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Minoru Nakazato & J. Mark Ramseyer

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Harvard Law School
Cambridge, MA 02138

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Minoru Nakazato
Univ. Tokyo Law Faculty
Bunkyo-ku, Tokyo
nakazato@j.u-tokyo.ac.jp

J. Mark Ramseyer
Harvard Law School
Cambridge, MA 02138
ramseyer@law.harvard.edu

Bonuses and Biases in Japanese Baseball

By Minoru Nakazato & J. Mark Ramseyer*

Abstract: Do workers earn their market wage under multi-year incompletely specificied contracts? Or do employers use their monopsony power in later years to hold wages down? We use pay and performance data from Japanese baseball to compare the salaries players receive before and after turning free agents. Although teams do pay lower salaries (performance levels held constant) during the early years of a player's contract term, they do so largely to recoup the training and sign-on bonus they provide. Once they recover that training and bonus, they pay salaries close to free agent levels -- even before a player becomes a free agent.

Additionally, we find that the younger stars earn high endorsement incomes; that Japanese owners compete for players who offer the same performance characteristics as the players for whom U.S. owners compete; that Japanese teams pay a premium for American players; and that Japanese teams do not pay black players less than white players.

* Professor of Tax Law, University of Tokyo, and Mitsubishi Professor of Japanese Legal Studies, Harvard University, respectively. We received helpful advice and suggestions from John Betts, Ben Donahue, Jack Donahue, Tom Ginsburg, Salil Mehra, and Zen'ichi Shishido. We gladly acknowledge the generous financial assistance of the East Asian Legal Studies Program and the John M. Olin Center for Law, Economics & Business at the Harvard Law School.

Do workers earn their market wage under multi-year contracts? At least sometimes, they do. In the trans-Atlantic trade in indentured (and "redemptioner") servants, they earned it (e.g., Grubb, 1985, 1988; Galenson, 1984). They auctioned their services to rival buyers, and obtained wage and contract terms that captured their marginal product.

Suppose, however, that workers and employers only incompletely specify the terms of their multi-year contracts. Suppose a worker agrees to work for a firm for several years, but negotiates only his first year's wage. Will the firm use its resulting monopsony power in year 2 to pay him less than his outside market wage?

Baseball players in the "reserve clause" days of the Major Leagues (through 1976; the clause also appeared in other U.S. and European sports) worked under precisely that contract, of course, and extensive literature suggests they suffered for it. After they signed with a team, the clause gave the team the right to their services for as long as they played in the Majors. Rather than pay them their marginal product, (according to most studies) the teams used their monopsony power to pay them substantially less. Players failed to negotiate around the problem; teams maintained their cartel despite the competitive environment. In the end, neither contractual innovation nor competitive reputational investments caused the teams to dissipate their monopsony rents.

In theory, this need not happen. In theory, multi-year incompletely specified contracts need not earn firms monopsony rents. Posit (a) auctions at the outset of the multi-year terms, (b) firms that compete for players by investing in reputations for paying well, (c) sophisticated market participants, and (d) incentivized contracts that induce high performance levels, and workers might well obtain their marginal product.

In the article that follows, we describe evidence consistent with the proposition that Japanese baseball players (the evidence is stronger for batters than for pitchers) under nine-plus-year terms obtain wages close to their market wage. We first combine data on compensation, tax liability, and performance. We do not calculate marginal revenue added, but readers should note that most of the baseball teams (other than the Giants, Tigers, and Carp) lose money.[1] We then compare the wages players earn during their initial nine-plus-year contract with the wages they earn after obtaining free agency.

We find little evidence that players earn more upon reaching free agency. Instead, at the outset of their careers players obtain training and bonuses that largely offset the lower wages during their first few years. Teams seem to compete away their monopsony rents, for performance and tenure held constant, players seem to earn total compensation before free agency almost as large as after.

We begin by surveying the literature on free agency and the sports industry (Sec. I.). We describe our data (Sec. II), and use it to explore the dynamics of free agency and long-term contracting in Japanese baseball (Sec. III). We then (i) contrast the determinants of player salaries with the determinants of total -- including endorsement -- income (Sec. IV.A.), (ii) discuss the implications these results pose for claims about major differences between American and Japanese baseball (Sec. IV.B.), and (iii) compare the relative compensation of American and Japanese players and of black and white American players (Sec. IV.C.).

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[1] www.asahi.com/special/baseballteam/TKY200407190231.html (accessed spring 2007).

I. The Literature

In many ways, the modern economics of sports begins with Rottenberg (1956). Although Rottenberg surveyed a variety of issues, most relevantly here he addressed the "reserve clause." Under the clause as in effect until 1976, each team retained the right to a player's services for his entire Major League career. Through his analysis of this clause, Rottenberg launched two lines of work. First, anticipating Coase, he reasoned that players should tend to work at those teams where they maximized revenue, and should tend to do so regardless of who initially held the property right to their work.

Second, although a discriminating monopolist might use the reserve clause to pay its players only a penny more than their non-baseball wage, Rottenberg (1956: 252) observed that in fact the teams did not. Instead, "teams seem to pay, in the major leagues, much more than this." Apparently, he explained, they did this to avoid the havoc wreaked by discontented players.

In the years since the reserve clause ended, several scholars have tested the first of Rottenberg's observations: the Rottenberg-Coase invariance hypothesis. They reach conflicting results. In studying the effect that the clause had on team parity and player mobility, Depkin (1999) and Hylan, Lage & Treglia (1996) argued that it made a difference. By contrast, Drahozal (1986) and Fort & Quirk (1995) found evidence more consistent with the invariance hypothesis.

In turn, Scully (1974) extended Rottenberg's observations on compensation. More specifically, he examined the determinants and levels of pay in the Major Leagues. After exploring a wide variety of performance indices, he found he best explained batter compensation by regressing (with logged values) salaries on career slugging percentages, years in the Majors, annual at-bat rates, and a dummy variable equal to 1 for those with above-average batting averages but below-average slugging percentages.[2] To explain pitcher compensation, he regressed salaries on career strike-out-to-walk ratios, years in the Majors, and annual innings pitched. Simple as they were, these regressions explained 81 percent of the variation in batter pay, and 78 percent of the variation in pitcher pay. Both batters and pitchers, however, earned less than the marginal revenue they brought to the team.

