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Corporate Sports Activity and Work Morale: Evidence from a Japanese Automobile Maker

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Corporate Sports Activity and Work Morale: Evidence from a Japanese Automobile Maker*

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Abstract

This paper estimates the factors affecting the relationship between the wins and losses of corporate sports club teams and the work morale of employees, using an original survey of employees from a selected Japanese automobile maker. We find that corporate sports club teams' performance is an important factor influencing the work morale of older employees and employees who work with colleagues belonging to those teams in the same division. We cannot say statistically that the impacts of teams' wins and losses on changes in work morale at the individual level are symmetric, that is, the work morale of employees is significantly raised by own teams' wins but not necessarily reduced by own teams' losses.

Keywords: work morale, corporate sports, subjective well-being analysis, Japan

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1. Introduction

This paper aims to identify factors that determine the links between work morale and the performance of corporate sports club teams, using an original survey of employees of a selected Japanese automobile maker.

There is a different system of fostering world-class athletes in Japan. Companies have hired competitive athletes as employees while providing them with training environments. The majority of Japanese Olympic athletes are employees belonging to sports club teams owned by companies. Saeki (2004) reported that 48% of athletes participating in the 2000 Sydney Olympics were from corporate sports club teams. In general, they work with their colleagues for half a day and then spend the remaining half for training. It should be noted that they are not professional in the sense that their payments are not determined by evaluation of their sports performance but mainly of their labor performance, like ordinary workers. A number of major companies including Toyota, Tokyo Gas, Mitsubishi Motors, Hitachi, Matsushita and so on own various sports clubs from baseball to *Ekiden* marathon relay races (track & field) and *Keirin* bicycle racing in Japan, as is also the case with schools and colleges supporting a variety of sports club activities such as American football, basketball, baseball and so on in the US.

Why do these companies own sports club teams? One of the reasons is that the good performance of their teams is expected to encourage employees to work hard and to feel united. Corporate sports club

teams are considered as a symbol of unification. According to the survey conducted by the Ministry of Education, Culture, Sports, Science and Technology (2001), 64.3% (out of 115 firms) responded that one of the purposes to support corporate sports club teams was to unite employees and to boost their work morale. [1]

Although many Japanese companies have owned and supported sports club teams, the impact of these teams on employees' productivity or work morale has not been analyzed before. Is the work morale of ordinary workers really influenced by the wins and losses of their corporate sports club teams? If so, what types of employees are influenced? Although this paper has some drawbacks such as the use of subjective data and the limiting of the data from one firm, it is worthwhile explicitly and quantitatively to explore the link between the performance of corporate sports club teams and changes in work morale, and to estimate factors that affect this link. The results may be helpful of providing companies with guidelines on how to utilize corporate sports club teams for business strategies.

The company's personnel department and the authors collected original data from a leading Japanese automobile maker during March 8-16, 2005 by directly asking a sample of employees about how their work morale changes when selected corporate sports club teams win or lose. This analysis picks up the following three teams owned by this company: Rugby football, baseball and *Ekiden*

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[1] Sasaki (2005) summarizes the trend of corporate sports in Japan.

marathon relay race (track & field).[2] The data contain various items of information on demographic and productivity characteristics.

There is recent literature on subjective well-being (SWB) analysis that determines the extent of happiness (Di Tella, MacCulloch and Oswald 2001; Frey and Stutzer 2002; Alesina, Di Tella and MacCulloch 2004; Ohtake 2004), job satisfaction (Clark 1997; Hamermesh 1977, 2001) and life satisfaction (Wolfers 2003; Frijters, Haisken-DeNew and Shields 2004), using subjective data.[3] We need to be aware that there have to be economic relationships between subjective independent variables and objective explanatory variables in the estimations, as suggested by Hamermesh (2004).

Empirical results are summarized below. We cannot say statistically that the effect of age on work morale of an employee is symmetric between wins and losses in that the work morale of older employees is raised by wins of their own Rugby football, baseball and *Ekiden* marathon relay race (track & field) teams, but is, although insignificantly, reduced by losses of these teams. These results suggest that competitive sports teams play an important role in raising the work morale of older employees.

To get to know colleagues belonging to one's own corporate sports club teams is a crucial factor affecting work morale. An employee who works with at least one colleague in the same division

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[2] Ekiden marathon relay race is one of the most popular sports events. Races including individual marathon races are often held and televised. There are many corporate track & field club teams specializing in marathon and long-distance races in Japan.

