Pay for Performance: Match-Specific Compensation and Turnover

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Abstract: This paper explores the interrelationship between wages, turnover, and performance using payroll and employment data from a call center company. I study how various compensation components evolve over time and how they are related to turnover. I find that the monthly performance-based component of compensation is negatively related to turnover, suggesting that it can be interpreted as reflecting match-specific compensation, broadly defined. I also explore the differences of this match-specific component between referred and non-referred employees. I find that referred employees earn more in the match-specific component of compensation, and that this drives their lower turnover rates. Consistent with literature, this suggests that referred employees are better matched than their non-referred counterparts.

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1. Introduction

Compensation and turnover dynamics of employees and the complex interrelationship between wages and turnover have been at the forefront of theoretical and empirical labor economics for several decades. The basic questions are: how are wages related to turnover? How do wages change over time? And what does the wage represent?

The theoretical mechanism for the relationship between wages and turnover is loosely outlined in the following: If higher wages reflect skills that are either not valued outside the firm (firm-specific) or which are hard to observe from the outside, then higher wages are likely to reduce turnover rates. Conversely, if higher wages reflect skills that are both transferrable (general) and observable then wages should have no impact on turnover, assuming competitive labor markets.

In this paper, I use detailed payroll and employment data from a large call center company to isolate various compensation components, most importantly base wage and monthly performance-based bonuses. In this environment, each employee's individual performance is easy to isolate since the nature of the work is inherently not cooperative and because individual performance measures are logged in real-time. I study how these compensation components evolve over time and how they are related to turnover, which enables me to identify whether any of these wage components can be interpreted as general or match-specific. I find that higher base wages are weakly negatively related to turnover but that the bonus component based on objective performance metrics is strongly negatively linked to turnover. This suggests that this component of wages can be interpreted as match-specific defined broadly.

To better understand the role of bonuses on turnover, I also analyze the compensation and turnover dynamics of referred and non-referred employees separately. Research shows that referrals introduce match-relevant information to the hiring process, which ultimately results in a pool of hires that is superior in terms of (match-specific) performance to non-referred hires (Bojilov, Barr, and Munasinghe 2016). Indeed I find that referred employees earn more, particularly in the match-specific component of compensation, and that this drives their lower turnover rates. In addition I find that the referred employees who survive the longest have much higher match-specific components of compensation early in tenure compared to non-referred with similar future survival.

Theoretical Framework

The theoretical literature on wages and turnover has been motivated by the two well-known empirical regularities: the upward sloping tenure-wage profile and the downward-sloping tenure-turnover profile. Several models have been proposed to explain these facts, including human capital (Becker), matching (Jovanovic), and incentive models (Lazear). Becker (1962) presents a theory of the investment in human capital, particularly through on-the-job training. Employees are willing to accept a below-market wage as a payment for the general skills they acquire, but in the case of purely firm-specific training, the employee is no better off by receiving it and so would not be willing to pay for it. After the investment in firm-specific training however, turnover is costly for the firm. In order for their investment to be protected

(and the risk to be shared), the wage schedule is as follows: employees bear some of the cost of the firm-specific training, and in turn the firm shares some of the return with higher later wages.

Jovanovic (1979a) presents a theory of job matching based primarily on information asymmetry–search by experience. In a simple case, there are either good or bad matches, and neither the firm nor the employee knows the match quality up front. The information problem is only resolved over time on the job, and as the bad matches receive bad signals, they exit the firm. Therefore, employees with a certain tenure must be of better match-quality than the pool of new hires, and thus receive fewer bad signals and have lower turnover rates. Jovanovic (1979b) presents another theory in which information uncertainty is eliminated and match quality is completely known before hire–search by inspection. Here the downward sloping tenure-turnover profile and upward sloping wage-tenure profile are derived from the fact that better matches have a longer expected duration, and thus a larger payoff from investment in firm-specific skills.

The perspective I adopt in this paper is somewhere between the extremes of search by experience and by inspection–some information is known about match quality before hire, but much is left to be resolved on the job. There may be heterogeneity both in match-quality itself and in pre-hire information *about* match-quality (in the case of referrals for example). If match-quality is heterogeneous across employees, then the simplest way to measure it is the duration of the employment match. But if we can find a way to measure the heterogeneity *before* the termination takes place, then we may have a better understanding of the drivers of this somewhat vague concept of match-quality. One possible way to measure this is to examine the various components of compensation during early tenure.

Implicit in our definition of match-quality is that a better match should result in lower turnover, but whether an employee will be directly compensated for such match quality by the firm is not immediately clear. The issue is that if productivity has a match component, then the determination of wages is complex because there is no direct competition. In this case, how would we isolate the “extra” productivity resulting from a good match, from the general productivity, which may of course also be heterogeneous across employees? In practice these are hard to untangle because productivity is rarely observed by the econometrician (or even by the firm) in a reliable, objective way, and even when it is, the firm-specific and general components are muddled.

