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Transforming Incentives:  
Analysis of Personnel and Employee Output Data  
in a Large Japanese Auto Sales Firm

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August 2007

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**Transforming Incentives:  
Analysis of Personnel and Employee Output Data  
in a Large Japanese Auto Sales Firm**

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*Abstract*

This paper analyzes the economic consequences of performance-oriented human resource (HR) system reform at Auto Japan (pseudonym), one of the largest Japanese auto sales firms, using personnel and employee output data. The author overviews the three major components of the HR reform: base wages, performance-based pay, and performance rating systems. Then the author examines the productivity effect of the reform. The performance-based pay was changed from combining a base wage with a simple performance pay system to instead a scheme kinked around a draw line (representing aggregate base pay) to intensify incentives. The introduction of the draw formula performance-based pay system raised the productivity of the new car sales staff, but generally failed to raise the productivity of the used car sales staff. The evidence suggests that while Auto Japan's performance-oriented HR system reform, which was typical of reforms instituted among major Japanese firms in the late 1990s, changed the wage structure and grading pattern of employees, it brought only slight improvement in individual productivity.

Incentives have been the essence of economics and firm organization. Pay for performance has drawn great interest from both personnel economists and HR practitioners. Yet, it has been difficult to capture the relationship between pay and productivity in most industries and occupations. In path-breaking works, Lazear (2000) and Paarsch and Shearer (1999, 2000) show that the introduction of performance-based pay has the effect of stimulating employee effort. However, the jobs analyzed in those studies are too simple to hold much meaning for professional occupations. The purpose of this paper is to examine the economic consequences of performance-oriented human resource (HR) system reform at Auto Japan (pseudonym), one of the largest Japanese auto sales firms, using personnel and employee output data.

## **Investigating the Sales Force Incentives: Review of Accumulated Knowledge**

Two areas of existing research provide especially important insights for the analysis of the wage determination and productivity for salespersons. One, from economics, is agency theory, and the other, from management studies, is the analysis of sales incentive systems. Both areas of research have developed a sizable literature, but I will focus here on the works critical to analyzing auto dealerships.

### **Agency Theory**

Agency theory is the bench-marking theory for analyzing not only sales forces, but also efficiency- and performance-based personnel systems (Milgrom and Roberts 1992; Gibbons 1997; Baron and Kreps 1999; Prendergast 1999). Agency theory examines the problems – due to contractual imperfections and asymmetric information – that occur when the employer as a principal hires employees as agents.

There are generally latent conflicts of interest between employer and employee (the agency relationship). In addition, the firm cannot comprehensively monitor the employees' behavior (asymmetry of information), and not all of the behavior required from the employees can be included in the contract (incompleteness of contract). To resolve such agency problems, firms devise incentive and reward systems to motivate employees. Stated differently, what is important is the wage contract devised by the principal to motivate the agent to engage in behavior that upholds the interests of the principal.

Based on Gibbons (1997:3-4), the core logic in agency theory as it relates to wage contracts can be summarized as follows. The individual wage  $w$  is composed of fixed portion  $\alpha$  and a fluctuating portion (that changes according to performance indicator  $Z$ ). The reward can be depicted as a linear function of  $Z$ ,

$$w = \alpha + \beta Z,$$

where  $\beta$  is an incentive intensity. In this case, the optimal incentive intensity can be expressed as the decreasing function of the degree of the employee's risk aversion and marginal cost of effort, as well as the error variance of performance, under appropriate assumptions.<sup>1</sup> If the employee's risk aversion level is zero, then  $\beta$  is equal to 1, and the optimal effort level is reached. However, since the employee's risk averse level is not zero,  $\beta$  is significantly less than one (trade-off between risk and incentive).

According to Prendergast (1999), however, there is little empirical evidence regarding whether the type of optimal wage contract summarized above can be observed in the real world. Instead, there is evidence that the linking of performance to wages can substantially raise an individual's performance. Lazear (2000)

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<sup>1</sup> The assumptions include: (a) the employee has constant and absolute risk aversion, and (b) her/his observable performance depends linearly on her/his tasks completed, although the observations typically include a normal error.

and Paarsch and Shearer (1999, 2000) show that the introduction of performance-based pay has the effect of stimulating employee effort. Their major contribution is to use company personnel data to demonstrate that the introduction of performance-based pay systems can raise individual productivity.

What Lazear (2000) shows, however, is that the sorting effect of performance-based pay is much greater than the incentive-enhancing effect. A firm that adopts the piece rate system retains and attracts high performers while low performers quit; as a result, it achieves higher levels of productivity, assuming adequate influence from the external labor market. However, the logic of the sorting effect is not directly applicable to Japan's large enterprises, which hire largely graduating university seniors and guide their skill and career development over the long term in highly developed internal labor markets.

A more serious deficiency of the previous studies is that they have tended to investigate simple jobs, such as windshield installation or tree planting, in order to utilize objective performance measures. However, as Prendergast (1999:57) pointed out, "to put it simply, most people don't work in jobs like these." Thus, the critical agenda is to analyze the effect of performance-based pay, not on simple manual jobs, but on white-collar-type jobs.

### **Sales Incentive Schemes**

Sales is an example of an occupation that is not precisely white-collar, but close to it in character. Academics conducting research on marketing have utilized the framework of agency theory to examine the incentive system for sales forces. The most important studies include Basu, Srinivasan, and Staelin

(1985), Coughlan and Narasimhan (1992), and Mishra, Coughlan, and Narasimhan (2003). This body of research demonstrates that the performance of salespersons reflects more than just their own effort, and creates models showing how a firm decides on a reward system (composed of a fixed wage and a performance wage) that maximizes firm profits while taking into consideration changes in the effort level of salespersons under conditions of uncertainty. These researchers have sought empirical verification by using firm level data to examine predictions from the theory. For example, they have shown that as the number of phone calls necessary to complete a sale (variance of sales effort) increases, the share of performance pay in total compensation increases as well.

However, empirical analyses examining the relationship between compensation systems and individual performance of sales personnel are lacking. This is unfortunate, because it is possible to observe objective indicators for individual sales performances and salespersons perform a task that is both complex and well represented in the labor market. The most closely related research concerns the timing of sales response to non-linear compensation schemes and is performed on industry level sales data by Oyer (1998) and on individual level data for the U.S. Navy recruiters by Asch (1990).

Oyer's (1998) findings are quite important. Oyer demonstrates that when a salesperson's sales target is set, and an incrementally increasing, non-linear reward function commission is used, the salesperson responds to the evaluation period (especially toward the end of the period). More concretely, both the timing of customer purchases and the level of effort can be altered. As a result, depending on her/his performance in the first half of the evaluation period, a salesperson may postpone sales to the next period

(push-out) or bring sales forward to the present period (pull-in). Oyer (1998), using industry data, confirms that there are seasonal fluctuations corresponding to the close of the fiscal year, indirectly proving the existence of such phenomenon as push-out and pull-in.

In contrast, Asch (1990) provides more direct evidence of a related phenomenon by using individual data on recruiters for the Navy. The number of new recruits grows as the end of the evaluation periods nears, and then falls off sharply when the period ends. This pattern also persists when the recruiters' length of tenure is taken into account. In short, Asch shows that the productivity of recruiters changes discretely, and that degree of effort is changed at particular points in time according to the situation of the evaluation period.

### **Implications of the Existing Research**

Previous studies have shown that the introduction of performance-based pay can raise the performance of individual employees. They have also demonstrated, however, that the productivity-raising effect is not primarily attributable to the incentive-enhancing effect on employees within the internal labor market, but rather to the sorting effect operating through the external labor market. Furthermore, the individual performance of sales staff has not been examined in previous studies.

The following sections analyze the incentive mechanisms for the sales staff at one of Japan's largest auto sales firms. The car sales job in Japan constitutes an excellent case for analyzing performance-based pay because it is similar in nature to professional occupations but also provides an unusually clear measure of

objective performance, namely the number of cars sold by individual salespersons. Personnel practices in Japan's auto sales firms mirror those of the nation's major firms: The firms hire predominantly university graduates as sales staff and utilize highly developed internal labor markets featuring long-term employment.

I analyze the changes in employee behavior that occur when a performance-based pay system is introduced into an internal labor market. In other words, I highlight the effect of the introduction or intensification of a performance-based wage system on the behavior of current sales staff.

## **Auto Japan's Business and Financial Structure and Its Work Practices**

The existing personnel economics literature has rarely analyzed in detail the business and financial structures and work practices of the firms that it has analyzed. There are no clear reasons for this, but it probably reflects economists' tendency to "let the data speak for itself." However, given that personnel and compensation systems are closely related to particular firms' business practices and financial systems, analysis of those factors is essential to this line of research.

### **Business and Financial Structures**

*Business Structure and Contractual Relationship with the Manufacturer* Auto Japan (pseudonym)

is a large auto sales firm that also conducts service and repair and leasing-and-renting businesses. It had approximately 2,300 employees in 2004. The main business areas include selling and leasing cars made by

Nippon Motors (pseudonym), selling parts and supplies, and doing repair and maintenance work. As will be detailed further on, Auto Japan is one of the top-performing retail chains for cars manufactured by Nippon Motors.

