

**DO MANAGERS CAPTURE THE VALUE THEY CREATE? DRIVERS OF MANAGERS'
VALUE CAPTURE IN A LARGE RETAIL CHAIN**

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ABSTRACT

Research Summary: We investigate the relationship between value creation and value capture among frontline managers. Using longitudinal data from a restaurant chain, we find that those managers who persistently create more value for the firm capture just 0.5 percent of that extra value through their pay. We explore the reasons for this limited managerial value capture using an abductive approach. We find some evidence that value capture may be limited by lack of alternative employment opportunities. More extensive evidence suggests that the employer often struggled to identify individual contributions to value creation, limiting managerial rewards. We discuss the theoretical implications of such limited managerial value capture for the strategic human capital literature.

Managerial Summary: Frontline managers can differ in how much they contribute to firm profitability. Do those managers who contribute the most to firm performance also capture those benefits back through higher pay? In a study of restaurant managers, we find that managers differ substantially in the profits that they create, but that the most profitable managers only capture 0.5 percent of the extra profits they create. We also find evidence that the firm often fails to identify which managers are the most persistently profitable, potentially reducing the rewards paid to those managers. By demonstrating that differences in performance are not balanced by differences in pay, we show how high-performing managers can be an important strategic resource for organizations.

1 INTRODUCTION

Recent research has drawn increasing attention to the role of frontline managers in creating value (Mollick, 2012). Compared with top managers and CEOs, frontline managers are less visible and their work is more embedded within the organization, making it harder to directly assess the impact of their actions. Recent empirical work has found, though, that some frontline managers deliver persistently higher performance than their peers within the same firm (Lazear, Shaw, & Stanton, 2015). These results suggest that the quality of the individual frontline managers employed by a firm may have a substantial impact on the value that the firm creates.

Whether managers who create more value also contribute to the firm's competitive advantage depends on who captures that extra value (Coff, 1997; Lepak, Smith, & Taylor, 2007)—the managers themselves (perhaps by commanding higher wages), or the firm. It is only if the firm can capture that extra value that the quality of people in less visible managerial positions will make a direct contribution to firm profits and competitive advantage.

Although strategic human capital theory has identified many factors that may shape frontline managers' ability to capture the value that they create, it offers little guidance on the extent of that value capture. Initial arguments suggested that employees who could create more value across different employers—those with higher general human capital—would be able to bargain up their wages to capture the full value that they create (Becker, 1962; Molloy & Barney, 2015). More recent conceptual work, though, argues that employees may sometimes fail to capture the full value that their general human capital creates as barriers to their mobility undermine their bargaining power (Campbell, Coff, & Kryscynski, 2012a; Chadwick & Dabu, 2009). Exactly how much value the employer can capture through these barriers remains unclear, though.

We also lack empirical evidence on the magnitude of employer value capture – particularly from employees who possess generic human capital and occupy less visible and interdependent jobs such as frontline managers. Accurately assessing the relationship between value creation and value capture requires measures of how each individual contributes to value creation net of any influences of the organizational unit or environment. Although a rich literature on pay-for-performance has explored the relationship between compensation and such performance metrics as sales or performance evaluations (e.g. Larkin, 2014; Medoff & Abraham, 1980; Zenger, 1992), it has generally lacked such detailed measures of individual value creation.

Some research has developed such measures for top executives and salespeople, relating that value creation to pay (Frank, 1984; Nguyen & Nielsen, 2014). For more interdependent jobs such as frontline managers though, we lack evidence of how individual differences in value creation translate into individual differences in pay.

Yet empirically estimating managerial value capture is necessary to further theory development on strategic human capital and how frontline managers shape competitive advantage. If those managers who create the most value also tend to capture most of that value, then differences in firms' ability to capture value from their managers will determine which organizations benefit from managerial human capital. If, by contrast, managers capture little of the value that they create, then firm performance will be more closely related to firms' ability to attract, retain and develop high quality managers.

In this study, we provide (to the best of our knowledge) the first empirical evidence on the extent of value capture from general managerial human capital, using a quantitative case study of frontline managers in a quick-service restaurant chain. We exploit the fact that around a quarter of the store managers change stores every year to separate out those managers' contributions to profitability from the influence of the stores themselves. Although we find substantial, persistent differences in the value that different managers create, the managers who create more value capture only a tiny proportion of it—around 0.5 percent, well below the proportion found in studies of senior executives and salespeople (Nguyen & Nielsen, 2014; Obloj & Sengul, 2012). Additional analyses suggest that high-value-creating managers' lack of value capture may partly reflect limited labor market competition. Our findings also point to a particular role for causal ambiguity, as the organization struggles to separate out individual managers' contributions to value creation from the effects of the environment that they are in.

These findings contribute to the literature on competitive advantage from human capital (Chadwick & Dabu, 2009; Coff, 1999) by providing empirical evidence that employers can capture value from the general human capital of some of their employees, and that the magnitude of that value capture can also be very sizeable. They also complement theoretical work on labor market frictions (Call & Ployhart, 2021; Campbell et al., 2012a; Molloy & Barney, 2015), by identifying specific frictions that shape value capture in practice, and showing how causal ambiguity in particular can limit value capture by high-value-creating employees. Finally, our study contributes to the emerging conversation about “expanding the types of workers highlighted in SHC [strategic human capital] research” beyond those in highly visible positions (Chadwick, 2017, p. 156).

2 BACKGROUND

2.1 Theories of employee value capture

Managers create value for organizations by improving the ways in which employees are motivated, work is coordinated, and organizational assets are deployed (Ahearne, Lam, & Kraus, 2014; Floyd & Wooldridge, 1997; Sirmon, Gove, & Hitt, 2008). Managers also capture value from the organization, most often in the form of pay (Coff, 1999; Lepak et al., 2007). Pay scales usually incorporate wide pay bands for each job (Cappelli & Cascio, 1991; Gibbs & Hendricks, 2004; Kepes, Delery, & Gupta, 2009), allowing firms ample scope to base pay on each employee’s human capital and performance (Gibbs & Hendricks, 2004; Medoff & Abraham, 1980). Just as managers vary in the value that they create, they may therefore vary in the value that they capture. It is the difference between this value creation and value capture that determines their overall contribution to firm profitability.

The theoretical literature on strategic human capital has tended to view value capture as a

bargaining process, in which each party seeks a larger share of the value created (Chadwick, 2017; Coff, 1999). The baseline argument suggests that competing potential employers should bid up managers' wages until their outside option equals the value that they can create, forcing the current employer to pay the same amount in order to retain the employee (Becker, 1962; Castanias & Helfat, 1991; Coff, 1997). As a consequence, managers in a frictionless labor market should capture the full value that their general human capital allows them to create

Recent theoretical work, though, has argued that multiple "frictions" (Mahoney & Qian, 2013) within real labor markets may limit employees' ability to capture the value they create with general human capital (Campbell et al., 2012a; Chadwick & Dabu, 2009). As these frictions prevent wages being set in competitive factor markets, employees' pay instead reflects bilateral bargaining (Stoelhorst, 2021) which may not return those employees' full contributions to value creation. Molloy and Barney (2015) provide a useful framework for understanding those frictions, organizing the barriers to employee value capture into three broad categories.

The first of these barrier is employees' own nonpecuniary motivations, which can limit their ability to credibly threaten to leave if they are not paid the value that they create (Campbell *et al.*, 2012a). Firms that can provide "firm specific incentives," such as a strong reputation, a valued mission, or a positive culture can therefore capture value from employees' general human capital (Kriscynski, 2020; Kriscynski, Coff, & Campbell, 2021) .

A second barrier is a lack of labor market demand, which limits the outside options that employees can use to bargain up their wages. Mobility may similarly be limited by "demand-side" barriers to employees' mobility, including monopsony (Ashenfelter, Farber, & Ransom, 2010) and the use of noncompete clauses and other legal restraints (Agarwal, Ganco, & Ziedonis, 2009; Marx, Strumsky, & Fleming, 2009; Starr, Ganco, & Campbell, 2018).

The third barrier is difficulty in valuing employees' human capital. Outside employers often struggle to accurately value employees' human capital, limiting the ability of high performing employees to bargain up their wages (Acemoglu and Pischke, 1998; Campbell *et al.*, 2012a). Employees themselves may lack information on the value they create, leaving them less likely to bargain to extract that value from the employer (Ambrosini and Bowman, 2010; Coff, 1999). Molloy and Barney (2015) also suggest that employers may sometimes underestimate the value of their own employees' human capital and lower their pay offers accordingly.