Other scholars followed Scully with a wide variety of performance and compensation studies. Although Raimondo (1983) found that free agency reduced monopsonistic exploitation, Sommers & Quinton (1982) concluded that players continued to earn less than their marginal product even under free agency. Sommers & Quinton used Scully's performance indices, but Andersen & La Croix (1991) and Bennett & Flueck (1983) advocated more complex measures. Blass (1992) argued that pay rose with experience independent of a player's performance

Because professional athletes disclose both salaries and a wide variety of highly standardized performance measures, several scholars have used the data to test for racial bias. Hamilton (1997), for example, found that white basketball players earned a premium over black players at the top of the salary distribution. Nardinelli & Simon

[2] The variable captures those players with high batting averages who fail to earn high slugging percentages. Additionally, Scully added the population of the team's hometown, an attendance variable, and a league dummy. The coefficient on the attendance variable was significantly positive for the batting regression, and insignificant in the pitching regression; the other calculated coefficients were insignificant.

(1990), Andersen & La Croix (1991), and Kahn & Sherer (1988) all located evidence of fan bias against black players. And Hanssen (1998) concluded that the teams that integrated most slowly suffered a performance loss as a result.

II. The Data

A. Salary:

To explore contracting practice in Japanese baseball, we assemble data on salary, performance, and total income for all 2004 players. We take the information on player salary from the Supotsu Nippon newspaper -- available at www.sponichi.co.jp. We focus on 2004 to match this information with our tax-based data on total income (described in Subsection C, below).

We include all players listed on a team's roster in late 2006, provided they played ball professionally in 2004.[3] Because a few of these men played only in the Japanese minor-league equivalent (known as Division 2) before 2004, we limit our pay-performance calculations to those players with at least some major league (known as Division 1) experience. Note that although each team maintains a 70-man roster, the number of players with Division 1 time has hovered around 50 (see Table 1).

[Insert Table 1 about here.]

B. Performance:

We take our data on player performance from the baseball statistical handbook, Nihon yakyu (2004). We use each player's career statistics at the end of 2003. As a robustness check, we also use statistics on each player's performance in 2003 only.

C. Total Income:

To add a player's endorsement earnings to his salary, we obtain total income (formally, tax liability) figures from the National Tax Agency (NTA). Through 2004, the NTA published the names, addresses, and tax liabilities of all high-income taxpayers (the HIT list; TSR, 2004). The tax threshold at which it disclosed the information varied over the years, but in 2004 stood at 10 million yen (about $97,000 in taxes, at the end-of-2004 exchange rate of 102 yen/$.). Unfortunately for the researcher (but perfectly understandably), in 2003 the legislature banned the NTA from publishing the information in the future. As a result, our 2004 dataset represents the last available installment of this information.

Japanese taxpayers pay a tax of 37 percent on ordinary income beyond 18 million yen.[4] Given deductions, credits, and the lower rates applicable to the infra-marginal income, a player who owed 10 million yen in taxes would have earned about 39.9 million

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[3] This creates some anomalies. The Eagles, for example, were formed in late 2004. Our data, however, cover those players on the 2006 Eagles team who were playing ball (obviously in other teams) in 2004.

[4] Shotoku zei ho [Income Tax Act], Law No. 33 of 1965, Sec. 89, as amended by Shotokuzeito futan keigen sochi ho [Act for Measures to Reduce the Burden of the Income and Other Taxes], Law No. 8 of 1999, as amended by Law No. 21 of 2005.

yen ($392,000).[5] Because of the progressive tax schedule, at higher tax liabilities his income will increasingly approach (tax)/.37.[6]

High-income taxpayers could avoid the HIT list through two quasi-legal strategies. First, because the NTA compiled the HIT list from returns filed within 2 weeks of the March 15 tax-return deadline, they could pay a penalty and submit their returns late. Alternatively, they could file an initial return that included only income below the amount that triggered disclosure, and then add the remaining income in a later amended return.

In fact, only a minority of baseball players used either of these strategies.[7] Of the 173 players with salaries of at least 40 million yen, 64 percent appeared on the high-income taxpayer list. Of the 123 players with salaries of at least 60 million 76 percent appeared on the list, and of the 84 with salaries of at least 80 million yen 90 percent appeared on the list.

III. Free Agents and Monopsony

A. Introduction:

The twelve Japanese professional baseball teams maintain players for both their major and their minor league-equivalent rosters -- Division 1 and Division 2. With effectively two teams, writes anthropologist and scholar of Japanese baseball William Kelley (2006: 25), they "devote a lot more time teaching fundamentals than they would for a MLB club (which depends on its largely independent farm system to prepare and winnow young players)."[8] These twelve teams then divide themselves between two leagues (see Table 1).

B. Compensation:

In 2004, the perennially high-paying Yankee-equivalent Yomiuri Giants counted 51 players with Division 1 experience -- 19 pitchers and 32 batters.[9] With the yen trading at 102 yen/$ at the end of the year, it paid the pitchers salaries that ranged from 8.7 to 300 million yen (median: 39 million yen). It paid the batters 4.8 to 540 million (median: 21 million). These veteran pitchers had played professionally for up to 22 years (median: 4), and the veteran batters for up to 18 years (median: 6.5).

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[5] For the details behind this calculation, see Nakazato, Ramseyer & Rasmusen (2007a, 2007b, 2007c).

[6] Note that in Japan, couples may not file joint returns, and taxpayers with rising incomes may not "average" their income across years. We discuss the tax treatment of capital gains, dividend, and other income in greater detail in Nakazato, Ramseyer & Rasmusen (2007a, 2007b, 2007c).

[7] Foreign players, as part-year residents, were exempt from the disclosure.

[8] Note, however, that the minor leagues that carry out the training in the U.S. often receive transfer payemnts from their affiliated Major League teams as compensation for that training.

[9] More precisely, this counts those players who were listed on the Giants roster in late 2006 who had been professional ballplayers during 2004 and had spent some time in Division 1 in earlier years. This excludes several groups of players, most obviously those who quit between 2004 and 2006, and those who were new to Division 1 in 2004.

Although the 51 veterans on the Giants roster had played a mean 6.9 years professionally, they had played at least one Division 1 game only 5.6 years.[10] As of early 2004, batting star Takayuki Shimizu had played at least some Division 1 games every one of his eight professional years. The more typical Satoshi Kuroda had played in Division 1 seven of his eleven career years. And the unfortunate Takashi Sasagawa of the Fukuoka Softbank Hawks had played professionally six years and never appeared in a single Division 1 game.

High as they are for Japan, these Giant salaries fall short of those in the Major Leagues. According to the Associated Press, Major League players in 2004 earned about $2.5 million. The mean varied widely by team, from less than $1 million at Pittsburgh to over $6 million at the Yankees. The teams paid a minimum $380,000 salary (in 2007) to their Major League players, and at least $60,000 to those minor leaguers who spent a day or more on their 40-man rosters.

