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Nonfinancial Performance Measures and Promotion-Based Incentives

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ABSTRACT

In this paper, I examine the sensitivity of promotion and demotion decisions for lower-level managers to financial and nonfinancial measures of their performance and investigate the extent to which the behavior of lower-level managers reflects promotion-based incentives. Additionally, I test for learning versus effort-allocation effects of promotion-based incentives. I find that promotion and demotion decisions for store managers of a major U.S.-based fast-food retailer (QSR) are sensitive to nonfinancial performance measures of service quality and employee retention after controlling for financial performance. The likelihood of demotion in this organization is also sensitive to nonfinancial performance on the dimension of service quality, while the probability of exit is primarily sensitive to financial performance measures rather than nonfinancial performance measures. I also find evidence that the behavior of lower-level managers is consistent with the incentives created by the weighting of nonfinancial performance measures in promotion decisions. Managers in locations where there is a higher ex ante probability of promotion and a higher potential reward upon promotion demonstrate significantly higher levels and rates of performance improvement in service quality. Finally, consistent with promotion-based incentives inducing both effort-allocation

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and learning effects, I find that performance-improvement rates for service quality: (1) are higher in prepromotion periods in markets where promotions occur, (2) decrease immediately after the occurrence of a promotion in the same market area, and (3) remain higher than in markets where promotions do not occur. These findings provide some of the first empirical evidence on an alternative to the explicit weighting of nonfinancial metrics in compensation contracts as a mechanism for generating improvements in nonfinancial dimensions of performance.

1. Introduction

In this paper, I examine the sensitivity of promotion and demotion decisions for lower-level managers to financial and nonfinancial measures of their performance and investigate the extent to which the behavior of lower-level managers reflects promotion-based incentives. Additionally, I test for learning versus effort-allocation effects of promotion-based incentives. Prior empirical research in accounting examining weights placed on nonfinancial performance measures in incentive compensation largely focuses on the context of relatively short-term bonus-based compensation contracts (Ittner, Larcker, and Rajan [1997], Ittner, Larcker, and Meyer [2003]). Similarly, empirical research on the use of subjectivity in the provision of incentives also tends to focus on bonus assignments rather than on the role of subjectivity in promotion decisions (Gibbs et al. [2004]). However, research across the finance, accounting, and economics literatures suggests that most of the average increases in individual employee compensation can be traced to promotions rather than continued service in a particular position (Baker, Jensen, and Murphy [1988], Gibbs [1995], Medoff and Abraham [1980]). Despite the documented size of incentives associated with promotion within organizations, there has been little research on the role of nonfinancial performance measures in promotion decisions.

Promotion in organizations serves two important functions: matching and the provision of incentives (Baker, Jensen, and Murphy [1988], Gibbs [1995]). Promotions provide incentives when they reward past performance with increased pay and rank in the organization. Promotions serve a matching function when they sort employees into the jobs for which their skills and abilities are best suited. Given the matching role of promotions, nonfinancial performance measures may provide incremental information to superiors about the capabilities and expected future performance of a lower-level employee in a different task environment.[1] Alternatively, managers

[1] For example, consider evaluating an account executive for the position of sales department manager. The account executive with the highest sales and sales volume each year may not be the best person to manage the sales department. Measures of customer satisfaction and retention may be informative of the account executive's ability to balance the competing demands of customer acquisition and relationship management. Similarly, lower levels of employee turnover and higher levels of skill and satisfaction of employees working with or under the account executive may be informative about ability to take on the added responsibility of a more senior management role.

making promotion decisions may rely little on nonfinancial performance measures. Prior research documents evidence that promotions tend not to be run as pure tournaments in organizations (Baker, Gibbs, and Holmstrom [1994], Gibbs [1994, 1995]). Rather, promotion decisions tend to share similar features to subjective performance evaluation, including a reliance on a combination of observable measures of performance, subjective evaluations of employees by superiors, and the subjective weighting of the importance of various observable performance measures.

Several features of nonfinancial measures may limit their use in such decisions, including a tendency by managers to view them as "softer" and less reliable than financial measures of performance, uncertainty over the extent to which they actually drive future financial performance, and the potential for employees subject to such decisions to view these measures as unreliable measures of their own performance (Ittner and Larcker [1998], Ittner, Larcker, and Meyer [2003]).[2] For example, in the context of subjectively administered bonus compensation schemes, prior literature finds that evaluators tend to rely on performance outcomes rather than actions or nonfinancial drivers of performance outcomes when evaluating the performance of managers (Ittner, Larcker, and Meyer [2003], Lipe [1993]). In the context of annual bonus compensation, Ittner, Larcker, and Meyer [2003] find that managers tend to reduce the "balance" in bonus awards by shifting weights from nonfinancial to financial measures of performance. The extent to which nonfinancial performance measures are used in promotion decisions is an open empirical question.

Considering next the incentive role of promotions, the large documented wage differentials around promotions in prior research suggest that implicit incentives created through the weighting of nonfinancial performance measures in subjective promotion decisions may be a powerful mechanism for generating performance improvements in nonfinancial performance measures such as customer satisfaction, product quality, or employee retention. However, a potential drawback of promotion-based incentives is that they depend on the ex ante probability of promotion. Once promotion occurs, incentives for continued performance improvement may be diminished for nonpromoted managers (Baker, Jensen, and Murphy [1988], Gibbs [1995]). The extent to which nonfinancial performance diminishes for such managers depends on whether the likelihood of promotion induces greater *effort allocation* towards nonfinancial performance improvement activities, towards activities aimed at *learning how* to improve nonfinancial dimensions of performance, or both.

If promotions simply generate greater effort allocation towards performance improvement activities, then rates of nonfinancial performance improvement should diminish in postpromotion periods for nonpromoted

[2] This last consideration may be particularly important as prior research suggests that a high degree of trust must exist between employees and superiors for such systems to succeed (Lawler [1971], Prendergast [1993], Gibbs et. al. [2004]).

managers. Alternatively, managers may expend effort directly aimed at learning how to improve nonfinancial performance through, for example, monitoring operations and surveying customers. "Learning by doing" may also occur as more effort is allocated towards performance improvement activities (Huber [1991], Lapre and Tsikriktsis [2006]). If promotion-based incentives induce learning, then performance improvements made in prepromotion periods may persist in postpromotion periods for nonpromoted managers. Whether, and the extent to which, performance improvement rates decline in postpromotion periods for nonpromoted managers depends on the relative magnitude of pure effort-allocation effects versus learning effects of promotion-based incentives.

I investigate these issues using panel data on restaurant managers from Quick-Service Restaurant (QSR), a large U.S.-based fast-food retailer. Managers at QSR have several opportunities for promotion, including gaining opportunities to work as a consultant to new managers, relocating to a more profitable unit, or gaining an additional unit to become a multiunit manager. I examine whether manager movements into or out of better opportunities is sensitive to past financial and nonfinancial performance measures in QSR's balanced scorecard. I then investigate the extent to which manager behavior is consistent with implicit incentives created by the weighting of nonfinancial performance measures in promotion decisions at QSR.

I find that promotion and demotion decisions for store managers in this organization are sensitive to nonfinancial performance measures of service quality and employee retention after controlling for financial performance. The likelihood of demotion in this organization is also sensitive to nonfinancial performance on the dimension of service quality, while the probability of termination (voluntary or involuntary) is primarily sensitive to financial performance measures rather than nonfinancial performance measures.

Perhaps more important, I find evidence that the behavior of lower-level managers is strongly influenced by incentives created by the implicit weighting of nonfinancial performance measures in promotion decisions. Managers in locations where there is a higher ex ante probability of promotion demonstrate significantly higher levels and rates of performance improvement in service quality. Similarly, I find that performance improvement rates for service quality: (1) are higher in prepromotion periods in markets where promotions occur, (2) decrease immediately after the occurrence of a promotion in the same market area, and (3) remain higher than in markets with the weakest promotion incentives (e.g., markets where promotions did not occur over the sample period). These latter findings are consistent with promotion-based incentives inducing both effort-allocation and learning effects whereby diminished effort incentives from being passed over for promotion do not fully dilute service quality performance improvement rates.

This study makes three contributions to the performance evaluation and compensation literatures. First, I extend prior empirical work in account-

ing that examines weights placed on nonfinancial measures and the use of subjectivity in bonus-based compensation contracts (Ittner, Larcker, and Rajan [1997], Ittner, Larcker, and Meyer [2003], Gibbs et. al. [2004]) to consider the sensitivity of promotion and demotion decisions to nonfinancial performance measures.

Second, I provide empirical evidence supporting an alternative incentive mechanism for generating improvements in nonfinancial performance measures to what is documented in the past literature. Banker, Potter, and Srinivasan [2000], in one of the few studies to empirically examine the effects of incentives based on nonfinancial performance measures, find evidence that the direct weighting of customer satisfaction in a new compensation plan leads to increased levels of customer satisfaction and financial performance. I provide evidence of improvements in nonfinancial performance metrics generated by implicit, promotion-based incentives and link these improvements to organizational learning.

Third, I contribute to the relative handful of studies that examine promotion- or demotion-based incentives at lower levels in the organization (Medoff and Abraham [1980], Gibbs [1995], Baker, Gibbs, and Holmstrom [1994]). These studies primarily focus on the existence of promotion-based incentives in the form of wage differentials across hierarchies, the relationship between promotions and within-job pay for performance, and the sensitivity of promotion and turnover to proxies for employee ability such as subjective performance ratings by superiors. Evidence in this literature on the influence of promotion-based incentives on employee performance is scarce.[3] I extend this literature by providing evidence of the usefulness of nonfinancial performance measures in assessing employee ability for promotion opportunities. Additionally, I contribute to this literature by documenting the influence of promotion-based incentives on lower-level employee behavior.

The results in this paper are subject to the caveat that the field-based nature of the research limits its generalizability. However, the research site chosen for this study offers several advantages for empirical investigation of the use and consequences of nonfinancial measures in promotion decisions. First, multiple executives in this organization make discretionary promotion decisions based on general guidelines but not explicit criteria. I exploit this

[3] Gibbs [1995] examines the incentive effects of promotions by demonstrating that the performance of employees that remain in the same job level (and are likely to have been continually passed over for promotion) declines over time. However, a challenge in the empirical work on promotions within organizations is the identification of both opportunities for promotion and the set of employees that are eligible and competing for a given promotion opportunity. For example, in a company with geographically dispersed business units, the set of employees eligible for a given promotion opportunity may consist of local employees rather than all employees in a given job title. In the empirical setting used for this paper, I am able to identify when specific promotion opportunities arise and more closely approximate the set of managers that are eligible for those specific promotion opportunities, making it possible to document the influence of promotion-based incentives on lower-level employee behavior.

feature to gauge the extent to which managers incorporate nonfinancial performance measures into promotion decisions.[4] Second, multiple lower-level managers at this site are subject to these promotion decisions. Cross-sectional differences in the ex ante probability of promotion faced by these managers allows for measurement of behavioral consequences arising from the use of nonfinancial performance measures in the promotion decision. Finally, because I observe all managers over time, I am able to examine the incentive effects of promotion decisions for employees that have been passed over for promotion. Future research should provide additional evidence from other settings on the use, usefulness, and consequences of nonfinancial performance measures in promotion decisions.