2.2 Empirical evidence on employee value capture

Theoretical work therefore predicts that managers should be able to bargain to retain some of the value that they create, but that labor market constraints may prevent them from capturing the full value attributable to their general human capital. How great a gap between value creation and value capture these frictions actually create is ultimately an empirical question – yet we have surprisingly little empirical evidence on this topic. Although there is a large literature on the relationship between pay and performance, studies in this literature do not usually measure value creation, relying instead on proxies such as performance appraisal scores (e.g. Medoff & Abraham, 1980; Zenger, 1992) or sales (Larkin, 2014). Where studies have measured value creation more directly, using measures such as firm market value (e.g., Gabaix & Landier, 2008; Hall & Liebman, 1998) or business unit profitability (e.g., Gartenberg & Wulf, 2017), they have generally been unable to separate out individual contributions to performance from the influences of the organizational unit or environment. A separate literature on rent sharing has explored the relationship between value creation and value capture at the organization level, finding that more profitable firms offer higher wages (Abowd, Kramarz, and Margolis, 1999) and that increases in organizational rents lead to a 5 to 15 percent increase in wages (Card,

Cardoso, Heining, & Klein, 2018), but that research has not explored effects of individual-level differences in value creation.

Some research on highly visible workers and those with the most measurable output suggests that such workers may often capture much of the value that they create. For example, data on commissions and sales bonuses suggest that brokers and salespeople may capture 10 to 50 percent of the value that they create (Frank, 1984; Obloj & Sengul, 2012),¹ and research on stock market reactions to executives' sudden death suggests that executives receive around 60 percent of the value attributed to them (Nguyen & Nielsen, 2014). It is unclear, though, whether high performers with less visible output and more interdependent activities—such as frontline managers—would be able to capture similar proportions of the value that they create.

This lack of evidence on the relationship between managerial value creation and value capture likely reflects the exacting data demands of conducting such empirical research. First, researchers must have manager-level data on value creation as well as compensation. Perhaps more importantly, those data must allow the researchers to disentangle the effects of individual managers from contextual effects. Although it is rare to find a dataset that meets all of these criteria, we describe below a setting in which manager mobility across stores allows us to estimate the link between managerial value creation and value capture.

3 METHODS

3.1 Research setting

We measured value creation and value capture in a network of quick-service restaurants in Italy. Although studying a single organization raises questions about generalizability, it gives us the

¹ Studies that only examine bonuses and commissions also leave open the very real possibility that high value creators may capture additional value through salary and other components of their pay as firms seek to retain their most valuable employees.

granular information we need to parse out individual contributions to value creation and value capture. The firm we study has outlets along highways, in airports and railway stations, with a selective presence in high streets, shopping centers, trade fairs, and museums.

We study value creation and value capture by the managers who supervise all of the workers within each store. Each store is run by one manager, who can shape value creation in a number of ways. Managers' day-to-day work involves managing operations, staffing, training and allocating workers to jobs, monitoring store cleanliness, and deciding how to display goods. They have significant scope to affect sales through how they promote products, how they train staff to sell and serve customers, and through supervising personnel shifts and goods inventory. Their staffing and inventory decisions also directly influence the stores' costs.

The main channel for managers to capture the value that they create is through their pay (promotions to higher managerial positions are very rare). Managers' compensation is divided into a base salary and a bonus. Since these managers are exempt employees, their salary is not determined by collective bargaining but negotiated on an individual basis. Major pay raises occur once a year; there were no salary reductions during the period of our study. Quarterly bonuses averaging 6 percent of total compensation are based on meeting quarterly goals for the store around sales, profits, and quality.²

A particular strength of our setting is the way that managers move regularly across stores. An average of 23 percent of managers changed stores each year, allowing us to separate out the persistent effects of different managers from store-level influences on profitability. These moves

² Managers are assigned points for meeting or exceeding these goals. The company then multiplies the points for sales and profits by a "store-specific value" that is based on a periodic assessment of how difficult it is to meet goals in that store (i.e., one point for meeting sales goals can be worth \$5 in some stores and \$15 in others). The resulting bonus is then paid only if the manager scores above a threshold on the quality dimension.

reflect a company policy of regularly rotating managers to prevent them from becoming over-embedded within a given store. As one of the senior HR leaders explained, the main goal of the policy is not to solve performance problems but to avoid “overconfidence” and enable “psychological recycling for the store.” Moves could be initiated by the company or the manager, although managers could specify how far they were willing to move. Analyses (see Table 1 in online Appendix 1) confirmed that the probability of moving was not related to manager performance, gender, age, or tenure.

One concern about using moves across stores to identify manager effects is that the company may systematically match high performing managers with high performing stores. Qualitative interviews and quantitative analyses suggested that managers’ moves were largely independent of their performance, though. One of the leaders of the team in charge of manager rotations reported that the allocation criteria

really depend on the situation. In an ideal world you want the good manager in the complex store, but most of the time situations are more complicated than that. There is not such a thing as a straightforward match, and the match is linked to other dynamics, people’s availability for geographical mobility, need to relocate people, and many others. We don’t really have stable statistics on that.

Other interviews documented additional non-performance-related factors that drove manager mobility (i.e., vacancies, family needs). Nor did our quantitative analyses find a consistent pattern in the moves. Managers were not simply moving into more complex stores over time: during our period of observation 39 percent of managerial moves were to stores similar in managerial complexity (i.e., size, and variety of products and services offered) to the ones they had been managing, 35 percent to stores with higher complexity, and 26 percent to stores with lower complexity. As we demonstrate below, there is no evidence that the managers moving to more complex stores had stronger performance, greater age, or higher tenure. These

analyses reassure us that managers' moves are largely exogenous to manager performance.

3.2 Data

The research site provided access to a matched establishment-employee dataset with monthly personnel records for all store managers for the years 2007–2014. The initial database included 477 managers and 430 stores (29,143 manager-month-year observations). We eliminated observations that reflected accounting adjustments following a manager leaving the organization (81 observations) or a store closing (2 observations). Since we use managers' moves across stores to identify individual differences in performance and pay, we also excluded 2,604 manager-year observations of 36 managers for which manager and store are fully collinear in our data—the store was always managed by the same manager, and that manager did not work in any other stores. The final database thus includes 441 managers and 394 stores (26,456 manager-month-year observations).

3.3 Measures

3.3.1 Defining monetary units. In order to protect our research site's proprietary information, we were required to disguise exact levels of profitability and pay by multiplying these variables by an undisclosed constant, $x/1000$. We report all results using "Monetary Units," which are the product of Euros times this constant.

3.3.2 Measuring unit performance and manager pay. *Log profit.* We measure value creation as the logarithm of the store net controllable profit ($Sales_t - Operating\ Costs_t$) in month t . Net controllable profit is the portion of the store profits that is under direct managerial control, and therefore provides a direct measure of the financial value that the manager creates for the firm. Because store profits are highly skewed, we use the logarithm to allow store and manager effects to more closely approximate the normal distribution assumed in our analytical approach

(described below). Because some stores made losses in some months, we first add to every store's profits a constant (15.02) that slightly exceeds the maximum loss, transforming the scale to represent how much a store's profit in a given month exceeds the minimal performance. This transformation allows us to calculate logs of every value.³

Log total pay. We proxy value capture with manager pay. Because pay does not vary monthly, but rather with the quarterly bonus, we measure manager compensation as the logarithm of managers' average monthly pay within each quarter. In some analyses, we separate pay into *log base salary* and *log bonus* (described above). Since the bonus can be zero, we add a constant (0.001) to every manager's bonus to calculate the log of every value.

3.3.3 Controls. *Store complexity.* While some stores are service stations on peripheral roads, with few employees and limited food options, other establishments are multiconcept food and shopping courts in major airports or shopping malls. The company created a complexity score to reflect these differences in the difficulty of managing the store as well as its strategic relevance. The score is based on a variety of factors including the store's location, size, and complexity of assortment and services provided and ranges from very low (1) to very high complexity (6). The classification of each store is constantly updated by the company and varies over time.

Manager tenure. We measure manager tenure as tenure with the company in years.

Unit quality. Some analyses control for the company's measure of store quality, which is the average of a quarterly "Mystery Shopper" score covering such operational Key Performance Indicators as store hygiene level and service speed.