In Japan as well as in the U.S., auto manufacturers utilize several distribution channels for selling different models. For example, Toyota has four distribution channels, including Toyota stores (50 dealerships), Toyopet (52), Corolla (74), and Netz (118), for a total of 294 dealerships. Nissan has two distribution channels, Blue Stage (72) and Red Stage (79), with 151 total dealerships. Honda has three channels, Verno (75), Clio (80), and Primo (863), with 1018 dealerships in all. Auto Japan is one of the largest dealerships among the above.

In November and December, Nippon Motors, the manufacturer, and Auto Japan, the dealer, negotiate contracts for the number of new cars and used cars to be sold and services (such as repairs) to be transacted from January through December of the following year. In reality, the sales targets specified in the yearly contract are for planning purpose only. What really matters is the “3-month term demand” sent by the manufacturer to the sales enterprises. These mandate a certain level of business transaction (sales) goals. The manufacturer makes demands in three categories – new car sales, used cars sales, and services– and the parties then negotiate the detailed numerical goals. However, these numerical goals have little relationship to the sales target specified in the yearly contract. In the case of car sales, the number of cars sold above the manufacturer’s demanded goal becomes the actual sales outcome for the year. Auto Japan negotiates seriously over the numerical goals demanded by the manufacturer. Most other sales firms accept

automatically the goals imposed by the manufacturer, but Auto Japan takes the stance that after a serious negotiation it will achieve the numerical goals determined in the negotiations.<sup>2</sup>

**Financial Structure** As can be seen in Table 1, Auto Japan's sales for 2004 were 140 billion yen (approximately 1.3 billion dollars at the 2004 exchange rate) with an operating profit of 240 million yen (2.2 million dollars). Not shown in this table is that Auto Japan's new cars sales in 2004 were 40,000 while 16,000 used cars were sold. The 2004 earnings of 140 billion yen (1.3 billion dollars) were an increase of 100 billion yen (9 million dollars) over the 1995 figure of 130 billion yen (1.2 billion dollars). The operating profit rose by 9 hundred million yen (82 million dollars), from 1.5 billion yen (138 million dollars) to 2.4 billion yen (220 million dollars), but the number of new cars sold fell by some 5,000, from around 45,000 to 40,000. The number of used cars sold remained about the same.

The firm's basic financial approach is, in the words of one of its directors, "make a lot of money, spend a lot of money." In other words, while the gross profit on sales and the incentive payments from the manufacturer are high, sales fees and general operating fees are also high. These points can be verified from Auto Japan's 2004 income statements. The gross profit and incentive payments from the manufacturer combined totaled nearly 30 billion yen (2.8 billion dollars), but sales and general operating fees amounted to 27 billion yen (2.5 billion dollars), leaving only 2.4 billion yen (220 million dollars) in operating profits.

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<sup>2</sup> This information is based on an interview with Auto Japan's executive director, managing director, and director of corporate planning (conducted on April 11, 2006).

While cause-and-effect is not clear, it is important to notice that the operating profit of 2.4 billion yen (220 million dollars) and the sales incentive payments from the manufacturer of 2 to 3 billion yen (185 to 278 million dollars) are very close. In short, intense market competition has squeezed operating profits to a very low level. However, sales incentive payments from the manufacturer supplement these earnings to some extent.

*Shifts in Personnel Expenses*      The personnel expenses of Japanese auto dealerships are generally high, due largely to long-term employment practices and a high base pay component in individual wages. As the Japan Automobile Dealers Association data shown in Table 1 indicate, auto dealers' personnel costs amount to about 50 percent of total sales, general, and administrative (TSGA) expenses. Auto Japan is no exception. Its personnel expenses are in the neighborhood of 50 percent of TSGA expenses.<sup>3</sup>

However, as seen in Table 2, the fraction of personnel expenses in Auto Japan's TSGA expenses declined slightly from 56.4 percent in 1995 to 54.2 percent in 2004. Moreover, if we consider only wages and bonuses, the ratio fell from 46.9 percent to 43.9 percent in the same period. This decline was achieved mainly through natural attrition of personnel (from 2600 persons in mid-1990 to 2250 in 2004) and not through the 2000 reform of the personnel system.

In other words, the objective of the personnel system reform was not a short-term reduction of personnel costs. This is indicated by the accounting data. The ratio of personnel costs (not shown in the table), was

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<sup>3</sup> \*A study by the Graduate School of Business, Stanford University (2000) estimates that 21 percent of total expenses of the average U.S. auto dealership is related to payroll expenses.

56.6 percent in 1999, the year prior to the reform, and 56.2 percent in 2001, the year following the reform.

Hence, there was almost no change.

Let us next examine trends in sales commissions (performance based pay), which are an important source of the salespersons' income (Table 2). Throughout the 1990s, sales commissions hovered around the 800 million yen (7.4 million dollars) level. In 2000, when the personnel system reform took effect, the figure shot up to 1.3 billion yen (12 million dollars). This rise is attributable to the effect of the introduction of the new performance pay system, termed draw system, which I examine below.

### **Breakdown of Business Objectives and Management of Work Practices**

Auto Japan divides its territory into seven zones, with a sales management office in each zone. The chain of command is from Auto Japan's senior sales director to the seven sales management office general managers to the outlet managers. Each sales management office directs from seven to eleven dealer outlets. Each outlet includes a new car sales section, a used car sales section, and a service section. The chain of command runs from section chief (*kacho*) to sales staff. In the service section, it is section chief to "advisor" (the person in charge of handling repair and other services), then service work leader, and mechanic. The numbers vary relative to sales volume, ranging from 13 employees at the smallest outlet to 39 at the largest.

As explained above, there are two numerical objectives linking manufacturer and dealer – the annual contracted sales target and the quarterly manufacturer-demanded numerical goals. In accordance with these

figures, each outlet has a yearly sales target and a monthly numerical goal. The yearly sales target is presented as the year's objective to be achieved by the end of March, the end of Auto Japan's fiscal year.

The monthly numerical goal is presented as a breakdown of the quarterly numerical goals for all products at the regular end-of-month sales meetings, where it is distributed (in printed form) to the participants.

Auto Japan steadily revises its monthly numerical goals in accordance with market conditions, and then broke down the resulting figures into very specific weekly and daily plans for the new car, used car, and service sections. Each dealer outlet is assigned different sales targets according to car model, but in the end it is the number of cars sold, regardless of model, that is at issue. Auto Japan's largest outlet is given a target of 80 to 90 new cars a month. This figure is apportioned carefully among the salespersons based in large part on past performance. Apportioning the monthly numerical goals among sales staff is the important task of the section manager to put pressure on subordinates. Put differently, the section chief needs to know how many "hot" negotiations the salespersons are starting up each week, and about how many cars they can expect to sell every day. For this purpose, a "control board" is set up to keep track of the number of models or cars being sold or seriously discussed with customers. The outlet managers supervise the section managers but ordinarily do not exercise direct control over the salespersons.<sup>4</sup>

## **Outcomes of the Base Wage System Reform**

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<sup>4</sup> This description of the company's work practices is based on interviews with the managers of three outlets, A, B, and C (May 24, 2006), and on my participatory observation of outlet D's various meetings and business operations (June 8, 2006). D is a middle-ranking (i.e., more or less average) outlet in Auto Japan.

Auto Japan implemented the 2000 personnel system reform in order to encourage greater variation in personnel expenses, and to change from a seniority-oriented system towards a performance-based system. The first goal (greater variation in personnel expenses) was intended to cope with the change in the automobile sales environment from a situation of continuously rising sales towards slow or no growth. For that reason, Auto Japan changed the base wage system. Auto Japan abolished its skill grade system (*shokuno shikaku seido*) and introduced a job-based wage system. In addition, with regard to the job-based wage system, Auto Japan expanded the performance-based component, and switched to a so-called draw formula system (discussed in detail later). In the following section, we examine the personnel system reform, starting with the base wage system.

### **From the Skill Grade System to the Job-based System**

Auto Japan had used the skill grade system (the standard grading system of Japanese firms from the 1970s until recently) since 1980. Auto Japan's internal materials state: "The skill grade system divides employees into ranks (qualification grades) according to level of skill development reflecting the skills necessary to the firm; along with measuring employees' skill development, the skill grade system determines the level of base wages." As shown in Table 3, responsibilities were laid out for each skill/qualification level. The distinguishing characteristic of the skill grade system compared with the U.S. job grade system is that responsibilities are not job-specific, but rather are laid out somewhat abstractly in order to preserve organizational flexibility. There were seven grades for non-managerial employees and

seven grades for mid-level managers as well, making a total of 14 grades. As shown in Figure 1, the base wage was composed of both skill-based pay and seniority-based pay (which corresponds to life-stage in Japan).

The fundamental change in the 2000 personnel system reform was to abolish the skill grade system and introduce the job-based system. What must be emphasized here is that the meaning of job-based system is totally unrelated to the job grade system typically observed in the U.S. That is, Auto Japan's system is not a job grade system in which a process of job evaluation and analysis is used to create quantitative measures for measuring job size.