2. Data

2.1 Environment

The data come from the personnel records of a multinational customer services company. This company contracts with outside companies who require customer service, and provide the requisite facilities and employees to deliver the service for the outside company. I take as my sample eight call centers located in the continental United States, and consider only the employees performing the main task of the firm: speaking on the phone with customers. There

are several units, called programs, which perform this same task for different clients, though possibly with different computer systems and phone call protocols.

The data include a record of each applicant and employee over a three-year period. The job application process includes an online survey of around 50 questions on demographics, work and education history, reading comprehension, math, logic, response to work situations, language, and non-cognitive skills. Applicants are hired on the basis of this survey and an interview, and after accepting a job offer, join the next administered training class. The training environment is a three-week class, followed by a one-week period during which employees interact with customers, but are supervised closely and take calls at a slower rate. The training period is considered part of an employee's tenure and is, at least in part, specific to each program.

The data have a record of each paycheck paid to an employee during his or her tenure. Compensation may be comprised of several components: an hourly base wage, performance-based bonuses, bonuses from a referral incentive program, and health insurance benefits paid in the form of a purse. The data isolate performance-based bonuses but the rest is aggregated. The performance bonuses are determined from objective performance measures. More specifically, bonus plans are based on "Key Performance Indicators" (KPIs), which are recorded monthly for each agent, including for example average call handle time, quality of customer service, sales amount, etc. Each program defines the four KPIs which are most important, and sets cutoff scores for each. If an agent's average monthly performance reaches the cutoff, she will receive a bonus amount in accordance with that performance: above the cutoff, better performing employees receive more money. If she does not reach the cutoff, she will receive no bonus.

Base wage increases occur throughout tenure, starting with a pre-determined dollar or fifty cent raise after successful completion of the training period. After that, increases come only from receiving high subjective ratings from an employee's immediate supervisor, which are done on a monthly or quarterly basis, depending on the employee's current wage band. It should be noted that in addition to being subjective (though they are based at least in part on objective measures), they are also done on a strict curve, such that each employee is compared only to their ten or so immediate coworkers, and not on any sort of broader objective scale. For these reasons the ratings (and thus the wage increases associated with them) are not a robust measure of productivity on large scales.

2.2 Descriptive Analysis

Table 1 provides some overview about the nature of our sample. The sample includes a total of 21,387 new hires made between August 2012 and June 2015. I track new hires through one year of employment, breaking the time into four ninety-day periods. The telecommunications industry is characterized by high employee turnover, and this firm is no exception. In this sample, 84% of new hires terminate within one year, leaving only 3,401 employees at the end of 360 days. Less than half of new hires survive the first ninety days. A little under half of the new hires enter through employee referrals, and they experience substantially lower turnover

rates in the first six months of their tenure – 66% compared to 75% for non-referred. Turnover rates of referred and non-referred employees converge after around six months.

In Table 2 we see information about paychecks about each of the ninety-day periods for employees that survive the entire period. Employees are typically paid biweekly, resulting in an average of five or six paychecks per period. Paychecks are for an average of around 74 hours, and for slightly fewer in the first period. The average paycheck is for $729 in the first period, $872 in the next, $929 in the third, and $970 in the final period. The fraction of paychecks which include a bonus is only .05 in the first period, rising to .19 in the second period, and levelling off at .23 in the second half of the year. If the paycheck does include a bonus, the bonus amount also increases from a little under $100 in the first period to $230 in the final period.

Table 3 presents paycheck amounts for each period, separating people by their future turnover outcomes. We see that the people who survive longer are paid more in the first period. Those that terminate in the subsequent ninety days are paid on average $697 per paycheck, while those that end up surviving the entire year are paid ten percent more per paycheck, at $767. The differences between the paychecks among employees with different turnover outcomes persist through the entire year.

Table 4 explores the same phenomenon in a slightly different way by aggregating the compensation over the entire ninety days, and checking some of the other relevant variables related to compensation. The aggregate dollars paid confirms our result from Table 3, that in the first period the employees with the best turnover outcomes are paid 10% more than those with the worst turnover outcomes. However we can now see that they also work about 5% more hours. After controlling for hours worked, we see that they have a 4% higher effective wage. Employees with better turnover outcomes consistently work more hours and have higher effective wages throughout the first year of employment. We also show that the effective wages are serially correlated, confirming that the wage rates are not random, but rather are systematic, likely based in part on employee characteristics and performance.

We also explore the bonus components of the compensation. Despite having the same fraction of employees who receive at least one bonus during each period, the total bonus dollars paid in each period is higher for employees with better turnover outcomes. In the first period, employees with the best turnover outcomes are paid twice the amount in bonuses as employees with the worst outcomes. In the next period, the best are paid 71% more in bonus dollars; and in the third period they are paid 50% more. The bonuses account for between 2 and 7 percent of total compensation. As a fraction of total compensation, the bonus component is also consistently higher for employees with better turnover outcomes.

