / 597.5 657.4 / 609.4

$\chi^2$ to Model A (Adf=19) / Model B (Adf = 9) 42.5*** / 11.5 252.4*** / 60.8*** 238.7*** / 51.9***

***, **, * indicates significance at the 1%, 5%, 10% respectively (two-tailed). The estimations include 8 DMs (Level 3), 61 SMs (Level 2) and 405 quarterly observations (Level 1, involving 10 quarters).
ONLINE APPENDIX

This appendix provides information on the validity of the independent variables and analysis of the sensitivity of the reported results to alternative measures of the theoretical constructs.

A.1. Measurement and testing of the effects of Career Horizon on Goals

As noted in the text, we measure career horizon as a 7-category variable that indicates the approximate number of years until the SM expects to retire. Since, in a separate question, SMs indicate little or no intention to separate from HKS, the number of years until retirement is a reasonable proxy for the manager’s horizon with the firm. The question then is whether career horizon is confounded with other theoretical constructs in a manner that would introduce multicollinearity or otherwise jeopardize inferences of the tests.

A natural concern is that career horizon may be related to SM job tenure (our proxy for local store knowledge) and economic dependence in ways that would diminish the precision of the estimated coefficients (i.e., multicollinearity problems). If, for example, SM job tenure is closely related to the total number of years that the manager has worked, then one would expect the two to be negatively correlated at a high level simply because the total number of years of a managers’ career is circumscribed by typical U.S. employment patterns. Similarly, if economic dependence is closely related to wealth, then retirement plans may be linked to wealth accumulation. Fortunately, in HKS neither of these conditions exists. As the correlation table in this appendix, Table A-1, indicates, career horizon is virtually uncorrelated (-0.08 and 0.01) with measures of local store knowledge (SM job tenure) and economic dependence. Moreover, as we report in the paper, there is no evidence from the variance inflation factors of auxiliary regression analysis that multicollinearity poses a serious problem to coefficient interpretation. Because SM job tenure is distinct from either years of employment with the company or years of employment in the retail industry (both of which have a stronger negative correlation, -0.15 and -0.33 respectively, with career horizon as predicted), there is no mathematical identity that links SM job tenure and career horizon.

Moreover, because we assess the share of household income provided by the manager’s salary without regard to size of household, wealth or expenditure levels, economic dependence measures only the
differential impact of bonuses on managers’ household annual income. Thus it is unlikely to correlate with accumulated wealth, a theoretical construct that would be more likely to be related to career horizon.

We hypothesize in H4a that managers with longer career horizons exert greater slack-building effort both because of the long-term consequences of higher goals to bonus payments and because of the possibility that goal attainment is more important for those who are candidates for promotion. However, there are few theoretical guidelines for determining what constitutes the short and long term. Stated differently, the functional form that relates career horizon to returns to slack-building is unknown and the approximately linear relation that we test is only one possibility. A plausible alternative is that the effect of career horizon may only be diminished in the years very near retirement. To explore this possibility, we replace our categorical (and more continuous) measure of career horizon with an indicator variable to distinguish SMs who are more than ten years away from retirement. We find that the results are qualitatively unchanged; specifically, that after introduction of the plan, managers that are further from retirement are more likely to obtain lower goals. We interpret this as evidence that these managers have a greater incentive to engage in slack-building and are successful in their efforts after participative goal-setting is instituted.

A.2. Measurement and testing of the effects of SM local store knowledge on Goals

As noted in the text, we measure local store knowledge with SM Job Tenure, a 7-category variable that indicates the approximate number of years that the manager has been an SM for HKS. Tenure as a store manager proxies for the SM’s local knowledge and information asymmetry that favors the SM in goal setting. Clearly tenure as SM is limited as a measure of an SM’s stock of relevant store knowledge; consequently, we perform extensive tests to assess the extent to which SM job tenure might represent different theoretical constructs. As an initial validity check, we compare SM job tenure with responses to a survey in which DM’s were asked directly about information asymmetry. Specifically, for each of their SMs, the DM was asked whether they were more or less knowledgeable than the SM about how best to enhance store profitability. Although missing DM surveys meant that only 45 of the SMs were evaluated, the correlation between DM’s claimed superiority in enhancing store profits and SM job tenure is -0.41 (p
< 0.01). A concern of course is whether the DM would be biased toward claiming greater knowledge, since this is effectively self-reported performance; nonetheless, it appears that even this potentially biased measure provides support for the use of SM job tenure as a proxy for local knowledge and information asymmetry that favors the SM in goal setting.