That high-end Japanese earn less than high-end Americans is not peculiar to baseball. Top U.S. pay exceeds top Japanese pay across the board. Firm size held constant, CEOs of public U.S. firms make three times as much as their Japanese peers, and star lawyers earn more in the U.S. than in Japan as well (Nakazato, Ramseyer & Rasmusen, 2006, 2007). Japanese and U.S. households may earn comparable incomes at the median, but not at the upper and lower tails. According to Piketty & Saez (2006: 204), this U.S. premium is largely a post-1970 phenomenon: "While top income shares have remained fairly stable in continental European countries or Japan over the past three decades, they have increased enormously in the United States and other English-speaking countries." The puzzle, perhaps, is why the ability of star players like Daisuke Matsuzaka to cross market lines does not equilibrate pay levels more closely than it does.

Yet although Japanese and American baseball salaries differ in levels, they do not differ in their determinants. Closely, player salaries in both countries depend on the same factors. Recall Scully's (1974) classic study: 81 percent of the variation in U.S. batter pay turns on career slugging percentage, years in the Major Leagues, at-bat rates, and a dummy variable equal to 1 for those with above-average batting averages but below-average slugging percentages; 78 percent of the variation in pitcher pay depends on career strike-out to walk ratio, years in the Majors, and innings pitched.

Almost precisely the same principles apply in Japan. As we show in Column (1) of Table 2 Panel A, career slugging percentages, Division 1 years played, Scully's high-batting-average dummy, and annual at-bat rates explain 81 percent of the variation in batter pay.[11] Career strike-out-to-walk ratios, Division 1 years played, and annual pitching rates explain 68 percent of the variation in pitcher pay (Tab. 2, Pan. B).

[Insert Table 2 about here.]

C. Free Agency:

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[10] For reasons of data availability, we estimate Division 2 years as total professional years less Division 1 years. Our measure of Division 2 years thus includes those years in which a player was disabled the entire year.

[11] Scully (1974: 925) explains that he added the high batting average dummy because "some excellent hitters have low slugging averages." In fact, however, the coefficient on the dummy is insignificant in his regression; in ours, it is significantly negative.

1. The rules. -- Japanese players turn free agents only after they spend at least 150 days on a Division 1 roster for nine seasons.[12] This is not an easy test to meet. According to the players' union, most players never become free agents, and those that do take a mean 11.5 years.[13] Among the 13 players who became free agents in 2003, total (Divisions 1 plus 2) professional experience varied from 10 to 17.

2. The pay. -- The 61 free agents among our 620 players earned high salaries. Where the mean player earned 45 million yen, the mean free agent earned 122 million. Of the total wage bill of the 12 teams, the 61 took home 27 percent. Yet despite fan and journalistic complaints to the contrary (e.g., "because of free agency average player salaries have trebled in the past decade"),[14] they did not earn a higher base salary than the rest. In Column (2) of Table 2, we add a dummy variable equal to 1 if a player is a free agent. For both batters and pitchers, the coefficient is insignificant.

Instead, the free agents earned higher salaries because they played better ball and played under contracts that rewarded that better performance. Where the mean batter had played 6.4 years, the mean free agent batter had played 14.5. Where the mean batter had appeared at bat 148 times a year, the mean free agent had appeared 272 times. Where the mean batter had a .334 career slugging percentage, the mean free agent batter had .388. Pitchers presented a similar contrast.

The 61 free agents worked under contracts that rewarded this top-flight performance generously. Consider Column (3) of Table 2, where we interact free agency with our Column (1) variables. The coefficients on the interaction terms give the additional effect that a variable has on a free agent's salary. According to these results, a batter's career slugging percentage had over three times the effect on a free agent's salary that it had on the salary of the others (Pan. A). A pitcher's career strike-out/walk ratio had nearly ten times the effect on a free agent's salary that it had on everyone else's (Pan. B).

3. The inter-temporal allocation of income. -- (a) Introduction. The more highly incentivized free-agent contracts mask the inter-team competition that drives even pre-free-agent compensation toward market levels. At the outset of their careers, a team will lavish recruits with promises and cash to induce them to join its roster. Midway through their contracts, it will offer financial incentives to induce them to train hard. As star players approach the nine-year mark, it will cultivate their good will lest they abandon it when they can. And throughout a player's career, it will treat its best players well lest they emigrate to the U.S. Majors. Consider, then, how a player's pay package develops over the course of his career.

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[12] The rule is subject to a variety of qualifications (e.g., 10 rather than 9 years for players who picked their team independently in the draft, provisions for tacking days from years with fewer than 150 playing days). See generally Saito (2004: 84, 152-55).

[13] www.jpbpa.net/topics/03.htm (accessed spring 2007).

[14] www.uttaeru.jp/yougo.html (accessed spring 2007); see also www.asahi.com/special/baseballteam/TKY200407190231.html (accessed spring 2007).

(b) Rookie training. Japanese teams pay their new players considerably more than their marginal product. As Kelly noted, these men play on separate rosters of largely non-revenue-generating training programs. Where would-be Major League players compete in over 200 minor-league teams in the U.S., in Japan they play in only 24 Division 2 teams. But where minor league players in the U.S. (even when on a Major-League-affiliated farm team) earn virtually nothing, Japanese Division 2 players collect (at 4-6 million yen, or about $40,000 to $60,000) close to the median national household income.[15] In effect, U.S. players compete in a more steeply graded tournament than their Japanese cohorts.

Japanese teams fund these generous Division 2 salaries by -- in effect -- advancing new players their expected future revenue. Because players vary in the number of years they will stay in these subsidized programs, so does the size of this effective loan. Of all professional baseball players in 2004, 116 had spent no time in Division 1 for three or more professional years. Twenty-six had spent no time in Division 1 for five or more years. And some retire without playing any Division 1 baseball at all.

Japanese teams try to recoup the subsidized salaries they pay players in Division 2 by signing them to a multi-year deal. Under this arrangement, once players move from Division 2 to Division 1 the teams pay them sub-market salaries for several years. The difference during their Division 1 years between (a) their estimated market wage and (b) the wage they actually receive represents, in other words, (c) the repayment of their Division 2 salary (plus sign-on bonuses; see Subsection (d) below).

Hypothetically, Japanese teams could accommodate the variation in player ability by varying the length of these terms. They could sign the strongest players to the shortest terms, and the weakest players to the longest. After all, the stronger players do spend the least time on subsidized Division 2 salaries. And they generate the largest revenue stream once they join Division 1.