[3] Kahneman and Krueger (2006) discussed how to treat and interpret subjective measures of well-being. They concluded that these measures represent respondents' perceptions of their behavior, but not the utility level obtained from their behavior.

belonging to the Rugby football team, the baseball team or the *Ekiden* marathon relay racing team has significantly increased work morale after wins of the respective team. However, the losses of a colleague's team (except in baseball) insignificantly reduce employees' work morale. Thus, we cannot say statistically that the effect of having athletic colleagues is symmetric on the work morale of individual employees (except in baseball).

The next two sections of this paper introduce corporate sports activities in Japan and a simple model with optimal choice of sports activity. Section 4 discusses our original survey of employees from a Japanese automobile maker. Section 5 presents estimated results. The final section provides concluding remarks.

2. Corporate Sports Activities in Japan

We define corporate sports activity as a sports program carried out for corporate athletes with financial and physical support from companies. Corporate athletes are usually given the status of full-time employees and attend games or tournaments as representatives of their companies. To be easily understandable, corporate sports activity can be compared with college sports activity in the US. In the US, college athletes are essentially not professionals, but students, combining study with sports activity. In Japan, similarly, corporate athletes are not professionals, but employees, combining work with sports activity. For example, Matsushita Electric Industrial Co. Ltd., one of the leading electronics

manufacturers, owns several sports club teams: baseball, basketball, and volleyball. Mitsui Sumitomo Insurance Co. Ltd. (MSIG), a major general insurance company, owns a women's track & field (Marathon and *Ekiden* marathon relay race) team and a women's judo team. Supporting sports club teams and athletic employees is considered as one of corporate activities in Japan.[4]

Corporate sports activity, like school sports activity, has made a great contribution to fostering world-class competitive athletes in Japan. For example, 32 of 39 track and field athletes who participated in the 2004 Athens Olympics were selected from corporate sports club teams, and five out of six were selected from corporate sports club teams in ski jumping for the 2006 Torino Olympic Winter Games, according to data from the Japan Olympic Committee.[5] It is clear that Japanese athletes would not have been competitive enough to advance to the Olympic Games without corporate support. Corporate athletes have also served as reserve sources of professional players (in baseball in particular). In fact, 25 out of 90 drafted players of professional baseball clubs were from corporate sports club teams in the 2006 selection, according to Nippon Professional Baseball (NPB).[6] Corporate sports activity provides many athletes with the opportunities and environments to continue sports activity after school.

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[4] Corporate sports club teams are active in Korea and Taiwan, too.

[5] Of course, the proportion of corporate athletes depends on the type of sport. Thirteen out of 20 swimmers who were selected in the Athens Olympic Games were college or high school athletes. Professional players were allowed to participate in baseball and men's soccer in the Olympic Games.

[6] College graduates, high school graduates and corporate players are eligible to be drafted to the NPB. Thirty-two out of 90 players were college graduates, and the rest were high school graduates in the 2006 selection.

The institutional structures for training athletes in Japan and the US are different: in the US, athletes after graduating from high school or college have no way of continuing sports activity except as professionals, finding sponsors to provide financial support. In Japan, there has not been a business culture under which companies support professional athletes like the financial sponsorships (except in major sports such as soccer football, baseball and golf). Athletes who graduate from high school or college get a job in a company and join a corporate sports club team if they want to continue sports activity.

Athletic employees are usually hired as full-time employees. Despite having the status of a full-time employee, athletic employees are allowed to work only for half a day and then to train themselves for the remaining half.[7] After retiring from sports club teams, they usually stay in the same companies and pursue their careers in business, like other employees. Retired athletes are not so productive in the beginning, but are appreciated as potentially productive workers because they have spirit and endurance gained through hard training.

Dated back to the 1950s, the original purpose of supporting corporate sports activities was to provide ordinary employees with opportunities to do sports for a change, which promoted workers' health. It thus made a contribution to raising labor productivity by accumulating human capital (health)

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[7] Rugby football, with its amateur spirit, is exceptional. Rugby football players in general work with other colleagues until closing time and then begin training, regardless of which team they belong to.

stocks and increasing work effort. In those days, when professional and college baseball and *Sumo* wrestling were only mass entertainment sports, corporate sports leagues such as volleyball or football (soccer) were popular not only among employees but among local people of the area where the corporate sports club teams were homed. Companies then took advantage of sports clubs as advertising media, and they began to recruit competitive athletes from high schools and colleges to strengthen their teams. Because of dramatic economic growth in the 1960s-70s, companies afforded to build more sports club teams and to hire more competitive athletes. The 1964 Tokyo Olympics promoted companies to strengthen their athletes because the companies' name recognitions were increased if their athletes participated actively in the Olympics game.