Auto Japan has instead established a rank order of positions (bands) which incorporate a sliding scale (stage) within each position (Figure 2). Described from a different perspective, Auto Japan abolished the concept of qualification or grade, in which wage costs easily became fixed. Instead, it has established a fluid wage-adjustment system (a matrix of bands and stages) in which employee ranking corresponds directly to performance and results. This is a very flexible system with regard to wage determination. It should also be noted that the wage system includes an achievement portion (*koseki-kyu*) – this is based on the previous skill-based pay system, and is more stable than the newly introduced pay component. It serves as compensation for past contributions, and therefore partially compensates for the introduction of the flexible wage system.

### **Changes in Wage Structure**

The whisker box graph, which compares the staff's yearly wages for 1998 and 2004, reveals important changes in wage outcomes (Figure 3). First, in 1998, there was a steep curve but narrow distribution under a seniority-oriented (*nenko*) wage system, but a major transformation had been achieved by 2004. The trajectory of the median continues to slope upwards toward the right, but the dispersion for employees aged from the mid-20s to mid-40s has greatly widened and the median shows significant vertical fluctuation.

To verify the situation indicated by the graph, I divided the employees into three age groups – under 30, 30-39, and 40 and over – then separated the new and used car sales staffs, and finally calculated the coefficient of variation (Table 4). First, for the under-30 new car sales staff, the coefficient of variation was 0.20 in 1998 rising to 0.26 in 2004. Similarly, the figure rose from 0.16 to 0.22 for 30-and-over new car sales staff, and from 0.09 to 1.15 for over-40 staff. There are too few under-30 and over-40 used car sales staff to produce reliable figures, but the figures for the numerous 30-39-year-old used car salesperson group rose just as they did for the new car salespersons. These calculations confirm that the sales staff's wage structure changed as a result of the 2000 reform, and indicate that its main effect was to increase wage differentials among the under-40 staff.

## **The Incentive Effect of the Performance-based Pay System Reform**

### **From the Simple Performance-based Pay System to the Draw Formula Performance-based Pay System**

What impacted employees most strongly in the new system was not so much the abolition of skill-based pay but the change in the performance-based pay system. Figure 4 depicts the nature of the change.

Previously, the wage system included a simple performance-pay allowance that was added on to the base wage in linear fashion. But it has been changed into a system in which the performance pay is not paid at all if the amount calculated from sales does not exceed a draw line representing the total value of base wage and de facto overtime allowances.

To explain in more detail, the performance payment in the previous (pre-2000) system was a small commission rate multiplied by the gross profit on each car sold (namely, gross profit times commission rate). In short, the performance-based pay was calculated by multiplying the commission rate (set at 2 to 5 percent) by the gross profit on each car sold (calculated by subtracting the cost from the sales price). In this system, an employee would receive a performance-based payment even if she/he sold only a single car in a month.

Under the new system, an employee cannot receive a performance-based allowance if the level of sales performance fails to rise above the draw line. By contrast, it is possible for employees to increase their earnings by raising sales performance. If their level of sales performance rises above the draw line, the commission rate rises to 7 to 30 percent (compared to the set 2-to-5 percent range in the old system); in addition, a standard performance allowance is paid on each car sold.

The change in wage system incorporates two management concerns. One is to greatly strengthen incentives, which was achieved by creating the opportunity to earn much higher performance rewards once

a certain level of sales performance (i.e., sales figure) is attained. Another was to mesh a strong incentive system with long-term employment practices; this was achieved by making the draw line coterminous with the base wage for each employee. Since the base wage constitutes the stable (fixed) portion of pay, the new system clarifies the employees' responsibility to generate sales.

The first concern is so obvious as to require no discussion. However, the second entails several problems. One is that, from the company's point of view, the draw line represents the employee responsibility to generate sales. From the point of view of the employees, however, it represents the level of determination and effort to sell cars. In short, insofar as this line represents the possibilities of changing employee behavior, it encompasses the classic incentive problems identified by the previous research findings discussed above.

From this point, the following research issues arise. First, in general, to what extent does the draw system pay formula contribute to the increase in car sales? Second, how does the system change the behavior of the high and low performers of the earlier system?

### **Changes in Sales Volume**

Did the new personnel system really increase the number of new car sales? Figure 5 depicts the Kernel density of new and used car sales before and after the 2000 reform. First, regarding new cars, the average monthly pre-reform sales figure was around 55 vehicles, about midway between 0 and 100. Following the reform, however, the average value rose to 68 cars, and the distribution curve shifted clearly to the right. In

short, the graph indicates that there was an increase in the number of high performers, namely those persons able to sell a quantity of automobiles above the average.

With regard to used car sales, there was a gentle slope, indicating a low peak. The pre-reform average of 92 vehicles per month increased to 103 after the reform. Moreover, the left side of the ridge sagged lower while the peak rose substantially to nearly the 100 level. In short, the new personnel system reduced the number of people with lower morale and significantly raised the number of employees with higher morale.

Those improvements are not simply the reflection of the macroeconomic expansion of the Japanese economy after 2002. On the contrary, domestic auto sales have declined in spite of the recovery. As Figure 6 reveals, new car sales nationwide decreased by 3 percent from 2000 through 2004, while used car sales declined even more sharply, by 9 percent from 2000 through 2004. Therefore, the improved sales at Auto Japan since 2000 have resulted, not from the macroeconomic environment alone, but at least partly from the HR reform.

### **Incentive Effects of Draw Formula Performance-based Pay**

If the overall sales increases are not due to the external environment, what is the internal mechanism that has improved auto sales? To identify the mechanism, I examine differences between high and low performers in relation to the issue of increased car sales. Figure 7 separates the high and low performers since 1998 in groups according to whether their sales were above or below the average number of vehicles sold in 1998, and also tracks movement in per-salesperson yearly performance.

As can be seen, sales results for new cars for high-performing staff improved modestly, while those of low-performing staff improved much more substantially. In contrast, the results for high-performing used car sales staff showed little change, and actually fell off slightly, while results for low-performing used car sales staff increased even more than for low-performing new car sellers. Figure 7 shows that while the introduction of the draw formula performance-based pay system had no strong effect on high-performing used car sales staff, it brought improved performance from both high and low performing new car sales staff and from low performing used car sales staff.

However, this impression could be misleading. It is possible that the improved performance results derive from none other than the growing experience and accordingly improved skills of the employees. Further, Figure 7 does not take account of the high or low influences of each individual's draw line. For this reason, I have analyzed the effects of the introduction of the draw formula performance-based pay system on sales results while controlling for experience-based skill development. For empirical estimates, I use a simple production function: the number of cars sold serves as the dependent variable, and the independent variables are the dummy for the period following the personnel system reform, length of tenure, and the draw line (namely, the sum of the individual base wage and overtime allowances). The results, from panel estimates using a fixed effect model, are shown in Table 5.<sup>5</sup>

Table 5 indicates two critical points. First, new car sales results after the reform for both high and low performers rose significantly, even when increases in experience were accounted for. Second, raising the

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<sup>5</sup> Strictly speaking, there are attrition bias problems when we conduct a panel estimate using surviving samples. It is on the future agenda for more careful analysis.

level of the draw line, introduced in 2000, has a negative impact on sales. In short, if salespersons think that the draw line is too high, their sales efforts lag, meaning the effect is counter-productive.

However, a different effect is observed with regard to used car sales staff. First, contrary to the impression created by Figure 7, sales results by low performers did not rise significantly. Rather, there was a very large experience effect. Second, there is no significant estimated effect for the draw line variable for either high or low performers. This means that the draw line is unrelated to sales figures in case of used car staff.

From the above, it is possible to conclude that the draw formula performance-based pay system has not exerted a strong impact on used car salespersons, but has exerted a strong impact on new car sales staff, especially by raising the sales results of low performers. Further, while the level of the draw line has exerted no impact on sales performance for used car staff, raising the line has generated a negative effect on sales performance of new car staff.

## **Results of the Performance Rating System Reform**

### **From General Evaluations of Skill to Focused Evaluations of Performance**

In combination with the skill grade system, Auto Japan also previously used a traditional performance rating system that put strong emphasis on skill acquisition. The evaluation system included four components: performance assessments, skill level assessments, skill development assessments, and attitude

assessments. Each employee met twice a year with managers to discuss whether objectives were being realized in the four areas, and managers assigned evaluation scores in each of the areas in a 5-step scale. These evaluation scores, in numerical form, were used to determine annual base wage raises and bonuses. For example, for members of the lower management (*shunin/shuji*) class, the performance assessments and skill assessments accounted for 20 percent and 50 percent, respectively, of the total determination for raises, but 50 percent and 10 percent, respectively, in determining bonuses.

The 2000 personnel system reform implemented a major shift by focusing evaluation results in just one area, performance assessment. Further, evaluations are conducted only once a year instead of twice. These changes may mean that company has shifted its HR philosophy from personnel nurturance and development, a relatively group-centered and long-term concept, toward emphasis on the short-term performance of individuals (rather than the group).