In Tables 5 and 6 we duplicate Table 4 for referred and non-referred employees separately. Comparing cell by cell, in the first period we see that referrals make higher effective wages: though the differences are slight for employees with the worst turnover outcomes, the differences widen for employees with better turnover outcomes, with a 7% higher effective

wage for referred employees with the best turnover outcomes compared to non-referred with similar turnover outcomes. Looking at the bonus dollars, the results are even more striking. Despite the fact that the fraction of non-referred employees receiving at least one bonus is as high, if not higher, than the fraction of referred employees, the bonus dollars paid for the period is much higher for referred. Again the gap widens for better turnover outcomes: For employees with the worst outcomes, referred receive 25% more in bonus dollars; for employees with the best, referred receive 90% more. In the next two periods the trend holds, with referred employees earning between 30 and 40% more in bonus dollars for each turnover outcome. The only exception is in period 2, for employees that turnover in the next ninety days, the difference is only 6%.

3. Results

The findings stated in the previous section are confirmed in a multiple regression context, controlling for location, time, several employee characteristics including education, previous work experience, industry experience, gender, age, and micro labor market conditions.

3.1. Wage Regressions

We model the dollar amount of each paycheck in Figure I. We start by looking at paychecks received in the first 90 days after hire, including both employees who terminate within the 90 days and those that do not (Column 1). The effective wage rate is $10.22 per hour. We include three tenure variables: (1) days since hire on the pay date, (2) the hours of experience before the current pay period, and (3) number of paychecks received since hire. All three are significant. We see a convex relationship for hours of experience. Holding days of tenure constant and evaluating at the mean (128 hours), the paycheck increases by 51 cents for each additional hour of experience on the job. Conversely, an extra day of tenure to reach the same hours of experience results in a $2.20 decrease. We also include the number of paychecks that the employee received, to control for when in the two week pay cycle the employee started work.

Performance based bonuses add $97. Referred employees make an additional $13.58 per paycheck. Females earn $8.30 less on each paycheck. Employees that came from the call center industry earn an additional $33.60. In some cases, a check is paid for zero hours. It is assumed that most of such checks come from referral bonus payments, or corrections to previous paychecks. I control for them with a dummy for zero hours, showing that in these cases the base amount paid is $55.

Column 2 shows the same regression including only employees who survive the entire 90 days. The effective wage rate increases by 32 cents to $10.54 per hour. The return to hours of experience also increases: evaluated at the mean hours of the pooled sample (128 hours), the paycheck increases by 59 cents for each additional hour of experience on the job, holding days of tenure constant. An extra day of tenure to reach the same hours of experience results in a larger decrease of $2.93. Bonuses contribute more for the survivors, on average $115.

The referral, gender, and previous call center experience effects are all exaggerated in the survivor sample. Entering through a referral contributes an additional $18; females earn $11 less; and employees who came from the call center industry earn an additional $48.

We also include dummies for future turnover outcomes. Employees that turnover between 91 and 180 days or between 181 and 270 days do not earn significantly different paychecks in the first 90 days. However, employees that survive to between 271 and 360 days earn $9 more per paycheck, and employees that survive more than 360 days earn an additional $16. We explore these differences more closely by running separate regressions for each group, shown in Columns 3 through 6.

The effective wage rate in the first 90 days is larger for employees who survive longer after those 90 days. Employees who terminate in the next 90 days earn $10.29 per hour, while employees who survive for more than 360 days earn $10.78 per hour. We see in general a higher return to hours of experience for employees who survive longer, though the effect is not monotonic. For an employee who terminates between days 91 and 180, an extra hour of experience at the mean adds 49 cents to a paycheck; for an employee who terminates between days 181 and 270 the addition is 57 cents; for employees terminating in the next 90-day block, the addition is 65 cents; finally, for employees who survive more than 360 days, the addition is 56 cents.

Employees who survive longer earn more in bonuses. For an employee who terminates in days 91 to 180 or 181 to 270, a bonus adds $79 and $82 respectively. For an employee who terminates in days 271 to 360 or survives more than 360 days, a bonus adds nearly twice as much, $150 and $155 respectively.

Entering through a referral adds more to an employee's pay check for employees that survive longer. Being referred adds $7 for employees that terminate in days 91 to 180, while the addition quadruples to $29 for employees that survive more than 360 days. The addition stays around $13 for employees who terminate in between. Call center experience also adds more for employees who survive, from $30 for the earliest terminations to $67 for employees surviving more than 360 days.

We explore the differences between referrals more closely in Figures II and III. In Column 2 we see that the average bonus for referred is almost twice as much as for non-referred, $82 compared to $158. Also in Column 2, we see that the coefficients on future turnover outcomes are larger and more significant for referred than for non-referred. There is also greater separation between the two best turnover outcomes. For referred, the additions for the better turnover outcomes are $6, $14, and $26 respectively; for non-referred the additions are -$1, $6, and $3 (the first is insignificant).