³ One potential problem with using store net controllable profit (*Log profit*) to measure the value created by managers is that it is net of the manager's pay, so variation in profits could also reflect differences in managerial value capture. In order to address this concern, we also ran our analyses using the logarithm of the sum of store net controllable profit and manager pay in month *t*. The results are largely unchanged from the ones presented in the paper; in the interest of simplicity, we present results here using store controllable profit.

Worker turnover. We measure worker turnover as the number of workers leaving the firm in a month over the average of the numbers of workers at the beginning and at the end of that month (Hausknecht & Trevor, 2011).

Worker tenure. We measure worker tenure as the average company tenure of the workers in the store (in years).

Some of our analyses also control for managers' *gender* (which takes the value one if the manager is male) and *age* in years. All of our month-level and quarter-level models control for month- and quarter-year-level time fixed effects, respectively.

Table 1 reports means, standard deviations, and correlations for the main dependent and independent variables in the analyses, with manager-month-year as the unit of analysis.

3.4 Structure of the analyses

Our analytical approach follows three steps. Step 1 estimates how much value managers create. In step 2, we measure how much of the value that high-value-creating managers create is captured by them through pay, and establish that they capture only a very limited portion of it. In step 3, we explore plausible explanations for this result.

4 STEP 1: ASSESSING MANAGERIAL MARGINAL CONTRIBUTIONS TO VALUE CREATION

Before addressing our central question, we first test whether managers do indeed vary significantly in the value that they create. We do this using mixed-effect models (Crossland & Hambrick, 2010; Lazear et al., 2015; Mollick, 2012) that allow us to quantify managers' impact on profits, independently of persistent differences in the stores they manage and random variation. Specifically, we estimate

$$Y_{ijt} = \alpha + \beta X_{ijt} + \varphi_i + \theta_{lj} + \theta_{2j}.m_t + \zeta_t + \varepsilon_{ijt}, \quad (1)$$

where each i is a different manager, j refers to stores, and month-years are denoted by t . Y is store profitability, α is a constant, and X_{ijt} is a vector of control variables. φ_i represents a random effect that takes different values for different managers i , θ_{1j} represents a random effect that takes different values for different stores j (a random intercept for each store), and θ_{2j} represents a random effect that allows the linear performance trend (m is month) over time to take a different value for each store j (a random slope for each store). ζ_t is a month-year fixed effect that takes a different value for each of the different 96 months of observation, and ε_{ijt} is an error term. The manager effects, φ_i , therefore represent the persistent differences in profitability that are associated with each manager, net of any confounding effects of controls, time-varying store effects, and random variation.

Manager effects can be estimated using either “fixed effects” regression, which estimates individual values of φ_i for each manager, or “random effects” regression, which does not explicitly estimate values for each manager, but instead assumes that the manager effects are distributed normally with a mean of 0 and a standard deviation of σ_φ , and then estimates this standard deviation, σ_φ (Baayen, Davidson, & Bates, 2008; Rabe-Hesketh & Skrondal, 2008). We follow various studies (Hough, 2006; Lazear et al., 2015; Quigley & Graffin, 2017) in modelling φ_i as a random effect. The advantage of using random effects within a mixed-level model such as this is that the estimation explicitly partitions the variance between the unit-level effects, φ_i , and the idiosyncratic error ε_{ijt} . Estimates of unit-level effects using fixed effects estimation do not account for the presence of idiosyncratic error in shaping those fixed effects (Bell, Fairbrother, & Jones, 2019), and studies of firm performance have found that fixed effects can overstate variation across units, even finding CEO or corporate effects in data that are constructed to lack such effects (Fitza, 2014; Jarosiewicz & Ross, 2020; Quigley & Graffin, 2017). Random effect

specifications are thus preferred for estimating contributions to variance (Quigley and Graffin, 2017). Random effects specifications do assume that unit-level effects are orthogonal to regressors, and violations of this assumption can bias estimates of the coefficients β and lead to underestimation of unit-level effects. Overall, though, the random effects specification seems to be the more conservative methodological choice for estimating variance in unit-level effects, so we use random effects in our main specification.

For completeness, we also conducted analyses using manager fixed effects, which are reported in online Appendix 2 (Table 2). Comparing Table 2 of this appendix and Table 2 of the paper, we find support for the argument that random effects provide a more conservative estimate of the variation in manager effects on value creation (see Jarosiewicz & Ross, 2020). While the standard deviation of the manager random effects estimated in Model 2 of Table 2 in the paper equals 0.067, the standard deviation of manager fixed effects estimated in this appendix is 0.254 (Model 2, Table 2, online Appendix 2). Online Appendix 2 also reports on a placebo test altering the assignment of managers to stores that we used to further validate our mixed effect models.

4.1 Results

Models 1 to 3 of Table 2 present our analyses of unit profitability. The dependent variable is *log profit*. The key parameter of interest is the standard deviation of manager effects (bold in the table). Model 1 is a baseline model including manager random effects, store random effects, and store-time random slopes, as well as month-year fixed effects. The model demonstrates persistent managerial differences in profitability with the standard deviation of managers' effects on *log profits* of 0.071. A likelihood ratio test confirms that models containing these manager random effects fit the data better than models lacking such effects ($p < 4.9 \times 10^{-13}$). Stores represent the

biggest single source of differences in our models (s.d. = 0.885), reflecting radical differences in store size, location, and products. The magnitude of these differences underscores the importance of separating out store effects before assessing managers' contributions to value creation.

Models 2 and 3 of Table 2 add controls. First, we add *store complexity* to confirm that our results are robust to changes over time in store classifications. Model 2 also includes *worker turnover*, to account for changes in the manager's team, and *worker tenure*, to account for the experience of team members. Model 3 includes controls for managers' demographic characteristics and tenure, to test whether differences across managers are related to easily observable characteristics. None of those individual-level controls are precisely estimated by the model, nor do they substantially affect the standard deviation of manager effects.

These estimates confirm that managers materially affect store value creation. Our estimates from Model 2 suggest that a manager who is one standard deviation above the mean in generating profits is associated with store profits 6.7 percent higher than the mean—a magnitude very similar to the 5.6 percent effect on market value that Nguyen and Nielsen (2014) report for CEOs. 6.7 percent of the profits of the mean store (4.6 monetary units) is also nearly twice the compensation of the mean manager (2.47 monetary units).

5 STEP 2: ESTIMATING MANAGERIAL VALUE CAPTURE

We now turn to our central question: how much of the extra value created by high-value-creating managers is also captured by them? As we note above, store profits can reflect three factors: the effects of the store itself, transient fluctuations in performance, and persistent effects of the manager. Our analyses seek to parse out these latter, between-individual effects, to understand whether managers who persistently create more value are paid more. We differentiate the within-manager and between-manager effects of store profitability on pay by using hybrid models

(Certo, Withers, & Semadeni, 2017; Kaufman, 1993; Schunck, 2013). Hybrid models decompose key independent variables X_{it} into two components: the unit mean of the variable for each unit i , and the unit-centered variable, which is a given observation's deviation from the unit mean. The coefficient on the unit-centered variable represents the effect of within-unit changes in the independent variable, and is identical to the coefficient estimated in a unit fixed-effects regression. The coefficient on the unit mean estimates the effect of between-unit changes in the independent variable, demonstrating the effects of persistent differences between units (net of within-unit fluctuations).

We estimate such hybrid models in Table 3. As pay in our sample varies quarterly rather than monthly, we use the quarter as the time unit of analysis (results are very similar if we use monthly data). For each quarter, we regress pay on average *log profit* in the preceding three months—the period whose performance the bonus explicitly rewards (we also experimented with longer lags of two, three, and four quarters; longer lags attenuated the relationship between pay and store profits). *Log profit* is decomposed into two variables: *manager mean store profitability* and *manager centered store profitability*.

We include store fixed effects in all of our models to purge the effects of time-invariant store differences on manager profitability (both mean and centered) and manager pay. The models also control for other potential impacts on profitability and pay, including quarter-year fixed effects and *store complexity* (because stores could change over time, this is a time-varying measure). We do not include manager fixed effects because our main variable of interest, *manager mean store profitability* does not vary within manager. Instead, we follow Schunck (2013) and include manager random effects to account for the non-independence of observations. We also include a number of manager characteristics, notably *gender*, *age*, and *manager tenure*

that are likely to affect pay independent of profitability. We control for *worker turnover* and *worker tenure* to account for team-level factors that may affect the manager's compensation. Finally, our models include *unit quality*.