Despite the increased emphasis on individual performance, however, evaluations are not condensed into numerical indicators alone. Table 6 is a sample evaluation form for sales staff. It is divided into two sections, quantitative evaluation, which is totally numerically coded, and qualitative evaluation, which includes considerations about the performance of business duties that cannot be easily grasped by numbers. In the matrix table created by integrating the evaluation scores from the quantitative and qualitative tables, the figures are converted into a 6-level evaluation ladder, from S to E.

It is important to note that the 6-level performance evaluation and the 6-level job stages (shown in Figure 2) are connected, as shown in Table 7. Generally, a person at the S stage is expected to earn an S evaluation

score, and a score below that will result in a pay reduction. On the other hand, if a person at the D stage earns a C evaluation score, she/he would be exceeding expectations and would therefore earn a raise. In simple terms, the system treats employees at higher stages more strictly, and those at lower stages more leniently. More precisely, this strengthens the incentive for people at low pay levels (who are mostly young employees) to work for pay raises, while employees who have attained high levels of pay and high levels of responsibility are evaluated much more rigorously.

Without further investigation, however, it is not clear whether the evaluations *actually* impact manager behavior and pay determination. For example, people at high stages may be concerned about the possibility of pay cuts, and managers may make adjustments to qualitative evaluations of their subordinates. Hence, the next important step is to understand the effect of performance evaluations.

### **Distribution of the Performance Rating Results**

What resulted from the direct linking of the performance evaluation results and the job stage decision? To explore this issue, Table 8 shows the distribution of performance evaluation results broken down by job stage. It can be seen that for both new and used car sales staff, it is easier to receive fairly relatively high evaluation results at the lower C, D, E stages. In contrast, results tend to cluster at the corresponding level for the B stage employees, and fairly low results are relatively common for employees in the highest (A and S) stages. This indicates that base wage raises are fairly common at the lower stages, and that the reform has largely realized the objective of using the new evaluation system to make pay reductions

possible, at least at the high level stages.

Next, let us verify what pay outcomes (raises and reductions) have actually occurred at the different job stages as a result of the performance evaluation results. Table 9 shows movements of employees among stages for both new and used car sales staff from 2000 to 2004. There are almost no pay reductions at the low C, D, and E stages. There are some reductions at the higher B, A, and S stages, but most results maintain the status quo.

From these patterns, we can observe a “leniency tendency” for low-stage employees, who tend to receive fairly high evaluation results, while performance evaluation results for high-stage employees, except for the S stage, exhibit a “central tendency.” Producing a leniency tendency was the intended result of linking the performance evaluations to the job stages. In contrast, the HR department did not necessarily want to produce a central tendency for higher stages. The latter situation suggests that evaluators (superiors) are able to use considerable discretion when making evaluations that impact on pay.

## **Conclusions**

This paper has used Auto Japan as a case study for examining the reasons for changing from a skill grade system-based personnel system to a performance-based personnel system, the content of the new system, and its economic outcomes. The results can be summarized as follows.

Auto Japan enjoyed steadily rising sales and operating profits from the mid-1990s, but rising sales of

new and used cars were threatened by increasingly difficult domestic market conditions. Further, because of long-term employment practices and high ratios of basic pay in wages, the company needed to deal with a rising ratio of personnel costs relative to sales and operating expenses. As a result, Auto Japan implemented a fundamental change of its personnel system in 2000 on the basis of a management strategy calling for (a) promoting flexibility in personnel costs, and (b) shifting from a tenure-oriented to a performance-oriented personnel system and clarifying individual responsibility for improving performance.

There were three principal components to the personnel system reform and three major concomitant outcomes. First, the skill grade system was abolished and the job-based system introduced; the latter featured job stages organized in bands, making possible a shift to a new wage system in which base wages could be reduced. As a result, the reform produced substantial wage dispersion, especially among employees under 40.

Second, the performance-based pay was changed from combining a base wage with a simple performance pay system to using a draw line (representing aggregate basic pay and de facto overtime allowances) to facilitate refinements in the use of performance pay. The introduction of the draw formula performance-based pay system raised the productivity of the new car sales staff, but failed to raise the productivity of the used car sales staff.

Third, the performance evaluation system was changed from using composite skill-and-performance evaluations to emphasizing individual performance. In addition, job stages were determined by

performance evaluation results. There were many relatively high evaluation results for employees ranked in low stages, and there were many somewhat low evaluations for employees ranked in high stages.

Given the above results, it is possible to conclude that the introduction of the new wage/ personnel system generally succeeded in raising the individual performance of the sales staff. However, more careful analysis indicates that the draw formula performance-based pay system did not seem to raise the productivity of the used car sales staff, and that raising the draw line had a negative effect on new car sales. These findings suggests that while Auto Japan's performance-oriented HR system reform, which was typical of reforms instituted among major Japanese firms in the late 1990s, changed the wage structure and grading pattern of employees, it brought only slight improvement in individual productivity.

Two major issues remain to be future agenda. First, there is the issue of how the employees react to whether they receive the performance payment (whether it exceeds the draw line), an outcome that lies outside the scope of this paper. While the average yearly car sales increased, the individual employees are more aware of whether they have earned a performance payment from month to month. Breaking down sales on a monthly basis reveals that, for example, in some months as few as 30 percent of individual new car salespersons earned performance payments, and the figure falls to 20 percent for used car salespersons. A high ratio of non-receiving staff could produce adverse effects on morale. Further, awareness of the draw line could also have adverse effects on behavior, leading employees to postpone the effort of making sales until the following period (push out) or trying harder to bring sales forward to the present period (pull in). Thus, the final verdict on Auto Japan's personnel system reform must await analysis of monthly patterns of

sales volumes and performance-based pay.

Second, regardless of whether the personnel system reforms raised efficiency in terms of car sales, the issues of inter-organizational equity and employee satisfaction levels remain. Previous research has examined only the efficiency effects of wage contracts and neglected the issue of equity. This study has also left these issues inadequately examined. It might be possible to investigate the equity issue using panel data. For example, it might be possible to use inequality indicators to measure the distribution of performance, evaluation, and wage outcomes, then observe their time-series movements. In addition, it is necessary to investigate the connection between the personnel system reform and the employees' satisfaction level by conducting a matching analysis of survey data and personnel data. Investigation of these issues is our next agenda, and is essential to making a conclusive evaluation of Auto Japan's personnel system reform.

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**Table 1. Financial Structure of Auto Japan and other Japanese Automobile Dealerships**

(unit: million yen)

	1995		2000		2004	
	National Average	Auto Japan	National Average	Auto Japan	National Average	Auto Japan
Sales	8,252	129,724	8,422	137,453	9,679	139,839
Gross Profits	1,279	20,437	1,368	20,716	1,508	19,420
Incentive Payments from the Manufacturer	453	9,410	442	9,570	527	9,899
Total Sales Expenses	1,603	28,096	1,679	27,800	1,890	26,898
General and Administrative Expenses	1,298	21,456	1,325	20,165	1,478	18,786
Personnel Expenses	868	14,949	867	13,740	941	12,180
	(54.1%)	(53.2%)	(51.6%)	(49.4%)	(49.8%)	(45.3%)
Sales Expenses	306	6,640	354	7,635	411	8,112
Operating Profits	122	1,477	129	2,256	145	2,399
Ordinary Profits	73	1,173	109	1,986	133	2,320

(Notes) The number of dealerships surveyed by the Japan Automobile Dealers Associations was 1852 dealers in 1995, 1628 dealers in 2000, and 1395 dealers in 2004. The numbers in parentheses indicate the proportion of personnel expenses to total sales, general, and administrative expenses.

(Sources) The Japan Automobile Dealers Association and Auto Japan.

**Table 2. Changes in Expense Items Associated with Personnel Expenses of Auto Japan** (unit: million yen ,%)

	1995		2000		2004	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Total Sales, General, and Administrative Expenses	30,170	100.0	32,378	100.0	32,137	100.0
Personnel Expenses	17,001	56.4	18,317	56.6	17,418	54.2
Wages	10,671	35.4	10,486	32.4	10,473	32.6
Bonuses	3,471	11.5	4,285	13.2	3,634	11.3
Sales Expenses	6,640	22.0	7,635	23.6	8,112	25.2
Sales Commissions	817	2.7	1,291	4.0	1,003	3.1
Contest Charges	498	1.7	298	0.9	233	0.7