Columns 3 through 6 run the regressions separately for each turnover outcome, showing that the effective wages and bonus amounts are higher for better turnover outcomes. We see also that comparing referred to non-referred with the three better turnover outcomes in columns 4,

5, and 6, referred bonuses are around twice as high as non-referred bonuses. The effective wage rate is substantially different between only the worst and best turnover outcomes, being higher for referred employees.

3.2. Turnover Regressions

We model 90-day turnover conditional on surviving to four different tenure horizons: 0 days, 90 days, 180 days, and 270 days. We are interested in the role of compensation in turnover, and again referral status, gender, and recent industry. We include also the standard controls such as education, age, and work experience, as well as several additional dimensions from the application survey and external labor market data at the zip code level of the employee's home address.

In Figure IV, we model conditional turnover as a function of the compensation in the previous 90-day period, and therefore include only the static employee characteristics to model turnover in the first 90 days. The coefficient for referred employees is negative and strongly significant in the first two periods. It remains negative in the third period, but loses its significance, and finally is weakly positive and insignificant in the final period.

We find insignificant coefficients for female and for employees who previously worked in a call center. The former increases turnover risk early in tenure, and decreases it later in tenure. The reverse is true for the latter, decreasing turnover early in tenure, but increasing it later. These estimates however are imprecise.

For compensation, we include for the previous 90-day period the number of hours worked, the total dollars paid, and the number of paychecks received. We then add the fraction of dollars paid that came from performance-based bonuses. In the first set of regressions without the bonus component (columns (2), (4), and (6)), we find that more money leads to lower turnover in all 3 periods. We find that more hours of experience leads to lower turnover, though the magnitude and significance decreases from period 2 to period 4.

Adding the bonus component produces significant changes in coefficients (shown in columns (3), (5), and (7)). First it should be noted that a higher fraction of compensation coming from bonuses, holding total compensation constant, decreases risk of turnover. The estimate is precise in the third and fourth period, but not in the second period. In the third and fourth period we also see the coefficient on the total dollars paid decrease in magnitude by half, and lose its statistical significance completely. Thus, holding the fraction of pay coming from bonuses constant, an increase in effective wage has little to no effect on turnover. This does not hold in the second period: the coefficient on total dollars does decrease slightly in magnitude, but remains strongly significant. Also in the third and fourth period, the coefficient on hours of experience increases in magnitude and in significance. It remains stable in the second period. It should be noted that the coefficient on referral status becomes insignificant in the same period that the coefficient on bonus fraction becomes significant. Figure V shows that without controlling for compensation, the coefficient on referral status is more negative and more significant in the second and third period.

4. Discussion

In the first ninety days, there is considerable heterogeneity in total compensation for employees with essentially the same job: the interquartile range of total take-home pay spans $1,000, between $3,400 and $4,400. I also find that effective wage rates are serially correlated: conditional on surviving consecutive periods, an employee with high compensation in the first period tends to have high compensation in the next period. More specifically I also find that bonus incidence in the past predicts bonus incidence in the future, and that among employees who receive at least one bonus in consecutive periods, the serial correlation between amounts is relatively strong. Thus, the employees receiving the higher performance compensation today are the same employees who receive it in the future. Together these relationships suggest that the initial dispersion is not a random phenomenon, but rather related to the individual, and in particular that there may be good or bad matches.

I find that some of this heterogeneity in compensation in the first ninety days is correlated with future turnover outcomes. The people who end up surviving longer earn more money in the first ninety days. I then explicitly model the role of compensation in turnover and find that what actually impacts future turnover is not the total take-home pay, but rather the fraction of that dollar amount coming from the objective performance bonuses. This suggests that the compensation for objective performance is what creates lower turnover, and that the base wages are a payment commensurate with external labor market conditions.

If this is the case, then what is it about the performance metrics (KPIs) and consequent compensation that explains the lower turnover? This observation is consistent with several standard labor theories. The performance metric may reflect match quality, the accumulation of firm specific skills, or there may be information asymmetry–what the current firm and employee know about match quality or productivity cannot be credibly discerned by outside firms. The findings are consistent with any of the possibilities, or a combination.

In all three explanations, we have that compensation is based partly on market value and partly on performance on the job. In the first, the performance, and thus a portion of the compensation (in this case the bonus component), is based in part on the idiosyncratic match between the employee and the firm. An employee that fits in better with the firm—either with the culture, a supervisor, or immediate coworkers—will perform better, and thus will have higher bonus compensation at this firm, but not necessarily any others.

