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**Conduct, Performance, and Public Policy Implications of Baseball's Reentry Draft**

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Conduct, Performance, and Public Policy Implications of Baseball's Reentry Draft

This paper examines issues of theory and evidence regarding the link between baseball's reentry draft and league balance. The character of this relationship is important in at least two broad respects. First, from the standpoint of public policy, events which potentially affect competitiveness in professional baseball are especially significant in light of the sport's rather curious antitrust immunity. Second, though the redistributive implications of baseball's labor market have been set forth quite clearly in the economic literature, the conventional prediction that team balance will be unaffected by the reentry draft has not been tested.

Section I provides background relating the issues of baseball's favored antitrust status and the economic analysis of the sport. We touch briefly on the proffered rationale for baseball's exemption and then review the salient points in the economic model of baseball's labor market. This summary serves to distinguish aspects of the traditional model which are sound from those perhaps less so. In Section II we extend an alternative theory of the competitive effects of baseball's reentry draft originally suggested by Daly & Moore [1981]. Section III presents and estimates an empirical model designed

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1Baseball's immunity stems rather circuitously from the 1914 New York Supreme Court interpretation in American League Baseball Club v. Chase. The basis for the Court's judgement was that professional baseball at that time did not qualify as "a commodity or an article of merchandise subject to the regulation of Congress on the theory that it is interstate commerce". Despite several mitigating developments since then, the Courts have shown that they will rule in favor of baseball's exemption until Congress acts explicitly to revoke it. Congressional inquiry into this prospect was undertaken by the Sisk Committee as recently as 1976. Though the committee's findings failed to justify baseball's exemption, no formal action was taken. For a more detailed account of the judicial history, see Markham & Teplitz (1981, pp. 1-9).
to test important tenets of the alternative theory. Section IV discusses the policy significance of our findings and suggests directions for further research.

I. Background & Review

Broadly speaking, defenders of baseball's antitrust exemption contend that the explicit league agreements afforded by its unique legal status are necessary to preserve the vitality of competition. For purposes of financial viability, the league requires such seeming cartel arrangements as jointly negotiated broadcasting contracts, intricate formulas for sharing attendance revenue, and complete control in granting new "competitors" the right of territorial monopoly. The rules governing the sport's labor market are even more controversial, defended as "pro-competitive" restraints on player mobility. For example, the reverse-order rookie draft is intended to give each year's worst teams the first option on the best new talent. Furthermore, through the "reserve clause" in rookie contracts, players are obligated to stay with their original club for a period standardized by the league. Although this draft system limits competitive bidding on new talent, and thus artificially suppresses the cost of potential superstars, this cost-saving can be especially vital in preserving otherwise extramarginal clubs. In these varied respects it has been argued that formal agreements clearly in breach of antitrust guidelines are necessary to assure team balance, financial integrity, and thus the general vitality of competition in our national pastime.

In rather sharp contrast, economic analysis finds most of these arguments untenable, especially the notion that the reserve clause has pro-competitive
implications. The traditional economic view holds that the terms of the original reserve clause merely facilitated monoposonistic exploitation, without altering the allocation of talent that would prevail in an auction market for players.\(^2\) The cogency of this argument follows from two labor market conditions implied by the reserve clause. First, it is essentially a provision that secures the property rights to players' talent with the owners. Second, clubs are nonetheless unilaterally free to sell, trade, or waive players. Since there is initially no competitive bidding for players, a club receives economic rents via the revenue received from relatively low cost personnel. Given the initial property-right assignments wrought in the rookie draft, and subsequently protected under the reserve clause, owners are in a position to extract the economic rents of players either through the box office or the cash-player market. In short, the economic model has long identified the reserve clause as simply a rent-seeking arrangement. Indeed, the model clearly predicted the dramatic escalation in player salaries that has occurred since the creation of the reentry draft in 1976.\(^3\) The unprecedented contracts

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\(^2\)The seminal discussion of this issue is Rottenberg's (1956, pp. 247-252). More formal treatments are presented by Quirk & El Hodiri (1971) and Demmert (1973). A concise review of the literature on this point is provided by Daly & Moore (1981, pp. 78-79).