The remainder of the paper proceeds as follows. In the next section, I discuss the research setting and data for this study. Empirical tests and results are presented in section 3. Finally, I conclude with a brief discussion in section 4.

2. *Research Setting*

The research site for this study is QSR, a large U.S.-based fast-food retailer that counts firms such as McDonald's and Burger King as major competitors. QSR operates multiple locations throughout the United States. Individual restaurant units operated by QSR consist primarily of three formats. First, "tier-1" units are stand-alone units that typically have a full-seating area and a drive-thru window. Second, "tier-2" units are smaller and receive less foot traffic than tier-1 units, and they typically do not have a dedicated seating area. Third, "tier-3" units are locations operated by a third-party that purchases the rights to sell QSR products and operate under the QSR brand name. Tier-3 units are typically small units located within college campuses, hospitals, and large corporate office buildings.

Individual restaurant units are owned or leased by QSR and managed by company employees. Managers have a high degree of autonomy in managing their locations. One senior QSR executive noted that "... [managers] have almost complete discretion in how they run their units within the constraints of brand rules." QSR's brand rules put tight limits on manager discretion with respect to changes in menu items or recipes. With respect to pricing decisions, corporate management at QSR sets price ceilings. Managers have discretion to lower prices, but rarely do according to one senior QSR executive. Corporate sets minimum operating hours for units and allows manager discretion over the decision to remain open for longer hours. Managers have complete discretion over personnel decisions for their units as well as for decisions regarding inventory ordering and management as well as customer service.

[4] In a similar vein, Ittner, Larcker, and Meyer [2003] find that, even within the same firm, multiple decision makers apply different criteria when weighting performance measures in a subjective annual bonus program.

Regional managers oversee restaurant operations within a particular region. Their primary functions are to ensure compliance with brand standards and to help managers run their units more effectively. Regional managers, in turn, report to the director of field operations.

2.1 PERFORMANCE MEASUREMENT AT QSR

QSR's performance measurement system consists primarily of a "strategic priorities" scorecard and a restaurant-level scorecard, both modeled after the balanced scorecard concept of Kaplan and Norton [1996, 2000]. The restaurant-level scorecard captures a variety of performance measures designed to evaluate the performance of individual managers and locations. The strategic priorities scorecard includes measures of restaurant performance (e.g., same store sales growth) as well as more aggregate measures of corporate-wide performance (e.g., new store openings, brand awareness). The primary objective of this paper is to examine promotion- and demotion-based incentives and behavior for individual store managers at QSR. Thus, I focus on the measures contained in the restaurant-level scorecard.

The performance measures in the restaurant-level scorecard fall into five categories: quality and customer satisfaction, people, sales and brand growth, financial return, and vision.[5] Measures in the quality and customer satisfaction category capture basic dimensions of service quality (Zeithaml [2000], Fitzsimmons and Fitzsimmons [2001]) including taste of food, speed of service, and overall cleanliness of facilities. Quality metrics capturing each of these dimensions are constructed once per quarter for each store via customer surveys. Quality on each dimension is measured as the proportion of surveyed customers who respond that a particular QSR location is "excellent" on that dimension. For example, speed of service is measured as the proportion of surveyed customers rating a particular location as "excellent" on speed of service. The "people" category contains a measure of nonmanager employee retention and a measure of attentive and courteous employees. The metric of attentive and courteous employees is also collected via customer surveys and measured as the proportion of customers giving a location an excellent rating on this dimension.

The sales and brand growth category contains measures of growth in same store sales, transaction counts, and average check size. The financial return category captures measures of operating profit as a percentage of sales, growth in operating profit, and variance in controllable expenditures relative to targeted expenditures. Finally, the vision category captures metrics representing QSR's key strategic priority, "winning and keeping customers." This category contains measures of customer attraction (e.g., the proportion of customers responding that they are new customers to the QSR brand), customer retention (e.g., customer loyalty index), and overall service quality. QSR's overall service quality metric is measured as the proportion of

[5] See appendix A for definitions of measures in QSR's restaurant-level scorecard.

surveyed customers reporting that a location is excellent on each of the dimensions of attentive and courteous employees, speed of service, taste of food, *and* cleanliness.

QSR corporate management tends to monitor most of these metrics on a rolling 12-month basis to eliminate effects of seasonality. For example, in month t the relevant sales metric is the sum of monthly sales from months $t-11$ to t. Sales growth is then measured relative to the same 12-month period in the prior year. Similarly, in month t, the service quality or customer loyalty metrics are averaged over the last four surveys.[6] Since this is the way metrics are monitored for internal decision making at QSR, I primarily use these "12-month" measures in subsequent tests.

2.2 COMPENSATION AT QSR

QSR's explicit compensation plan for store managers bases manager compensation exclusively on the "adjusted profitability" of units under their supervision. Specifically, QSR's formula-based compensation plan awards managers a high percentage, α, of the operating profit of units under their supervision net of a percentage, β, of sales of those units.[7] Thus, on an annual basis, a given manager receives $\alpha[(1-\beta)*Sales-Cost]$ and the profitability generated for QSR by that manager is $\beta*Sales+(1-\alpha)[(1-\beta)*Sales-Cost]$. The cost figure in the profitability calculation includes controllable expenses such as labor and food costs as well as uncontrollable (by the manager) costs such as rent.

On a monthly basis, managers receive compensation according to the above formula. However, in order to shield managers from risk associated with seasonality, each month QSR bases this formula on average monthly sales and costs over the prior 12 months rather than on sales and costs in the given month. Additionally, QSR's compensation plan includes a minimum income level. Managers whose units are not profitable enough to generate the minimum income, including cases where adjusted profitability ($(1-\beta)*Sales-Cost$) is negative, are paid at this level.

2.3 PROMOTION AND DEMOTION AT QSR

While QSR's explicit compensation plan for managers is formula based and driven purely by financial performance, there are several opportunities for additional income that arise through promotion. First, managers can be promoted to the position of manager-consultant. Manager-consultants work with managers of tier-3 units and new managers to ensure implementation of QSR's brand standards and to assist them in running their units more effectively. Managers who are promoted to this position earn an ongoing consulting fee from QSR in addition to their regular profit-based

[6] Recall that customer surveys are only carried out once every quarter.

[7] Due to confidentiality concerns, I am not able to reveal the actual parameters of the compensation formula.

compensation. The decision to promote a manager to a manager-consultant is a joint decision between the regional manager and the director of field operations.

Second, managers in tier-2 locations can be relocated to tier-1 locations. This is considered a traditional career path for managers at QSR. Tier-1 units operate at a much larger scale than the typical tier-2 location and are significantly more profitable than tier-2 locations on average. Given QSR's profit-based compensation plan, moving from a tier-2 location to a tier-1 unit can have a significant impact on manager compensation. Opportunities for tier-2 managers to move to a tier-1 unit arise when either a new tier-1 unit is opened in the manager's market area or there is turnover of a manager in an existing tier-1 unit in the market area. Relocation opportunities (tier-2 to tier-1 unit) are evaluated by the regional manager, human resources, and the director of field operations.

Third, managers can gain an additional unit to become a multiunit manager. Opportunities for managers to gain an additional unit arise when a new unit of any type is opened in the manager's market area or when there is turnover among existing managers in the market area. Promotions of managers to multiunit opportunities are evaluated jointly by the regional manager, human resources, the director of field operations, and the CEO of the company. The involvement of the CEO in this decision suggests the importance of this particular promotion category.

The explicit link between pay and performance at QSR is the primary driver of ongoing incentives for managers to improve the performance of their units. However, interviews with managers suggest that promotion opportunities are important for their long-term career goals. In a typical comment, one manager who was promoted from a tier-2 to a tier-1 unit noted "... when I ran the [tier-2] unit, my initial goal was to be the best I possibly could at that location. But, after several years, I really began thinking about the possibility of moving to a [tier-1] unit ...."

The geographic location of a manager is an important consideration in virtually all promotion decisions. For example, consulting opportunities are typically given to existing tier-1 or tier-2 unit managers to assist tier-3 managers within the same market area in improving financial performance and operating within QSR's brand standards. Thus, only managers within market areas where opportunities for promotion to manager-consultant arise are considered for promotion to that position. Similarly, managers are only awarded additional units within reasonable geographic proximity to their existing units. In some of the empirical tests in this paper, I exploit the importance of geographic location in the promotion decision to identify the set of employees that are eligible and competing for a given promotion opportunity.

Another feature of this research site that I exploit for my empirical tests is that executives at QSR exercise a considerable amount of discretion when making these decisions. For example, when asked which of the various

scorecard measures were most important for manager promotion decisions, a QSR executive replied

> . . . the decision is made on [manager] performance as a whole. They really need to have strong performance in all areas. I wouldn't say there is one metric that is more important than the others. . . .[our criteria] are very light on hard and fast rules . . .

QSR issues a set of "guidelines" for these promotion opportunities organized around the five perspectives of the restaurant-level scorecard. Criteria for the various promotion opportunities are generally not specific. For example, for the "people" category of the scorecard, the guidelines provide team member training, selection, recruitment, and retention as important criteria for evaluation, but do not give targets or benchmarks for these criteria. Similarly, in the "quality and customer satisfaction" category, the guidelines list service quality and customer satisfaction scores as important criteria, but do not provide benchmarks. Even the financial category of "sales and brand development" provides nonspecific criteria for evaluation stating ". . .[the manager's] unit should exhibit real growth in sales and transaction count over time."

While there does not appear to be any specific criteria for demotion in this organization, I also consider how discretion was used in manager demotion decisions. Demotion can take two forms at QSR. First, a manager may voluntarily or involuntarily separate from employment at QSR due to poor performance. Second, a multiunit manager may voluntarily or involuntarily lose a unit due to poor performance. I am not able, in either case, to observe whether a particular "demotion" event is voluntary or involuntary for a particular manager. Therefore, in subsequent tests, I interpret the results with this caveat in mind.

2.4 DATA

The data for this study are collected from QSR's performance measurement system and restaurant manager compensation files. The sample used for subsequent analyses consists of 24,643 manager-months including observations on 852 unique managers over 39 months from January 2001 to March 2004.[8] I am able to track manager movements over this time period and classify these movements into various promotion or demotion categories. I observe all of the performance measures in QSR's restaurant-level scorecard over this period (listed in appendix A) with the exception of customer loyalty and new to brand percentage. These measures are only available for the last 18 months of the sample period. Because I identify a small number of manager promotions and demotions over the full 39-month period, I exclude these variables from subsequent analyses rather than restricting the sample period further.

[8] Not all managers are observed over the entire 39-month period due to new managers and manager turnover in the sample.

Consistent with QSR's performance evaluation practices, I use rolling 12-month versions of each performance measure in most of my subsequent tests except where otherwise noted. I also use QSR's overall measure of service quality in subsequent tests and exclude measures of the underlying dimensions of attentive and courteous employees, speed of service, taste of food, and cleanliness. The overall measure of service quality captures the extent to which managers are performing well on all of these dimensions. Moreover, untabulated results show that correlations among these measures range from 0.65 to 0.89, making it difficult to disentangle their potentially unique weights in promotion and demotion decisions.