In the second explanation, the employee accumulates firm-specific skills on the job which are valued at the firm and are compensated for, but which are not valued on the market (i.e. in outside firms). This may be consistent with the nature of the work and productivity at this firm. While a particular worker may have a certain level of competency at speaking on the phone, the training program and on-the-job accumulation of knowledge are for a specific computer system, with specific phone call protocols, and client-specific information about prices and policies. It is not clear that all of these skills would be transferrable to an outside firm (or even

to another program within the firm). This narrative is also consistent with the finding that the bonuses drive turnover more strongly later in tenure, as this firm-specific knowledge is accumulated by the employee (Bonus rates and amounts do in fact increase with tenure). It should be noted that this finding also holds with very precise controls for tenure (hours of experience), suggesting that employees may have different growth rates of firm-specific productivity or on-the-job learning.

In the third and final explanation, the performance metrics are not visible to the outside market. A firm making an outside job offer does not see an employee's current compensation. Assume again that compensation is based partly on market value and partly on performance on the job, and take two employees who are making the same total take-home pay. Assume that one has a higher fraction of bonus than the other, and thus a lower base wage. This implies that on the observables which determine the base wage, i.e. the market value, this person must look worse to the outside market than the employee with the lower bonus fraction but higher base wage. Thus the employee with the higher bonus fraction will receive lower outside wage offers, and hence will be less likely to leave as both employees compare their wage offers to the identical compensation at the current firm.

It has been shown that referrals reveal information about match-quality during the hiring process (Barr, Bojilov, and Munasinghe 2016), and thus referrals present an opportunity to more closely study the role of match-specific compensation. I find that referred employees have a higher fraction of earnings coming from bonuses, which in turn explains why they have lower turnover rates. That the coefficient on referral status becomes insignificant in the third period only after I control for wages confirms that their lower turnover is driven by their higher fraction of compensation coming from the bonus component. In other words, the referred employees are performing better, and are being compensated for that superior performance in the form of bonuses. These findings support the idea in the aforementioned paper by showing that the referred pool of hires is better in terms of this match-specific component of wages.

Finally, there are some interesting results related to tenure and turnover and compensation dynamics. In the wage regressions, I include precise controls for tenure: the days since hire and the total hours worked. Holding days of tenure constant, more hours of experience results in a higher effective wage rate. Restated, the more hours that were previously invested in on-the-job learning, the more productive a current hour of work is. This finding supports with human capital investment story of accumulation of firm-specific skills to explain the downward sloping tenure-turnover profile. The result is robust when we explicitly model turnover as well – holding days of tenure constant, more hours of experience results in lower turnover. I also find in the wage regressions that holding hours constant, an extra day of tenure decreases the effective wage. This suggests that on-the-job learning is more effective if it's concentrated as opposed to spread out.

This paper has limitations. While I make attempts to control for selection by comparing wages for a given period only among employees who survive that entire period, and by looking at future turnover outcomes, there are more explicit ways of controlling for selection, à la

Heckman for example, that can answer questions about how an employee *would have been compensated*, had they in fact survived. Moreover, we can also answer questions about the hiring process to see if either the applicant or the firm select in or out of employment on the basis of match-quality as revealed by the firm-specific component of wages. A multi-stage selection model as used by Barr, Bojilov, and Munasinghe would be particularly applicable here.

Extensions of this paper can attempt to break down the non-bonus compensation into further match-specific or general components using data about hourly base wage increases and subjective ratings. One can also examine more closely the growth of compensation and the impact on turnover, particularly the intriguing results introduced here suggesting heterogeneity in growth rates of the accumulation of firm-specific skills. Though it may be noted that exploitation of the panel nature of the dataset can be difficult when explicitly modeling turnover. One can also try to address the ambiguity in these results surrounding what is driving the firm-specific component of wages.

References

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Table 1

Turnover and Sample

Tenure (Days)	Freq.	90-Day Turnover	Fraction Referred	Referred Turnover	Non-Referred Turnover
0	21,387	53%	45%	49%	57%
90	10,009	37%	50%	34%	41%
180	6,283	29%	53%	27%	31%
270	4,453	24%	54%	23%	24%
360	3,401	.	54%	.	.

Table 2

Paychecks by period

	Period (Days)	Employees	Paychecks	Hours	Dollars	Fraction Had Bonus	Bonus Dollars
1	(1-90)	10,009	55,453	71.36	$729.35	0.05	$93.58
2	(91-180)	6,283	38,735	74.82	$871.95	0.19	$169.82
3	(181-270)	4,453	27,690	74.72	$928.97	0.23	$206.46
4	(271-360)	3,401	20,948	74.43	$970.17	0.23	$230.22

Table 3

Paycheck amounts by period and future turnover outcomes

	Period (Days)	turnover t=91-180	t=181-270	t=271-360	t=361+
1	(1-90)	697.42	722.38	733.52	766.61
2	(91-180)		805.88	852.28	913.56
3	(181-270)			857.40	951.13
4	(271-360)				970.17