5.1 Results

We report determinants of *log total pay* in Model 1, and *log salary* and *log bonus* in Models 2 and 3. Our key independent variable is *manager mean store profitability*. The results indicate that store profitability has a small but precisely estimated between-manager effect on *log total pay*. The between-manager effect (estimated from the manager-mean store profitability) indicates a 14 percent pay-profitability elasticity. We also find a within-manager relationship between pay and profitability, with the coefficient on *manager centered store profitability* indicating a 5 percent pay-profitability elasticity.

Models 2 and 3 then report separate analyses for *log base salary* and *log bonus*. The elasticity is greater for bonus, reflecting the bonus's intended goal of rewarding performance. Between-manager differences in profitability are also reflected in salaries, though. Although the relatively fixed nature of salaries largely prevents them from responding to fluctuations in centered store profitability, those managers who are persistently more profitable do appear to be able to bargain for somewhat higher salaries.

As robustness checks, we also estimated the elasticity of pay to profitability using alternative model specifications (see online Appendix 2). We confirmed that our results were robust to store-specific time trends using either store-time random slopes or the interaction between a store fixed effect dummy and a linear time trend. We also found similar results using a two-step approach where we first estimated profitability using a manager fixed effect model and then used the manager fixed effects estimated in step one as the independent variable in our pay

models.

5.2 Assessing the magnitude of value capture

The coefficients reported above measure the elasticity of pay to changes in profitability.

However, in order to fully understand the relationship between value creation and value capture, we must convert our elasticities into absolute values: for each extra dollar of profit that a manager persistently generates each month, what proportion of that dollar does she keep? This proportion depends on the mean values of pay and profits as well as the elasticity of pay with respect to profits.

The mean value of profits in our sample is 68.6 monetary units per month. At the mean store, each additional percentage point of profits that a manager earns would therefore translate into 0.69 monetary units of value per month. Our estimated pay/performance elasticity of 14 percent indicates that the same one-percentage-point increase in performance should be associated with a 0.14 percent increase in pay. Given the mean monthly pay of 2.47 monetary units, this corresponds to an increase in pay of 0.0035 monetary units. Hence, a manager who persistently creates an additional 1 percent in profit creates 0.69 monetary units of value, but captures only 0.0035 of those units—just 0.5 percent. If we assume that one monetary unit represents around \$1000, then a manager who is one standard deviation above the mean in persistent profitability would create \$4,600 extra value each month, of which they would themselves capture just \$23.

6 STEP 3: POTENTIAL EXPLANATIONS

As we have noted, theories of strategic human capital rooted in bargaining models have tended to suggest that employees who create more value should be able to capture a significant share of that value. So why do managers at this organization capture so little of the value that they create?

We adopt an abductive approach (Behfar & Okhuysen, 2018; Hausman, 1993; Sætre & Van de Ven, 2021) to this question. First, we investigate whether the limited value capture by persistently better managers does indeed represent sustainable employer value capture from general human capital. We then explore the role of three plausible explanations based on Molloy and Barney's (2015) framework: managers' nonpecuniary motivations, lack of labor market demand, and difficulties in valuing human capital.

6.1 Sustainability of value capture

One possible explanation for high-value-creating managers' limited value capture is that the employer operated an inefficiently rigid compensation scheme—for example, by creating very narrow pay bands, perhaps to limit problems of social comparison (Frank, 1984; Gartenberg and Wulf, 2017). The bargaining-based human capital theories that suggest that employees should capture the value created by their general human capital are prescriptive, laying out the most efficient way for firms and employees to behave. Firms can of course deviate from those prescriptions, but the theory suggests that such deviations should be unsustainable, as managers who create the most value would leave for organizations that would reward them better.

We therefore assessed the sustainability of the firm's pay practices by examining attrition among high performers (see Table 1 in online Appendix 3). We found that voluntary turnover was extremely rare overall, with only 25 exits during the eight years of our observation. We also found no evidence that high-value-creating managers were more likely to leave. Since sharing value with high-value-creating managers does not seem to have been necessary to retain those managers, we do not find evidence that the firm's compensation policies were inefficient. These results therefore reveal no evidence of threats to the sustainability of this pattern of value sharing.

6.2 General human capital vs. firm-specific human capital

We then assessed whether differences in managerial value creation might reflect firm-specific human capital rather than general human capital. If the skills that allowed some managers to create higher value at our research site were entirely firm specific, then those managers who created more value should struggle to solicit higher wages elsewhere, limiting their bargaining power (Chadwick & Dabu, 2009; Coff, 1997; Mahoney & Kor, 2015).

Our interviews indicated that the kinds of skills that managers needed to perform their jobs well were generic to managing retail establishments, and there was little in their work or training that suggested strong investments in highly firm-specific skills. The company's human resources director explained that their human capital consisted mainly of such transferable abilities as adaptation, learning, and social skills that could readily be applied in other firms in the restaurant, hospitality, and retail industries.

Our own analyses also confirm the limited importance of firm specific skills. Table 2 shows no relationship between managerial tenure and store profitability ($p = 0.256$). Managers who had been at the firm longer and had had more opportunities to acquire firm-specific skills appeared to create no more value than others, suggesting that firm-specific skills played little role in differences in managerial value creation.

6.3 Nonpecuniary motivations

We next explored evidence for the first explanation in Molloy and Barney's (2015) framework: nonpecuniary motivations that would induce high-value-creating managers to stay at the firm despite not capturing the value that they create. We found no evidence that such nonpecuniary motivations shaped managerial value capture at this site. Little about the organization suggested that the culture was particularly distinctive, and stores were situated in a wide variety of

locations. The company did have a good reputation, but Bidwell, Won, Barbulescu, and Mollick (2015) note that status benefits are likely to be of value only to young managers; many of our managers had significant experience. Our interviews also suggested managers mainly valued the job because it offered higher pay than most potential alternatives.

Our mobility analyses (online Appendix 3) cast further doubt on the role of nonpecuniary motivations in restricting employee mobility. Although quitting was rare and unrelated to managerial profitability, there was a negative relationship between pay and attrition ($b = -1.684$, $p = 0.008$). This result indicates that managers were able to move when they felt that they were underpaid. Altogether, our findings suggest that nonpecuniary motivations were unlikely to be the main driver of low managerial value capture.

6.4 Lack of labor market demand

Molloy and Barney (2015, p. 316) also propose that employees may fail to capture the value that they create when, “simply put, jobs are scarce.” Our turnover analyses described above suggests that poorly paid managers were able to find other job options. Nonetheless, we probed whether variation in the availability of such options might affect value capture.

Specifically, we explored whether value capture was higher when local labor market competition was greater. We created a variable, *employer competition*, that measures the number of restaurants and retail stores per km² in the province according to the 2011 national census (the average province size is 2,739 km² with a population of 551,505 inhabitants).⁴ The number of such stores ranged from 1.28 to 66.91 per km² with an average of 14.65. We then tested whether this indicator of labor demand affected value capture by interacting it with our *manager mean*

⁴ The measure includes both stores operated by large chains and smaller independent competitors, reflecting the varied outside options available to these managers.

store profitability measure in pay regressions. Table 4 shows the results.

The interaction of *employer competition* with *manager mean store profitability* increases *log base salary* (Model 2, Table 4: $b = 0.0007$, $p = 0.038$; Figure 1 online Appendix 4), indicating that managers' value capture is indeed higher in markets with a higher density of stores and restaurants. The effect is not large, though: the salary-profitability elasticity ranges from 7.5 percent when *employer competition* is at its minimum, to 9.6 percent when competition is one standard deviation above the mean, corresponding to value capture rates of .27 percent to 0.32 percent. The interaction is less precisely estimated for *log total pay* ($p = 0.313$) and *log bonus* ($p = 0.174$; the coefficient is also negative). It may be that salary is more sensitive to differences in managers' capacity to bargain with the firm: while the formulae used to set bonuses are relatively mechanical, salary will be shaped by value creation only in conditions that enable the manager to bargain.