In recent years, corporate sports activity has not been as strong as it used to be. A number of corporate sports club teams were disbanded during the severe economic slowdown in the 1990s after the burst of the Bubble Economy. The Japanese Association of Amateur Baseball reported that the number of corporate baseball club teams decreased from 142 in 1995 to 83 in 2005. There are other reasons why corporate sports club teams were disbanded. Now that they can enjoy so many sports entertainments such as MBL, NBA, Premier League on satellite broadcasting programs as well as Japanese professional baseball and J. League (professional soccer football league in Japan), the Japanese viewers are not so interested in the games of the corporate sports leagues as they used to be. This implies that corporate sports club teams are not valued as advertising media.

The Ministry of Economy, Trade and Industry (METI) reported the detrimental effects of the elimination of corporate sports club teams in 2001. It warned that elimination of corporate sports club teams leads to the worsening of sports competitiveness, a decline in junior club teams, and a decrease in sports events, particularly in local areas.

Recently, the role of corporate sports activity has changed to fulfilling Corporate Social Responsibility (CSR) to employees and neighborhoods. The companies abandon full support of sports club teams, but instead share support of them with local governments and other companies at home. Athletic employees are then changed to contracted employees from full-time employees, so they do not need to work at all, but have to leave the company after they have retired as athletes. They are treated as professional players. Corporate sports club teams start afresh as local-community-oriented club teams in the sense that sports teams are not the private goods for employees, but the public goods for the community on the one hand, and as professional club teams in the sense that players basically earn their living by showing their skills on the other hand. The *Sakai Blazers*, a men's volleyball team, is an appropriate example. It used to be one of the most competitive teams owned by Nippon Steel located at Sakai, the southern part of Osaka. After the 2000 season, it became the community-based and professional volleyball team sponsored by a subsidiary corporation of Nippon Steel, other companies and the local community.

Are corporate sports club teams really the burden for companies? It may be true that corporate

sports club teams no longer serve as advertising media, but those teams are still expected to play a crucial role in motivating employees to work as a symbol of unification. Good performance of sports teams cheer employees up, which gives them more energy to work. We investigate the link between the work morale and performance of corporate sports club teams in the following sections.

3. Model

This section develops a simple model with the optimal choice of investment into corporate sports activities. We assume that for convenience, a firm owns one corporate sports club team and chooses the optimal number of employees and the optimal amount of sport inputs. The firm faces the following profit maximization problem:

$$\Pi = F(e(p(s),X)L) - wL - c(s)$$

where $e(p(s), X)$ represents efficiency unit of labor, L employees, w the exogenous wage, and X a vector of the characteristics of employees. $p(s)$ is the probability of own team's winning and is positively associated with the amount of sport inputs, s. If $e(\cdot,\cdot)$ depends positively on p, employees are motivated to work harder as own team wins games. $F(\cdot)$ is the production function with usual properties: $F'(\cdot)>0$ and $F''(\cdot)<0$, and $c(s)$ is the cost function featured by $c'(\cdot)>0$ and $c''(\cdot)>0$.

Taking a differential with respect to L and s yields:

$$F'(e(p(s),X)L)e(p(s),X) = w, \qquad (1)$$

and $F'(e(p(s),X)L)\left(\frac{\partial e(p(s),X)}{\partial p(s)}\right)\left(\frac{\partial p(s)}{\partial s}\right)L = c'(s)$. (2)

Equation (1) shows a familiar property determining the number of employees such that the marginal product of labor equals the wage. On the other hand, equation (2) indicates that the optimal sport inputs are determined where the marginal product of sport input (MR_s) equals its marginal cost. If own team's wins do not raise the efficiency unit of labor, that is, $\partial e/\partial p=0$, the firm has no incentive to invest into its own team, so $s^*=0$. If $\partial e/\partial p >0$, on the other hand, it is worthwhile for the firm to spend the money for own team.

We now see how the characteristics of employees, X affects the determinant of sport inputs, assuming a positive effect of winning on the efficiency unit of labor ($\partial e/\partial p >0$). Taking a differential of the left-hand side of equation (2), that is, the marginal product of sports input (MR_s) with respect to X obtains:

$$\frac{\partial MR_s}{\partial X} = \left[F''(\cdot)\left(\frac{\partial e}{\partial X}\right)\left(\frac{\partial e}{\partial p}\right) + F'(\cdot)\left(\frac{\partial^2 e}{\partial p \partial X}\right)\right]\left(\frac{\partial p}{\partial s}\right)L . \quad (3)$$

The first term on the right-hand side of equation (3) represents the *compensation effect*. If $\partial e/\partial p >0$, an increase in X shifts the MR_s curve to the left, leading to lower sport inputs, s. In contrast, the second term is the *indirect effect* throughout the marginal efficiency unit of labor by the probability of winning. If $\partial^2 e/\partial p \partial X >0$, that is, if the marginal efficiency unit of labor by the probability of winning increases in X, the MR_s curve is shifted to the right, thus raising the optimal level of sport inputs. In this case, the overall effect of increasing X on s is ambiguous. If the second term dominates the first one, the firm

should increase sports inputs, s in response to an increase in X. However, if $\partial^2 e/\partial p \partial X < 0$, because the sign of the second term turns out to be negative, the overall effect is unambiguously negative. Therefore, the firm cuts sports inputs, s in response to an increase in X.