Table 4

Stats by period, one obs. per person

Period (Days)	turnover t=91-180	t=181-270	t=271-360	t=361+	
1 (1-90)	$3854.92	$3992.01	$4086.64	$4256.61	Dollars
	384.67	395.02	398.83	406.24	Hours
	$10.00	$10.08	$10.20	$10.44	Eff. Wage
	0.22	0.20	0.21	0.21	Fraction Got Bonus
	$85.55	$89.67	$159.73	$168.10	Bonus Amount
	3,726	1,830	1,052	3,401	N
2 (91-180)		$4963.40	$5259.53	$5633.37	Dollars
		440.56	455.89	474.08	Hours
		$11.23	$11.48	$11.81	Eff. Wage
		0.58	0.67	0.64	Fraction Got Bonus
		$213.07	$287.43	$366.33	Bonus Amount
		0.8262	0.9088	0.9063	Corr Eff Wage Period 2 & 1
		1,830	1,052	3,401	N
3(181-270)			$5335.14	$5913.18	Dollars
			443.29	471.20	Hours
			$11.97	$12.54	Eff. Wage
			0.72	0.75	Fraction Got Bonus
			$279.72	$419.53	Bonus Amount
			0.8677	0.6864	Corr Eff Wage Period 3 & 1
			0.9315	0.7505	Corr Eff Wage Period 3 & 2
			1,052	3,401	N
4(271-360)				$5975.66	Dollars
				458.45	Hours
				$12.97	Eff. Wage
				0.75	Fraction Got Bonus
				$435.01	Bonus Amount
				0.7718	Corr Eff Wage Period 4 & 1
				0.8766	Corr Eff Wage Period 4 & 2
				0.8249	Corr Eff Wage Period 4 & 3
				3,401	N

Table 5

Stats by period, one obs. per person, REFER==1

Period (Days)	turnover t=91-180	t=181-270	t=271-360	t=361+	
1 (1-90)	3857.32	4019.01	4105.62	4370.11	Dollars
	381.94	394.64	396.38	404.86	Hours
	10.07	10.16	10.30	10.74	Eff. Wage
	0.18	0.16	0.19	0.18	Fraction Got Bonus
	97.65	125.29	209.06	224.17	Bonus Amount
	1,676	906	559	1,849	N
2 (91-180)		4974.05	5334.13	5777.46	Dollars
		438.16	454.08	472.43	Hours
		11.31	11.67	12.16	Eff. Wage
		0.54	0.65	0.63	Fraction Got Bonus
		220.34	334.91	411.35	Bonus Amount
		0.8564	0.9321	0.9297	Corr Eff Wage Period 2 & 1
		906	559	1,849	N
3(181-270)			5430.66	6046.89	Dollars
			443.54	468.38	Hours
			12.16	12.88	Eff. Wage
			0.69	0.74	Fraction Got Bonus
			331.77	470.67	Bonus Amount
			0.9008	0.7826	Corr Eff Wage Period 3 & 1
			0.9475	0.8236	Corr Eff Wage Period 3 & 2
			559	1,849	N
4(271-360)				6084.93	Dollars
				454.14	Hours
				13.31	Eff. Wage
				0.75	Fraction Got Bonus
				490.38	Bonus Amount
				0.8606	Corr Eff Wage Period 4 & 1
				0.8997	Corr Eff Wage Period 4 & 2
				0.9197	Corr Eff Wage Period 4 & 3
				1,849	N

Table 6

Stats by period, one obs. per person, REFER==0

Period (Days)	turnover t=91-180	t=181-270	t=271-360	t=361+	
1 (1-90)	3852.96	3965.54	4065.12	4121.40	Dollars
	386.90	395.39	401.62	407.88	Hours
	9.94	10.01	10.09	10.08	Eff. Wage
	0.25	0.25	0.24	0.25	Fraction Got Bonus
	78.45	67.49	114.58	118.46	Bonus Amount
	2,050	924	493	1,152	N
2 (91-180)		4952.97	5174.94	5461.71	Dollars
		442.91	457.93	476.05	Hours
		11.15	11.27	11.41	Eff. Wage
		0.63	0.69	0.66	Fraction Got Bonus
		207.05	236.44	315.52	Bonus Amount
		0.7832	0.8278	0.8187	Corr Eff Wage Period 2 & 1
		924	493	1,152	N
3(181-270)			5226.84	5753.88	Dollars
			443.01	474.56	Hours
			11.76	12.13	Eff. Wage
			0.76	0.77	Fraction Got Bonus
			225.57	360.52	Bonus Amount
			0.7493	0.6132	Corr Eff Wage Period 3 & 1
			0.8734	0.4901	Corr Eff Wage Period 3 & 2
			493	1,152	N
4(271-360)				5845.48	Dollars
				463.59	Hours
				12.55	Eff. Wage
				0.74	Fraction Got Bonus
				368.11	Bonus Amount
				0.7065	Corr Eff Wage Period 4 & 1
				0.8023	Corr Eff Wage Period 4 & 2
				0.5511	Corr Eff Wage Period 4 & 3
				1,152	N