For multiunit managers, I face the challenge of how to aggregate data across multiple locations into performance measures for a single manager. I use mean performance across units for multiunit managers. However, my results are insensitive to alternative measures such as performance in the multiunit manager's worst or best performing unit.

For some tests, I am able to observe financial and nonfinancial measures over a longer period from January 2000 to March 2004. However, for periods earlier than 2001, I can only trace these measures to specific locations and not to specific managers.

3. Empirical Tests and Results

3.1 DESCRIPTIVE STATISTICS ON SHORT-TERM AND PROMOTION-/DEMOTION-BASED INCENTIVES AT QSR

Before turning to promotion-/demotion-based incentives at QSR, I first examine shorter-term incentives embedded in QSR's explicit compensation plan to ensure that the promotion incentive effects I document in later tests are not driven by explicit short-term compensation. My first tests examine whether nonfinancial measures of service quality and employee retention are weighted in short-term compensation awards despite QSR's formula-based compensation plan. QSR's compensation plan explicitly links short-term manager compensation solely to adjusted profit. However, prior research has found that subjectivity (e.g., discretionary pay) is positively related to financial losses and manager tenure (Gibbs et. al. [2004]). Variation across managers and time at QSR in both operating losses and tenure levels may lead QSR executives to weight alternative measures in short-term compensation awards.

Table 1 contains results from linear regressions of changes in annual manager compensation (*AnnCompensation*) on changes in annual operating profit of all locations managed by a manager (*AnnProfit*); changes in overall annual service quality (*AnnServiceQuality*), measured as the average over the four quarterly service quality surveys conducted in each year across all units controlled by the manager; changes in employee retention (*AnnEmployeeRetention*), measured as the number of regular staff employed at the end of each year divided by the total number of staff on the pay-

TABLE 1

Relationship between Changes in Short Term Compensation, Changes in Profitability, and Changes in Nonfinancial Measures of Performance

	Dependent Variable: $\Delta AnnCompensation_t$		
Variable	(1)	(2)	(3)
$\Delta AnnProfit_t$	+++	+++	+++
	(264.2)	(205.3)	(200.2)
$\Delta AnnServiceQuality_t$		180.2	179.6
		(1.41)	(1.40)
$\Delta AnnEmployeeRetention_t$		−34.5	−31.6
		(−0.41)	(−0.35)
$EOYManagerTenure_t$			20.43
			(0.45)
Adjusted R^2	98.8%	98.7%	98.7%
No. of observations	1,694	1,694	1,694

This table provides estimates from linear regressions of the change in annual manager compensation on selected independent variables for 1,694 manager-year observations from 2001 to 2003. Δ denotes the change in the corresponding variable from year $t-1$ to year t. In this table, *AnnCompensation* is defined as total annual manager compensation. *AnnProfit* is defined as total annual profitability of all units controlled by the manager during the year. *AnnServiceQuality* is measured as the percentage of surveyed customers giving an "excellent rating" in each of the areas of employee interaction, service speed, taste of food, and cleanliness; surveys are carried out once per quarter; the measure of service quality used for the tests in this table is the average over the four quarterly surveys conducted in each year across all units controlled by the manager. *AnnEmployeeRetention* is the number of regular staff employed at the end of each year divided by the number of regular staff employed at the end of each year plus the number of regular staff terminations throughout the year; for multiunit managers, this measure is averaged over all units controlled by the manager throughout the year. *EOYManagerTenure* is the number of years a manager has been with QSR measured at the end of each year. *t*-statistics in parentheses are adjusted for clustering of observations within managers over time. +++ denotes not significantly different from α = percentage of restaurant profitability paid to the manager as stated in QSR's compensation plan; α cannot be revealed due to confidentiality concerns.

roll during the year (including terminated employees; for multiunit managers, this measure is averaged over all units controlled by the manager throughout the year); and manager tenure (*EOYManagerTenure*), measured as the number of years a manager has been with QSR as of the end of each year.[9] The adjusted R^2 in column 1 shows that 98.8% of the variation in changes in annual manager income over the sample period of this study is explained by variation in changes in annual store profitability. Consistent with QSR's formula-based compensation plan, short-term compensation for managers is based almost exclusively on the profitability of units under their control. The coefficient on *AnnProfit* is, of course, statistically significant ($p < 0.01$). Moreover, the coefficient on *AnnProfit* is not significantly different from α (the stated percentage of adjusted restaurant profitability paid to managers per QSR's explicit compensation plan). Neither the coefficient on *Profit* nor the regression R^2 changes substantively when annual measures of service quality, employee retention, and manager tenure are added to the specification.

[9] Standard errors used to compute *t*-statistics in table 1 are corrected for clustering of observations within managers over time.

These results demonstrate conclusively that profit-based incentives dominate short-term manager compensation. However, there still may be indirect financial incentives via QSR's explicit compensation plan for managers to improve nonfinancial dimensions of performance such as service quality and employee retention if there is an actual or perceived link between the profitability of their units and these measures. Table 2 provides some evidence on the extent to which this is the case. Panel A of table 2 provides coefficient estimates from the following model

$$QPROFIT_{it} = \beta_0 + \sum_{k=1}^{4} \rho_k QPROFIT_{i,t-k} + \sum_{L=0}^{4} \beta_L QServiceQuality_{i,t-L} + u_i + v_t + \varepsilon_{it}$$

where *QPROFIT* is quarterly profitability of a location and *QServiceQuality* is service quality measured during the quarter. u_i and v_t represent location and time fixed effects, respectively. Time indicators along with four lags of quarterly profit up to and including the same quarter in the prior year are included to control for general time trends due to changes in macroeconomic and local factors over the time period of the sample. Service quality in the current quarter along with four lags of service quality up to and including the same quarter in the previous year are included to test the contemporaneous and lagged impact of service quality on profitability. I estimate the model using the generalized method-of-moments dynamic panel data model of Arrelano and Bond [1991].[10] The coefficient estimates in column 1 show that, for tier-1 locations, changes in service quality lead to changes in profitability one, two, and three quarters into the future. For tier-2 locations, changes in service quality lead to changes in profitability contemporaneously and two quarters into the future. Normalizing these coefficients by average quarterly profitability for tier-1 or tier-2 units, these coefficient estimates imply that, all else equal, each 1% increase in service quality in tier-1 units leads to a 0.18% increase in profitability the next quarter, a 0.17% increase two quarters hence, and a 0.26% increase in three quarters. In tier-2 locations, the same 1% increase in service quality this

[10] A long literature in econometrics addresses bias in panel data models with lagged dependent variables and fixed effects in panels with a short time-series dimension (e.g., see Wooldridge [2002]). Any attempt at eliminating the fixed effects, u_i, through either first differencing or subtracting within-location averages leads the error term in this equation to be correlated with the lagged dependent variable by construction. This leads to biased coefficient estimates, with the magnitude of the bias decreasing in the time-series dimension of the panel and not the cross-sectional dimension. The generalized method of moments estimator (GMM) developed in Arrelano and Bond [1991] addresses this problem through first differencing the equation to eliminate the u_i and then using all available lags of the *level*s of the regressors dated $t-2$ and earlier as instruments for changes in the lagged values of the dependent variable. Standard specification tests for the Arrelano-Bond estimator, including tests of serial correlation and the Sargan test statistic, fail to reject the validity of these instruments when used in my sample.

TABLE 2

Are Nonfinancial Measures Leading Indicators of Financial Performance?

Panel A: Quarterly changes in profit on lagged quarterly changes in service quality

	Dependent Variable: $QProfit_t$	
	Tier-1 Units	Tier-2 Units
$QProfit_{t-1}$	0.096***	−0.164***
	(0.013)	(0.009)
$QProfit_{t-2}$	−0.15***	−0.197***
	(0.009)	(0.007)
$QProfit_{t-3}$	−0.032***	−0.208***
	(0.008)	(0.006)
$QProfit_{t-4}$	0.382***	0.328***
	(0.011)	(0.007)
$QServiceQuality_t$	−29.34	99.425***
	(44.753)	(28.258)
$QServiceQuality_{t-1}$	110.129**	71.794**
	(47.413)	(34.543)
$QServiceQuality_{t-2}$	103.67*	61.62*
	(54.077)	(35.176)
$QServiceQuality_{t-3}$	157.49***	−5.527
	(45.780)	(33.846)
$QServiceQuality_{t-4}$	58.829	31.554
	(49.217)	(29.037)
Time indicators	+++	+++
No. of location-quarters	2,748	4,474

Panel B: Annual change in profit on lagged annual change in employee retention

	Dependent Variable: $\Delta AnnProfit_t$	
	Tier-1 Units	Tier-2 Units
$\Delta AnnProfit_{t-1}$	0.409	0.179
	(0.041)***	(0.038)***
$\Delta AnnEmployeeRetention_{t-1}$	708.7	449.3
	(279.983)**	(154.625)***
No. of locations	314	410

This table provides estimates of the relationship between current financial performance and lagged service quality and employee retention. Panel A provides estimates of the relationship between quarterly profitability (*QPROFIT*) and quarterly service quality (*QServiceQuality*), measured as the percentage of surveyed customers giving an "excellent rating" in each of the areas of employee interaction, service speed, taste of food, and cleanliness during the quarter. Estimates are provided separately for the sample of tier-1 and tier-2 units using the generalized method of moments dynamic panel data model of Arrelano and Bond [1991]. Samples used for estimation include all tier-1 and tier-2 units appearing in the sample for all 17 quarters in the sample period. Standard errors in parentheses are robust to clustering of observations within locations over time. Panel B provides estimates of the relationship between the change in annual profitability (*AnnProfit*) and the lagged change in annual employee retention (*AnnEmployeeRetention*) as defined in table 1. Estimates are provided separately for the sample of tier-1 and tier-2 units during 2003 using two-stage least squares with $AnnProfit_{t-2}$ as an instrument for $\Delta AnnProfit_{t-1}$. Standard errors are in parentheses.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

+++ denotes jointly significant at the 1% level using the χ^2 test.

quarter leads to a contemporaneous change in profit of 0.47%, a 0.34% increase next quarter, and a 0.29% increase in two quarters. Thus, a sustained 1% increase in service quality per quarter over three quarters leads quarterly profits to increase by 0.62% in tier-1 units and by 1.10% in tier-2 units.

Panel B of table 2 reports similar estimates linking employee retention to future financial performance. Because employee retention is only measured on a rolling basis, I estimate the following model linking changes in annual profitability (*AnnProfit*) to changes in end of year employee retention (*AnnRetention*)

$$\Delta AnnProfit_{it} = \rho \Delta AnnProfit_{i,t-1} + \beta \Delta AnnEmployeeRetention_{i,t-1} + \varepsilon_{it}$$

In a similar spirit to the model linking quarterly profit to quarterly service quality, I estimate this model using instrumental variables regression with the twice-lagged level of annual profit as an instrument for the lagged change in profit. The coefficient estimates in panel B of table 2 show that employee retention is significantly related to future profitability after controlling for current profitability. Normalizing these coefficients by average annual profitability for tier-1 or tier-2 units, these coefficient estimates imply that, all else equal, each one-point increase in annual employee retention in tier-1 units leads to a 0.30% increase in profitability the next year, while each corresponding increase of 1% in tier-2 units leads to a 0.53% increase in profitability the next year. The results in tables 1 and 2 demonstrate that explicit incentives for managers to improve nonfinancial measures are determined through a combination of profitability-linked compensation and the link between nonfinancial performance improvement and future profitability.