Perhaps the greatest threat to the validity of SM job tenure as a measure of local store knowledge giving rise to information asymmetry is the concern that it measures competence instead of, or in addition to local store knowledge. We posit that local store knowledge favors the SM in setting lower goals with greater slack. However, SM job tenure could also be associated with competence that either (i) provides the manager with credibility in goal-setting discussions (facilitating increased slack-building), and/or (ii) leads the DM to demand more of longer tenured managers (mitigating slack). While the former suggests a negative relation between SM job tenure and post-plan goals (consistent with H4b), the latter suggests a positive relation (and, therefore, works against our hypothesis). The challenge in assessing this measurement vulnerability is obtaining a reliable independent measure of competence. For this validity check, we employ survey data in which the DM was asked to evaluate each of their SMs. For the 45 SMs for which these data are available, we find a positive correlation between SM job tenure and the DM’s assessment of the SM’s competence ($r = 0.34; p < 0.01$) and whether he is one of the best SMs ($r = 0.32; p < 0.01$). Although these correlations are slightly lower than the correlation with the direct assessment of information asymmetry, there is nonetheless evidence that SM job tenure confounds both information asymmetry and expertise or capability.

In this situation, the best way to distinguish the separate effects of information asymmetry and manager competence is to include both SM job tenure and DM assessment of SM competence in the analysis. When we do so, for the sharply reduced sample of 45 SMs, we find that the results of Table 3 are qualitatively unchanged. Specifically, SM job tenure continues to be significantly ($p < 0.01$) negatively associated with goals after introduction of the plan, consistent with theory that information asymmetry that favors the SM will lead to lower goals. However, SM competence as judged by the DM is associated with significantly ($p < 0.05$) higher goals after introduction of the plan, consistent with the
explanation that more is expected of more capable managers. We do not report these results in the body of the paper owing to the much smaller sample size; nonetheless, this ancillary analysis provides support for the validity of SM job tenure as a measure of local store knowledge and information asymmetry that favors SMs in goal setting discussions with DMs.

We hypothesize that it is knowledge of local store-specific conditions that creates information asymmetry between the SM and DM that favors the more knowledgeable SMs in goal setting (relative to less tenured SMs). However, an argument may also be made that any work experience with the firm is a valid basis for information asymmetry (particularly if the SM was promoted within a store in which he previously worked, a common phenomena). We explore this possibility by replacing SM job tenure by a measure of total years of firm employment (correlation with SM job tenure = 0.69; \( p < 0.01 \)). The results are qualitatively the same as reported in the text; that is, more experience with the firm is associated with lower goals. If we add to this analysis a measure of prior retail experience outside HKS, industry experience also provides a marginally significant negative interaction with Plan \( (p < 0.10) \), indicating that, similar to longer HKS tenure, SMs with more outside experience receive lower sales goals after plan implementation. When the above analyses are augmented to include the measure of SM competence as judged by the DM, the results are qualitatively unchanged, with knowledge of retail operations associated with lower goals and managerial competence as judged by the DM associated with higher goals after the plan was introduced.

A.3. Potential confounds with Store Characteristics and SM Job Tenure and Career Horizon

In the two earlier sections we considered the measurement and meaning of the SM Career Horizon and Job Tenure variables and their potential association. In this section we consider the possibility that these variable measures are confounded with store characteristics (i.e., control variables); specifically, with differences between new versus existing stores or, more generally, store growth. A concern in field-based research as compared to experimental studies is that managers are not randomly assigned to stores. Specifically, it is plausible that better managers are placed in more challenging environments, which in our setting is often the opening of new stores. Inconsistent with this logic, the correlations in Table A-2
between SM Job Tenure and Career Horizon, and the measures, Store Age and New Store, indicate these are largely unrelated. Only Career Horizon shows a weak correlation (0.11) with Store Age. When we investigated this with the Director of Strategic Planning she pointed out that it is virtually impossible to transfer store managers outside of their current geographic region owing to the relatively modest salaries of SMs and the costs of relocation. As a result, the “selection effect” of placing better managers in new stores is only operative at the margin, within a region at best, and not for the full pool of SMs. Indeed, univariate correlations between SM Job Tenure and Career Horizon and the other store and market demographic characteristics range between 0.00 and -0.26. In addition, new store openings affect a modest portion of the observations, as Table A-1 indicates, only 7% (i.e., 27 quarterly observations out of 405, which relate to 14 stores and 15 SMs) of all sample observations has a value of one on the new store indicator, indicating the store has been open less than one year (10 observations in the pre-plan period and 17 observations in the post-plan period). Although the limited number of new store observations is unlikely to substantially affect our model estimates, we include a variable to control for effects of store age measured both in days (Store Age) and as a ‘New Store’ indicator variable to control for growth and start-up effects (i.e., lower sales and goals) in all analyses reported in the study.

We also repeated the analyses after excluding the new store observations (i.e., cases where New Store = 1), and find that the results are unchanged and, in fact, increase in significance. The Plan coefficient reported in Table 2, Panel B for the PtoG model is 0.48 (t = 2.32, p < 0.05), and without the 27 new store observations is 0.60 (t = 2.93; p < 0.01). This results from an increased difference between the Plan coefficients resulting from a larger negative coefficient on Plan in the Goal Level model (i.e., -0.50, t = -7.57 vs. -0.49, t = -7.45) and a smaller negative coefficient on Plan in the Sales Level model (i.e., -0.42, t = -6.48 vs. -0.43, t = -6.54). In sum, we conclude that for our research setting, SM Job Tenure and Career Horizon are not significantly confounded with the store characteristics that are used as control variables.