Yet Japanese teams do not take this straightforward solution to the player heterogeneity problem. From time to time, they have tried to protect their monopsony rents (though the existence of the shadow U.S. market cabins those rents on the best players) by coordinating their actions in the rookie market. Probably, they agreed to offer only nine-year contracts as yet another attempt to prevent each other from dissipating those rents. Rather than compete down the number of sub-market-salary years, they agreed to sign all players to nine-plus-year terms. As we show below, however, in preserving their rents they have largely failed: although they use identical term lengths, they compete fiercely through salaries and sign-on bonuses (for the standard player form contract, see Saito, 2004: 188-91).

(c) The draft. Like their Major League counterparts, Japanese teams hire their rookies in an annual draft. Would-be players register, and every fall (typically with separate drafts for high-school and university graduates) the teams select. The actual mechanics have changed over the years, but currently teams can each take two of the top-ranked university and corporate players if those players choose them independently

[15] Raising the puzzle of why American rookies do not try to break into the Japanese Division 2 market.

(Saito, 2004: 32-35). All other players face take-it-or-leave-it offers -- formally. Yet form has not always been substance. For much of the past several decades, through various strategies many players circumvented the draft entirely and negotiated more favorable contracts on their own.[16]

Players can turn professional at several points in their career. Compulsory education ends at 16 in Japan, and four players in our dataset joined a professional team immediately. Most players joined after high school, some joined after college, and a few joined later still. Among those in our dataset, the modal age of turning professional was 18 (40.9 percent of the players), the next most common was 22 (25.3 percent), and the oldest player entered the draft at age 28.

(d) Start-up bonuses. To induce a talented player to accept its offer, a Japanese team will promise high wages -- but if it hires on a nine-year contract how does it promise credibly? It can promise, but why should anyone believe it? It can detail terms in writing, but contingencies can be hard to specify nine years in advance. It can invest in a reputation for treating players well, but reputations -- crucial as they are -- still only imperfectly insure credibility.

Facing these obstacles to credibility, Japanese teams pay their strongest players cash bonuses up-front. In effect, they sign their players to arrangements of uniform length, but advance them amounts that vary by a player's expected strength. To the weakest players they offer subsidized Division 2 salaries for several years, but only trivial bonuses. To the strongest they need give little or no Division 2 training, but pay a large cash bonus. And from all their players, they then recoup the sum of the training cost and bonus over the next nine (or more) years.

The strongest players negotiate very large bonuses indeed. Where first-year players in 2006 earned 4.4 to 15 million yen (median: 9.6 million yen) salaries, they collected bonuses ranging from 10 million to 100 million yen with a median of 55 million (recall the 102 yen/$ exchange rate). Among the 2004 players who had started earlier, sign-on bonuses ranged from 10 million to 160 million. The median pre-2004 player received a 60 million bonus, and the modal player collected 100 million (mean: 61.4 million yen; Fig. 1).

[Insert Figure 1 about here.]

At least with new batters (results are weaker for pitchers), in paying these bonuses the teams predict future performance reasonably well. Together, the bonuses the teams paid their new players and the years those players then spent in Division 1 explain 13 percent of the variation in slugging percentage, and 31 percent of the variation in annual at-bat rates (Tab. 3, Cols. (1), (3); unlike slugging percentages, at-bat rates are at least partially under the teams' control). In both cases, the bonus is statistically significant at more than the 99 percent level. It similarly predicts the number of years a rookie will languish in Division 2 (Tab. 3, Col. (5)).

[Insert Table 3 about here.]

Obviously, teams will pay the highest bonuses to those players best able to prove their talent. Because university play substitutes for Division 2, teams will have the best

[16] For evidence on the elaborate contacts between professional scouts and the university team players, see Saito (2004: 14-15, 27-31); see id. (20, 36) (ban on extra-draft hires in 1991).

information about those who wait to enter the draft until age 22. Predictably, they pay bonuses that rise with draft age (a .251 correlation coefficient, significant at 99 percent). Perhaps because players obtain better contract terms if they can prove their ability,[17] the best players are those who waited to enter the draft (even at the cost of foregoing Division 2 salary): the older the age at which a player turns professional, the higher his career slugging percentage and at-bat rate in Division 1 (Tab. 3, Cols. (2), (4)).[18]

(e) Loan recovery rates. The teams train players and offer sign-on bonuses, but then pay sub-market salaries for the next several years. Does the salary shortfall merely offset the initial advance -- as we suggest above? Or do the teams keep the advances small enough to retain large monopsony rents for themselves?

To address the issue, we first turn to the results of our Table 2 Column (3) regression. Using the coefficients, we predict the salary non-free-agent players would have received under a free-agent contract. We then subtract their actual salary from that predicted amount, and estimate their salary shortfall.

Second, we calculate the amount that the teams advanced their players at the outset of their careers. To do so, we multiply the number of years a player spent in Division 2 by the minimum salary paid Division 2 players in his cohort. We add the bonus the team paid the player, and present-value all figures at a 10 percent annual discount rate.

In Table 4, we give the resulting loan recovery rates for batters: the salary shortfall divided by that player's initial loan (Division 2 salary plus bonus), for all players in a given cohort. The recovery rate drops rapidly, from nearly 40 percent in year 1 to 3 percent in year 6. At these rates, the average player would pay back his Division 2 salary and bonus in five years. Once he does, the team apparently pays him the salary he would earn under free agency -- even though he is not yet a free agent. Given that a third of the players leave baseball after two years (Tab. 4), the teams seem to forfeit nearly half of their advance to a large cohort of players.[19]

[Insert Table 4 about here.]

We are unable to offer a comparable table for pitchers. The coefficient on free agency in our Panel B Column (3) regression is massive, but only insignificantly different from zero. As a comparison of the coefficient across the various Table 2 regressions shows, moreover, it is highly unstable. Accordingly, we omit any analogous pitching estimate.

IV. Product Endorsements, Cultural Differences, Ethnic Biases

A. Introduction:

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[17] Highly ranked older entrants can also more readily negotiate their contracts outside the draft. For evidence that school teachers pass on this advice to their players, see Saito (2004: 13).

[18] Given that university play substitutes for Division 2 training, older draftees will obviously spend less time in Division 2 -- as Tab. 3, Col. (6) shows.

[19] The need to recover the Division 2 training costs and sign-on bonuses goes a long way toward explaining the large amounts Major League teams must pay Japanese teams (e.g., the $50 million-plus to the Lions for Matsuzaka) for star players.

We close with several disparate discussions. First, we study the determinants of endorsement income. Although athletic salaries are often public in the U.S., endorsement earnings are not. In Subsection B. we use our tax and salary data to approximate endorsement income. Second, we ask what our results might imply about the putative cultural differences (so widely asserted by fans) between baseball in the U.S. and Japan (Subsection C.). Last, we ask whether Japanese teams pay American players differently from Japanese players, and black Americans differently from white Americans. Expatriates routinely claim that Japanese employers discriminate against foreigners in general and black foreigners in particular, and we use our data to see whether evidence of the claimed phenomenon appears in baseball (Subsection D.).