Turning to implicit incentives in the form of promotion and demotion, table 3 suggests economically significant differences in compensation across promotion categories at QSR. Examining first the distinction between managers and manager-consultants, there appear to be large differences in compensation associated with this promotion category. On average, compensation for a manager with one tier-2 (tier-1) location and an outside opportunity as a manager-consultant is 40% (15%) higher than for a manager with one tier-2 (tier-1) location and no outside opportunity. Moving next to differences between tier-2 and tier-1 units, a manager with one tier-1 unit and no outside consulting opportunity earns approximately *double* the compensation of a manager with one tier-2 location and no outside opportunity. Turning finally to multiunit managers, columns 5 and 6 of table 2 suggest potentially large incentives associated with multiunit opportunities. Two- and three-unit managers earn three and four times as much, respectively, as the base category of a manager with one tier-2 location and no outside opportunity.[11] All differences between promotion levels are statistically significant ($p < 0.01$). Together, these results suggest that long-term promotion-based incentives are large in this organization.

Table 3 provides little in the way of potential clues about the extent to which financial and nonfinancial performance measures in QSR's scorecard

[11] While confidentiality concerns prevent me from reporting actual compensation across categories, the amounts of compensation involved are not trivial. At the time of this study, multiunit managers could earn in excess of three to five times the average starting salary of an MBA graduating from a top business school.

TABLE 3

Cross-sectional Differences in Mean Compensation, Experience, and Performance for Managers at Different Promotion Levels

	1 Tier-2/No Outside Opportunity ($N = 8,491$)	1 Tier-2/ Outside Opportunity ($N = 1,980$)	1 Tier-1/No Outside Opportunity ($N = 8,722$)	1 Tier-1/ Outside Opportunity ($N = 2,208$)	2 Units ($N = 2,887$)	3 Units ($N = 355$)
$Compensation_t$	1	1.4	2.0	2.3	3.3	4.1
$Sales_t$	1	1.2	1.9	2.2	1.9	2.1
$SalesGrowth_t$	1.6%	4.3%	4.9%	3.9%	3.6%	8.2%
$RelativeCost_t$	46,837	47,160	60,634	63,360	56,764	96,179
$ManagerTenure_t$	5	12	7.5	13.3	17.6	25.8
$ServiceQuality_t$	29%	28%	36%	36%	34%	31%
$EmployeeRetention_t$	49.6	53.7	53.7	54.4	51.7	41.5

This table shows means of all variables across different promotion categories. Each column represents the means for managers with the specified number and type of unit (e.g., one tier-2 or one tier-1 unit, two units, three units). "Outside opportunity" denotes that a manager earns a "consulting" fee from QSR for coaching tier-3 unit managers and new managers of QSR restaurants in the manager's market area. The sample consists of 24,643 manager-months. $Compensation_t$ and $Sales_t$ are the rolling sum of monthly compensation and monthly sales, respectively, from months $t-11$ to t. $SalesGrowth_t$ is growth in $Sales_t$ relative to the same 12-month period one year earlier. $RelativeCost_t$ is the difference between actual controllable expenses over the previous 12-month period and targeted controllable expenses over the same 12-month period. $ManagerTenure_t$ is the number of years a manager has been with QSR. $ServiceQuality_t$ is measured as the percentage of surveyed customers giving an "excellent rating" in each of the areas of employee interaction, service speed, taste of food, and cleanliness; surveys are carried out once per quarter; the 12-month measure of service quality reported in this table is the average over the last four surveys as of month t. $EmployeeRetention_t$ is the number of regular staff paid in month t divided by the number of regular staff paid in month t plus the number of regular staff terminations from months $t-11$ to t. Mean compensation and sales levels for managers with one tier-2 unit and no outside consulting opportunity are normalized to 1 to maintain confidentiality; *Sales* and *SalesGrowth* for two- and three-unit managers represent average sales and sales growth across all units controlled by that manager, respectively. All differences in compensation between different promotion levels are significant at the 1% level (two-tailed).

are weighted in promotion decisions over the sample period of this study. Both the level of sales (*Sales*) and growth in sales (*SalesGrowth*)[12] are higher for managers with one tier-2 location and an outside consulting opportunity versus managers with one tier-2 location and no outside consulting opportunity. However, sales growth is *lower* for managers in tier-1 units with an outside consulting opportunity versus managers in tier-1 units without an outside opportunity. Sales growth is markedly high for managers with three units. This may simply reflect the awarding of relatively new, high-growth units to existing multiunit managers. Service quality is generally higher on average for tier-1 units versus tier-2 locations, but is actually lower for multiunit managers when compared to managers with a single tier-1 unit.

While table 3 relies on comparisons across managers at different promotion levels in the organization, table 4 provides evidence on relatively short-term changes in compensation from the 12 months prior to promotion or demotion to the 12 months following promotion or demotion. The first row of table 4 shows changes in compensation for managers with no outside consulting opportunity as of January 2001 ($N = 13,755$ manager-months

[12] In table 3, the reported *Sales* measure for two- and three-unit managers is the average sales across all units controlled by that manager and not total sales across all units.

TABLE 4

Compensation Changes for Managers around Promotion and Demotion

Sample Description	Prepromotion/ Demotion Compensation	Postpromotion/ Demotion Compensation
Gain outside consulting opportunity:		
# Manager-months for managers without consulting opportunity at start of sample period: 13,755		
# Unique managers: 685	1	1.1
# Managers awarded a consulting opportunity: 80		
% Manager-months in which promotion occurs: 0.6%		
% Managers promoted over sample period: 11.7%		
Move from tier-2 to tier-1 unit:		
# Manager-months for managers who start with one tier-2 unit at beginning of sample period *and* are in a market area in a month in which an opportunity to move to a tier-1 unit becomes available: 1,457		
# Unique managers: 372	1	1.7
# Tier-2 managers gaining a tier-1 unit: 36		
% Manager-months in which promotion occurs: 2.5%		
% Managers promoted over sample period: 9.7%		
Gain an additional unit:		
# Manager-months for managers who start with less than three units at beginning of sample period *and* are in a market area in which an opportunity to gain an additional unit becomes available: 2,815		
# Unique managers: 561	1	1.2
# Managers gaining an additional unit: 16		
% Manager-months in which promotion occurs: 0.6%		
% Managers promoted over sample period: 2.9%		
Lose a unit but stay with QSR:		
# Manager-months for managers who start with more than one unit at beginning of sample period: 2,764		
# Unique managers: 79	1	0.95
# Managers losing a unit: 18		
% Manager-months in which loss of unit occurs: 0.7%		
% Managers losing unit over sample period: 22.8%		
Manager leaves QSR:		
# Manager-months: 24,141		
# Unique managers: 851	1	-
# Managers exiting QSR: 86		
% Manager-months in which exit occurs: 0.4%		
% Managers exiting over sample period: 10.1%		

This table shows the mean levels of compensation in the 12 months before and the 12 months after each promotion or demotion category. Managers who operated a restaurant that was closed down at any point in the sample period are excluded from all calculations. The number and proportion of manager-months in which each promotion/demotion event occurred are provided in the first column. Mean compensation levels before promotion/demotion are normalized to 1 for each type of promotion/demotion to maintain confidentiality. All differences in compensation before and after promotion/demotion are significant at the 1% level (two-tailed).

representing 685 unique managers). For the 80 of these managers who are awarded an outside consulting opportunity by April 2004, compensation increases by approximately 10% on average. The second row of table 4 shows changes in compensation across manager-months where manager-months

are restricted to those in which (1) the manager first appears in the sample operating one tier-2 unit and (2) the manager is in a market area in a month in which an opportunity to move to a tier-1 unit becomes available ($N = 1{,}457$ manager-months representing 372 unique managers). A tier-1 unit becomes available if either a new tier-1 unit is opened or another manager leaves an existing tier-1 unit. For the 36 managers in this sample who are awarded a tier-1 unit by April 2004, compensation increases by approximately 70% on average.

The third row of table 4 shows changes in compensation across manager-months where manager-months are restricted to those in which (1) the manager first appeared in the sample controlling less than three units and (2) the manager is in a market area in a month in which an opportunity to gain an additional unit becomes available either due to a new unit opening or due to a manager leaving an existing unit ($N = 2{,}815$ manager-months representing 561 unique managers).[13] For the 16 of these managers who are awarded an additional unit by April 2004, compensation increases by approximately 20% on average.[14]

Next, considering demotion-based incentives, the fourth row of table 4 shows changes in compensation for managers who first appear in the sample operating more than one unit ($N = 2{,}764$ manager-months representing 79 unique managers), subsequently lose one unit, and continue operating at least one unit for QSR. For the 18 of these managers who lose a unit by April 2004, compensation decreases by approximately 5% on average. All differences around changes in promotion levels are statistically significant ($p < 0.01$). While relatively small compared to differences in compensation across promotion levels in QSR, the short-term changes around promotion and demotion documented in table 4 provide additional evidence of the existence and strength of promotion-/demotion-based incentives at QSR.

The results in tables 3 and 4 suggest that promotion-based incentives are potentially strongest for managers in tier-2 locations. Differences in compensation between managers in tier-2 locations and tier-1 units are substantial, as documented in table 3. Moreover, as documented in table 4, managers

[13] Interviews with QSR executives suggest that awarding a manager with more than three units is an extremely rare occasion. Generally, managers with three units are not eligible for additional unit opportunities.

[14] In the cases of tier-2 to tier-1 unit promotions and promotions involving the awarding of an additional unit, I can observe when additional units become available (due to manager turnover, the addition of new units in a market, or both). Thus, for these two types of promotion opportunities, I can observe both when a promotion opportunity arises and the set of managers that are eligible for promotion (those within the same market area as the promotion opportunity). For tier-2 to tier-1 unit promotions, 242 promotion opportunities arise chain-wide during the 39-month sample period, 372 unique managers are eligible for promotion, and only 39 managers are awarded promotion. For promotions involving the awarding of an additional unit, 561 unique managers are eligible for 251 unique promotion opportunities, and only 16 managers are awarded promotion chain-wide over the sample period. Thus, for these two types of opportunities, the option of hiring new managers in the external labor market appears to reduce the average probability of promotion.

moving from a tier-2 to a tier-1 location over the sample period of this study show the largest average increase in compensation relative to prepromotion levels when compared with all other promotion categories. Finally, table 3 documents that holding location type constant (e.g., one tier-2 or one tier-1 unit), an outside consulting opportunity is associated with a much larger difference in compensation for managers in tier-2 units versus managers in tier-1 units (40% vs. 15%, respectively).