It is logical to assume that age represents one of the vectors of employee characteristics, X. Because older employees devote longer periods to working for the company and have stronger loyalty to the company, the efficiency unit of labor, $e(p(s),X)$, rises in age, that is, $\partial e(p(s), X)/ \partial X > 0$, thus shifting MR_s to the left. In addition, because those older employees have stronger loyalty to their own corporate sports club team as well, the marginal efficiency unit of labor with respect to the probability of winning, $\partial e(p(s),X)/\partial p(s)$, increases in age, that is, $\partial^2 e(p(s),X)/\partial p(s) \partial X > 0$, shifting MR_s to the right. The work morale of older employees is increasingly raised by own team's wins, which thus leads to productivity improvement. In this case, whether or not to invest more in sport activity is not determined as employees are older.

This paper does not discuss whether or not to invest more in sports activities and does not estimate how much to increase or decrease investments in corporate sports activities, but rather explores the second term on the right-hand side of equation (3): in practice, identifying who in the corporation is motivated to work hard by own teams' wins, and simultaneously, who is not. This empirical study focuses on which factors in X affect the marginal efficiency unit of labor by the probability of winning, $\partial e(p(s),X)/\partial p(s)$. We test the null hypothesis $\partial^2 e(p(s),X)/\partial p(s) \partial X = 0$. We cover only the effect of the

second term, but it may be a good start to investigate the role of corporate sports club teams.

3. Data

Our original survey of employees from a selected Japanese company was conducted during March 8-16, 2005 by the company's personnel department and the authors. This company is one of the leading automobile makers in the world and is listed on the first section of the Tokyo Stock Exchange. It is one of the most representative corporations in Japan. The survey covers 1,550 employees from the headquarters, two branch offices, one research division and 12 factories, 89% of whom responded to the questionnaire. This corporation has 35 active sports teams, five of which are designated as special club teams. They are baseball, Rugby football, track and field (*Ekiden* marathon relay race), men's basketball and women's basketball. These five sports' teams receive substantial financial support from the company, and the company relies on these club teams to win league matches and tournaments during the season. These club teams have been successful in each league and have trained excellent athletes.

The survey focuses on the effects on work morale in the five sports types mentioned above. In this study, we restrict ourselves to the link between work morale and the performance of Rugby football, baseball and track& field (*Ekiden* marathon relay race) teams. These teams were competitive in each league or in tournaments and were popular among employees for a long time before the conducted date. We do not use data on men's or women's basketball because there are many missing variables.

The survey asked sampled employees about subjective changes in their work morale by recognizing wins or losses by their own corporate sports club teams. Recently, there has been some literature on work morale in the subjective well-being (SWB) analysis. Bewley (1999) tested for downward wage rigidity, using his original survey. He found that a wage cut reduces work morale and hence production, but that a wage rise increases work morale although its range is not as great as the range of a work morale decline due to a wage cut. Kawaguchi and Ohtake (2004) and Smith (2002) also tested for the effect of a wage cut on work morale and explored the cause of nominal wage rigidity. Ohtake and Karato (2003) and Ohta and Ohtake (2001) analyzed how work morale is influenced by the introduction of a pay-per-performance system adopted by many Japanese companies in recent years.

Here, the survey asked employees to answer the following question for each sport: "How does your work morale change when your own team wins a game?". We construct the dichotomous variable indicating 1 if the employee chooses "increase moderately" or "increase" in response to the question and 0 if the employee chooses “neither”, “not increase moderately” or “not increases”.[8] It should be noted that the dichotomous variable is not the one indicating the *level* of employees' work morale, but the *change* of their work morale when their own corporate sports club teams win. In other words, it represents not whether the work morale of employees is at a high level or at a low level, but whether or

[8] Conversion to the dichotomous variable enables us to estimate qualitative model (probit and logit models).

not their work morale rises when their own teams win.

Conversely, the survey also asked employees the question of how their work morale changed when their own club teams lost. In a similar manner, the dichotomous variable is constructed indicating 1 if the employee responds “decrease” or “decreases moderately” and 0 if the employee responds “neither”, “not decrease moderately” or “not decrease”. It is the variable indicating whether or not work morale of employees declines when their own teams lose.