These analyses therefore offer mixed evidence that a lack of labor demand accounts for high-value-creating managers' inability to capture the value that they create. Lower paid managers do seem able to move to other employers, but some of our models suggest that value capture is higher when there are more alternative employers present in a province.⁵

6.5 Difficulty in valuing human capital

For a manager to bargain effectively for the value that she creates, the manager, the employer,

⁵ We also conducted additional analyses using alternative indicators of outside options from the Italian National Institute of Statistics. Survey data on ease of commute confirmed that value capture through salary was smaller in regions where commuting is harder. We also used data on value added per employee as an indicator of the overall vibrancy of the local economy. We found that managerial value capture was greater in regions with higher value added per employee. We also explored using the local unemployment rate as an indicator of outside options. Unfortunately, quarterly data were available only at the more aggregate geographical level of the region, rather than the province. Unemployment data also provide less information on the specific opportunities available to store managers. Perhaps because of these constraints, we found no effects with these data. Results of these analyses are available from the authors.

and other potential employers must all be aware of the value of that manager's human capital. But valuing human capital may be challenging for all parties when the effects of individual managers on profits can be difficult to separate from the effects of the context that they are in. Such difficulty may hinder the interpretation of performance signals not only by managers and outside employers, but also by the employing firm: given that the firm's estimates of future performance are based on past performance, firms may end up erroneously attributing past performance outputs to managers when it was in fact driven by contextual factors – or vice versa – and make decisions based on those attributions. We explored evidence for inaccurate valuations of human capital by the employer using data on how managers are evaluated and rewarded and how they are assigned to stores.

6.5.1 Evidence from performance management practices. In order to assess the information that the restaurant chain had on contributions to value creation, we examined the determinants of bonuses and annual performance appraisals. To the extent that the organization sought to reward high-value-creating managers and could identify them, we would expect these bonuses and appraisals to reflect variation in managers' contributions to profitability.

Recall that bonuses were higher for managers who were persistently more profitable, but the effect was not large (Table 3). Our analyses of *manager's performance appraisals* (Table 2 of online Appendix 3, Models 1 to 4) similarly show that managers who are persistently more profitable receive higher evaluations but that the effect is modest; persistent manager differences in profits explain only around 4 percent of variation in evaluations.

Nor did this weak relationship between profits and performance evaluations appear to reflect employer concerns about other dimensions of performance such as customer service or HR management. Detailed interactions with the team in charge of performance management

emphasized that store profitability was the main manager objective set by the company. Moreover, our analyses show that measures of unit quality and worker turnover explain even less of the performance appraisals than does profitability.

Did the weak relationship between appraisals and manager profitability partly reflect the problems of separating individual contributions from the effects of the context? Our analyses of bonuses and performance using mixed effects models (see online Appendix 3, Models 5 and 6 of Table 2) found that the standard deviation of store effects was more than twice as large as the standard deviation of manager effects for both dependent variables. In other words, both bonuses and performance appraisals were much more closely related to the assigned store than to any persistent differences in the manager's own performance. These findings suggest that the employer's understanding of the value created by each manager may be limited by challenges in disentangling managers' contributions to value creation from the effects of the store itself.

6.5.2 Evidence from store assignments. We also explored the possibility that the company knows which of its managers is most profitable but chooses not to reward them through performance evaluations or pay because such rewards are not necessary to retain them. To do so, we looked at whether staffing decisions suggested that the firm could identify its most profitable managers.

The firm could maximize the value created by high-performing managers by assigning them to jobs where they can have the most impact; similarly, it could minimize the cost of poor performers by assigning them to roles where their failure matters least (Jacobs, 1981). As we noted above, the company explicitly noted the value of assigning the best managers to the most complex stores, where they could affect a greater scope of activity, potentially raising profits more. If the company knew which managers had the greatest contributions to value creation, it

should therefore assign those managers to the most complex stores.

Our analyses, reported in online Appendix 3, Table 1, Models 2 and 3, find no evidence that persistently more profitable managers were assigned to more complex stores. We do find, though, that working in a more profitable store (as measured by the store's performance under other managers) increases a manager's probability of being assigned to a more complex store. This finding is consistent with the company trying to assign its best managers to its most complex stores, but mistaking store effects for the managers' performance. These results again suggest that the firm is unaware of which managers persistently generate the most profits.

6.5.3 Evidence from moderation analyses.

We next asked whether high-value-creating managers captured more value in situations where it is easier to separate out the effects of managers from their context. We identified three sets of variables that prior literature has identified as determinants of causal ambiguity (Ambrosini & Bowman, 2010; Mosakowski, 1997), representing attributes of the store, the environment and the manager.

First, we expected that managerial contributions would be easier to identify in less complex stores. Fewer services generate fewer interdependencies, making it easier to trace a path from the manager's actions to the resulting profits (Ambrosini & Bowman, 2010; Call & Ployhart, 2021; King, 2007). Second, managerial contributions should be more accurately identified when the environment is more stable, as fewer confounding factors affect performance (Prendergast, 2000, 2002). Third, the employer should better understand the contributions of managers who have worked longer for the firm (Ambrosini & Bowman, 2010), providing more evidence with which to disentangle their effects from those of their assigned stores.

We tested these ideas by examining how the effects of *mean manager profitability* on *log*

pay are moderated by *store complexity*; *demand volatility* (measured by the coefficient of variation for quarterly traffic measured by the Italian Association of Highways; analyses using this variable examine only stores on highways); and *manager tenure*. The results of these analyses are presented in Table 4.

The regressions provide additional evidence that the difficulty of valuing managerial human capital may limit managerial value capture in this setting. Models 4 and 5 show that *log total pay* and *log base salary* are more strongly related to *manager mean store profitability* in the least complex stores. The salary-profitability elasticity is 11.2 percent in the least complex stores and 9.4 percent in the most complex ones, with a value capture through salary of 0.4 percent and 0.3 percent, respectively. We do not find, though, that further increases in complexity affect the relationship between pay and *manager mean store profitability*. Such a pattern is consistent with manager contributions only really being observable in the simplest stores, so that increases in complexity beyond that threshold do not increase manager value capture.

Demand volatility also moderates the relationship between *log base salary* and *manager mean store profitability* (Model 8; $b = -0.1$, $p = 0.013$), indicating that value capture is highest when steady traffic makes it easier to detect changes in performance driven by managerial activities. The salary-profitability elasticity falls from 9.2 percent when *demand volatility* is at its minimum to 5.7 percent when *demand volatility* is one standard deviation above its mean, corresponding to a change in value capture through salary from 0.30 percent to 0.19 percent.

Finally, *manager tenure* has a positive interaction effect on *log base salary* (Model 11; $b = 0.0033$, $p = 0.000$), suggesting that better managers can capture more of the value they create when the firm and the manager have more data points to assess their contribution. Salary-profitability elasticity increases from 6.4 percent when *manager tenure* is one standard deviation

below the mean (7 years) to 11.9 percent when it is one standard deviation above the mean (24 years), raising the rate of value capture through salary from 0.21 percent to 0.39 percent.

These moderation analyses and the evidence from performance assessments and store assignment therefore suggest that difficulty in valuing individual contributions to value creation limits managerial value capture.

7 DISCUSSION

Although the relationship between value creation and value capture plays a central role in strategic human capital theory, we lack empirical evidence on the amount of value that is actually captured by high-value-creating employees, outside of a few studies of highly visible occupations such as CEOs, salespeople and realtors. We addressed this question by exploring how differences in value creation among Italian restaurant managers translate into differences in value capture. We find that high performing managers captured only 0.5 percent of the extra value that they created, far below the 25–60 percent found in studies of more visible occupations (Frank, 1984; Nguyen & Nielsen, 2014; Obloj & Sengul, 2012). These findings suggest that there may be very little relationship between value creation and value capture in less visible, interdependent roles, even when value is created with general human capital.

Abductively exploring the reasons for this disconnect, we find mixed evidence that a lack of labor demand might play a role, with some evidence that value capture was greater when there was more employer competition. We find more consistent evidence that challenges in accurately inferring individual contributions to value creation in our setting reduced value capture by high-value-creating managers. In particular, our analyses suggest that the firm may frequently confuse store-level determinants of performance with the managers' own contributions, evaluating and rewarding managers on the basis of store characteristics rather than their individual

contributions.

7.1 Implications for theory

7.1.1 Limited value capture by high-value-creating managers. The basic assumption underlying much of the strategic human capital literature is that “the instances where human resources can generate traditional Ricardian rents [those stemming from access to better resources] may be rare and often transitory” (Chadwick & Dabu, 2009, p. 256). Theorists have therefore focused on studying how firms can improve performance by reducing value capture by employees (Campbell et al., 2012a; Coff, 1999). We found, though, that high-value-creating managers captured just 0.5 percent of the value that they created. Those results suggest that firms can benefit from employing better employees, and that the extraction of Ricardian rents from human capital may be a common phenomenon.