B. Who Endorses Products?

The highest salary players are not necessarily the highest endorsement-income players: some of the high endorsement earners are younger. Both groups perform at high levels, with high slugging-averages and high strike-out-to-walk-ratios. But where the teams generally pay a premium for experience, manufacturers bidding for endorsements sometimes prize youth.

To approximate endorsement income (necessarily, the calculation is crude), we first estimate taxable income by dividing tax liability by .37. To correct for the lower marginal brackets and unobserved exclusions and deductions, we add 20 million yen. We then subtract a player's 2004 salary. Among older taxpayers, we obviously would capture significant investment income. Professional baseball players are young, though, and we doubt that many would have accumulated enough wealth to earn much from investments.

Most players earn very little from endorsements. Even among the 120 high-income players on which we have tax data, we estimate median endorsement income of only 4.7 million yen. We obtain a maximum value of 163 million yen, but few players approach that level. Only 18 players earned more than 50 million yen from endorsements, and only five earned more than 100 million.

The stars earned the large endorsements. The batters with over-50-million endorsement incomes had career slugging percentages of .399 and annual at-bat rates of 342, compared to .335 and 149 for batters as a whole. The pitchers had strike-out-to-walk ratios of 3.26 and annual pitching rates of 393, compared to 2.12 and 211 for pitchers as a whole.

Yet in contrast to the stars with the salaries, some of the stars with the endorsements were young.[20] The batters with over-50-million in endorsement incomes averaged nearly ten years in Division 1, but the pitchers averaged barely three. An unreported tobit regression of this (admittedly crude) endorsement estimate (censored at 0) for the entire player database on the Table 2 Column (2) variables yields significant coefficients on slugging percentage and at-bat rates for batters, strike-out-to-walk ratios and pitching rates for pitchers, and insignificant coefficients on years played for both groups. A simple OLS regression (also unreported) of our endorsement income estimate on age for the 120 high-income players yields a significant and negative coefficient.

[20] If the taxable income in fact contains substantial investment income as well, it obviously accentuates the ability of stars to accumulate substantial wealth through endorsements while still young.

In Column (2) of Table 5, we regress total tax liability (logged) on our standard performance variables. Our dependent variable thus reflects both salary and endorsement income, but censored at 10 million yen for players earning less than about 40 million. Given how few players earn significant endorsement income, the results resemble those obtained from an OLS regression of salary on the same variables (Column (1); reproduced from Table 2, Column (2)). Reflecting the extra endorsement income to the very highest performing players, however, the coefficients on slugging and strike-out-to-walk rates are higher in Column (2) than in (1).[21]

[Insert Table 5 about here.]

C. A Different Sport?

For decades now, baseball fans in the U.S. and Japan have traded insults and stereotypes along with the occasional player. Are American players really more self-centered? Do Japanese managers manage with an aim toward winning? Or do they manage only toward cultivating team camaraderie?

Among those fans who stress the cross-national differences, none has stressed them as prolifically as Robert Whiting (1977, 1989). Whiting does not claim different rules. Instead, he posits a fundamental cultural divide: relentless individualism in the U.S., and a collective willingness to sacrifice for the team in Japan. The result -- Whiting (1989: 58) quotes Dodgers and Yomiuri Giants alumnus Reggie Smith -- is a game that "isn't baseball. ... It only looks like it."

Our dataset offers a test of Whiting's hypothesis, and it suggests he is wrong: Japanese owners bid for players offering the same attributes American owners want. Owners must attract fans to the stadiums, buyers to the merchandise retailers, and viewers to the television broadcasts. Toward that end, they will bid for the players fans want to see (though fans in turn seem not to bid enough for tickets and merchandise to let the teams break even). Japanese owners may pay substantially lower salaries than American owners, but -- as a comparison of Table 2 with Kelley's (1974) regressions indicates -- they pay for the same qualities. Apparently, Japanese and American fans prize the same game.

D. Biases?

Our pay and performance data also let us test for national and racial bias. Americans in Japan have complained of bias in a wide range of jobs -- from the corporate intern to the university English instructor (most prominently, Hall, 1998). Unfortunately, random variation always infects employee treatment, few employees anywhere believe they deserve any bad treatment they perceive, and objectivity becomes rarer still in the necessarily stress-filled ex-pat environment. Given the lack of systematic data, the debate over Japanese anti-foreign bias has remained mired in anecdote.

The market for baseball players offers a respite from this empirical quandary. Although anti-American bias can manifest itself in ways besides pay (allegations players detail in Whiting, 1977, 1989; Fitts, 2005; Cromartie & Whiting, 1989), pay is one

[21] For reasons explained in Nakazato, Ramseyer & Rasmusen (2007c) we make the comparison with the Tobit coefficients themselves, not separately calculated "marginal effects."

prominent way bias can show itself. And where individual performance is often hard to gauge from outside the firm, fans document athletic performance in detail.

Foreign ball players come to Japan from a home market without that bias, of course. As a result, their shadow wage in the U.S. market should operate as a floor on what their Japanese team can pay them, just as it operates as a floor for the best Japanese players: pay them less than what they could earn in the U.S., and they will not play in Japan. Indeed, Whiting (1989: 79) himself writes that "[f]oreigners always make two or three times as much as Japanese players of comparable ability."

Yet the principle that the U.S. shadow market cabins Japanese wages applies to virtually every American who works in Japan. The foreign engineer at Sony could work instead in White Plains; the English instructor at the Japanese university could teach comparative literature in Albany. If the Major Leagues limit the scope of any anti-foreign bias in the baseball market, so too do American firms and universities in their own industries.

In Table 2 Column (4) we add a dummy equal to 1 if a player is an American. For both batters and pitchers, the coefficients on the dummy are positive and statistically significant. At "two or three times" the comparable Japanese' salary, Whiting nails the size of the effect: because the regression uses a logged dependent variable, subtracting .775 from the median American pitcher's salary lowers compensation from 142 million yen to 65 million yen.

To test for racial bias, in Table 2 Column (5) we replace the American dummy with two variables -- White American (including Hispanic) and Black American. Although both coefficients are positive for batters, the coefficient on Black American is larger and significant, while the coefficient on White American is insignificant. For whatever reason (obviously, we cannot rule out racism), the teams had no black American pitchers. At least among batters, Japanese teams did not pay their black Americans less than they paid their white Americans.