\(^3\)We should emphasis that the re-entry draft represents a revision, not a repeal, of the reserve clause. Originally, the reserve clause assigned the property rights of a player to the team for the duration of the player's professional career. The only real option for a disgruntled player prior to 1976 was to leave baseball for a season, after which time the player was free to negotiate with any club. This option was in fact taken by Curt Flood in 1970 following an unfavorable U. S. Supreme Court ruling on Flood's appeal on the legality of the reserve clause. The basis for this decision was baseball's antitrust exemption. Under the revised reserve clause, a player is only obligated to his original team for six years. Then the player is eligible for the re-entry draft.
negotiated since that time reflect the redistribution of economic rent from club owners to players. However, regarding the net reallocation of players, the economic reasoning is that an owner unwilling to match a player's new contract as generated in the free-agent market, should have been quite willing to sell that player at a comparable premium under the original reserve clause. Though the free-agent market clearly changes the profitability associated with management's decision, it does not alter the calculus. For this reason, the reentry draft is predicted to redistribute economic rents, but not talent, and thus team balance should be unaffected.

Whether team balance has in fact been unaltered by the reentry market is an empirical question which has been relatively neglected in the economic literature. An exception is a recent paper by Dolan & Schmidt (1984) which, contrary to the traditional prediction, found improvements in team revenue and field performance positively correlated with player movements in the free-agent market. However, we regard these findings as preliminary in two respects. First, the Spearman rank procedure performed is a univariate methodology which does not control for any of the other variables that might explain team revenue and field performance. Second, the ordinal ranking of free-agents within three broad quality classifications reflects a subjective, albeit majority designation. Nevertheless, those preliminary findings are consistent with an alternative view of the reentry draft's implications suggested by Daly & Moore (1981). The next section summarizes this view and then extends

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4 The prediction of monopsonistic exploitation has been amply verified in the literature. Estimates of the rate of exploitation under the reserve clause are obtained by Scully (1974). Empirical estimates of the degree of rent redistribution since the re-entry draft are provided by Cassing & Douglas (1981), Sommers & Quinton (1982), and Hill & Spellman (1983).
the analysis to obtain new short- and long-run predictions regarding the competitive implications of the reentry draft.

II. Theoretical Reconsiderations

As indicated above, a crucial link in the prediction of the traditional model is the assumption that any pro-competitive allocation of talent achieved through the reverse-order rookie draft would be ultimately undone via cash-player transactions. This would seem to imply that cash-player deals should have been common, if not rampant, prior to the reentry draft. However, Daly & Moore (hereafter D & M) cite an apparent dearth of such transactions historically, and thus question the appropriateness of the traditional model for examining the competitive impacts of the reentry draft.5

D & M's reformulation proceeds from the common premise that close races enhance the aggregate wealth of the league.6 However, they reject the related proposition, as discussed by Demmert (1973), that efforts to capture the

5"According to press accounts, prior to 1976 and the prospective revision of the reserve clause, few, if any, players of star quality had been exchanged for cash since World War II. Indeed, the Commissioner of Baseball's nullification of a number of player sales by the Oakland franchise in 1976, subsequently upheld by the courts, was explicitly based on the rationale that they were highly unusual and would reduce the equality of competition....In short, casual empiricism (probably the best evidence we have) suggests that player-cash transfers are not the medium through which significant increments of talent are transacted....this custom raises serious questions about the descriptive or predictive accuracy of the conventional model for analyzing changes in the rules structure." (D & M, pp. 83-84)

6Cognizance of this point is manifest in the league policy of splitting gate receipts between home and road clubs. However, perhaps of greater significance is the role of national broadcasting contracts. These are negotiated jointly and shared equally. It is reasonable to presume that the value of the national contracts will depend on the level of national interest in the sport, something which is likely to vary directly with the vigor of competition. Hence, in terms of national broadcasting revenue, all teams have an equal interest in league balance.
joint benefits of league balance are necessarily thwarted for reasons endemic to the typical externality problem. Instead, they stress special attributes of Baseball’s environment which raise the likelihood that significant external wealth effects can be internalized. This unique setting is forcefully described by D & M:

"...team owners are surely aware of these (wealth) effects; the number of teams is not large and, hence, free-rider effects are not inevitable; a central organization (the league) is available to coordinate activities and prescribe allocative rules; collusion among teams is, uniquely, legal in the industry and detection of violators of collusive agreements remarkably easy." (pp. 81-82)

Considered in this context, the explicit terms of the reverse-order rookie draft can be seen as a rather clear instance of how league rules are devised to incorporate the collective benefits associated with team balance. Furthermore, it is not even imperative that such agreements be explicit in light of baseball’s facilitating institutional structure. Hence, it is plausible that if the initial allocation of players rendered in the rookie draft is recognized as a significant step toward wealth-maximizing balance for the league, then an implicit contract not to undermine that allocation via cash-player deals could be binding. Indeed, D & M maintain that just such an implicit "no sale" agreement was a rather well-known and time-honored tradition prior to revision of the reserve clause in 1976. 8

7"The situation is analogous to the traditional production externality problem. The improvement of a better than average team results in diseconomies which are external to the club but internal to the league. Likewise, the improvement of a poor team results in benefits to the league as a whole over and above those which accrue to that individual club. It can not be expected that the club will consider these external effects of its decisions in determining the level of its team's quality" (Demmert 1973, p. 29).

8Daly & Moore (1981. p. 82-83), especially notes 5, 7, and 8.
In sum, the conspicuous absence of cash-player deals prior to 1976 may reflect the effectiveness with which league rules, both explicit and implicit, work to internalize the collective wealth effects identified with greater league balance. However, it is also likely that a major rule change such as the reentry draft could be a destabilizing shock to the implicit contractual environment described above. In the conclusions of our earlier paper, we commented that the crucial effect of the reentry draft may have been to reduce the perceived benefits of implicit cooperation while raising the costs of implementation. This conclusion is based on several findings or observations with respect to the post reentry draft period. First, the intensity of bidding on premier players by several clubs in the reentry draft testifies to some erosion of an apparent "no-sale" custom. Second, it is noteworthy that the free-agent contracts have had a significant slipstream effect on baseball's salary structure in general. Third, according to the findings of our earlier paper, measurable improvements in revenue and field performance correlated with the movement of free-agent talent from 1977-1983. Though we regard this finding as preliminary for the reasons cited in Section I, it does indicate a profit incentive for an individual team to explore the prospects of the free-agent input market.

Still, these points alone do not undermine an arguably powerful rationale that the owners would still be collectively better off if they simply agreed to abstain from the financial fray of the free agent market, much in the way that cash-player deals had been eschewed in the past. That this policy has apparently not been implemented leads us to hypothesize that the crucial effect of a well-organized auction market for proven major league talent may have been to raise the cost of detection and enforcement of an implicit
agreement. This concept represents an interesting extension of the D & M model and can be developed more fully to render new predictions regarding the short and long-run implications of the reentry draft.

In our view, the reentry player draft is potentially disruptive because it lends a greater degree of anonymity to player transactions. Anonymity in this setting is important since it makes detection and thus enforcement of implicit agreements more difficult. In essence, the reentry draft elevates a cash-player transaction from a two- to a multi-party event. From a seller's standpoint, it is quite simply no longer a club's decision. Players decide to be free-agents. On the demand side, blame among clubs is also rather intractable. One bid does not an auction make, and when as many as a dozen clubs exercise their option to negotiate with a player, it is inappropriate to view the successful bidder as wholly culpable. In sum, it is hard to enforce an implicit anti-raid agreement when the raid ceases to be a clear two-party transaction. As cartel theory predicts, an agreement without means of detection is less enforceable and consequently more prone to violation.