These two-sided questions about increases and decreases in work morale enable us to identify consistently how employees' work morale responds to the performance of the sports club teams. The merit of conducting separate surveys for wins and losses is to investigate whether or not the effects on work morale are symmetric between wins and losses. They are not necessarily symmetric. If employees have a prejudice in favor of their own company and its teams, they are delighted at wins, which raises work morale when teams win, and they are generous toward losses, which does not reduce their motivation to work even though teams lose. This survey makes a contribution to measuring directly how employees' work morale changes by use of subjective data.

Table 1 summarizes the definitions of variables, and Table 2 shows data descriptions of the link between work morale and own teams' performance. The work morale of employees responded more to wins of the Rugby football team, the baseball team and the *Ekiden* marathon relay team than to losses of these teams. That is, employees' work morale is raised by own teams' wins more than it declines from

losses. Therefore, the effects of club teams' performance on work morale are not symmetric between wins and losses. This result implies that employees have an attachment to their teams so they are delighted at wins, but generous toward losses. The change of work morale by the outcomes of games, regardless of wins or losses, is larger for Rugby football and baseball than for *Ekiden* marathon relay race. Employees are more concerned about the outcomes of games of the Rugby football team and the baseball team than those of the *Ekiden* marathon relay racing team in this corporation. There appears to be little difference between blue-collar and white-collar employees' changes of work morale as a result of their own teams' outcomes of games.

【Table 1 is located here.】

【Table 2 is located here. 】

Attention is restricted to the following factors affecting the work morale of employees when own corporate sports club teams perform well or poorly: gender, age, occupational ranking, job types, experience of any sports, experience of Rugby football, baseball or track & field, and whether or not they work with colleagues who are corporate athletes. It is expected that these factors are significantly correlated with the link between work morale changes and wins or losses by employees' own corporate sports club teams. A win by one's own team raises the work morale of male employees, who are generally more interested in sports than female employees, and the work morale of older employees and high-ranked employees, who are generally more loyal to their company. In the case of a loss, their work

morale is correspondingly lowered. Employees who have had experience of any sports, Rugby football, baseball, and track & field in particular, are in turn the most happy or sad at the outcome of games involving their teams. It is easily predicted that their work morale is raised by their teams' wins, but lowered by their losses.

From the survey, employees were asked for each sport: "Do you have at least one colleague who belongs to a special sports club team?" If they answered yes, it means that the respondent has at least one athletic colleague. It is expected that their colleague's good performance puts the respondent on his or her mettle. Otherwise, employees are not necessarily influenced by the performance of their own teams. In cases where employees have at least one athletic colleague, their work morale is boosted by knowing that their colleagues play hard and their teams are winning. The definitions of the explanatory variables are in Table 1, and summary statistics are in Table 3.

【Table 3 is located here.】

We employ the univariate probit model to estimate the factors that affect the link between work morale and wins and losses by corporate sports club teams for selected sports (Rugby, baseball, and track & field(*Ekiden* marathon relay race)).

4. Results

We begin to identify factors affecting the link between an increase in individual work morale and

wins by the selected three sports club teams. Table 4 displays the estimated results of each sport for blue-collar employees, white-collar employees and both.

【Table 4 is located here.】

As one would expect, the coefficients on age are significantly positive in the estimates of the three sports. Older employees' work morale is boosted when the Rugby football team, the baseball team and the *Ekiden* marathon relay racing team win games or tournaments. Our predictions are supported that older employees are more loyal to their company than young ones, so wins by own teams are more likely to encourage them to work hard. The same results appear when the sample is limited to blue-collar employees. However, age is insignificant in the estimates for white-collar employees.

Whether or not employees work with at least one colleague belonging to corporate sports club teams in the same division is an important factor affecting their work morale. The coefficients on having colleagues are positively significant in the estimates of all the sports. For employees who work with at least one colleague in the same division belonging to the Rugby football team, the baseball team, or the *Ekiden* marathon relay racing team, their work morale increased with wins by the corresponding team. The colleague's good performance and wins impress employees of the same division, thereby inducing them to work harder. The same results are obtained for blue-collar employees in the three sports. However, the effects disappear for white-collar employees in Rugby football and *Ekiden* marathon relay race. Blue-collar employees are encouraged to work harder by their colleagues' performances and their

teams' wins.

We test another side of the coin, the link between declining work morale of individual employees and losses by their teams to confirm whether or not the results are symmetric with those cited above. Table 5 displays the estimated results of each sport for blue-collar employees, white-collar employees and both. Because we cannot reject the null hypothesis that all the coefficients are zero in the estimates of the three sports for the white-collar employees according to the log likelihood test, the estimates for the white-collar employees are ignored here although the results are displayed in Table 5.