V. Robustness Checks

In Table 4, we offer several checks on the robustness of our results. In Column (1), we reproduce our basic Table 2 Column (2) regression. In Column (2) described above, we confirm that NTA tax data yield results close to those with official team salary data. In Column (3), we use only 2003 rather than career performance data, and in Column (4) we look only at the 100 highest-earning batters and pitchers. In both of these last cases, the results match Column (1) closely enough to reassure us on the strength of our results.

In unreported regressions, we add team fixed effects to the basic Table 4 Column (1) regression. We use the Yomiuri Giants as the omitted variable. The Giants apparently outbid the other teams for batters, but not necessarily for pitchers. Among batters, all team coefficients are negative, and all are significant at the 90 percent level (or stronger) except the Dragons. Among pitchers, though, the coefficients are positive for the Tigers, Dragons, and Hawks. What is more, even the negative coefficients are not significant at the 90 percent level except those for the Carp and Eagles. More relevantly here, in both regressions the coefficients on the performance variables are significant in the predicted directions, and the calculated coefficient on the free agent dummy is insignificant.

VI. Conclusions

Even under multi-year, incompletely specified contracts, Japanese baseball players obtain close to what they would earn under free agency. What appears a salary shortfall instead represents the repayment of the training and bonuses the players receive at the outset of their careers. In effect, Japanese teams set the terms of their contracts by the expected strength of a player. To all players, they offer supra-market wages as long as they languish in Division 2 training programs. To recoup that wage subsidy, they sign them to multi-year contracts paying sub-market wages once they graduate to Division 1. Because the stronger players will repay their loan in much less than the contractual nine years, however, they compete for top recruits with massive sign-on bonuses. Largely, the teams recover those Division 2 subsidies and sign-on bonuses by a player's fifth year. Once they do, they pay their players what they would earn if they were free agents.

Bibliography

Andersen, Torben & Sumner J. La Croix. 1991. Customer Racial Discrimination in Major League Baseball. Economic Inquiry, 29: 665-77.

Bennett, James & John A. Flueck. 1983. An Evaluation of Major League Baseball Offensive Performance Models. American Statistician, 37: 136-49.

Berri, David J. & Anthony C. Krautmann. 2006. Shirking on the Court: Testing for the Incentive Effects of Guaranteed Pay. Economic Inquiry, 44: 536-46.

Blass, Asher A. 1992. Does the Baseball Labor Market Contradict the Human Capital Model of Investment, Rev. Econ. & Stat., xx: 261-68.

Cassing, James & Richard W. Douglas. 1980. Implications of the Auction Mechanism in Baseball's Free Agent Draft. Southern Econ. J., 47: 110-21.

Cromartie, Warren, & Robert Whiting. Slugging It Out in Japan: An American Major Leaguer in the Tokyo Outfield. Tokyo: Kodansha International.

Depkin, Craig A., II. 1999. Free-Agency and the Competitiveness of Major League Baseball. Rev. Indus. Org., 14: 205-17.

Drahozal, Christopher R. 1986. The Impact of Free Agency on the Distribution of Playing Talent in Major League Baseball. J. Econ. & Business, 38: 113-21.

Dudink, Ad. 1994. Birth Date and Sporting Success. Nature, 369: 592.

Eckard, E. Woodrow. 2001. The Origin of the Reserve Clause: Owner Collusion Versus "Public Interest." J. Sports Econ., 2: 113-30.

Fitts, Robert K. 2005. Remembering Japanese Baseball: An Oral History of the Game. Carbondale: Southern Illinois University Press.

Fort, Rodney & James Quirk. 1995. Cross-subsidization, Incentives, and Outcomes in Professional Team Sports Leagues. J. Econ. Literature, 33: 1265-99.

Galenson, David w. 1984. The Rise and Fall of Indentured Servitude in the Americas: An Economic Analysis. J. Econ. Hist., 44: 1-26.

Grubb, Farley. 1985. The Incidence of Servitude in Trans-Atlantic Migration, 1771-1804: An Economic Analysis. Explorations Econ. Hist., 22: 316-38.

Grubb, Farley. 1988. The Auction of Redemptioner Servants, Philadelphia, 1771-1804: An Economic Analysis. J. Econ. Hist., 48: 583-603.

Hall, Ivan P. 1998. Cartels of the Mind: Japan's Intellectual Closed Shop. New York: W.W. Norton.

Hamilton, Barton Hughes. 1997. Racial Discrimination and Professional Baseketball Salaries in the 1990s, xxx

Hanssen, Andrew. 1998. The Cost of Discrimination: A Study of Major League Baseball. Southern Econ. J., 64: 603-27.

Hylan, Timothy R., Maureen J. Lage & Michael Treglia. 1996. The Coase Theorem, Free Agency and Major League Baseball: A Panel Study of Pitcher Mobility from 1961 to 1992. Southern Econ. J., 27: 1029-42.

Kahn, Lawrence M. & Peter D. Sherer. 1988. Racial Differences in Professional Basketball Players' Compensation. J. Labor Econ., 6: 40-61.

Kelly, William W. 2002. Caught in the Spin Cycle: An Anthropological Observer at the Sites of Japanese Professional Baseball. In Susan O. Long, ed., Moving Targets: Composing Circles of Self and Community in Japan. Ithaca: Cornell University East Asia Program, pp. 137-49.

Kelly, William W. 2006. Japan: The Hanshin Tigers and Japanese Professional Baseball. In George Gmelch, ed., Baseball without Borders: The International Pastime. Lincoln: University of Nebraska Press, pp. 22-42.

Lehn, Kenneth. 1982. Property Rights, Risk Sharking, and Player Disability in Major League Baseball. Journal of Law & Economics, 25: 343-66.

Marburger, D. 2003. Does the Assignment of Property Rights Encourage or Discourage Shirking? Evidence from Major League Baseball. J. Sports Econ. 4: 19-34.

Nakazato, Minoru, J. Mark Ramseyer & Eric B. Rasmusen. 2007a. Executive Compensation in Japan: Estimating Levels and Determinants from Tax Records. Unpublished.

Nakazato, Minoru, J. Mark Ramseyer & Eric B. Rasmusen. 2007b. Public and Private Firm Compensation Compared: Evidence from Japanese Tax Returns. Unpublished.

Nakazato, Minoru, J. Mark Ramseyer & Eric B. Rasmusen. 2007c. The Industrial Organization of the Japanese Bar: Levels and Determinants of Attorney Income. Unpublished.

Nardinelli, Clark & Curtis Simon. 1990. Customer Racial Discrimination in the Market for Memorabelia: The Case of Baseball. Q.J. Econ., 105: 575-95.