Our results therefore suggest that strategic human capital theory should pay more attention to value creation, studying how firms can attract, develop, and retain managers who create more value, expanding beyond the current theoretical focus on value capture. It seems that our research site could have substantially increased profits by replacing lower-performing managers with higher-performers. More broadly, firms should be able to improve their performance by developing their capabilities to create value through human capital, perhaps by improved pre-hire screening, more accurate performance evaluation, and ensuring that the best managers are allocated to the most important roles.

There may also be value in considering how such value creation practices interact with the nature of the work to shape organizational rents. Although we find little evidence of value capture by high-performing managers in our context, this might not be true elsewhere. There remain strong theoretical grounds to believe that employees whose value creation potential is

well known can capture the value that they create. And if an organization becomes well known for employing more able managers, it may find that it must pay higher wages, at least once those employees are established (Bidwell et al., 2015). Hence, we believe that an important direction for future research is to identify the interactions between role characteristics and firm practices that shape organizational performance. Among less visible employees like frontline managers, steps to increase average ability through improved selection and training are likely to improve competitive advantage. But among more visible employees, such as senior executives or salespeople, such practices may add much less to overall organizational rents.

Our study also has implications for research on investments in general human capital. The conventional wisdom suggests that firms should avoid investing in general skills training because workers will capture the full increase in their general human capital (Becker, 1962). Various studies, though, have suggested that labor market imperfections may allow firms to benefit from such training (Acemoglu & Pischke, 1998; Autor, 2003), and there is evidence linking training to shareholder returns (Riley, Michael, & Mahoney, 2017). On the one hand, our results suggest that firms can benefit from investments in general human capital, as managers with stronger general skills in our setting did not command more pay. On the other hand, our results raise new questions about employees' incentives to invest in general human capital: if improved performance does not result in higher pay, then managers could be reluctant to invest in general human capital, at least where those investments are not clearly observable.

Finally, our study provides empirical evidence of how rents from human capital vary with labor market concentration. In accord with theories outlined by Campbell et al. (2012a), we find that managers are more likely to capture more of the value that they create when the labor market is more competitive. An implication of these findings is that firms may pursue different human

capital strategies in different labor markets. Where labor market competition is low, firms may accrue substantial benefits from efforts to attract and train workers who can create most value. Where labor market competition is stronger, such a strategy may yield lower returns.

These effects of labor market competition may also depend on entrepreneurship opportunities. When labor market competition is limited, high-value-creating individuals may seek to leverage their human capital by going into entrepreneurship (Campbell, Ganco, Franco, & Agarwal, 2012b; Ganco, 2013). In the context that we studied, the challenges of acquiring financial capital and other complementary resources may make it difficult for high-value-creating managers to set up their own stores. Where barriers to entrepreneurship are lower, firms may capture less of the value that high-performers create.

7.1.2 Causal ambiguity as a barrier to employee value capture. We also contribute to research on strategic human capital by highlighting how value capture is affected by problems in evaluating human capital. Although others have noted that information problems may limit employee value capture, they have often focused on the difficulties that outside employers (Acemoglu & Pischke, 1998; Campbell et al., 2012a) or employees (Ambrosini & Bowman, 2010; Coff, 1999) face in evaluating individual contributions. Our analyses suggest that the employers themselves may often struggle to identify individual contributions to value creation, limiting the value that they will share with high performers.

We extend Molloy and Barney's (2015) observation that employers may sometimes underestimate the value of an employee's human capital, by identifying why such failures happen: because of the difficulty of distinguishing individual contributions from contextual effects. Because the firm was often unaware of how much more value was being created by the highest-performing managers, they would likely not have been prepared to share so much value

with them during bargaining. Work in organizational economics has sometimes highlighted how interdependent “team production” can complicate incentive systems (Alchian & Demsetz, 1972). We propose that such interdependence can also hinder those who create more value from capturing that value.

Our findings therefore suggest the value of linking research on strategic human capital to the literature on causal ambiguity. Causal ambiguity is usually defined as a lack of knowledge about relationships between organizational inputs and results (King & Zeithaml, 2001) – in our case, the relationship between individual managers and profitability – and has been invoked to explain the challenges of replicating capabilities. We believe that insights from the literature on causal ambiguity could also help us to understand managerial value capture.

First, drawing on the literature on causal ambiguity provides a theoretical framework for predictions about when high performing managers and employees are most likely to capture the value that they create. For example, King (2007) notes that causal ambiguity is strongly related to the complexity and interdependence of competences; we find that the more complex the store operations are, the less managers will capture of the value they create. Mosakowski (1997) suggests that causal ambiguity can stem from a complex environment as well as interdependences within the firm, and that decision-makers can begin to resolve causal ambiguity over time through processes of trial and error; accordingly, we find that high-value-creating managers capture more of their value when the environment is more stable and they have been in the organization for longer. Building on these predictions can help us to develop a more nuanced understanding of when employees capture the value that they create.

Second, attending to the influence of causal ambiguity reveals new dilemmas that firms face as they seek to achieve advantage from their human capital. The literature on causal

ambiguity has highlighted how ambiguity reduces the threat of imitation but can also complicate firms' ability to create value (King, 2007). Similar dilemmas occur in the management of human capital, where causal ambiguity reduces high-value-creating managers' capacity to capture value but also reduces the employer's ability to assign those managers to the most valuable tasks. An important theoretical question is therefore how different approaches to resolving causal ambiguity might affect value creation versus value capture. Would it be possible, for example, for firms to get better at identifying their best performers and assigning them to the most important roles without also increasing those performers' pay? Addressing such questions could shed new light on how firms achieve rents from human capital.

7.2 Limitations

Our data come from only one company, raising questions about how our results might generalize. There are grounds to believe that our results have broad applicability. Our research site had similar pay and evaluation practices to other companies and paid similar bonus rates (Lemieux, Macleod, and Parent, 2009; Pouliakas, 2010). The practice of regularly moving people across stores would also make it easier for our research site to parse out managerial contributions to value capture than in other organizations. Moreover, our finding that a company can fail to share value with those most able to create it but still retain those employees has lessons across firms. If this company can sustainably avoid sharing value with the employees who create the most, why would other similarly placed firms give up some of that value?

A related question is whether our findings reflect high labor market frictions in Italy. The Italian labor market is less fluid than the U.S. one, although it has historically had one of the highest rates of mobility in Europe (Contini, Leombruni, Pacelli, & Villosio, 2008). It is therefore possible that our results will generalize more closely to countries with strong

employment protections, such as European ones. That said, it is not clear that lower overall mobility should constrain high-performing employees from being hired by other firms—and indeed, we find that those managers who were paid less were more likely to leave.

A further issue is the lack of random assignment of managers to stores. Our store fixed effects and random-slope store time trends should account for the great bulk of store-level influences on manager performance and our analyses suggest that the assignment of managers to stores bears little relation to manager performance. Nonetheless, a setting with random assignment of managers to contexts would further strengthen our inferences.

An additional question that we cannot fully address is who appropriates the rents generated by high-value-creating managers. As Stoelhorst (2021) notes, all rents within the firm must ultimately be appropriated by some other stakeholder, be they shareholders, more senior managers, or other frontline managers who create less value. Understanding who benefits from high-value-creating managers would require us to be able to measure the contributions to value creation of all of these different stakeholders, a task that is beyond the scope of our data.

Finally, while our rich dataset enables us to infer much about how value is created and captured, it lacks detailed information on the perceptions of the managers themselves. We did run some analyses that looked at whether managers contested their performance evaluations, and found that managers who were persistently profitable were more likely to contest poor evaluations than those who were not. It is therefore possible that those managers received some signal of their contributions to profitability, but it is difficult to draw a firm conclusion.

Similarly, our data do not allow us to measure the extent to which managers perceive their compensation to be equitable and to assess the role of that perception in shaping our results. Some scholars have suggested that firms will not share value with their highest performers

because doing so could exacerbate fairness concerns, and that this leads organizations to compress differentials between high and low performers (e.g. Frank, 1984; Gartenberg & Wulf, 2017; Nickerson & Zenger, 2008). In analyses not reported here, we did find evidence of pay compression: the variation in managers' pay was around 11 times smaller than the variation in manager performance. Note, though, that this pay compression cannot by itself account for our findings, as what variation there was in pay was only very weakly related to contributions to value creation. Nonetheless, future research could include data on workers' perceptions of fairness and assess how such perceptions shape value capture across labor market conditions.