This analysis suggests an increased likelihood that the reentry draft will alter competitive balance. Balance in this context can be interpreted as revenue and/or field performance, since the two are highly correlated. Indeed, it is the extra revenue that comes with winning, coupled with the perception that a free-agent might make the difference between winning a pennant and merely contending for one, that poses the initial incentive to

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9 The general significance of these points for effective collusive conduct was discussed by Stigler (1968) and are well accepted in the literature.

10 For example, Scully's revenue model predicts that the financial implication for a club playing .500 versus .600 baseball is more than one million 1972 dollars (1974, pp. 920-921).
defect. Here again the analysis broaches an established tenet of cartel theory — there must be sufficient rewards to entice defectors. For this reason, it is necessary to refine our preliminary assessment of the role which free-agent movements may have had on team performances. The strength of this relationship yields some measure of the incentive to cheat. In sum, the short-run prediction of the alternative model is that competition should be affected, for which both the motivation and evidence are measureable impacts of free-agent activity on team revenue and field performances. Estimation of these effects is largely the focus of Section III.

This theoretical perspective also has longer-run implications which we should develop briefly. Generally, we would anticipate efforts to restrike a collusive agreement, implicit or explicit. The basis for this hypothesis combines several points. First of all, important facets of the league arrangement which encourage cooperation remain intact. The two most significant of these are the legality of explicit collusion and the fact the team balance remains the wealth-maximizing strategy for the league. Close competitions are not only a significant predictor of attendance revenue, but may heighten interest in the sport in general.\(^\text{11}\) This latter effect can be especially relevant in determining national broadcasting contracts, the revenues from which are shared equally. In a more theoretical context, we also emphasize that any disruption of a pre-1976 implicit contract due to the free-agent draft, will play out in a multi-period setting. Time adds a very important dimension in this case. Although there are always individual incentives

\(^{11}\)For example, Hunt & Lewis (1976, pp. 937-938) found the number of games behind the leader to be significant in explaining a team's home and road attendance.
to cheat on a collusive agreement, there are also predictable joint consequences of doing so.\textsuperscript{12} Indeed, this is the point so cogently conveyed in the well-known "prisoners' dilemma".\textsuperscript{13} However, the dilemma is most vexing in a single-trial setting with no communication between prisoners. In contrast, the lessons afforded by repetitions of the game reinforce rather than undermine the rationale for collective action. Therefore, we offer the longer-run prediction that steps will be taken by league members to reinstate a policy paralleling the implicit "no sale" contract that apparently existed prior to the reentry draft. Indeed, one sign that league sentiments to this effect may have already surfaced is the issue of team compensation for players lost in the reentry process. Recall that this was a critical issue behind the player strike which interrupted the 1981 season. Generally speaking, manifestations of any renewed league agreement in the longer term should appear in the nature and intensity of activity in the free agent market. Further consideration of this long-run hypothesis is given in our concluding comments.

\textsuperscript{12}For a concise graphical treatment of this point, see Asch (1983, pp. 61-63).

\textsuperscript{13}For a detailed discussion of this game and related extensions, see Luce & Raiffa (1957, pp. 94-102).
III. The Empirical Model and Results

This section presents an empirical framework within which to test for changes in competitive balance between pre- and post-reentry draft eras, 1969-76 and 1977-83 respectively. Changes in competitive balance as they relate to free-agent movements are assessed in terms of affects on teams' total revenue. In a purely accounting sense, an individual team's annual revenue (REV) is derived from five potential sources:

\[
REV = AREV + CREV + BREVL + BREVN + POSTREV;
\]

where

- AREV = attendance revenue,
- CREV = concessions revenue,
- BREVL = local broadcast revenue,
- BREVN = shared national broadcast revenue, and
- POSTREV = post-season attendance and concessions revenue.