Nihon yakyu kiko, ed. 2004. Nihon puro yakyu kiroku daihyakka, 2004 [The Official Baseball Encyclopedia, 2004]. Tokyo: K.K. Beesu boru magajin, 4th ed.

Raimondo, Henry J. 1983. Free Agents' Impact on the Labor Market for Baseball Players. J. Labor Res., 4: 183-93.

Rottenberg, Simon. 1956. The Baseball Players' Labor Market. J. Pol. Eco., 64: 242-58.

Scully, Gerald W. 1974. Pay and performance in Major League Baseball, Am. Econ. Rev., 64: 915-930.

Sommers, Paul M. & Noel Quinton. 1982. Pay and Performance in Major League Baseball: The Case of the First Family of Free Agents. J. Human Resources, 17: 426-36.

Tokyo shoko risaachi (2005) Zenkoku kogaku nozeisha meibo [Roster of High-Income Taxpayers] (CD-ROM). Tokyo: Tokyo shoko risaachi.

TSR. See Tokyo Shoko.

Whiting, Robert. 1977. The Chrsanthemum and the Bat: Baseball Samurai Style. New York: Avon Books.

Whiting, Robert. 1989. You Gotta Have Wa. New York: Vintgage Books.

Table 1: Selected Summary Statistics

A. Pay and Performance

	n	2004 Salaries					2003 Performance		
		Low	Mean	Median	High	% HIT*	Slug Av	SO/Walk	W/L.
All Players	620	0	4,461	1,885	65,000	.194	.334	2.122	
Central League									
Tigers	52	480	4,827	2,000	26,000	.25	.357	1.892	.630
Dragons	48	560	5,608	2,500	25,000	.27	.319	2.406	.525
Giants	51	480	8,485	3,000	54,000	.373	.318	2.591	.518
Sawllows	54	440	3,733	1,100	30,000	.111	.343	2.943	.518
Carp	51	440	2,858	900	17,000	.157	.311	2.013	.486
Baystars	47	460	5,265	1,310	65,000	.213	.342	2.504	.324
Pacific League									
Hawks	52	450	4,606	2,000	40,000	.25	.337	2.033	.599
Lions	53	600	4,762	1,900	40,000	.189	.348	1.852	.558
Buffalos	57	480	2,884	1,300	27,000	.053	.308	1.959	.536
Mariners	52	0	3,283	1,900	23,000	.154	.325	1.822	.496
Fighters	50	480	4,027	2,000	40,000	.16	.351	1.927	.456
Eagles	53	490	3,579	2,700	12,500	.170	.347	1.743	**
Foreigners	23	500	9,520	5,500	54,000	0	.416	2.289	
Pitchers	268	460	4,404	2,350	65,000	.198			
Batters	352	0	4,504	1,600	54,000	.190			
Free agents	61	1,900	12,153	8,400	65,000	.689	.388	2.269	

B. Performance Range

	Low	Mean	Median	High
Slugging Percentage	0	.334	.349	1.00
Strike Out/Walk	0	2.122	1.938	12
Years Played	0	4.753	4	22

Notes: Financial figures in 10,000 yen.

* High-income taxpayer: those players who paid at least 10 million yen in taxes in 2004.

** The Eagles were formed in late 2004. Because we take our rosters from late 2006, the Eagles' financial and performance figures are based on 2003 performance for those players who had joined the Eagles by late 2006.

Sources: Nihon yakyu kiko, ed., Nihon puro yakyu kiroku daihyakka, 2004 [The Official Baseball Encyclopedia, 2004] (Tokyo: K.K. Beesu boru magajin, 4th ed., 2004); Tokyo shoko risaachi, Zenkoku kogaku nozeisha meibo [Roster of High-Income Taxpayers] (CD-ROM) (Tokyo: Tokyo shoko risaachi, 2005); www.sponichi.co.jp.

Table 2: Determinants of Compensation: Basic Regressions

A. Batters:

Dependent variable: Total Compensation

	(1)	(2)	(3)	(4)	(5)
Slugging %	1.121 (4.48)	1.133 (4.51)	1.053 (4.12)	1.112 (4.47)	1.115 (4.47)
Years Played	.435 (11.50)	.423 (9.77)	.426 (9.77)	.442 (10.15)	.440 (10.06)
D High Bat Aver	-.308 (2.96)	-.306 (2.93)	-.266 (2.29)	-.287 (2.77)	-.287 (2.77)
Annual At Bat	.005 (19.56)	.005 (19.17)	.005 (18.46)	.005 (17.89)	.005 (17.89)
Free Agent		.055 (0.54)	.302 (0.24)	.064 (0.64)	.067 (0.67)
FA * Slugging %		2.340 (1.69)			
FA * Years Played			-.317 (0.66)		
FA * DHBA			-.132 (0.48)		
FA * Annual At Bat			-.001 (1.19)		
American				.775 (2.51)	
Black Am.					.924 (2.51)
White Am.					.467 (0.90)
Constant	6.181 (72.00)	6.189 (71.03)	6.203 (70.43)	6.183(71.60)	6.184 (71.53)
n	289	289	289	289	289
R2	.81	.81	.81	.81	.81