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TABLE 1 Summary statistics and correlations ^{a, b}

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Log profit	4.08	0.87	1.00																					
2. Log total pay	0.89	0.17	0.47	1.00																				
3. Log base salary	0.81	0.14	0.47	0.79	1.00																			
4. Log bonus	-4.18	2.94	0.04	0.51	0.01	1.00																		
5. Manager tenure	15.76	8.32	0.04	0.30	0.37	0.01	1.00																	
6. Age	41.68	7.85	0.03	0.30	0.37	-0.03	0.88	1.00																
7. Gender	0.71	0.45	0.05	0.19	0.18	0.05	0.23	0.24	1.00															
8. Manager's performance appraisal	4.25	0.79	0.26	0.13	0.13	0.02	-0.28	-0.26	-0.14	1.00														
9. Unit quality	90.38	6.32	-0.18	0.04	-0.08	0.23	0.01	0.02	-0.06	-0.14	1.00													
10. Store complexity	3.76	1.24	0.47	0.46	0.55	0.00	0.11	0.10	0.05	0.10	-0.10	1.00												
11. Regional unemployment rate	0.08	0.04	-0.34	-0.15	-0.00	-0.09	0.01	0.00	0.10	-0.11	0.09	-0.04	1.00											
12. Employer competition	14.65	16.99	0.01	0.06	0.00	0.07	0.02	0.01	-0.09	-0.18	-0.05	-0.08	-0.15	1.00										
13. Move to higher complexity store	0.29	0.45	-0.07	-0.05	-0.03	-0.04	-0.16	-0.12	-0.06	0.10	0.09	-0.31	0.05	-0.08	1.00									
14. Move to lower complexity store	0.31	0.46	0.18	0.24	0.22	0.11	0.18	0.18	-0.00	-0.05	-0.02	0.44	-0.01	0.02	-0.37	1.00								
15. Move to same complexity store	0.32	0.47	-0.10	-0.17	-0.21	-0.03	-0.01	-0.04	0.05	-0.12	-0.05	-0.09	-0.05	0.04	-0.57	-0.45	1.00							
16. Most recent store log profitability (other managers)	4.10	0.74	0.87	0.49	0.54	0.02	-0.01	-0.02	0.04	0.28	-0.14	0.52	-0.32	-0.02	-0.01	0.15	-0.11	1.00						
17. Average manager log profits (most recent store)	4.08	0.76	0.90	0.52	0.58	0.00	0.05	0.04	0.06	0.29	-0.16	0.56	-0.31	-0.03	-0.08	0.18	-0.08	0.95	1.00					
18. Manager voluntary turnover	0.00	0.03	-0.00	0	0	-0.02	0.02	0.02	-0.00	0	0.00	-0.01	0.01	0	0	0	0	-0.01	0.00	1.00				
19. Worker turnover	0.01	0.03	0.11	0.00	-0.10	0.09	0.01	-0.02	0.03	-0.05	-0.12	-0.04	-0.15	0.13	-0.12	-0.12	0.24	0.06	0.05	0.08	1.00			
20. Worker tenure	0.48	1.03	-0.47	-0.27	-0.20	-0.09	0.24	0.24	0.05	-0.21	0.17	-0.31	0.37	0.03	0.14	-0.19	0.05	-0.49	-0.50	0.00	-0.11	1.00		
21. Demand Volatility	0.17	0.21	-0.16	-0.12	-0.16	0.04	-0.02	-0.03	-0.10	-0.06	0.10	-0.23	-0.13	-0.18	0.07	-0.11	0.06	-0.16	-0.15	-0.00	0.03	0.03	1.00	
22. Move to different store	0.02	0.15	-0.03	-0.02	-0.01	-0.01	-0.03	-0.03	-0.01	-0.00	0.00	-0.01	0.01	0	0	0	0	-0.01	-0.01	-0.01	-0.00	0.05	-0.01	1.00

^aUnit of analysis is manager-month-year.

^bn = 26,456.

TABLE 2 Managers' value creation: mixed effects estimation ^{a, b, c, d}

	(1) Mixed effects Log profit _t	(2) Mixed effects Log profit _t	(3) Mixed effects Log profit _t
Store complexity 2 _t		-0.023 (0.028)	-0.029 (0.027)
Store complexity 3 _t		0.005 (0.028)	0.0003 (0.027)
Store complexity 4 _t		0.003 (0.027)	-0.005 (0.026)
Store complexity 5 _t		0.012 (0.027)	0.005 (0.026)
Store complexity 6 _t		0.015 (0.029)	0.009 (0.029)
Worker turnover _t		0.257 (0.092)	0.284 (0.092)
Worker tenure _t		-0.095 (0.005)	-0.094 (0.005)
Gender			-0.008 (0.013)
Age _t			0.002 (0.001)
Manager tenure _t			-0.001 (0.001)
Constant	3.848 (0.051)	3.911 (0.056)	3.883 (0.068)
St. dev. of manager random effect	0.071	0.067	0.073
St. dev. of store random effect	0.885	0.838	0.835
St. dev. of store-time trend random effect	0.007	0.006	0.006
St. dev. of residuals	0.358	0.342	0.333
Time FE	Yes	Yes	Yes
Observations (number of manager-months)	26,456	25,123	24,700
Number of managers	441	437	435
Log likelihood	-12,273.360	-10,609.330	-9,817.055

^a Standard errors are clustered at the manager level.^b Standard errors are given in parentheses.^c Unit of analysis is manager-month-year.^d Likelihood ratio tests confirm that models including manager random effects fit the data better than models without such effects (Model 1: $p < 4.94 \times 10^{-13}$; Model 2: $p < 1.244 \times 10^{-12}$; Model 3: $p < 4.792 \times 10^{-16}$).

TABLE 3 Managers' pay and unit performance: hybrid models estimation ^{a, b, c, d, e}

	(1) Hybrid Log total pay _t	(2) Hybrid Log base salary _t	(3) Hybrid Log bonus _t
Manager centered store profitability _{t-1}	0.054 (0.005)	0.005 (0.002)	1.424 (0.127)
Manager mean store profitability _{t-1}	0.136 (0.011)	0.085 (0.008)	1.641 (0.198)
Store complexity 2 _{t-1}	-0.024 (0.020)	-0.009 (0.009)	0.025 (0.445)
Store complexity 3 _{t-1}	-0.026 (0.021)	-0.011 (0.011)	-0.009 (0.435)
Store complexity 4 _{t-1}	-0.027 (0.020)	-0.012 (0.011)	-0.032 (0.417)
Store complexity 5 _{t-1}	-0.024 (0.019)	-0.007 (0.009)	-0.178 (0.409)
Store complexity 6 _{t-1}	-0.030 (0.021)	-0.015 (0.011)	-0.192 (0.467)
Worker turnover _{t-1}	0.032 (0.079)	-0.053 (0.032)	0.305 (1.595)
Worker tenure _{t-1}	-0.003 (0.002)	-0.002 (0.001)	-0.044 (0.052)
Unit quality _{t-1}	0.003 (0.000)	0.000 (0.000)	0.048 (0.010)
Gender	0.015 (0.011)	0.017 (0.010)	0.151 (0.133)
Age _{t-1}	0.005 (0.001)	0.005 (0.001)	-0.006 (0.014)
Manager tenure _{t-1}	0.001 (0.001)	0.001 (0.001)	0.007 (0.013)
Constant	-0.016 (0.088)	0.280 (0.060)	-14.896 (1.754)
Store FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Manager RE	Yes	Yes	Yes
Observations (number of manager-quarters)	7,944	7,944	7,944
Number of managers	425	425	425

^a Standard errors are clustered at the manager level.^b Standard errors are given in parentheses.^c Unit of analysis is manager-quarter-year.^d Sample size differs from Table 2 because observations are at quarter rather than month level.^e *Manager mean store profitability* measures the mean of store profitability across all observations for a given manager. *Manager centered store profitability* measures the differences between profitability of a given store month observation and the manager mean store profitability for that manager.