3.2 SENSITIVITY OF PROMOTION/DEMOTION TO FINANCIAL AND NONFINANCIAL PERFORMANCE

To examine the implicit weights placed on QSR's scorecard measures in promotion/demotion decisions in more detail, I use the samples defined in table 4 to estimate logit models for each type of promotion/demotion category. The samples defined in table 4 are chosen to control for (1) *eligibility* for promotion (e.g., movement from a tier-2 to a tier-1 location is conditional on a manager starting in a tier-2 location) and (2) the *opportunity* for promotion (e.g., movement to a tier-1 unit requires the availability of a vacant tier-1 unit in a manager's market area).[15] Note that the data in table 4 suggest promotions and demotions are relatively rare events at QSR over the sample period of this study.[16] Thus, my tests have low power to detect the sensitivity of promotions/demotions to QSR's restaurant-level scorecard measures.[17] For each type of promotion, manager-month observations are dropped from the sample once a manager has earned the promotion opportunity. I exclude managers from the sample who operate a unit that is closed at any time during the sample period. The closing of a unit may reflect factors outside of the control of a manager such as a decline in economic conditions in a market area or the selection of a site location by QSR that ex post did not turn out to be a good location.

Results of the basic logit regressions of promotion decisions on one-month lagged financial and nonfinancial performance measures are presented in panel A of table 5.[18] For each type of promotion decision, I include

[15] It is an advantage of my empirical setting to be able to identify a close approximation to the set of employees that are eligible and competing for a given promotion opportunity. However, promotion is a two-way decision. It has to be offered by the organization and accepted by the employee. For nonpecuniary reasons, some employees may choose not to accept promotions. I acknowledge that this may bias the estimated promotion probabilities reported in tables 3 and 4 downward as the set of employees competing for an opportunity would be overstated.

[16] The promotion rates reported in table 4 can be interpreted as average monthly promotion rates. For example, on average, 36.7 managers are eligible for promotion from a tier-2 to a tier-1 unit in a given month that a tier-1 unit becomes available. Of these managers, 0.9 are awarded a tier-1 unit on average, yielding the approximate 2.5% promotion rate reported in table 4.

[17] In untabulated results, all findings are substantively similar when the logistic regressions are corrected for the "rare-events" nature of the data using the methodology of King and Zeng [2001].

[18] Standard errors used to compute *p*-values in table 5 are corrected for clustering of observations within managers over time.

TABLE 5

Logit Analysis of the Relationship between Promotion and Demotion Opportunities, Financial and Nonfinancial Performance Measures, and Control Variables

Panel A: Promotion opportunities

	Dep. Var.: *ConsultingOpp*$_t$			Dep. Var.: *Tier2Tier1*$_t$			Dep. Var.: *Gain*$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Profit$_{t-1}$ (000s)	0.004***			0.002			0.003		
	(0.002)			(0.002)			(0.003)		
Sales$_{t-1}$ (000s)		0.01*			0.003			0.003***	
		(0.006)			(0.006)			(0.0007)	
SalesGrowth$_{t-1}$			0.02***			0.07**			−0.11
			(0.008)			(0.032)			(0.153)
RelativeCost$_{t-1}$ (000s)		−0.004	0.001		−0.17*	−0.12		0.001	0.001
		(0.007)	(0.007)		(0.11)	(0.10)		(0.009)	(0.009)
ManagerTenure$_{t-1}$	0.10	0.03	0.06*	0.02	0.02	0.003	−0.021	−0.08	−0.04
	(0.088)	(0.031)	(0.033)	(0.028)	(0.029)	(0.030)	(0.078)	(0.081)	(0.08)
ServiceQuality$_{t-1}$	0.11***	0.11***	0.09***	0.05***	0.04**	0.04*	−0.019	−0.07	0.04
	(0.030)	(0.031)	(0.036)	(0.020)	(0.024)	(0.024)	(0.040)	(0.037)	(0.055)
EmployeeRetention$_{t-1}$	0.07***	0.07***	0.07***	0.09***	0.10***	0.11***	0.089**	0.15**	0.06
	(0.027)	(0.027)	(0.026)	(0.028)	(0.030)	(0.030)	(0.048)	(0.070)	(0.061)
NewUnits$_t$	0.58***	0.57***	0.57***				−0.678	−0.74	−1.31
	(0.25)	(0.25)	(0.26)				(1.12)	(1.12)	(1.29)
NewFSUUnits$_t$				0.54**	0.77**	0.85**			
				(0.343)	(0.037)	(0.42)			
Market area dummies	+++	+++	+++	+++	+++	+++	+++	+++	+++
N	9,647	9,647	9,647	1,004	1,004	1,004	1,308	1,308	1,308
Pr > ChiSq	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Implied probabilities									
All variables at mean	0.5%			1.7%			0.40%		
ServiceQuality at 10%	0.19%			1.0%					
ServiceQuality at 90%	0.91%			3.1%					
EmployeeRetention at 10%	0.26%			1.0%			0.15%		
EmployeeRetention at 90%	0.93%			3.3%			0.80%		

(Continued)

TABLE 5—*Continued*

Panel B: Demotion categories

	Dep. Var.: $Lose_t$			Dep. Var.: $Exit_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
$Profit_{t-1}$ (000s)	−0.007			−0.008***		
	(0.01)			(0.0001)		
$Sales_{t-1}$ (000s)		−0.001			−0.0015***	
		(0.007)			(0.0004)	
$SalesGrowth_{t-1}$			−0.09***			−0.09***
			(0.034)			(0.017)
$RelativeCost_{t-1}$ (000s)		−0.007	−0.009		0.014***	0.011***
		(0.015)	(0.015)		(0.003)	(0.003)
$ManagerTenure_{t-1}$	0.128	0.13	0.14*	0.072***	0.06***	0.022
	(0.099)	(0.092)	(0.074)	(0.016)	(0.018)	(0.019)
$ServiceQuality_{t-1}$	−0.069	−0.10**	−0.09**	−0.021	0.00002	−0.02
	(0.064)	(0.052)	(0.047)	(0.016)	(0.021)	(0.025)
$EmployeeRetention_{t-1}$	0.031	0.05	0.05	−0.0004	0.001	0.002
	(0.031)	(0.047)	(0.048)	(0.014)	(0.015)	(0.017)
Market area dummies	+++	+++	+++	+++	+++	+++
N	1,210	1,210	1,210	12,287	12,287	12,287
Pr > ChiSq	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Implied probabilities						
All variables at mean		0.5%				
ServiceQuality at 10%		1.40%				
ServiceQuality at 90%		0.20%				
EmployeeRetention at 10%						
EmployeeRetention at 90%						

This table provides estimates of the implicit weights placed on financial and nonfinancial performance measures in promotion and demotion decisions at QSR. Dependent variables in panel A: $ConsultingOpp_t$ is an indicator for whether a manager was awarded a consulting opportunity during month t, $Tier2Tier1_t$ is an indicator for whether a manager in a single tier-2 unit was awarded a relocation to a tier-1 unit during month t, $Gain_t$ is an indicator for whether a manager gained an additional unit during month t. $NewUnits_t$ and $NewTier1Units_t$ represent the number of new units of all types and the number of tier-1 units opened in a manager's market area during month t. Dependent variables in panel B: $Exit_t$ is an indicator for whether a manager leaves QSR during month t, $Lose_t$ is an indicator for whether a multiunit manager loses a unit during month t.

+++ denotes jointly significant at the 1% level using the χ^2 test.

*, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively (one-sided test where sign is predicted; two-sided test otherwise).

Standard errors in parentheses are adjusted for clustering of observations within managers over time.

profit as the baseline measure of financial performance. I also provide estimates using sales or sales growth and controllable expenses relative to target (*RelativeCost*) to allow for potentially different evaluations of revenues, revenue growth, and cost in the promotion decision.[19] Recall that all performance measures are calculated as rolling sums or averages over the previous 12 months. Thus, in month t, the one-month lagged values of each performance measure capture a manager's performance over the 12-month period up to and including month $t-1$. An alternative research design is to pool observations at the manager-year level rather than the manager-month level. However, executives at QSR do not evaluate managers for promotion at regular time intervals. Rather, they evaluate managers for promotion or demotion as opportunities arise (e.g., opening a new unit, manager retirement) or circumstances warrant (e.g., a poor-performing manager may lose a unit or be asked to leave QSR). Thus, I use pooled manager-month data with controls for the occurrence of promotion opportunities (e.g., $NewUnits_t$ = number of new units opened in a manager's market area during month t).

I also include market area indicators in each specification in table 5. Thus, all tests rely on relative comparisons of promotion occurrences and measured financial and nonfinancial performance across managers within market areas. This is consistent with the importance of geographic location in determining the set of managers that are eligible for a given promotion opportunity. The inclusion of market area indicators also serves as a control for unobserved differences in promotion opportunities across market areas. All specifications include a control for the length of manager experience at QSR (*ManagerTenure*). I do not make predictions on the relationship between experience and the likelihood of promotion/demotion. Experience may be correlated with ability, in which case we might expect a positive relationship with the likelihood of promotion. Alternatively, managers with a high level of experience who have been skipped over for promotion in the past may be less likely to be promoted in the future.

In columns 1, 2, and 3 of panel A of table 5, the regressions with *ConsultingOpp* (an indicator for a manager being promoted to a manager-consultant) as the dependent variable show that controlling for financial performance, nonfinancial measures of performance are significantly associated with the

[19] I examine sales and sales growth separately for two reasons. First, due to data limitations, I am only able to include sales growth measured over the previous one-year period. Any lack of significance on sales growth may reflect the fact that that I am not capturing longer-term sales growth trends in my tests. The level of sales at a particular point in time, however, reflects past sales growth. Thus, differences in the levels of sales within a particular market area may be correlated with past sales growth over longer periods. Second, differences in the level of sales may proxy for underlying differences in unobserved manager ability. This is the case if either (1) better managers elect to join QSR only if they can earn a high expected wage by being placed in a high-performing location or (2) QSR corporate management selects better managers to run units with high sales volumes.

probability of a manager gaining an outside consulting opportunity. In column 1, the logit coefficient on *ServiceQuality* ($p < 0.01$) implies that, holding all other variables at their mean values, when *ServiceQuality* is in the bottom 10% in the sample, the implied probability of a manager gaining a consulting opportunity is 0.19%, and it increases to 0.91% when *ServiceQuality* is in the top 10% of the sample. While small, this represents an approximately 80% increase over the implied probability of a manager gaining a consulting opportunity in a given month when all variables are at their mean values (0.5%). Similarly, the coefficient on *EmployeeRetention* ($p < .01$) suggests that, holding all other variables at their mean values, when *EmployeeRetention* is in the bottom 10%, the implied probability of a manager gaining a consulting opportunity is 0.26%, and it increases to 0.93% when *EmployeeRetention* is in the top 10% of the sample. The levels of profit and sales as well as sales growth are significantly related to the probability of a manager gaining a consulting opportunity ($p < 0.05$, $p < 0.10$, $p < 0.01$, respectively). Performance against location-specific cost targets is not significantly related to the probability of a manager gaining a consulting opportunity.