Figure I, Wage Regressions

	(1) All b/se	(2) Survivors b/se	(3) t=91-180 b/se	(4) t=181-270 b/se	(5) t=271-360 b/se	(6) t=360+ b/se
totalhours	10.223***	10.542***	10.291***	10.474***	10.725***	10.778***
	(0.02)	(0.03)	(0.03)	(0.06)	(0.10)	(0.06)
hoursworked	0.448***	0.517***	0.474***	0.553***	0.608***	0.514***
	(0.02)	(0.03)	(0.04)	(0.07)	(0.12)	(0.07)
hoursworked2	0.000***	0.000***	0.000	0.000	0.000	0.000**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
paytenure	-2.201***	-2.933***	-2.213***	-2.785***	-4.519***	-2.917***
	(0.09)	(0.14)	(0.16)	(0.27)	(0.49)	(0.28)
npaychecks	4.832***	8.807***	3.884*	6.126*	22.835***	6.196*
	(0.96)	(1.39)	(1.76)	(2.71)	(4.68)	(2.82)
nohours	54.584***	68.878***	75.588***	64.049***	95.959***	54.427**
	(4.69)	(9.09)	(10.91)	(18.47)	(28.30)	(19.52)
gotbonus	97.483***	115.420***	79.053***	82.203***	150.343***	155.420***
	(2.02)	(2.64)	(3.25)	(5.41)	(8.87)	(5.35)
refer	13.582***	17.724***	7.160***	12.581***	13.757***	29.105***
	(0.78)	(1.13)	(1.40)	(2.23)	(3.93)	(2.31)
female	-8.298***	-11.322***	-9.397***	-9.412***	-0.432	-15.987***
	(0.87)	(1.28)	(1.58)	(2.50)	(4.41)	(2.62)
callcenter	33.604***	47.838***	30.139***	35.971***	49.321***	67.403***
	(0.86)	(1.27)	(1.55)	(2.52)	(4.46)	(2.64)
turnover=3		-0.366				
		(1.56)				
turnover=4		9.416***				
		(1.91)				
turnover=5		15.934***				
		(1.34)				
R-sqr	0.866	0.802	0.859	0.837	0.772	0.778
Obs.	90854	55453	20595	10113	5861	18884
Employees	21387	10009	3726	1830	1052	3401

* p<0.05, ** p<0.01, *** p<0.001

Figure II, Wage Regressions, Refer = 1

	(1) All b/se	(2) Survivors b/se	(3) t=91-180 b/se	(4) t=181-270 b/se	(5) t=271-360 b/se	(6) t=360+ b/se
totalhours	10.399***	10.703***	10.370***	10.443***	10.695***	11.082***
	(0.03)	(0.05)	(0.06)	(0.09)	(0.16)	(0.09)
hoursworked	0.525***	0.535***	0.590***	0.454***	0.519**	0.523***
	(0.04)	(0.05)	(0.07)	(0.10)	(0.19)	(0.10)
hoursworked2	0.000***	0.000**	0.000	0.000	0.000	0.000*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
paytenure	-2.554***	-3.005***	-2.299***	-2.251***	-4.013***	-3.062***
	(0.15)	(0.22)	(0.28)	(0.43)	(0.80)	(0.44)
npaychecks	4.520**	7.214**	-1.901	2.836	19.376*	6.492
	(1.71)	(2.31)	(2.96)	(4.31)	(7.91)	(4.40)
nohours	47.097***	59.359***	76.910***	74.084*	32.553	34.763
	(9.41)	(17.01)	(19.31)	(34.34)	(58.29)	(35.02)
gotbonus	136.080***	158.958***	88.672***	118.021***	194.283***	217.952***
	(3.78)	(4.74)	(6.01)	(9.61)	(15.21)	(8.87)
female	-10.019***	-12.360***	-11.300***	-9.946**	-1.945	-12.625**
	(1.48)	(2.05)	(2.58)	(3.84)	(7.12)	(3.93)
callcenter	53.023***	71.751***	45.438***	45.896***	75.725***	94.343***
	(1.59)	(2.22)	(2.77)	(4.30)	(7.69)	(4.24)
turnover=3		5.583*				
		(2.64)				
turnover=4		13.506***				
		(3.12)				
turnover=5		25.748***				
		(2.23)				
R-sqr	0.825	0.768	0.830	0.810	0.721	0.764
Obs.	42294	27569	9231	5004	3100	10234
Employees	9701	4990	1676	906	559	1849