This identity serves a useful organizational purpose quite separate from its accounting function per se. Our objective is discerning whether, and to what extent, a revenue incentive exists for owners to bid in the free-agent market. For this reason, we may immediately ignore some of the revenue sources listed in equation (1). For example, national broadcasting revenue is shared equally each year. Hence, free-agent activity will in no way alter the distribution of this revenue component across teams. We also exclude

\[\text{Footnote: 14} \text{1969-76 provides an eight-year time span comparable in duration to the seven seasons since the inception of the reentry draft (1977-83). These fifteen years mark the full history of baseball since the sport reorganized into four divisions. A minor complication of the period is the introduction of two new teams, Seattle and Toronto, for the 1977 season. For consistency, we have dropped these teams from our sample and have recalculated all winning percentages in terms of the original 24 teams.}\]

\[\text{Footnote: 15} \text{These revenue figures are closely guarded by many of the teams. The manner and success of our revenue estimation are described in detail in Dolan and Schmidt, 1984.}\]
post-season revenue from consideration, but for a more interesting reason.  

For our purposes revenue estimation focuses on AREV, CREV, and BREVL. Each of these components will, to varying degrees, be influenced by factors such as on-field performance (both current and recent past), size of the market, and intensity of fan interest. In addition, the gain and/or loss of free agents during the 1977-83 period can influence team revenue both indirectly through their marginal contribution to team performance, and directly if they provide a turnstile draw as "superstars".

Consider these revenue sources in more detail. AREV and CREV are both obviously related to attendance itself. The basic sports attendance equation has been estimated in several studies, and aspects of our model are predicated upon that work. Formally:

\[
\text{AREV} + \text{CREV} = f \left[ \text{WFCT(+), CONTENDER(+), CELLAR(-), TSA(+), TKBB(+), PITCHERG(+), HITTERG(+), Y1981(-), TIME(?), SMSA(+), FANS(+), BBCOMP(-), STADIUM(+), INCITY(?)} \right];
\]

Teams not involved in post-season play receive no post-season attendance or concessions revenue, while participating teams receive equal shares for each game they play. Furthermore, the amounts are sizable. For the 1969-83 seasons, the World Series winners have averaged post-season revenues of approximately two million 1983 dollars. This represents approximately 11 percent of their total revenue for the year. A major issue, then, is getting into the playoffs. Finishing one game back represents substantial foregone revenue. In short, a contender may have the greatest incentive to shop in the free agent market. Not only can a team acquire a proven player, it can also shop to fill a weak position. The free agent could provide just the marginal improvement necessary to win the division for an already solid team. While this is true, estimation of this important revenue impact introduces estimation difficulties beyond the scope of the present effort. Bear in mind, however, that our reported revenue incentives will likely understate the revenue impact of free agents. Of course, this is also true of all studies in the rent redistribution literature cited in note 4.

where parenthetically we note predicted positive, negative, or indeterminant effects on attendance and concessions revenue. This specification posits that, ceteris paribus, fans turn out to see a winning team, and/or a team that is in the thick of a divisional race. These affects are modeled continuously through winning percentage (WPCT) and with a binary variable reflecting whether or not a team is in contention (CONTENDER = 1 for teams finishing five or fewer games behind the divisional winner; else = 0). Similarly, fans may show significantly less interest when a team is clearly out of the race (CELLAR = 1 for teams finishing twenty or more games back; else = 0). Power hitting and power pitching may also attract fans independent of their affect on team performance. These effects are incorporated through team slugging averages (TSA) and team strike-to-walk ratios (TKBB).18 A binary (Y1981) is included to allow for reduced revenue from the strike-shortened 1981 season. We also include a TIME variable to test for a secular trend which some observers maintain has occurred in baseball attendance over the past fifteen years.19

The addition of free agents to a roster can have two revenue effects. At least by design, they should influence revenue indirectly through their impact on team performance (WPCT). More will be said about this shortly. But newly acquired "superstars" may also lend an element of theatre, thus providing a turnstyle draw quite distinct from their playing contribution.

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18 An analogous situation for individual players was estimated by ?, ? who discovered that the most powerful variables for explaining salary differentials were slugging average for hitters and strikeout-to-walk ratio for pitchers.