A.4. Examination of goal ratcheting variant of H5

In the text we document a significant positive interaction between Prior Year PtoG and Plan (supporting H5). We conclude that after plan implementation, prior PtoG information is increasingly used
during goal setting. The influence of this information is insignificant for the pre-plan period when forecasts were developed using econometric time series modeling primarily based on historical sales information. In this section we further explore an asymmetric (i.e., “ratcheting”) variant of hypothesis H5 (Weitzman 1980) by examining whether positive PtoG outcomes result in goal increases that are larger than goal decreases associated with negative PtoG outcomes (Leone and Rock 2002). In an untabulated analysis we multiply the two prior performance interaction terms, Prior Qtr PtoG*Plan and Prior Yr PtoG*Plan, with indicator variables denoting whether the associated prior performance variable is positive and negative.

On the one hand, we find no difference between coefficients for prior year performance; the relation between goals and Prior Yr PtoG is positive and of similar magnitude regardless of whether or not the manager exceeds or falls short of the goal. Moreover, the negative association between current and past PtoG that would be expected under goal ratcheting is not observed. As a robustness check, we repeated the analysis with subsamples of observations in the upper or lower third of the PtoG distribution (N=183). This excludes observations in the middle of the distribution where classification of prior PtoG may be somewhat arbitrary owing to very small differences from zero. Conclusions are qualitatively similar.

On the other hand, the post-plan association between goals and Prior Qtr PtoG does differ depending on the sign of Prior Qtr PtoG. The association is positive for managers whose performance exceeded goals in the prior quarter and negative for managers whose performance fell short of goals. These offsetting effects yield an insignificant net effect in Table 3. Thus, goals increase in the magnitude by which prior quarter performance exceeds or falls short of the goal. While this provides evidence of an asymmetric relation between prior quarter performance and current goals, the asymmetry is not consistent with ratcheting.

**Unique Appendix References (for all others see text)**

Table A-1: Descriptive Statistics

Panel A: Distributions of panel data with repeated observations

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>N</th>
<th>MEAN</th>
<th>STD</th>
<th>MIN</th>
<th>MAX</th>
</tr>
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<tbody>
<tr>
<td>PtoG</td>
<td>405</td>
<td>-0.15</td>
<td>1.65</td>
<td>-5.15</td>
<td>5.25</td>
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<tr>
<td>Sales (^a)</td>
<td>405</td>
<td>3.88</td>
<td>1.15</td>
<td>1.56</td>
<td>7.68</td>
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<td>Sales Goal (^a)</td>
<td>405</td>
<td>3.89</td>
<td>1.16</td>
<td>1.53</td>
<td>7.77</td>
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<th>Independent Variables</th>
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<tr>
<td>Plan</td>
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<td>0.49</td>
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<td>Career Horizon</td>
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<td>7.00</td>
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<td>-2.18 E-03</td>
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<td>-0.25</td>
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<th>Retail Industry Control Variable</th>
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<th>MIN</th>
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<tr>
<td>Industry Sales</td>
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<td>3,551</td>
<td>357</td>
<td>2,912</td>
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<table>
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<th>Store and Market Control Variables</th>
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<th>MEAN</th>
<th>STD</th>
<th>MIN</th>
<th>MAX</th>
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<td>Cannibalize</td>
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<td>SM store change</td>
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<td>5,511</td>
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<td>3.86</td>
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</table>

\(^a\) For reasons of confidentiality we scale the sales and sales goals by a common arbitrary factor. The reported values are meaningful only in that they indicate the similarity of distribution of both measures.

Panel B: Distributions of variables that vary only with time (N=10), store (N=59) or SM (N=61)

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<td>6.03</td>
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<td>Local Store Knowledge (SM Job Tenure)</td>
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<td>2.64</td>
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<th>Store and Market Control Variables</th>
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<td>Num HH (sqrt)</td>
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<td>408.15</td>
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<td>280.0</td>
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<td>HH Income</td>
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<td>44,057</td>
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<td>%Fam Kids (sqrt)</td>
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<td>4.00</td>
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Table A-2: Pearson Correlations of Variables
(n=405, p-values in italics)

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Figures A1-A2: Standardized residual sales goals and sales

These graphs display the difference between the observed sales goals and sales and regression predicted sales goals and sales, which include industry sales growth (ICSC), cannibalization and new store as time-covarying predictors (note Q6 = first quarter of new plan). Both graphs show that after plan implementation, the observed sales goals and sales levels are below the model-predicted goals and sales.

Figure A1: Standardized residual sales goal (observed sales goal – predicted sales goal Q1 – Q10)

![Figure A1: Standardized residual sales goal](image1)

Figure A2: Standardized residual sales (observed sales – predicted sales) Q1 – Q10

![Figure A2: Standardized residual sales](image2)