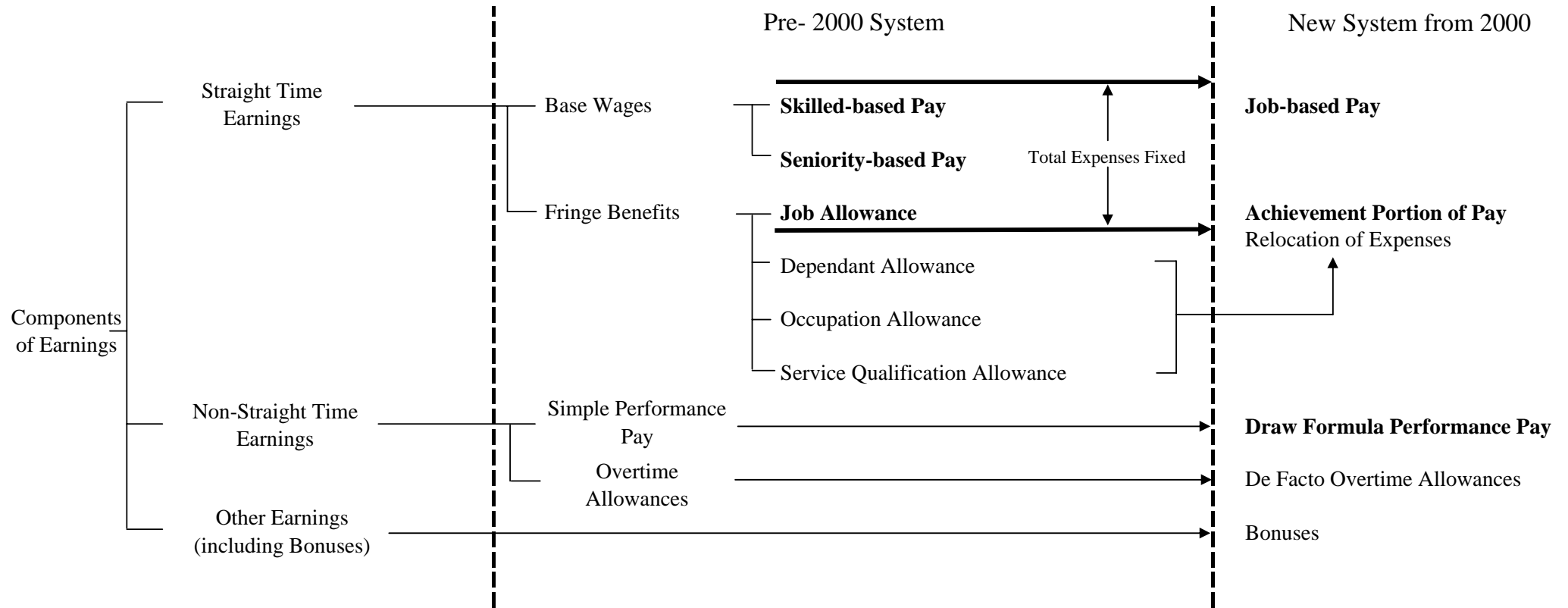
(Notes) Sales, general, and administrative expenses includes wages, bonuses and retirement allowance of the service department employees. Percentage means ratio of each item to sales, general, and administrative expenses.

**Table 3. The Framework of the Skill Grade System**

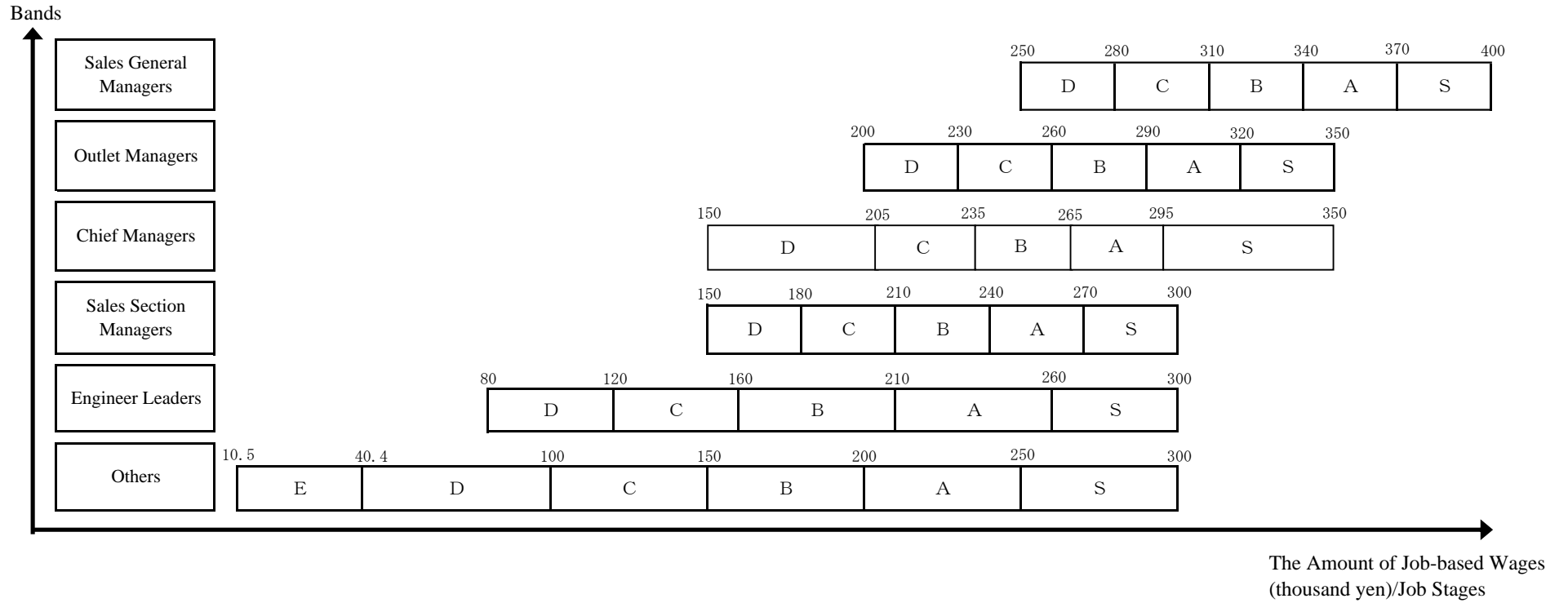
Position Level	Grade	Title	Responsibilities and Skill Level	Length of Service		
				Shortest	Standard	Longest
Mid-Level Managers	7	General Manager	Leadership or highly professional tasks	-	-	-
	6	Deputy General Manager	Higher managerial or professional tasks	3 years	3 years	-
	5		Supplementary performance for the high-level tasks <sup>a</sup>	3 years	3 years	-
	4	Section Manager	Managerial or professional tasks	3 years	4 years	-
	3		Supplementary performance for the high-level tasks <sup>a</sup>	3 years	3 years	-
	2	Deputy Manager	Planning, coaching and supervisory tasks	3 years	4 years	-
	1		Supplementary performance for the high-level tasks <sup>a</sup>	2 years	3 years	-
Non-Managerial Employees	7	Assistant Manager	Assistance of planning, judgment, and coaching tasks	-	-	-
	6		Supplementary performance for the high-level tasks <sup>a</sup>	-	8 years	-
	5	Chief	Judgment and simple coaching tasks	2 years	3 years	-
	4		Supplementary performance for the high-level tasks <sup>a</sup>	2 years	3 years	-
	3	-	Routine judgment and high-skilled tasks	2 years	3 years	-
	2		Uncomplicated judgment and semi-skilled tasks	2 years	3 years	5 years
	1		Supplementary/uncomplicated and routine tasks	4 years	4 years	5 years

(Note) <sup>a</sup> More concrete and accurate description would be "assists in planning, coaching, and other tasks requiring discretionary judgement."