【Table 5 is located here.】

Age is insignificant for the relationship between losses by all the sports teams and declining work morale. However, when the sample is limited to blue-collar employees, age becomes 10% significantly positive for Rugby football and baseball. Combined with the result from the effects of wins, we cannot say statistically that the effect of age on work morale is symmetric between wins and losses, but instead the effect of age on work morale of blue-collar employees is symmetric in the sense that the work morale of older blue-collar employees is raised by wins by the Rugby football team and the baseball team, but declines with losses by these teams. Older blue-collar employees are in turn happy or sad at wins or losses by the Rugby football and the baseball teams. We conclude that these club teams play an important role in raising the work morale of older blue-collar employees as an incentive device, although the team has to be a strong contender.

The effects of other variables are not symmetric for the relationship between work morale and the performance of own corporate sports club teams. The coefficients on experience in any sport are positively significant in the estimates of baseball and *Ekiden* marathon replay racing team, and when the sample is limited to blue-collar employees, the coefficients are significantly positive in the three sports including Rugby football. Employees who have played or are playing any sport, regardless of the type, are discouraged from working hard by losses by their own teams.

The coefficients on the blue-collar employees and the white-collar employees are significantly positive for the relationship between declining work morale and teams' losses. These results imply that losses by own teams lead to the work morale decline in both blue-collar employees and white-collar employees. It is interpreted that both blue-collar and white-collar employees have a strong sense of belonging to the corporation. However, compared with the results from Table 4, an increase in work morale by teams' wins is not statistically different by job types.

The coefficients on athlete colleagues are insignificantly different from zero in all sports types. Compared with the results from Table 4, an interesting point is that employees who have at least one athlete colleague are encouraged by wins by the colleague's club team, but their work morale does not necessarily decline following a loss. Employees who work with athlete colleagues are generous toward the colleague's loss.

5. Concluding Remarks

This paper estimated factors determining the relationship between wins and losses by corporate sports club teams and the work morale of employees, using an original survey of employees from a selected Japanese automobile maker.

We find that corporate sports club teams are a symbol of unification in the corporation and play a role in improving the team spirit and solidarity that are important factors in the manufacturing sector. The corporate sports club teams' performance influences the work morale of older employees and those who work with colleagues belonging to corporate sports club teams in the same division. These employees are motivated to work harder by knowing that their own teams win, but they are not necessarily discouraged from working hard if their own teams lose games. We cannot conclude statistically that the impact of teams' performance on work morale at the individual level is symmetric between wins and losses.

Finally, we briefly address policy implications of corporate sports club teams. How do companies use corporate sports club teams? They can be used as a useful incentive device to encourage employees to work hard and to improve solidarity and team spirit in the company on the condition that the teams are strong contenders. At the economy level, there is an externality in that a win by one team necessarily leads to a loss by another team. Therefore, it may not necessarily be a good idea to have corporate sports club teams. However, as shown in Table 2, employees' work morale is raised by own teams' wins more

than it declines from losses. These results imply that this company's employees are delighted at wins but are generous toward losses. If employees in all companies are like those in this company, it is beneficial to have corporate sports club teams and to organize leagues at the economy level.

Here, we have just focused attention on one aspect of roles of corporate sports club teams, that is, the effect on work morale of employees. From our estimated results, we conclude that it is worthwhile to obtain corporate sports club teams to help raise the work morale of employees. However, it is reminded that companies expect sports clubs to operate as advertising media. Because the Japanese viewers do not pay much attention on corporate sports leagues as they used to do, corporate sports clubs cannot be much workable as advertising devices. Combined to severe economic recession in the 1990s and increased costs of maintaining teams, many corporate sports club teams have been disdained.

It should be reminded that we surveyed a specific firm in this study, so the results are not general. However, this paper contributes to an understanding of the role of corporate sports club teams in the Japanese economy.

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Table 1: Definitions of the Variables

Dependent Variables	
morale rise	=1 if an employee's work morale increases by corporate sports teams' wins. =0 if an employee's work morale does not increase by corporate sports =0 if an employee does not feel that work morale of the division increases by corporate sports teams' wins.
morale decline	=1 if an employee's work morale decreases by corporate sports teams' losses. =0 if an employee's work morale does not decrease by corporate sports teams' losses.
Explanatory Variables	
gender	=1 female employee, =0 male employee
age	employee's age
Rank (1)	=1 if an employee is the director, =0 otherwise.
Rank (2)	=1 if an employee is the section head, =0 otherwise.
Rank (3)	=1 if an employee is the upper level employee, =0 otherwise.
Rank (4)	=1 if an employee is the lower level employee, =0 otherwise.
Blue Collar	=1 if an employee is the blue-collar employee, =0 otherwise.
White Collar	=1 if an employee is the while-collar employee, =0 otherwise
Other Collar	=1 if an employee is the other-collar employee, =0 otherwise
Any Sports Experience	=1 if an employee has played or is playing any sports, =0 otherwise
Each Sports Experience	=1 if an employee has played or is playing Rugby football, baseball or track and field, =0 otherwise
Colleague	=1 if an employee has at least one colleague belonging to corporate sports club teams in the same division (Rugby football, baseball, or track & field). =0 otherwise