B. Pitchers:

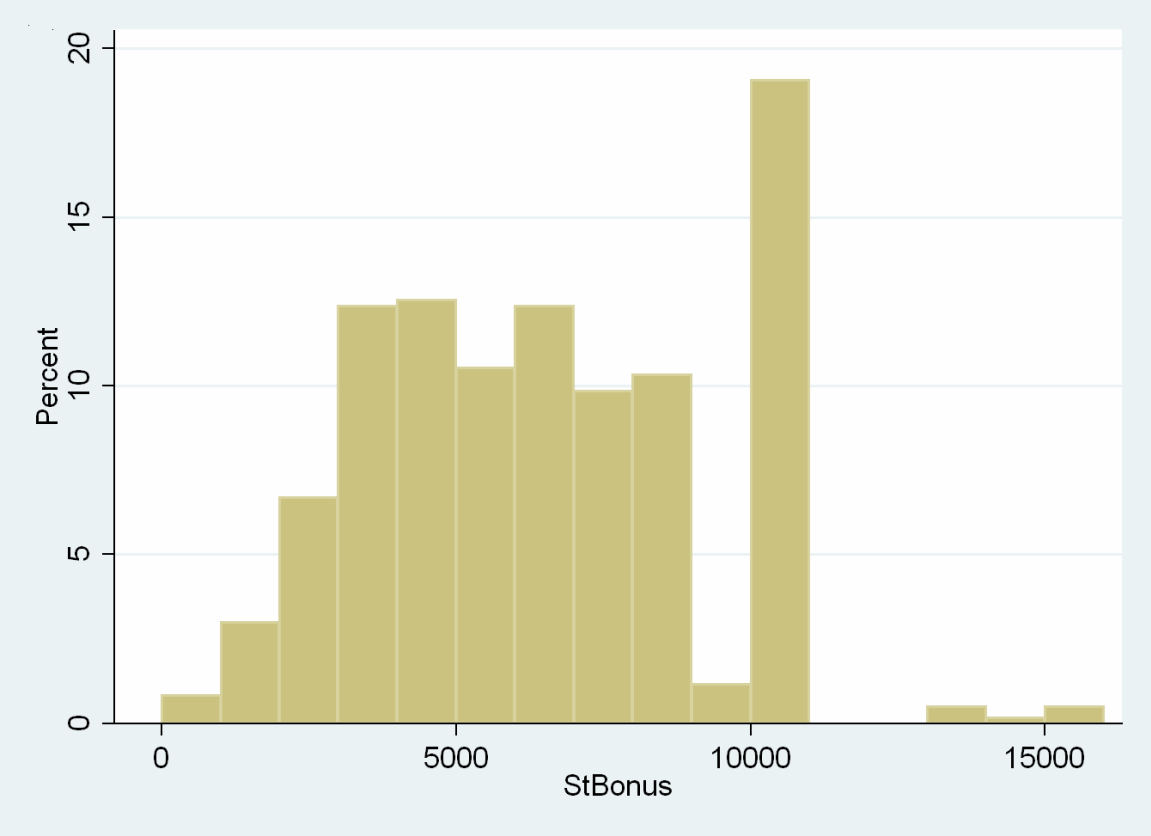
Dependent variable: Total Compensation

	(1)	(2)	(3)	(4)	(5)
Strike Out/Walk	.090 (2.90)	.089 (2.89)	.067 (2.28)	.093 (3.03)	.093 (3.03)
Years Played	.465 (9.75)	.438 (8.46)	.432 (8.83)	.460 (8.77)	.460 (8.77)
Annual Pitches	.004 (14.94)	.004 (14.60)	.004 (16.04)	.004 (13.67)	.004 (13.67)
Free Agent		.210 (1.32)	1.975 (0.92)	.216 (1.37)	.216 (1.37)
FA * Strk Out/Walk			.752 (4.04)		
FA * Years Played			-.734 (0.90)		
FA * Annual Pitches			-.004 (4.40)		
American				.519 (2.10)	
Black Am.					*
White Am.					.519 (2.10)
Constant	6.344 (65.41)	6.375 (63.96)	6.377 (67.26)	6.354(63.87)	6.354 (63.87)
n	240	240	240	240	240
R2	.68	.68	.72	.69	.69

Notes: Compensation and Years Played (in Division 1) are logged. D High Bat Aver equals 1 for those players with above-average batting averages but below-average slugging percentages.
* There are no black American pitchers in the dataset.

Sources: See Table 1.

Figure 1: Starting Bonuses



Notes: Sign-on bonus for all 2004 players with Division 1 experience who joined the team in an earlier year.

Sources: See Table 1.

Table 3: Predicting Performance (Batters)

	Dependent variable					
	Slug Aver.		Ann. At Bats		Div. 2 Years.	
	(1)	(2)	(3)	(4)	(5)	(6)
Start Bonus	.000009	.000008	.013	.013	-.0002	-.0001
	(2.98)	(2.72)	(4.86)	(4.63)	(4.87)	(3.46)
Div. 1 Years	.010	.010	17.211	18.067		
	(5.79)	(5.98)	(10.45)	(11.29)		
Draft Age		.006		7.858		-.313
		(1.88)		(2.78)		(9.81)
n	282	280	282	280	342	338
R2	.13	.14	.31	.35	.07	.27

Sources: See Table 1.

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Table 4: Loan Recovery Rates (Batters)

Div. 1 Years	n	Recovery (%)
1	40	39.1
2	39	23.2
3	24	10.6
4	25	14.5
5	21	20.2
6	17	2.9
7	23	-4.7
8	15	7.5
9	17	2.3

Notes: The recovery rate represents (a) the difference between (i) the salary a player actually received and (ii) the estimated amount he would have received as a free agent, calculated by the coefficients given in Table 2 Column (3), divided by (b) the sum of (i) a player's starting bonus and (ii) the number of years he spent in Division 2 times the lowest salary paid to a Division 2 player in his cohort, all discounted at (c) 10 percent per year.

Sources: See Table 1.

Table 5: Determinants of Compensation: Alternative Specifications

A. Batters:

	(1)	(2)	(3)	(4)
Dependent variable:	*Total Comp*	*Tax Liab*	*Total Comp*	*Total Comp*
Slugging %	1.133 (4.51)	5.810 (4.33)	.594 (3.20)	2.569 (2.18)
Years Played	.423 (9.77)	.930 (4.55)	.345 (8.07)	.350 (2.44)
D High Bat Aver	-.306 (2.93)	.318 (0.97)	-.134 (1.38)	.175 (0.67)
Annual At Bat	.005 (19.17)	.005 (6.93)	.004 (22.02)	.003 (3.48)
Free Agent	.055 (0.54)	.166 (0.60)	.317 (3.35)	.158 (0.80)
Constant	6.189 (71.03)	3.437 (4.15)	6.386 (78.25)	7.411 (13.85)
n	289	290	273	100
R2	.81		.83	.31
Regression	OLS	Tobit	OLS	OLS
Years	Career	Career	2003	Career
Players	All	All	All	Top 100

B. Pitchers:

	(1)	(2)	(3)	(4)
Dependent variable:	*Total Comp*	*Tax Liab*	*Total Comp*	*Total Comp*
Strike Out/Walk	.089 (2.89)	.288 (2.94)	.121 (4.48)	.268 (3.90)
Years Played	.438 (8.46)	.506 (2.61)	.474 (8.63)	.234 (2.85)
Annual Pitches	.004 (14.60)	.005 (5.84)	.002 (11.19)	.001 (2.48)
Free Agent	.210 (1.32)	.724 (1.77)	.210 (1.23)	.231 (1.45)
Constant	6.375 (63.96)	5.489 (9.22)	6.521 (66.56)	7.540 (30.69)
n	240	240	222	99
R2	.68		.62	.33
Regression	OLS	Tobit	OLS	OLS
Years	Career	Career	2003	Career
Players	All	All	All	Top 100

Notes: Total Comp, Tax Liab, and Years Played are logged. Column (3) uses the 2003 slugging percentage, at-bat figures, strike-out-walk-ratio, and number of pitches.

Sources: See Table 1.