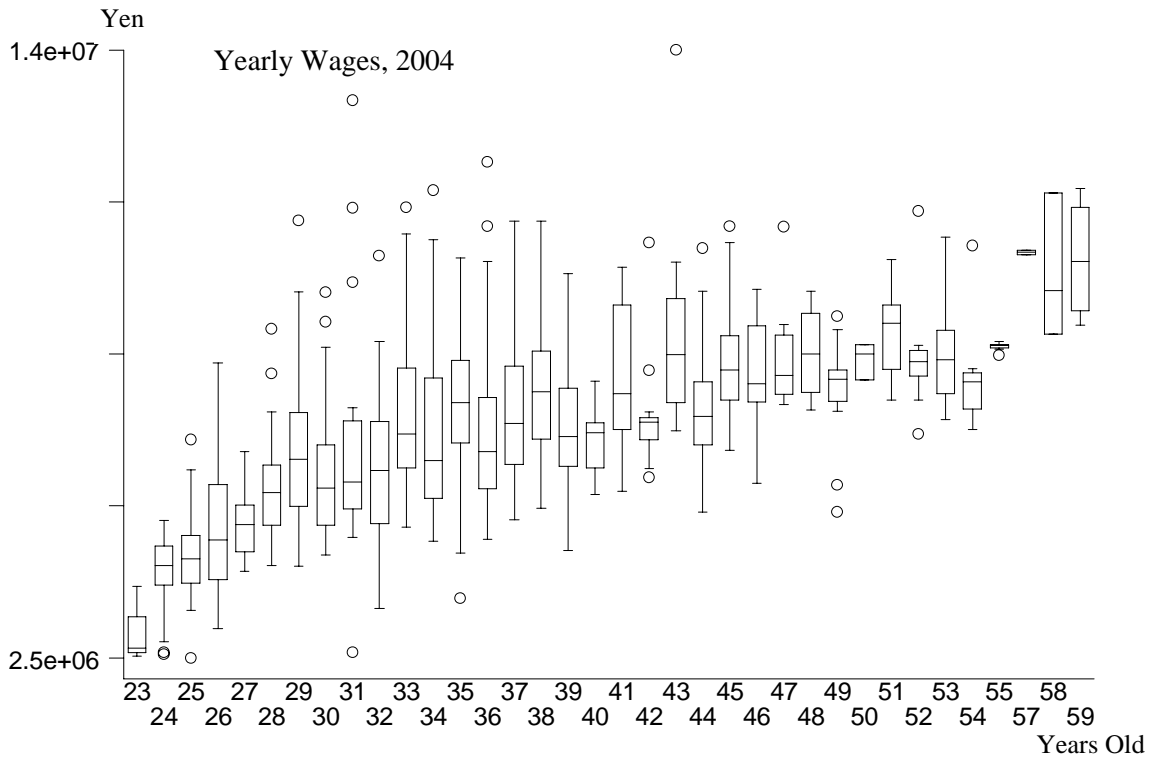
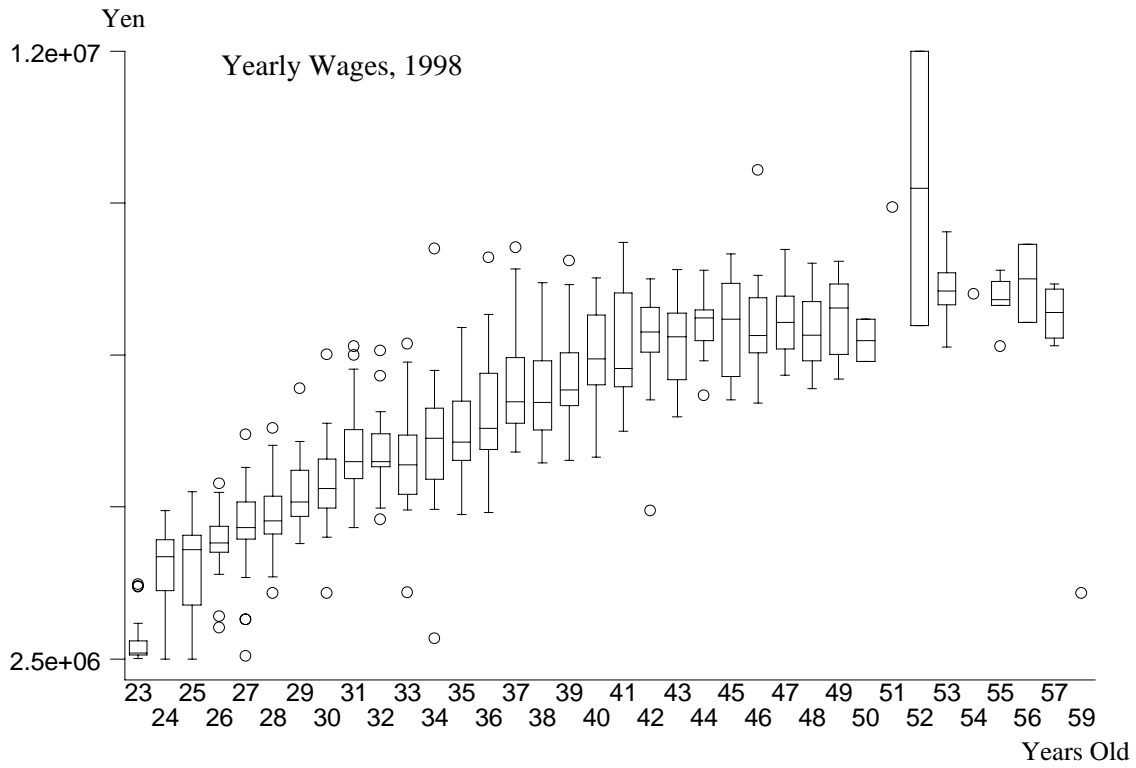
**Figure 1. The Transformation of the Wage System**



**Figure 2. New Wage System Based on Bands and Stages**



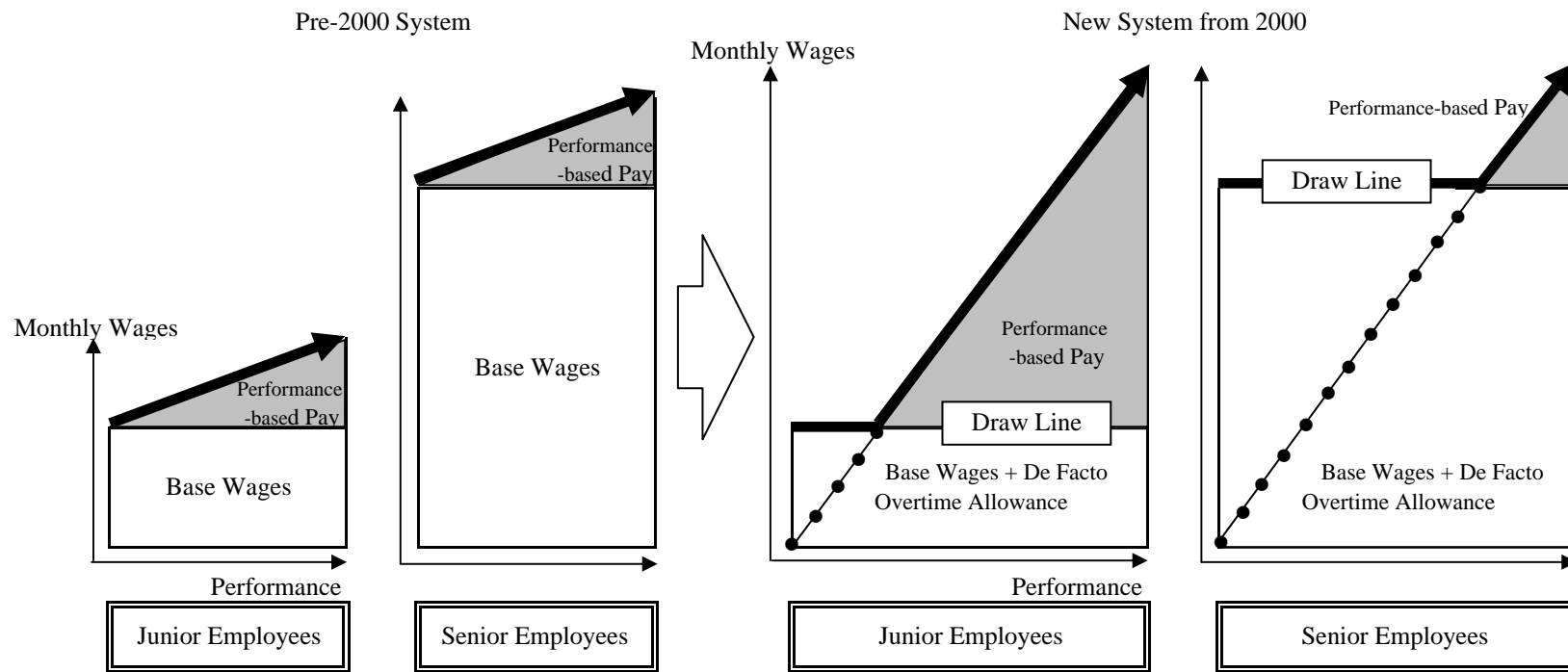
**Figure 3. Whisker Box Graphs of Sales Staff's Yearly Wages for 1998 and 2004  
(New and Used Car Sales Staff)**