Table 2: Work Morale and Corporate Sports Club Teams' Performance

		Rugby football	baseball	track and field
work morale rise	Overall	0.319	0.283	0.255
by teams' wins		(0.466)	(0.451)	(0.436)
	Blue-Collar	0.306	0.282	0.239
		(0.461)	(0.450)	(0.426)
	White-Collar	0.340	0.281	0.201
		(0.474)	(0.450)	(0.401)
work morale decline	Overall	0.103	0.101	0.069
by teams' losses		(0.303)	(0.301)	(0.253)
	Blue-Collar	0.112	0.110	0.077
		(0.316)	(0.312)	(0.267)
	White-Collar	0.079	0.079	0.050
		(0.269)	(0.270)	(0.218)

Numbers without parentheses are mean values.

Numbers in parentheses are standard errors.

Table 3: Summary Statistics of Explanatory Variables

Explanatory Variables	Mean	Standard Error	Obs
gender	0.149	0.356	1347
age	37.89	10.82	1340
Rank (1)	0.014	0.112	1327
Rank (2)	0.166	0.372	1327
Rank (3)	0.457	0.498	1327
Rank (4)	0.362	0.481	1327
Blue Collar	0.689	0.463	1343
White Collar	0.308	0.462	1343
Other Collar	0.004	0.061	1343
Any Sports Experience	0.781	0.414	1398
Sports Experience (Rugby football)	0.029	0.169	1398
Sports Experience (baseball)	0.215	0.411	1398
Sports Experience (track & field)	0.124	0.330	1398
Colleague (Rugby)	0.118	0.323	1276
Colleague (baseball)	0.102	0.303	1272
Colleague (track & field)	0.040	0.195	1265

Table 4: The Link between an Increase in Work Morale and Wins of Corporate Sports Teams

Probit Estimation	Rugby Football						Baseball						Track & Field					
	Total		Blue Collar		White Collar		Total		Blue Collar		White Collar		Total		Blue Collar		White Collar	
gender	-0.059		-0.148		-0.163	*	0.00005		-0.115		-0.052		-0.093	**	-0.069		-0.094	
	(0.057)		(0.118)		(0.096)		(0.059)		(0.122)		(0.097)		(0.043)		(0.116)		(0.080)	
age	0.007	***	0.007	***	0.004		0.006	***	0.008	***	0.000		0.006	***	0.008	***	0.002	
	(0.002)		(0.002)		(0.004)		(0.002)		(0.002)		(0.004)		(0.002)		(0.002)		(0.003)	
Rank (1)	0.016		-	(a)	-0.062		0.081		-	(a)	0.121		-0.177	**	-	(a)	-	(b)
	(0.126)		(-)		(0.160)		(0.132)		(-)		(0.187)		(0.036)		(-)		(-)	
Rank (2)	0.071		0.106		-0.032		0.106		0.073		0.126		-0.004		-0.039		0.053	
	(0.070)		(0.093)		(0.128)		(0.070)		(0.090)		(0.128)		(0.059)		(0.069)		(0.112)	
Rank (3)	0.008		0.010		-0.081		0.004		-0.006		-0.054		-0.008		-0.057		0.083	
	(0.043)		(0.048)		(0.094)		(0.041)		(0.047)		(0.092)		(0.037)		(0.045)		(0.097)	
Blue Collar	-0.380		-		-		-0.361		-		-		-0.212		-		-	
	(0.258)		(-)		(-)		(0.258)		(-)		(-)		(0.273)		(-)		(-)	
White Collar	-0.288		-		-		-0.310		-		-		-0.141		-		-	
	(0.190)		(-)		(-)		(0.165)		(-)		(-)		(0.191)		(-)		(-)	
Any Sports	0.015		0.059		-0.067		0.038		0.075	**	-0.041		0.023		0.025		0.020	
Experience	(0.035)		(0.040)		(0.070)		(0.034)		(0.039)		(0.067)		(0.031)		(0.037)		(0.058)	
Each Sports	0.112		0.045		0.294	*	0.023		0.035		-0.031		0.104	***	0.111	***	0.116	
Experience	(0.083)		(0.091)		(0.169)		(0.033)		(0.037)		(0.069)		(0.041)		(0.047)		(0.094)	
Colleague	0.144	***	0.227	***	0.065		0.177	***	0.210	***	0.136	**	0.111	*	0.129	*	0.127	
of Each sports	(0.046)		(0.073)		(0.060)		(0.048)		(0.068)		(0.067)		(0.073)		(0.082)		(0.205)	
Predicted Prob.	0.314		0.301		0.340		0.271		0.264		0.276		0.211		0.219		0.198	
LR Chi Square	74.11		61.59		20.46		66.03		55.01		17.91		54.27		38.60		18.39	
LR test	0.000		0.000		0.009		0.000		0.000		0.022		0.000		0.000		0.010	
Pseudo R2	0.046		0.060		0.042		0.046		0.056		0.040		0.045		0.046		0.053	
Sample	1228		845		379		1220		839		377		1171		804		348	