In columns 4, 5, and 6 of panel A of table 5, the logit regressions with *Tier2Tier1* (an indicator for a tier-2 unit manager being relocated to a tier-1 unit) as the dependent variable show that controlling for financial performance, nonfinancial measures of performance are significantly associated with the probability of a manager gaining an opportunity to move to a tier-1 unit. In column 4, the logit coefficient on *ServiceQuality* ($p < 0.05$) implies that, holding all other variables at their mean values, when *ServiceQuality* is in the top 10%, the implied probability of a tier-2 unit manager moving to a tier-1 unit is 1%, increasing to over 3% for managers with *ServiceQuality* in the top 10% of the sample. Similarly, the coefficient on *EmployeeRetention* ($p < 0.01$) suggests that, holding all other variables at their mean values, managers in the bottom 10% of *EmployeeRetention* have an implied probability of promotion of 1%, increasing to 3.3% for those in the top 10%. Thus, managers in the top 10% of *ServiceQuality* or *EmployeeRetention* have approximately *double* the mean implied probability of a tier-2 to tier-1 unit promotion in a given month and market area where an opportunity arises (1.7%) (table 5, panel A). The probability of promotion from a tier-2 to a tier-1 unit is significantly related to sales growth ($p < 0.05$) but not to the level of profit or sales. Controllable cost relative to target is significant in the specification with sales level ($p < 0.10$) but not when sales growth is included.

In columns 7, 8, and 9 of table 5, panel A, the logit regressions with *Gain* (an indicator for a manager gaining an additional unit) as the dependent variable show that the probability of gaining an additional unit is generally not sensitive to nonfinancial performance measures. Employee retention is significant ($p < 0.05$) when the level of profit or sales is included but not when sales growth is included. Service quality is not significant in any specification. The level of sales is significantly related ($p < 0.01$) to the probability of a manager gaining an additional unit but sales growth and the level of

profit are not. There are at least two possibilities for the inconsistency between these findings and those for *ConsultingOpp* or *Tier2Tier1*. First, there are only 16 managers at QSR who gain an additional unit over the period of this study. Thus, my tests may have low power to detect the sensitivity of promotion to nonfinancial performance for this category of promotion. Second, promotion to a multiunit opportunity is the highest level of promotion for a store manager at QSR. Executives at QSR generally consider many factors outside of the formal performance measures included in my tests when evaluating managers for this opportunity (e.g., personal interaction and evaluations by division managers).

Turning next to demotions and exits from QSR, panel B of table 5 provides evidence that, after controlling for financial performance, the likelihood of a multiunit manager losing a unit (*Lose*) is sensitive to performance on the dimension of service quality. In columns 2 and 3, the logit coefficients on *ServiceQuality* ($p < 0.05$) imply that, holding all other variables at their mean values, when *ServiceQuality* is in the bottom 10% of the sample, the implied probability of losing a unit is 1.4%, compared to 0.2% when *ServiceQuality* is in the top 10%. Thus, multiunit managers are approximately seven times more likely to lose a unit when *ServiceQuality* is in the bottom versus top 10%. Service quality is not significantly related to the likelihood of a multiunit manager losing a unit when profit is included as the measure of financial performance. The likelihood of a multiunit manager losing a unit in a given month does not appear to be significantly related to employee retention. Moreover, the likelihood of losing a unit is significantly related to sales growth ($p < 0.01$) but not to the absolute levels of profit or sales. The relationship between sales growth and the likelihood of losing a unit may reflect two factors. First, given QSR's profit-based compensation plan, sales growth in a new unit awarded to a manager is a significant determinant of the incremental compensation that the manager earns from the additional unit. Multiunit managers may voluntarily give up units that do not yield an increase in compensation sufficient enough to reward the extra effort involved in running the additional unit. Second, managers could be asked to give up a unit if their performance is not at the level desired by QSR management.

Columns 4, 5, and 6 of table 5, panel B show that the likelihood of a manager leaving QSR (*Exit*) either voluntarily or involuntarily is significantly related to profit ($p < 0.01$), sales ($p < 0.01$), sales growth ($p < 0.01$), and the level of controllable expenses relative to target ($p < 0.01$). However, the likelihood of exit does not appear to be significantly related to either service quality or employee retention. The level of controllable expenses relative to target is not significantly related to any other promotion or demotion decision in QSR. Interviews with senior QSR executives suggest that the ability to control expenses is considered an important, but basic, requirement for a manager. Thus, good performance on this measure appears to be a necessary condition for continued employment, but not a sufficient condition for promotion.

Overall, the results in this section provide evidence that both financial and nonfinancial performance of managers are significant determinants of promotion and demotion decisions at QSR. The results also provide evidence that termination (either voluntary or involuntary) is primarily related to individual performance on financial rather than nonfinancial dimensions.

3.3 DOES THE BEHAVIOR OF MANAGERS REFLECT PROMOTION-BASED INCENTIVES?

In this section I explore whether promotion decisions at QSR give rise to systematic variation in the behavior of managers over time with respect to improving service quality. The previous section documented (1) the existence of large promotion-based incentives at QSR (tables 3 and 4) and (2) that promotion decisions at QSR are sensitive to individual performance on the dimension of service quality. My primary interest in this section is to examine the extent to which manager behavior reflects these promotion-based incentives.

Incentives generated by promotion depend on the probability of promotion (Baker, Jensen, and Murphy [1988]). Ideally, to examine whether behavior reflects promotion-based incentives, I would like to have some measure of each manager's ex ante assessment of her own probability of promotion. Lacking such a measure, I attempt to capture differences in ex ante promotion possibilities by partitioning QSR locations based on market area characteristics related to the ex ante probability of promotion. I am able to obtain clear predictions in this regard for two types of promotion opportunities at QSR. First, consider the opportunity for a tier-2 unit manager to be promoted to operating a tier-1 unit (*Tier2Tier1*). The incentives generated by the potential for this opportunity should be highest for tier-2 managers in market areas where (1) the likelihood of a tier-1 unit becoming available in the future is high and (2) the number of other managers likely to be vying for the same unit is relatively low.

Predictions on the incentive effects of the number of coworkers vying for the same promotion opportunity are not straightforward. Competition for promotion is a central source of incentives in tournament models such as that of Lazear and Rosen [1981]. However, promotion incentives diminish for those who cannot conceivably win a promotion tournament. Gibbs [1996] demonstrates analytically that increasing the probability of promotion leads to increased (decreased) incentives for effort when promotion probabilities are sufficiently low (high). In QSR, the option of hiring new managers in the external labor market reduces the average probability of promotion. Even when there is only one tier-2 unit manager in a particular market area when a tier-1 unit becomes available, that manager still faces competition for promotion since QSR can award an open tier-1 unit to an existing tier-1 unit manager (e.g., award a multiunit opportunity) or simply hire a new manager to run the open unit. In the tests in this section, I assume that the distribution of promotion probabilities is such that increases in the probability of promotion lead to increased incentives for effort. The

validity of this assumption is supported by the relatively low promotion rates documented in table 4.

The ex ante likelihood of a tier-1 unit becoming available in the future is likely to be highest in markets in which there is a high concentration of tier-1 units. This is the case since normal retirements and other types of management turnover lead to the availability of tier-1 units in these markets. Moreover, any individual tier-2 unit manager has a higher likelihood of being promoted for this opportunity if there are fewer other tier-2 unit managers to compete with for this opportunity. To examine the extent to which tier-2 unit manager behavior reflects promotion-based incentives, I partition market areas based on the ratio of the number of tier-1 units to the number of tier-2 units in the market area. Specifically, I partition market areas into quartiles based on the ratio of tier-1 to tier-2 units.[20] Promotion incentives for tier-2 unit managers are expected to be higher in higher quartiles. If the behavior of tier-2 unit managers is consistent with these implicit promotion-based incentives, I predict that the level of service quality as well as the rate of performance improvement of service quality should be higher in higher quartiles.[21] To test this prediction, I use quarterly data on service quality for all single-unit tier-2 managers over the period from January 2000 to March 2004, representing 17 quarters.[22]

My findings are consistent with these predictions. In untabulated results, the mean level of *ServiceQuality* in quartiles 1–4 is 27.8%, 28.8%, 30.2%, and 30.4%, respectively. Differences in means across quartiles are all significant ($p < 0.01$) except for the difference in means between quartiles 3 and 4. Panel A of table 6 provides results from fixed-effects regressions of service quality on time and time interacted with dummies for each quartile.[23] Column 1 shows that, on average, *ServiceQuality* improves at a rate of approximately 0.95 percentage points per quarter. Column 2 reveals stark differences in the rate of performance improvement on this metric across quartiles. The coefficient on time suggests that managers in the bottom

[20] The presence of QSR competitors may cause a manager to exert more effort in improving service quality to keep and/or acquire customers, which would provide an alternative explanation for service quality improvements unrelated to promotion opportunities. However, this alternative can be ruled out in my research setting. This partition is based only on the *relative* number of tier-1 to tier-2 units and is not a proxy for overall competition faced by each manager. The number of fast-food competitors in each market (measured using the ESRI Business Location File) has a correlation of only 0.127 with the ratio of tier-1 to tier-2 units. Moreover, all results in this section are robust to including interactions of time with competition or time with dummy variables representing quartiles of competition.

[21] Service quality is a measure of *customer perceptions* of service quality rather than an internal process-oriented measure. I assume that changes in this measure reflect changes in the level of manager effort on the underlying dimensions of service quality captured by this metric (employee interaction, service speed, taste of food, and cleanliness).

[22] I aggregate the service quality metric at the quarterly level since *ServiceQuality* is measured through customer surveys once per quarter.

[23] Results are robust to panel corrected standard errors and autocorrelation using the methodology of Beck and Katz [1995].