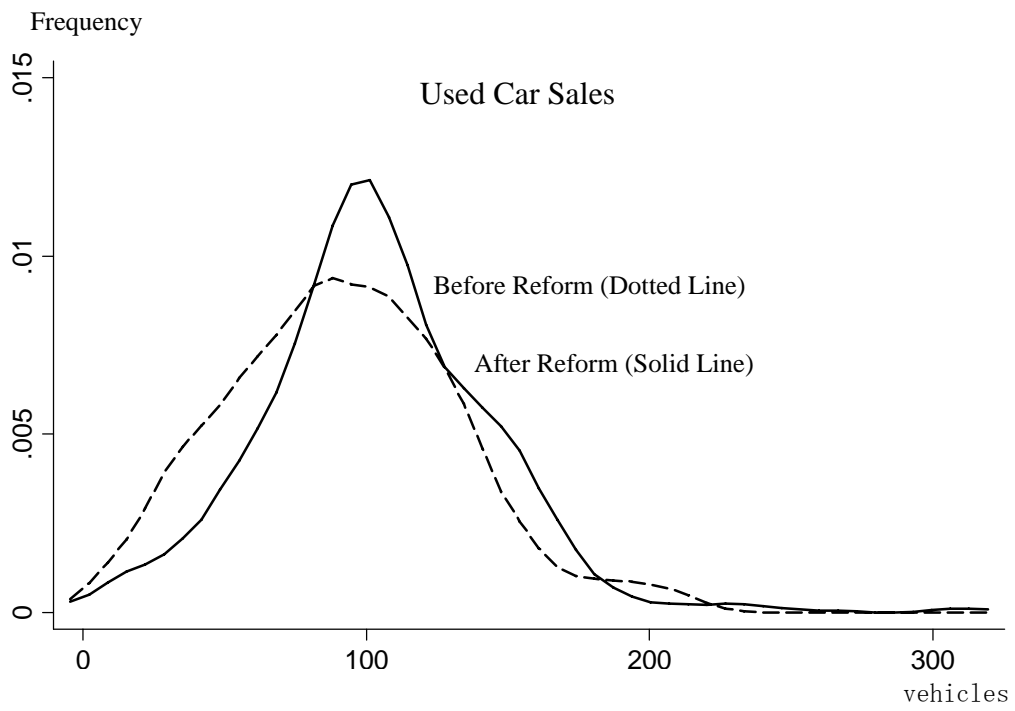
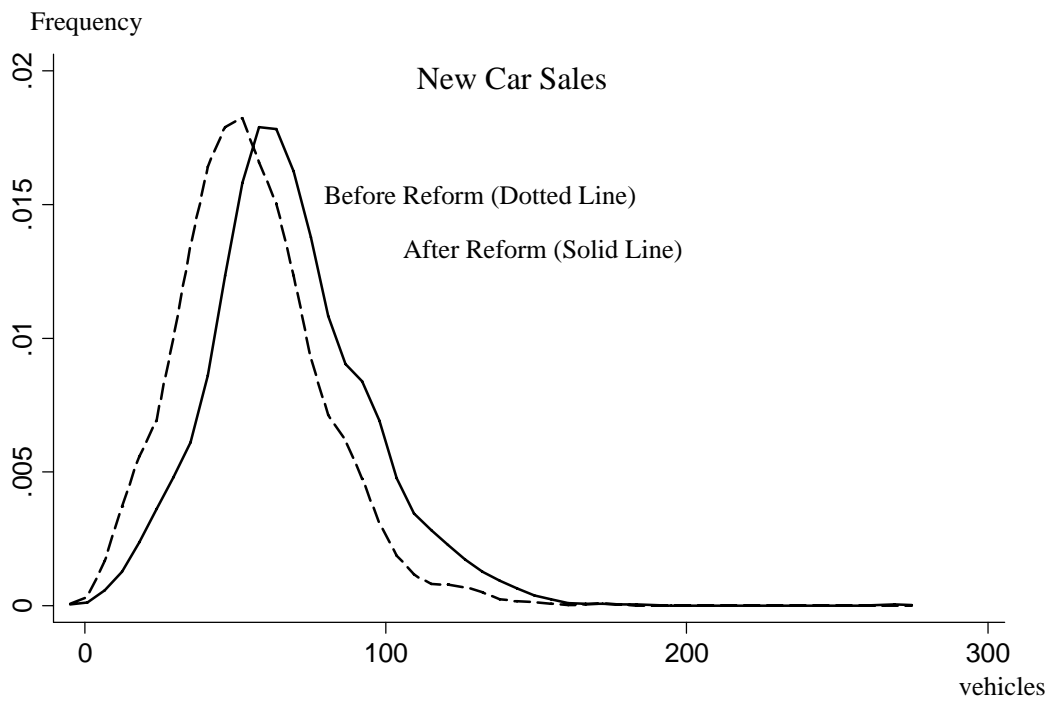
**Table 4. Coefficient of Variation of Yearly Wages  
by Age Categories, 1998-2004**

Year	New Car Sales Staff			Used Car Sales Staff		
	-29	30-39	40-	-29	30-39	40-
1998	0.20	0.16	0.09	0.21	0.16	0.12
1999	0.18	0.17	0.09	0.22	0.17	0.11
2000	0.19	0.19	0.11	0.15	0.15	0.11
2001	0.30	0.27	0.14	0.26	0.23	0.14
2002	0.28	0.23	0.17	0.22	0.24	0.13
2003	0.28	0.22	0.15	0.18	0.22	0.12
2004	0.26	0.22	0.15	0.15	0.20	0.14

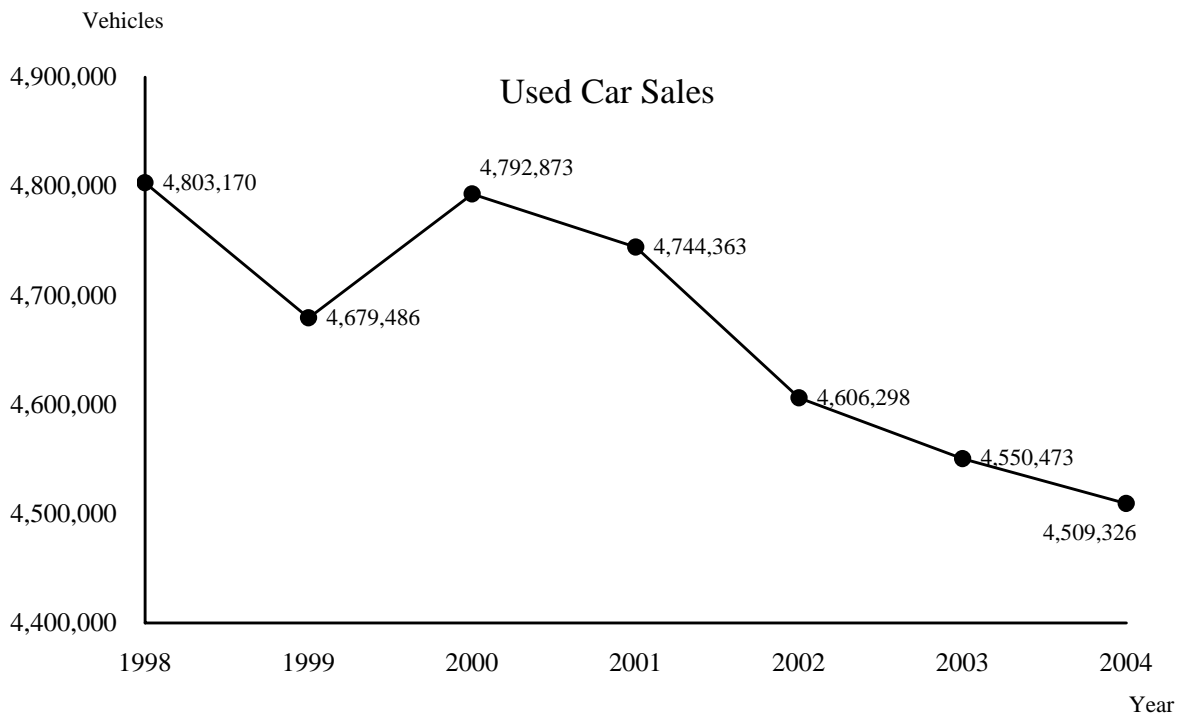
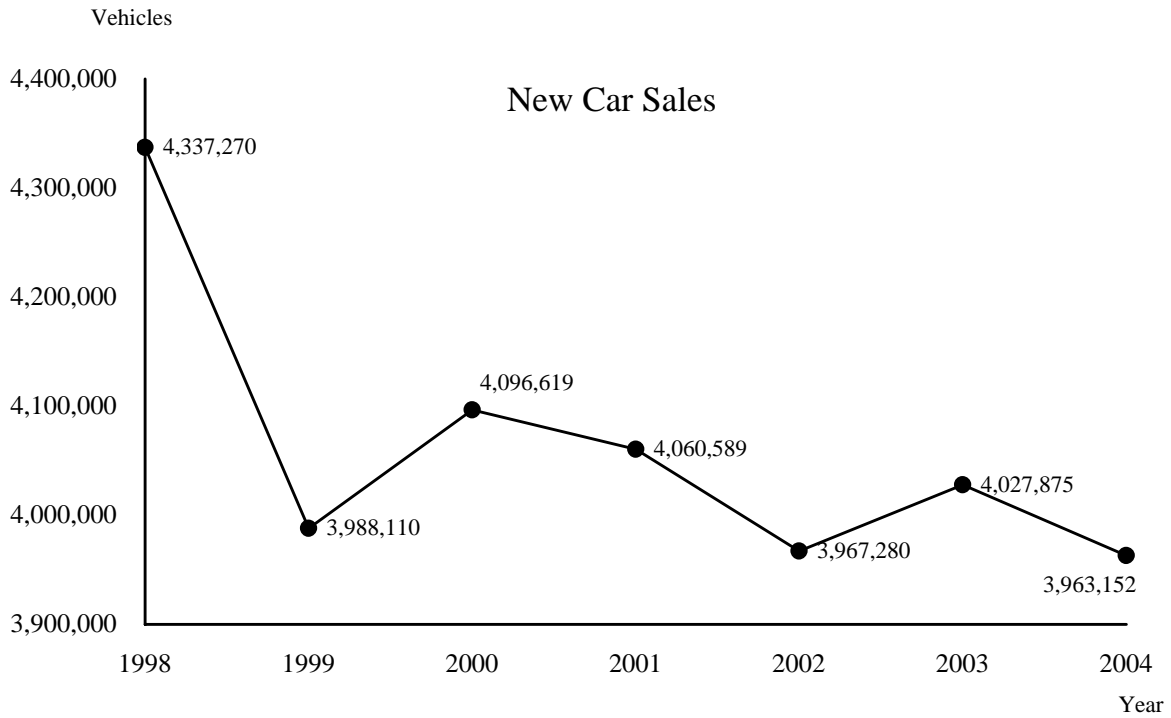
**Figure 4. Changes in the Performance-based Pay Scheme**