TABLE 4 Variation in value capture: hybrid models estimation ^{a, b, c, d, e, f}

	(1) Hybrid Log total pay _t	(2) Hybrid Log base salary _t	(3) Hybrid Log bonus _t	(4) Hybrid Log total pay _t	(5) Hybrid Log base salary _t	(6) Hybrid Log bonus _t	(7) Hybrid Log total pay _t	(8) Hybrid Log base salary _t	(9) Hybrid Log bonus _t	(10) Hybrid Log total pay _t	(11) Hybrid Log base salary _t	(12) Hybrid Log bonus _t
Manager centered store profitability _{t,i}	0.0626 (0.0069)	0.0066 (0.0024)	1.6201 (0.1859)	0.0533 (0.0050)	0.0050 (0.0018)	1.4229 (0.1270)	0.0829 (0.0093)	0.0145 (0.0048)	2.0354 (0.2102)	0.0536 (0.0051)	0.0052 (0.0019)	1.4262 (0.1274)
Manager mean store profitability _{t,i}	0.1341 (0.0148)	0.0743 (0.0108)	2.0835 (0.2820)	0.1115 (0.0212)	0.1906 (0.0118)	2.2987 (0.4889)	0.1817 (0.0178)	0.0952 (0.0138)	2.3068 (0.3310)	0.1209 (0.0161)	0.0399 (0.0139)	1.8401 (0.2685)
Store complexity 2 _{t,i}	-0.0168 (0.0208)	-0.0097 (0.0097)	0.1373 (0.4623)	0.3015 (0.0851)	0.1485 (0.0428)	3.4507 (2.1414)	-0.0222 (0.0258)	-0.0112 (0.0141)	0.1411 (0.5296)	-0.0233 (0.0202)	-0.0077 (0.0090)	0.0133 (0.4455)
Store complexity 3 _{t,i}	-0.0161 (0.0214)	-0.0107 (0.0115)	0.1098 (0.4502)	0.2346 (0.0901)	0.1286 (0.0429)	3.7324 (2.1638)	-0.0231 (0.0273)	-0.0129 (0.0170)	0.0174 (0.5243)	-0.0247 (0.0206)	-0.0073 (0.0102)	-0.0344 (0.4349)
Store complexity 4 _{t,i}	-0.0178 (0.0212)	-0.0133 (0.0126)	0.1302 (0.4333)	0.1866 (0.0826)	0.1004 (0.0410)	2.7570 (2.0505)	-0.0208 (0.0269)	-0.0157 (0.0185)	0.2092 (0.4880)	-0.0264 (0.0201)	-0.0088 (0.0111)	-0.0553 (0.4170)
Store complexity 5 _{t,i}	-0.0167 (0.0197)	-0.0081 (0.0102)	-0.0385 (0.4250)	0.2342 (0.0893)	0.1138 (0.0418)	3.2223 (2.0849)	-0.0172 (0.0247)	-0.0114 (0.0150)	0.0745 (0.4826)	-0.0228 (0.0189)	-0.0037 (0.0092)	-0.1987 (0.4088)
Store complexity 6 _{t,i}	-0.0209 (0.0216)	-0.0157 (0.0116)	-0.0234 (0.4871)	0.0629 (0.0989)	0.0629 (0.0470)	2.2708 (2.4798)	-0.0210 (0.0275)	-0.0156 (0.0169)	-0.0695 (0.5721)	-0.0292 (0.0205)	-0.0110 (0.0104)	-0.2022 (0.4673)
Worker turnover _{t,i}	0.1037 (0.1080)	0.0228 (0.0483)	-0.5202 (2.2412)	0.0376 (0.0787)	-0.0504 (0.0319)	0.4583 (1.5867)	0.1593 (0.1405)	0.0875 (0.0918)	-1.3545 (2.9982)	0.0313 (0.0792)	-0.0532 (0.0320)	0.2822 (1.5938)
Worker tenure _{t,i}	-0.0061 (0.0110)	-0.0060 (0.0044)	-0.3126 (0.2921)	-0.0019 (0.0024)	-0.0019 (0.0007)	-0.0468 (0.0548)	-0.0024 (0.0111)	-0.0047 (0.0045)	-0.1092 (0.2998)	-0.0022 (0.0025)	-0.0010 (0.0006)	-0.0517 (0.0519)
Unit quality _{t,i}	0.0025 (0.0005)	0.0001 (0.0002)	0.0522 (0.0114)	0.0025 (0.0004)	0.0001 (0.0001)	0.0482 (0.0099)	0.0028 (0.0005)	0.0002 (0.0003)	0.0637 (0.0137)	0.0025 (0.0004)	0.0001 (0.0001)	0.0480 (0.0099)
Gender	0.0152 (0.0102)	0.0145 (0.0095)	0.2521 (0.1506)	0.0153 (0.0108)	0.0174 (0.0099)	0.1394 (0.1297)	0.0055 (0.0117)	0.0035 (0.0113)	0.1223 (0.1601)	0.0142 (0.0107)	0.0154 (0.0100)	0.1596 (0.1336)
Age _{t,i}	0.0040 (0.0010)	0.0045 (0.0010)	-0.0161 (0.0161)	0.0044 (0.0010)	0.0045 (0.0010)	-0.0080 (0.0136)	0.0041 (0.0010)	0.0040 (0.0010)	-0.0098 (0.0153)	0.0046 (0.0010)	0.0047 (0.0010)	-0.0062 (0.0138)
Manager tenure _{t,i}	0.0006 (0.0009)	0.0008 (0.0009)	0.0125 (0.0156)	0.0010 (0.0010)	0.0010 (0.0009)	0.0065 (0.0133)	0.0004 (0.0009)	0.0011 (0.0010)	0.0019 (0.0154)	-0.0038 (0.0035)	-0.0124 (0.0031)	0.0620 (0.0535)
Manager mean store profitability _{t,i} X Employer competition	0.0005 (0.0005)	0.0007 (0.0003)	-0.0105 (0.0096)									
Manager mean store profitability _{t,i} X Store complexity 2 _{t,i}				-0.0741 (0.0197)	-0.0360 (0.0094)	-0.7671 (0.4958)						
Manager mean store profitability _{t,i} X Store complexity 3 _{t,i}				-0.0574 (0.0211)	-0.0313 (0.0098)	-0.8420 (0.5056)						
Manager mean store profitability _{t,i} X Store complexity 4 _{t,i}				-0.0462 (0.0188)	-0.0245 (0.0087)	-0.6060 (0.4751)						
Manager mean store profitability _{t,i} X Store complexity 5 _{t,i}				-0.0567 (0.0202)	-0.0266 (0.0092)	-0.7520 (0.4733)						
Manager mean store profitability _{t,i} X Store complexity 6 _{t,i}				-0.0481 (0.0217)	-0.0176 (0.0100)	-0.5556 (0.5442)						
Demand volatility _{t,i}							0.0651 (0.6529)	-1.1775 (0.4630)	22.7413 (11.6537)			
Manager mean store profitability _{t,i} X Demand volatility _{t,i}							-0.1140 (0.0682)	-0.1000 (0.0404)	1.8854 (1.0752)			
Manager mean store profitability _{t,i} X Manager tenure _{t,i}										0.0011 (0.0008)	0.0033 (0.0007)	-0.0134 (0.0123)
Constant	-0.0182 (0.0976)	0.2956 (0.0681)	-16.8099 (2.0136)	-0.2600 (0.1146)	0.1614 (0.0677)	-17.7709 (2.5876)	-0.2334 (0.1349)	0.3180 (0.1023)	-20.7147 (2.5822)	0.0450 (0.1017)	0.4565 (0.0771)	-15.7398 (1.9111)
Store FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manager RE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations (number of managers-quarters)	5,935	5,935	5,935	7,944	7,944	7,944	4,298	4,298	4,298	7,944	7,944	7,944
Number of managers	376	376	376	425	425	425	288	288	288	425	425	425

^a Standard errors are clustered at the manager level.

^b Standard errors are given in parentheses.

^c Unit of analysis is manager-quarter-year.

^d Sample size differs from Table 2 because observations are at quarter rather than month level. Missing values in moderating variables explain the differences in sample size across models in Table 4.

^e *Manager mean store profitability* measures the mean of store profitability across all observations for a given manager. *Manager centered store profitability* measures the differences between profitability of a given store month observation and the manager mean store profitability for that manager.

^f The models use *store complexity* 1 as the reference group.