TABLE 6

Behavior of Service Quality Metrics over Time across Market Areas with Different Ex Ante Opportunities for Promotion

Panel A: Service quality improvements over time for tier-2 units in markets with different ex ante opportunities for relocation to a tier-1 unit

	Dependent Variable: *ServiceQuality*$_t$		
	Full Sample of Tier-2 Units (N = 6,632)		Tier-2 Units in Market Areas with at least 5 Tier-1 Units (N = 3,424)
Time	0.949***	0.77***	0.81***
	(0.017)	(0.039)	(0.037)
Time × *Tier-1 to Tier-2 Ratio Q2*		0.08***	0.18***
		(0.027)	(0.055)
Time × *Tier-1 to Tier-2 Ratio Q3*		0.14***	0.25***
		(0.049)	(0.053)
Time × *Tier-1 to Tier-2 Ratio Q4*		0.31***	0.29***
		(0.045)	(0.049)
Time × *RelReward*			0.097***
			(0.032)
Time × *VarReward*			0.114
			(0.105)
Adj. R^2	21%	23%	24%

Panel B: Service quality improvements over time for tier-2 and tier-1 units in markets with different ex ante opportunities for manager consulting income

	Dependent Variable: *ServiceQuality*$_t$ Tier-2 Locations (N = 6,632)		Dependent Variable: *ServiceQuality*$_t$ Tier-1 Locations (N = 5,819)	
Time	0.95***	0.81***	1.02***	0.83***
	(0.017)	(0.037)	(0.16)	(0.048)
Time × *Tier-3 to Unit Ratio Q2*		0.26***		0.27***
		(0.048)		(0.053)
Time × *Tier-3 to Unit Ratio Q3*		0.10**		0.08
		(0.044)		(0.058)
Time × *Tier-3 to Unit Ratio Q4*		0.22***		0.10
		(0.058)		(0.086)
Adj. R^2	21%	21%	30%	30%

Panel A of this table includes coefficients from location fixed-effects regressions of service quality on time and time interacted by *Tier-1 to Tier-2 Ratio Qj* (j = 1,2,3,4), which are indicators representing whether a QSR location is in a market area in quartile j of the ratio of tier-1 units to tier-2 units. In column 3, *RelReward* is the difference between the average annual profitability of all tier-1 units within a tier-2 unit's market area during 2000 and the annual profitability of the individual tier-2 unit during 2000; *RelReward* is standardized by one sample standard deviation prior to estimation to facilitate interpretability while maintaining confidentiality in the profitability of QSR's locations; *VarReward* is the standard deviation of annual profitability of all tier-1 units within a market area scaled by the average annual profitability of all tier-1 units in the market area during 2000 and is only computed for market areas with at least five tier-1 units. Panel B of this table includes coefficients from location fixed-effects regressions of service quality on time and time interacted by *Tier-3 to UnitRatio Qj* (j = 1,2,3,4), which are indicators representing whether a QSR location is in a market area in quartile j of the ratio of tier-3 units to non-tier-3 units (e.g., tier-1 or tier-2 units). Regressions in Panel B are run separately for the samples of tier-2 units and tier-1 units staffed by managers who have no outside consulting opportunity at the start of the sample period. *Time* represents quarters beginning January 2000 and ending March 2004. Units of observation are location-quarters.

** and *** denote significance at the 5% and 1% levels, respectively (two-sided test).

Standard errors in parentheses are adjusted for clustering of observations within locations over time.

quartile improve service quality at a rate of approximately 0.77 ($p < 0.01$) percentage points per quarter. Those in the top quartile improve service quality at a rate that is 0.31 percentage points higher ($p < .01$) or 1.08 percentage points per quarter. The estimated rates of performance improvement are consistently increasing across quartiles 1–4.

Holding the probability of promotion constant, incentives increase in the size of the expected reward upon promotion. For the case of tier-2 to tier-1 unit promotions, a natural proxy for the size of the expected reward from the perspective of tier-2 managers is the difference between the average annual profitability of all potentially available tier-1 units (that the manager could be promoted to) and the profitability of the manager's own tier-2 unit. I measure this construct for location i in market area m as

$$RelReward_{im} = \overline{Profit_m} - Profit_{im},$$

where $\overline{Profit_m}$ denotes average annual profitability of all tier-1 units in market m during 2000 and $Profit_{im}$ denotes annual profitability of tier-2 unit i in market m during 2000. This measure is a cross-sectional constant that captures differences faced by managers within a market area in the potential to increase lifetime earnings upon leaving their existing tier-2 unit to manage a tier-1 unit in their market area if promoted. Depending on the risk aversion of managers within QSR, holding the probability of promotion and the size of the reward constant, uncertainty in this potential reward could potentially diminish incentives. To examine this possibility, I construct a proxy for reward uncertainty (*VarReward*) as the standard deviation in annual profitability of all tier-1 units in a market area divided by the mean profitability of all tier-1 units in the market area for all market areas with at least five tier-1 units.

Column 3 in panel A of table 6 includes *RelReward* and *VarReward* as additional determinants of the rate of performance improvement in service quality over time. *RelReward* is standardized by one sample standard deviation prior to estimation to facilitate interpretability while maintaining confidentiality in the profitability of QSR's locations. The coefficient estimate on *Time* × *RelReward* ($p < 0.01$) demonstrates that, holding the probability of promotion constant, a one standard deviation increase in the potential reward faced by a manager upon promotion is associated with a 0.097 increase in the rate of service quality performance improvement over time. The coefficient estimates in column 3 suggest that the average manager in markets with the highest probability of promotion (top quartile of ratio of tier-1 to tier-2 units) and facing a high potential reward (one standard deviation above the mean) improves service quality at a rate of 1.2 points per quarter compared to a substantially lower 0.81 points per quarter for the average manager in markets with the lowest probability of promotion (bottom quartile of ratio of tier-1 to tier-2 locations) and facing an average potential reward upon promotion. I find no evidence that uncertainty in the size of the potential reward upon promotion influences the incentives of employees in this organization.

The second type of promotion opportunity where I am able to obtain a clear prediction is for the awarding of an outside consulting opportunity (*ConsultingOpp*). Consulting opportunities are typically given to existing tier-1 or tier-2 managers to assist tier-3 managers with improving financial performance and operating within QSR's brand standards. Using similar reasoning to that above, I partition market areas into quartiles based on the ratio of tier-3 units to all other units (e.g., tier-1 and tier-2). Managers in both tier-1 and tier-2 units vie for these consulting opportunities. The ex ante likelihood of a promotion opportunity arising in a market area should be positively related to the number of tier-3 locations in the market while the likelihood of any particular manager obtaining that opportunity should increase when there are fewer managers competing for the opportunity. Again, I predict that the level of service quality as well as the rate of performance improvement of service quality should be higher in higher quartiles.

My findings for this prediction are mixed. The coefficient estimates in columns 1 and 3 of panel B of table 6 show that, on average, *ServiceQuality* is increasing by 0.95 ($p < 0.01$) percentage points per quarter in tier-2 units and 1.02 ($p < 0.01$) percentage points in tier-1 units. For tier-2 units, the rate of performance improvement for *ServiceQuality* is not monotonically increasing across quartiles. The coefficients for the first and fourth quartile are positive and significant ($p < 0.01$), but are not significantly different from each other. The coefficient for quartile 2 is positive and significant ($p < 0.05$), but implies a lower rate of performance improvement than for managers in the first quartile. Column 4 shows that the rate of performance improvement on *ServiceQuality* for tier-1 unit managers in the first quartile is much lower than the average rate of performance improvement (0.83 vs. 1.02 percentage points per quarter). The rate of performance improvement for tier-1 units in the second quartile is 0.27 percentage points higher ($p < .01$) or 1.10 percentage points per quarter. However, no other quartiles exhibit significant differences in the rate of performance improvement for *ServiceQuality*.

Overall, the results in this section provide evidence that manager behavior is strongly influenced by implicit promotion-based incentives for tier-2 to tier-1 unit promotions but mixed evidence in the same regard with respect to promotions from manager to manager-consultant.

3.4 DO PERFORMANCE IMPROVEMENTS REFLECT EFFORT ALLOCATION, LEARNING, OR BOTH?

The findings in table 6 show that rates of service quality improvement are higher among tier-2 unit managers in market areas where there is a greater ex ante likelihood of promotion to a tier-1 unit. However, these results do not shed any light on what happens to service quality improvements for units with managers that are passed over for promotion. I expect that units with nonpromoted managers in market areas where promotion occurs will show declines in rates of service quality improvement after the promotion is

awarded as the effort allocation incentive effect of promotions is diminished. However, the extent to which the rate of performance improvement declines depends on whether promotion-based incentives induce learning. In this case, performance improvements made in prepromotion periods may persist in postpromotion periods for nonpromoted managers. The relative magnitude of pure effort-allocation effects versus learning effects determines the change in performance improvement rates in postpromotion periods for nonpromoted managers. To investigate these issues, I estimate the following model using fixed-effects regression:[24]

$$\begin{aligned} ServiceQuality_{it} = {} & \gamma_0 + \gamma_1 Experience_{it} + \gamma_2 Experience_{it} \\ & \times \text{PrePromotion}_{it} + \gamma_3 Experience_{it} \\ & \times \text{PostPromotion}_{it} + \mu_i + \varepsilon_{it} \end{aligned} \tag{1}$$

Experience is measured as cumulative time (*Time*) measured from the first quarter of 2000.[25] *PrePromotion* and *PostPromotion* are indicator variables representing pre- and postpromotion periods in markets where promotions occurred over the sample period. I restrict the sample used for estimation only to managers that were never promoted, did not exit, and did not switch units over the sample period. This sample allows me to isolate how nonpromoted managers perform both before (when promotion incentives are strongest) and after (when promotion incentives are diminished) promotions are awarded in their market areas. μ_i represents manager fixed effects.[26] γ_1 is the average rate of service quality improvement for units in markets where no promotion occurs over the sample period. I use these markets as a benchmark because they are the markets where promotion-based incentives for managers are weakest. γ_2 is the differential rate of service quality improvement in prepromotion periods for units in markets where

[24] It is well documented in the literature on learning curves that performance increases with experience at a decreasing rate. Therefore, in this specification, the *PostPromotion* interaction may simply pick up this decreasing positive rate of performance improvement rather than a postpromotion incentive effect. In untabulated results, I attempt to rule out this possibility by estimating traditional learning curve models replacing *ServiceQuality* and *Time* with ln(*ServiceQuality*) and ln(*Time*) without substantive changes in my findings. Results are also robust to the "Performance Gap" model of Lapre and Tsikriktsis [2006], which takes ln(100% − *ServiceQuality*) as the dependent variable and *Time* as the independent variable. This model examines the extent to which learning drives measured performance towards a targeted or ideal outcome. Lapre and Tsikriktsis [2006] demonstrate that this specification is not biased by the omission of prior experience. This is important as I do not have the entire history of service quality data for each unit. Because the results are not affected by the specification of the learning curve model, I report results based on this basic performance improvement model for ease of interpretation. Results are robust to panel corrected standard errors and autocorrelation using the methodology of Beck and Katz [1995].

[25] Learning may also be a function of experience interacting with customers. Results are similar when experience is measured as cumulative customer volume rather than time.

[26] Manager and location fixed effects are equivalent in this specification as I only examine nonpromoted managers who do not switch units over the sample period.

promotion eventually occurs. γ_3 is the differential rate (relative to markets where no promotion occurs over the sample period) of service quality improvement in postpromotion periods for units in markets where promotion occurs.

I expect $\gamma_1 > 0$ reflecting general learning, $\gamma_2 > 0$ reflecting greater ex ante likelihoods of promotion in markets where promotion actually occurs, and $\gamma_3 < \gamma_2$ reflecting diminished incentives for nonpromoted managers after promotion occurs. $\gamma_3 < 0$ implies that service quality improvement rates decline relative to markets where no promotion occurs and is consistent with promotion primarily generating an effort-allocation effect. $0 < \gamma_3 < \gamma_2$ implies that service quality learning rates remain higher relative to markets with the weakest promotion incentives (e.g., where no promotion occurs), but lower than in prepromotion periods in markets where promotion does occur. This scenario is consistent with promotion generating a learning effect whereby diminished effort incentives from being passed over for promotion do not fully dilute service quality performance improvement rates.