19 Early in the 1970's, there was some concern that baseball was on the way out as our national pastime, losing ground to professional football. Others contend that, if this ever was true, interest in baseball nonetheless has shown renewed exuberance since the late 1970's. To capture this possible trend, TIME is entered quadratically.
The free-agent variables included explicitly in the revenue estimation are PITCHERG and HITTERG. These are cumulative indices of free-agent acquisitions of pitchers and hitters, respectively. Each player's index value is calculated as a three-year weighted average (year of the draft is 0.6, prior year is 0.3, and two years prior is 0.1) of the proportion of games played times a quality measure. As defended previously, the quality measure of a player we adopt is slugging average for hitters and strikeout-to-walk ratio for pitchers. The proportion of games played is a refinement of baseball's classification of free agents into type "C" spot players, type "B" everyday players, and type "A" superstars. The denominator for hitters is simply a full season, normally 162 games. For pitchers, the denominator is based upon the largest three-year average number of appearances by any starter (36, Mike Torrez 1975-77) or reliever (72, Rollie Fingers 1974-76). The resulting indices provide objective, continuous estimates of the potential impact of free agents on a team's future.

Special characteristics of a team's market may also explain variation in attendance. Certainly the population of the metropolitan area (SMSA) provides an unambiguous measure of a team's attendance base. But smaller cities can (and some do) compensate by having particularly rabid FANS. FANS is our estimate of per capita baseball attendance when the team plays 500

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20 Along these lines, it is of interest to note that the largest index value for any pitcher is 3.03 (Rollie Fingers in the 1976 draft) while that for hitters is for 0.48 (Dave Winfield in the 1980 draft). The largest aggregate index values for individual teams are pitcher gains, 4.03 (California in the 1980 draft); pitcher losses, 3.32 (New York Yankees in 1980); hitter gains, 1.12 (California in 1976); and hitter losses, 1.81 (Oakland in 1976).
ball. The observation ranged from 0.27 for the Yankees to 1.5 games attended annually per resident of Cincinnati. However, the existence of a second team in a metropolitan area may reduce the impact of a population base, especially if the other team is more successful. The impact of other baseball franchises (BBCCOMP) is considered as zero for single-team cities, and \(1 + WPCT_i\) of the other local team two-team cities (New York, Chicago, Los Angeles-Anaheim, and San Francisco-Oakland). A team's STADIUM size may also be important in the extreme case of success. A small stadium represents a supply constraint for a given level of demand, while a larger stadium allows a cushion for banner years. Finally, the number of years the team has been in the city (INCITY, taking on the values 1-5, 6 or more) has an ambiguous effect on attendance. The enthusiasm of a new team may wear off after several years, or conversely, it may take some years to build allegiances.

Local broadcasting revenue is set in single or multi-year contracts. Accordingly, the performance measures of interest are those of the team's recent past. We model this with a three-year weighted average winning percentage (WPCT3YR) and the number of pennants won over the past three seasons (P3YR). Free-agent gains (PITCHERG, HITTERG) are generally known at the time of negotiation and, as in the case of Pete Rose, could be a major factor

\[ WPCT3YR = \frac{.6(WPCT_{t-1}) + .3(WPCT_{t-2}) + .1(WPCT_{t-3})}{3}. \]

21 These predictions resulted from a separate time series (1969-83) regression for each team. Per capita attendance, calculated as total attendance for all teams in the metropolitan area divided by SMSA size, was regressed on winning percentage (entered in cubic form) and INCITY (as defined in the text). The Cochrane-Orcutt technique was employed to correct for serial correlation in these regressions.

FANS was then calculated by applying the estimated coefficients to a break-even, 500 season instead of actual WPCT and 6 instead of INCITY. FANS provides a measure of stable fan interest over the entire period. It subsumes many other factors which some authors deem influential in determining attendance. Included among these are per capita income, percent of the population who are black, as well as intangible sports interest.