Figure III, Wage Regressions, Refer=0

	(1) All b/se	(2) Survivors b/se	(3) t=91-180 b/se	(4) t=181-270 b/se	(5) t=271-360 b/se	(6) t=360+ b/se
totalhours	10.060***	10.387***	10.222***	10.492***	10.675***	10.463***
	(0.02)	(0.03)	(0.04)	(0.06)	(0.10)	(0.06)
hoursworked	0.374***	0.498***	0.375***	0.665***	0.625***	0.549***
	(0.02)	(0.03)	(0.05)	(0.08)	(0.11)	(0.07)
hoursworked2	0.000***	0.000**	0.000*	-0.000	0.000	0.000*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
paytenure	-1.870***	-2.807***	-2.122***	-3.584***	-4.762***	-2.684***
	(0.09)	(0.14)	(0.19)	(0.32)	(0.49)	(0.29)
npaychecks	5.363***	9.760***	8.769***	12.618***	28.535***	2.365
	(0.96)	(1.43)	(2.06)	(3.12)	(4.45)	(2.89)
nohours	53.743***	67.653***	70.220***	56.305**	117.837***	47.405**
	(4.29)	(8.54)	(12.30)	(18.82)	(23.23)	(17.69)
gotbonus	70.426***	82.105***	72.454***	57.375***	105.008***	98.436***
	(1.93)	(2.55)	(3.56)	(5.68)	(8.21)	(5.13)
female	-7.395***	-9.697***	-7.935***	-7.433*	9.647*	-19.054***
	(0.90)	(1.37)	(1.91)	(2.99)	(4.46)	(2.80)
callcenter	18.745***	26.506***	20.896***	26.462***	25.460***	34.865***
	(0.83)	(1.26)	(1.75)	(2.75)	(4.20)	(2.62)
turnover=3		-1.365				
		(1.59)				
turnover=4		5.525**				
		(2.00)				
turnover=5		3.325*				
		(1.38)				
R-sqr	0.920	0.873	0.890	0.884	0.881	0.856
Obs.	48560	27884	11364	5109	2761	8650
Employees	11686	5019	2050	924	493	1552

Figure IV, Turnover Regressions

	(1) t90 b/se	(2) t180 b/se	(3) t180 b/se	(4) t270 b/se	(5) t270 b/se	(6) t360 b/se	(7) t360 b/se
refer	-0.143***	-0.161***	-0.162***	-0.107	-0.115	0.056	0.055
	(0.03)	(0.05)	(0.05)	(0.06)	(0.06)	(0.08)	(0.08)
female	0.055	-0.039	-0.039	-0.136	-0.133	-0.084	-0.077
	(0.04)	(0.06)	(0.06)	(0.07)	(0.07)	(0.09)	(0.09)
callcenter	-0.023	-0.001	-0.007	0.030	0.016	0.071	0.070
	(0.04)	(0.06)	(0.06)	(0.08)	(0.08)	(0.10)	(0.10)
laghours_1		-0.656***	-0.680***	-0.295**	-0.461***	-0.067	-0.281*
		(0.07)	(0.07)	(0.09)	(0.11)	(0.11)	(0.14)
laggrossamount_1		-0.184***	-0.157***	-0.261***	-0.113	-0.346***	-0.168
		(0.04)	(0.04)	(0.07)	(0.09)	(0.08)	(0.10)
lagbonusfrac_1			-2.924		-3.109**		-3.459**
			(1.56)		(1.08)		(1.23)
laghours_2				-0.163	-0.090	-0.370**	-0.277
				(0.12)	(0.14)	(0.13)	(0.17)
laggrossamount_2				0.119	0.056	0.214*	0.138
				(0.09)	(0.11)	(0.09)	(0.13)
lagbonusfrac_2					-5.659*		0.929
					(2.28)		(1.41)
laghours_3						-0.233	-0.164
						(0.15)	(0.17)
laggrossamount_3						0.103	0.027
						(0.11)	(0.13)
lagbonusfrac_3							1.209
							(2.34)
Bonus Included?	No	No	Yes	No	Yes	No	Yes
Pseudo-R2	0.054	0.083	0.084	0.087	0.089	0.086	0.088
Obs.	21387	10009	10009	6283	6283	4453	4453
Employees							

* p<0.05, ** p<0.01, *** p<0.001

Note: Total Hours in hundreds of hours; Gross Amount in thousands of dollars.

Figure V, Turnover Regressions

	(1)	(2)	(3)
	t180	t270	t360
	b/se	b/se	b/se
refer	-0.177***	-0.126*	0.044
	(0.05)	(0.06)	(0.08)
female	-0.032	-0.124	-0.074
	(0.06)	(0.07)	(0.09)
laghours_1	-0.872***	-0.609***	-0.479***
	(0.05)	(0.05)	(0.06)
callcenter	-0.028	-0.006	0.059
	(0.06)	(0.08)	(0.10)
laghours_2		-0.071	-0.129
		(0.08)	(0.07)
laghours_3			-0.144
			(0.10)
Loc dummies	Yes	Yes	Yes
Pseudo-R2	0.082	0.083	0.082
Obs.	10009	6283	4453
Employees			

* p<0.05, ** p<0.01, *** p<0.001