Results from estimation of the service quality improvement model are presented in table 7. Column 1 shows that *ServiceQuality* improves at a rate of approximately 0.89 percentage points per quarter for managers in markets where promotions do not occur (e.g., where promotion-based incentives are weakest). Service quality improves at a rate that is 0.25 percentage points higher ($p < 0.01$), or 1.14 percentage points per quarter, in prepromotion periods for managers in markets where promotion eventually occurs. This result is consistent with larger possibilities of promotion leading to higher rates of performance improvement. Relative to managers in markets where no promotions occur, service quality improves at a rate that is 0.16 percentage points higher ($p < 0.01$), or 1.05 percentage points per quarter, in postpromotion periods for managers in markets where promotion occurs. For markets where promotions occur, the differential service quality improvement rate in postpromotion periods of 0.16 is lower than the differential performance improvement rate in prepromotion periods of 0.25 ($\gamma_3 < \gamma_2$) ($p < 0.05$). This result is consistent with diminished incentives for managers passed over for promotion. However, the statistically significant estimate of 0.16 implies $\gamma_3 > 0$, consistent with promotion generating a learning effect that at least partially cancels the effect of diminished effort allocation incentives for nonpromoted managers.

An alternative to my interpretation of learning effects of promotion-based incentives is that the postpromotion differential performance improvement rate remains positive relative to markets with the weakest promotion incentives (e.g., where no promotion occurs) because single promotion events only partially diminish nonpromoted managers' assessments of their future possibilities for promotion. To address this issue, I examine pre- and postpromotion behavior for managers who are passed over for multiple promotions. In the sample used for estimation of equation (1), there are 47 managers in seven different market areas that are passed over more than once for

TABLE 7

Pre- versus Postpromotion Service Quality Performance Improvement Rates

	Dependent Variable: $ServiceQuality_t$	
	(1)	(2)
Time	0.89***	0.88***
	(0.029)	(0.027)
Time × *PrePromotion*	0.25***	0.12*
	(0.066)	(0.086)
Time × *PrePromotion_m*		0.41***
		(0.085)
Time × *PostPromotion*	0.16***	0.14***
	(0.049)	(0.058)
Time × *PostPromotion_m*		0.20***
		(0.058)
Test of $\gamma_2 = \gamma_3$ (Pr > χ^2)	0.048	
Test of $\beta_2 = \beta_3$ (Pr > χ^2)		0.012
Test of $\beta_2 = \beta_4$ (Pr > χ^2)		0.624
Test of $\beta_3 = \beta_5$ (Pr > χ^2)		0.003
Adj. R^2	41.0%	41.2%

This table includes fixed-effects regression coefficient estimates from the following models:

$$\text{Column1: } ServiceQuality_{it} = \gamma_0 + \gamma_1 Experience_{it} + \gamma_2 Experience_{it} \times PrePromotion_{it} + \gamma_3 Experience_{it} \times PostPromotion_{it} + \mu_i + \varepsilon_{it}$$

$$\text{Column1: } ServiceQuality_{it} = \beta_0 + \beta_1 Experience_{it} + \beta_2 Experience_{it} \times PrePromotion_{it} + \beta_3 Experience_{it} \times PrePromotion\_m_{it} + \beta_4 Experience_{it} \times PostPromotion_{it} + \beta_5 Experience_{it} \times PostPromotion\_m_{it} + \mu_i + \varepsilon_{it}$$

μ_i_represents location fixed effects. *PrePromotion* is an indicator representing whether a QSR location is in a market area where a promotion from a tier-2 to a tier-1 unit occurs in the future; *PostPromotion* is an indicator representing whether a QSR location is in a market area after promotion from a tier-2 to a tier-1 unit has occurred. Experience is measured as *Time*, representing quarters beginning January 2000 and ending March 2004. *PrePromotion_m* is an indicator representing whether a QSR location is in a market area where more than one promotion from a tier-2 to a tier-1 unit occurs in the future; *PostPromotion_m* is an indicator representing whether a QSR location is in a market area after multiple promotions from a tier-2 to a tier-1 unit have occurred. Units of observation are location-quarters.

* and *** denote significance at the 10% and 1% levels, respectively (two-sided test).

Standard errors in parentheses are adjusted for clustering of observations within locations over time.

promotion. I add to equation (1) the indicator variables *PrePromotion_m* and *PostPromotion_m* which, respectively, represent pre- and postpromotion periods in markets where multiple promotions occur over the sample period.

Results are reported in column 2 of table 7, which shows that service quality improves at a rate that is 0.12 (0.41) percentage points higher ($p < 0.10$, $p < 0.01$) in prepromotion periods for managers in markets where one (more than one) promotion eventually occurs. The large difference in the prepromotion incremental performance improvement rates for markets where multiple promotions eventually occur relative to markets with only one promotion (0.41 vs. 0.12, $p < 0.05$) provides further evidence consistent with larger possibilities of promotion leading to higher rates of performance improvement.

The differential service quality improvement rate in postpromotion periods in markets where only one promotion occurs is not significantly different from the prepromotion performance improvement rate in the same

markets (0.12 vs. 0.14, $p > 0.10$). However, when considering managers in markets where multiple promotions occur, the differential service quality improvement rate in postpromotion periods is significantly lower than the prepromotion performance improvement rate in the same markets (0.20 vs. 0.41, $p < 0.01$). These results suggest that diminished promotion incentives for nonpromoted managers occur only after they are passed over multiple times for promotion. However, the statistically significant estimate of 0.20 implies that the differential service quality improvement rate in postpromotion periods remains positive relative to markets with the weakest promotion incentives. Overall, these results are consistent with promotion-based incentives generating both effort-allocation and learning effects. Managers put more effort into improving service quality in markets where promotions are more frequent, performance improvement rates decline when managers are passed over for multiple promotions, and disincentives from being passed over for multiple promotions do not fully dilute performance improvement rates relative to markets with the weakest promotion incentives.

4. Discussion and Conclusion

This paper examines the sensitivity of promotion and demotion decisions to financial and nonfinancial performance measures for lower-level managers as well as the extent to which the behavior of lower-level managers reflects promotion-based incentives. I find that promotion and demotion decisions for store managers of a major U.S.-based fast-food retailer (QSR) are sensitive to nonfinancial performance measures of service quality and employee retention after controlling for financial performance. The likelihood of demotion in this organization is also sensitive to nonfinancial performance on the dimension of service quality, while the probability of termination (voluntary or involuntary) is primarily sensitive to financial performance measures rather than nonfinancial performance measures.

Perhaps more interestingly, I find evidence that the behavior of lower-level managers is consistent with the incentives created by the weighting of nonfinancial performance measures in promotion decisions at QSR. Managers in market areas where there is a higher ex ante probability of promotion and a higher potential reward upon promotion demonstrate significantly higher levels and rates of performance improvement in service quality. Finally, consistent with promotion-based incentives inducing both effort and learning effects, I find that improvement rates for service quality: (1) are higher in prepromotion periods in markets where promotions occur, (2) decrease immediately after the occurrence of a promotion in the same market area, and (3) remain higher than in markets where promotions do not occur.

The finding that nonfinancial performance measures are weighted in promotion decisions at QSR is consistent with either the incentive or matching role of promotions. Nonfinancial measures may be used to facilitate better matching in the sense that they provide incremental information on a

lower-level manager's expected ability to perform well in a different task environment. Alternatively, senior executives may simply select for promotion the best performers on a given set of nonfinancial metrics in order to generate incentives for improvement. In either case, the prediction is the same: a positive weight placed on nonfinancial performance measures in the promotion decision.

It is difficult to distinguish these two roles for nonfinancial measures in promotion decisions empirically in my setting. However, the results in this paper, when coupled with qualitative evidence from interviews and internal documents at QSR, suggest that the primary role of nonfinancial measures in the promotion decision in this organization is to facilitate better matching. At QSR, each type of promotion opportunity constitutes a different task assignment and places different demands on the store manager. For example, the formal written guidelines for additional opportunities at QSR state as one criterion for promotion that ". . . [the manager's] team should be able to function effectively without the manager being present." The retention rate of employees under the manager's supervision is then listed as an important criterion for evaluation. Thus, when making a decision about which manager is best suited to run more than one unit or perform an outside task such as consulting for another unit, it appears that QSR executives rely on measures of the manager's ability to retain employees—a measure that may be a signal of the manager's ability to delegate the effective operation of a unit to employees under her supervision. This is consistent with my finding of the weighting of employee retention in promotion decisions across promotion types at QSR.

Similarly, nonfinancial performance measures may facilitate better matching ex post if, for example, such measures provide information about where "mistakes" in matching occurred. As one senior QSR executive noted: ". . . [a manager] may be asked to give up a unit because performance is not where we would like it to be. Only really good [managers] get an opportunity for a second location, and there is lots of pressure for them to run both of these locations as well as two separate managers would run those locations." Nonfinancial measures may be informative about the ex post ability of a manager to perform well in the function of operating more than one location. This is consistent with my finding that the likelihood of a manager losing a unit is related to the level of service quality after controlling for financial performance. Given the extensive involvement by corporate management up to the CEO level prior to selecting managers for multiunit opportunities, it seems unlikely that the possibility of demotion is used primarily as an incentive mechanism to maintain service quality. It seems more likely that problems with maintaining service quality are informative of the manager's ability to perform the function of a multiunit manager, consistent with a matching role for nonfinancial measures in the demotion decision.

A potentially interesting direction for future research is to empirically distinguish between the matching versus incentive role of nonfinancial

performance measures in promotion and demotion decisions. Moreover, with the obvious caveat of the difficulty of generalizing the results of a field study, a limitation of this study is that I examine promotions and demotions over a relatively short time period. This limits the number of movements in and out of positions that I am able to observe. Future research can perhaps examine similar issues in settings where a longer history of personnel performance records is maintained.

APPENDIX A

QSR Restaurant-Level Scorecard

Quality and Customer Satisfaction	
Taste of food	Percentage of customers giving an excellent rating in the area of taste of food; surveys conducted once per quarter
Speed of service	Percentage of customers giving an excellent rating in the area of speed of service; surveys conducted once per quarter
Cleanliness	Percentage of customers giving an excellent rating in the area of overall cleanliness; surveys conducted once per quarter
People	
12-Month retention	# of employees paid in the current month divided by # of employees paid in the last 12 months
Attentive and courteous employees	Percentage of customers giving an excellent rating (5 on a 5-point scale) in the area of attentive, courteous employees; surveys conducted once per quarter
Sales and Brand Growth	
Same store sales growth	Same store sales change; sales growth in $ as a percentage of prior years sales
Transaction count change	Same store transaction count change; transaction growth in $ as a percentage of prior years transaction count
Check average dollar change	$ Change in sales per transaction versus prior year
Financial Return	
Controllable cost gap relative to target	The dollar difference between expected expenditures for controllables and actual expenditures for controllables
Profit % sales	Profit dollars as a percentage of sales
Same store profit growth	Same store profit change; profit growth in $ as a percentage of prior years profit
Vision	
New to brand %	Percentage of customers responding that this is their first visit to any QSR location
Customer loyalty index	Percentage of customers eating with QSR four or more times in the last month *and* rate QSR as one of their favorite restaurants; surveys conducted once per quarter
Service quality	Percentage of customers giving an excellent rating in speed, taste, cleanliness *and* attentive courteous employees; surveys conducted once per quarter

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