**Figure 5. The Kernel Density of Sales Volume Before and After the 2000 Reform**

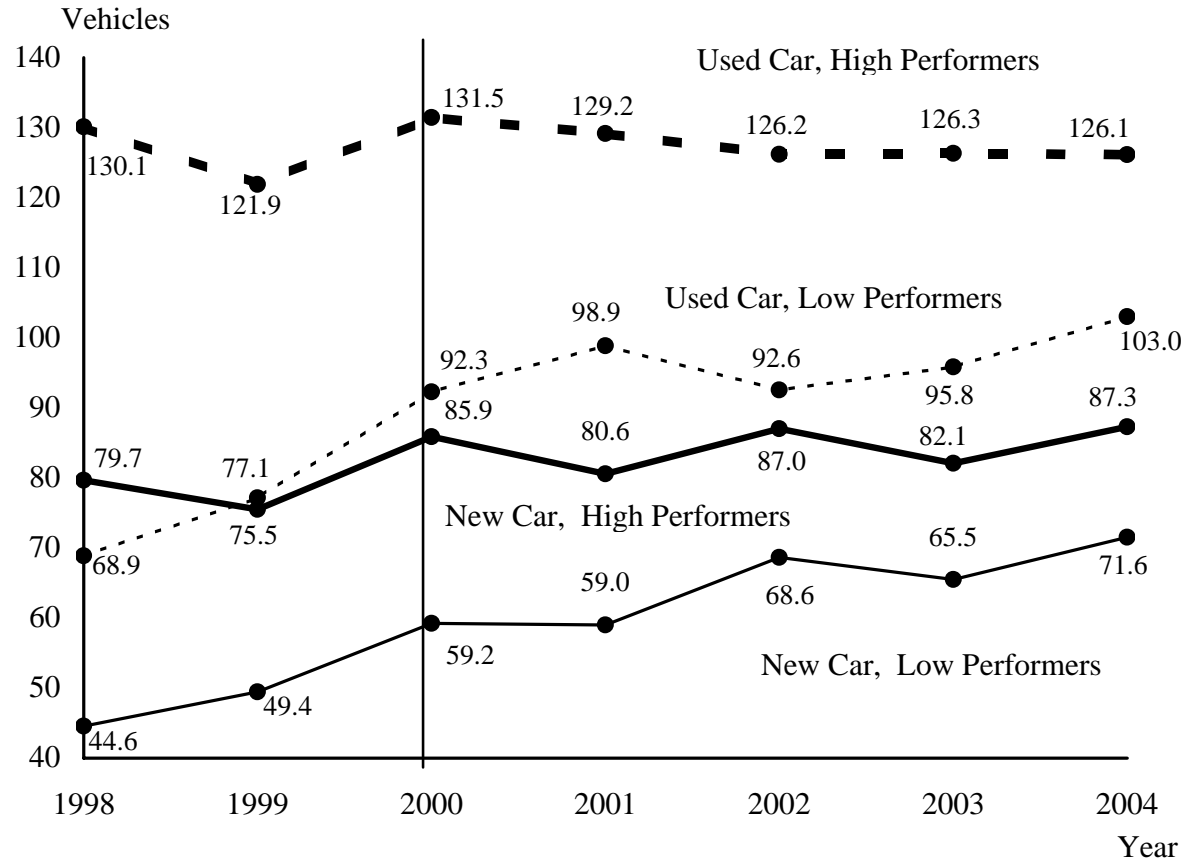


**Figure 6 . Trends of National Sales Volume**



(Sources) The Japan Automobile Dealers Association.

**Figure 7. Trends of Annual Auto Sales by High and Low Performing Staff**



(Notes) High or low performers are separated by the standard of their annual auto sales in 1998. If an employee's sales is above average, he/she is defined as a "high" performer. This sample excludes employees who had been employed less than 3 years in 1998, in order to control for the effect of initial rapid skill accumulation.

**Table 5. Determinants of Annual Auto Sales per Person (Panel Estimates Using a Fixed Effect Model)**

	New Car Sales Staff				Used Car Sales Staff			
	High Performers		Low Performers		High Performers		Low Performers	
After Reform Dummy	0.037** (0.016)	- -	0.078*** (0.020)	- -	0.016 (0.032)	- -	-0.014*** (0.057)	- -
Log of Length of Service	0.168*** (0.045)	0.332*** (0.086)	0.421*** (0.044)	0.506*** (0.073)	-0.164 (0.121)	-0.087 (0.156)	0.595*** (0.147)	0.525*** (0.184)
Log of Draw Line	- -	-0.019* (0.011)	- -	-0.027** (0.012)	- -	-0.001 (0.016)	- -	-0.020 (0.026)
Constant	3.892*** (0.115)	3.761*** (0.171)	2.942*** (0.097)	3.247*** (0.138)	5.272*** (0.331)	5.086*** (0.334)	2.855*** (0.357)	3.404*** (0.368)
R <sup>2</sup>	0.0086	0.0406	0.0754	0.0011	0.0013	0.0020	0.0003	0.0572
F-Value	33.54	8.39	182.01	31.95	1.26	0.36	16.12	5.36
Number of Observations	1260	831	1226	769	435	288	310	174

(Notes) The definition of high or low performers follows Figure 7. \*\*\* and \*\* indicate significance at the 1 and 5 percent levels. The numbers in parentheses indicate standard deviation.

**Table 6. Example of a Typical Performance Evaluation Sheet for Sales Staff**

Evaluation Items		Indicators	Weights	Evaluation Scores	Total Scores	Rank	Adjustments (twice)	Adjusted Score	Adjusted Rank
Quantitative Evaluation	Per person car sales volume	absolute value	70	30	90	B		90	C
	Per person gross profit	absolute value	70	20					
	Per person insurance premiums	absolute value	20	15					
	Management by objective (quantitative)	absolute value	40	25					
Qualitative Evaluation	Days from register to collection	degree of improvement	50	25	110	B	- 15	95	C
	Customer follow-ups	degree of improvement	50	25					
	Rate of free checking for customers	absolute value × coefficient	20	15					
	Management by objective (qualitative)	absolute value	30	15					
	Effort level in the business process	absolute value	50	30					

(Notes) This table illustrates a case where the evaluator deducts often 15 points from the total score because the employee is frequently late in the morning.

**Table 7. The Relationship between Job Stages and Performance Evaluation Results**

Job Stages	Performance Evaluation Results (Rank)					
	S	A	B	C	D	E
S	*	-	--	--	--	--
A	+	*	-	--	--	--
B	++	+	*	-	--	--
C	++	++	+	*	-	--
D	++	++	++	+	*	--
E	++	++	++	+	*	--

(Notes) - - : substantial wage reductions, because evaluation results are far below the standard of the job stage.

- : moderate wage reductions, because evaluation results are below the standard of the job stage.

\* : no reductions/increases, because evaluation results match the standard of the job stage.

+ : moderate wage increases, because evaluation results are above the standard of the job stage.

++ : substantial wage increases, because evaluation results are far above the standard of the job stage.

**Table 8. The Distribution of Performance Evaluation Results, by Job Stage and Occupation, 2000-2003**

Stages	Performance Results of New Car Sales Staff							Performance Results of Used Car Sales Staff						
	Number of Employees	S	A	B	C	D	E	Number of Employees	S	A	B	C	D	E
S	3	0.00	100.00	0.00	0.00	0.00	0.00	3	0.00	66.67	33.33	0.00	0.00	0.00
A	85	8.24	36.47	42.35	12.94	0.00	0.00	17	0.00	17.65	70.59	11.76	0.00	0.00
B	470	2.55	30.43	49.36	16.60	1.06	0.00	158	0.00	14.56	60.76	23.42	1.27	0.00
C	650	0.00	17.08	58.46	22.77	1.69	0.00	199	0.00	8.54	61.31	28.14	2.01	0.00
D	935	0.11	1.71	30.80	56.68	10.70	0.00	219	0.00	0.00	30.14	55.71	14.16	0.00
E	3	0.00	0.00	33.33	0.00	66.67	0.00	0	-	-	-	-	-	-

**Table 9. Movement of Employees among Stages**

(unit: number of employees)

New Car Sales Staff		Stages in 2004						Total
		S	A	B	C	D	E	
Stages in 2000	S	2	0	0	0	0	0	2
	A	1	65	5	0	0	0	71
	B	1	29	370	5	0	0	405
	C	0	7	178	436	0	1	622
	D	0	1	14	219	666	0	900
	E	0	0	0	0	1	2	3
Total		4	102	567	660	667	3	2003

Used Car Sales Staff		Stages in 2004						Total
		S	A	B	C	D	E	
Stages in 2000	S	2	1	0	0	0	0	3
	A	1	11	2	0	0	0	14
	B	0	7	128	1	0	0	136
	C	0	2	59	137	0	0	198
	D	0	0	2	58	159	0	219
	E	0	0	0	0	0	1	1
Total		3	21	191	196	159	1	571