*** 1%, ** 5%, * 10% significant. Numbers in parentheses are standard errors. The coefficients represent the change in the probability for an infinitesmal change of each explanatory variable. (a) There are no blue-collar employees in Rank (1). (b) The dummy variable is dropped because it is not varied over the dependent variable.

Table 5: The Link between a Decrease in Work Morale and Losses of Corporate Sports Teams

Probit Estimation	Rugby Football			Baseball			Track & Field		
	Total	Blue Collar	White Collar	Total	Blue Collar	White Collar	Total	Blue Collar	White Collar
gender	0.025	- (b)	-0.019	0.030	- (b)	-0.043	0.002	-	-0.026
	(0.045)	(-)	(0.057)	(0.045)	(-)	(0.056)	(0.035)	(-)	(0.048)
age	0.002	0.003 *	-0.001	0.002	0.002 *	-0.002	0.002	0.002	-0.0003
	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Rank (1)	0.027	- (a)	0.017	0.006	- (a)	-0.010	- (b)	- (a)	- (b)
	(0.096)	(-)	(0.109)	(0.084)	(-)	(0.085)	(-)	(-)	(-)
Rank (2)	0.051	0.129 *	-0.019	0.030	0.103	-0.043	0.016	0.061	-0.019
	(0.051)	(0.084)	(0.069)	(0.047)	(0.080)	(0.063)	(0.040)	(0.069)	(0.058)
Rank (3)	0.018	0.016	-0.010	0.011	0.016	-0.041	0.002	0.002	-0.009
	(0.028)	(0.033)	(0.055)	(0.027)	(0.032)	(0.043)	(0.023)	(0.028)	(0.047)
Blue Collar	0.579 ***	-	-	0.577 ***	-	-	0.478 ***	-	-
	(0.042) ***	(-)	(-)	(0.044)	(-)	(-)	(0.049)	(-)	(-)
White Collar	0.961	-	-	0.965 ***	-	-	0.955 ***	-	-
	(0.017)	(-)	(-)	(0.016)	(-)	(-)	(0.023)	(-)	(-)
Any Sports	0.034	0.048 *	0.017	0.047 **	0.059 **	0.036	0.037 *	0.046 *	0.024
Experience	(0.020)	(0.024)	(0.035)	(0.019)	(0.024)	(0.032)	(0.016)	(0.020)	(0.030)
Each Sports	0.070	0.012	0.236 **	0.030	0.027	0.020	0.032	0.040	0.008
Experience	(0.061)	(0.062)	(0.158)	(0.022)	(0.026)	(0.046)	(0.025)	(0.030)	(0.047)
Colleague	0.042	0.023	0.035	0.083 ***	0.069	0.081 **	-0.002	0.005	- (b)
of Each sports	(0.031)	(0.045)	(0.036)	(0.035)	(0.049)	(0.045)	(0.035)	(0.043)	(-)
Predicted Prob.	0.105	0.118	0.082	0.094	0.105	0.074	0.074	0.083	0.057
LR Chi Square	23.63	22.91	6.79	26.94	25.19	8.76	15.78	15.72	1.12
LR test	0.009	0.001	0.560	0.003	0.000	0.363	0.072	0.015	0.981
Pseudo R2	0.029	0.038	0.032	0.033	0.043	0.041	0.025	34	0.007
Sample	1227	829	379	1221	825	377	1181	810	348

*** 1%, ** 5%, * 10% significant. Numbers in parentheses are standard errors. The coefficients represent the change in the probability for an infinitesmal change of each explanatory variable. (a) There are no blue-collar employees in Rank (1). (b) The dummy variable is dropped because they are not varied over the dependent variable.