22
In broadcast revenues. In addition many of the market variables discussed above should also influence the contract. Thus local broadcasting revenue is specified as:

\[
(3) \quad \text{BREVL} = f[\text{WPCT3YR}(+), \text{P3YR}(+), \text{PITCHERG}(+), \text{HITTERG}(+), \\
\phantom{=} \text{SMSA}(+), \text{BBCOMP}(-), \text{FANS}(+)].
\]

Our estimation of season revenue (SREV, measured in thousands of 1983 dollars) is then obtained by adding Equations 2 and 3 to yield a reduced-form expression. Since overlapping variables have the same hypothesized sign in both equations, predictions are unaffected. Equation (3) was estimated through least squares regression by using the 24 teams over the 15 years as a panel data set. Serial correlation was corrected through the Cochrane-Orcutt technique with the first-order autocorrelation coefficient estimated at 0.82 (t-value of 26.1). The results of this estimation are presented as Equation (4).

\[
(4) \quad \text{SREV} = -4629.20 + 13.65 \text{WPCT} + 351.50 \text{CONTENDER} - 50.08 \text{CELLAR} \\
\phantom{=} (0.58) \quad (5.30**) \quad (1.51) \quad (0.22) \\
+ 10.21 \text{TSA} - 5.19 \text{TKBB} + 75.99 \text{PITCHER} + 412.53 \text{HITTERG} \\
\phantom{=} (2.47**) \quad (0.01) \quad (0.51) \quad (0.81) \\
- 4775.71 \text{Y1981} - 2137.51 \text{TIME} + 111.24 \text{TIME}^2 + 0.94 \text{SMSA} \\
\phantom{=} (16.69**) \quad (2.21*) \quad (3.04**) \quad (3.56**) \\
+ 5538.98 \text{FANS} - 644.68 \text{BBCOMP} + 114.31 \text{STADIUM} - 529.39 \text{INCITY} \\
\phantom{=} (2.83**) \quad (0.74) \quad (4.05**) \quad (1.65) \\
+ 14.31 \text{WPCT3YR} + 324.78 \text{P3YR} \\
\phantom{=} (3.39**) \quad (1.33)
\]

The $R^2$ for this equation is 0.64. The values in parentheses are t-values, with a single asterisk depicting significance at the five-percent level and a double asterisk at the one-percent level.
Based on these results, does an owner have a clear revenue incentive to get involved in the reentry draft? The answer is "no" if one is counting on turnstyle effect. Both PITCHERG and HITTERG are positive, but insignificant. However, the return could be great if free agents truly have the anticipated impact on WPCT. Note that WPCT is highly significant and carries a substantial revenue impact. For example, a team achieving a record one standard deviation (69-points) above the mean winning percentage of 500, raises revenue by $941,850. In other words, it is worth almost $1 million to play 569 versus 500 ball. The question remains, however, do free agents affect winning? This relationship will be examined shortly in Equations (5) and (6). Before turning to that estimation, consider briefly the other determinants of the season's revenue. Raising three-year winning by its standard deviation 59 points should increase revenue by another $143,087 in the future. However, having controlled for WPCT, a team's position in the divisional race (CONTENDER or CELLAR) appears insignificant. So are a team's strikeout-to-walk ratio, competition from other teams in the area, length of time in the city, and the number of pennants won in the last three years. Power-hitting teams do fare dramatically better, however. Raising TSA by a standard deviation (e.g., from the average 379 to to 407) should raise revenue by $285,880. Moving to a city (SMSA) with one million more people could increase revenue by $939,648, unless those FANS average 0.17 fewer trips to a park in a normal year. In that case, the team would break even, ceteris paribus. Adding 10,000 seats onto a stadium is projected to bring in $1,143,140. As an aside, observe that the 1981 players' strike is predicted to have cost $4,775,710 per team in foregone revenue. Finally, seasonal revenue appears to have declined throughout the entire period, but
at a decreasing rate. We note, however, that offsetting these revenue declines is a recent trend of rising national broadcasting contracts.

Now consider the impact of free agent activity on field performance. Our model postulates that a team's winning percentage (WPCT) is determined by the previous year's stock of playing talent (represented by last year's winning percentage) plus personnel changes during the off-season. Of immediate interest are the free-agent gains and losses (PITCHERG, HITTERG, PITCHERL, HITTERL) that occur during the second half of our time period. Formally:

\[ WPCT = f[WPCT_{t-1}^+, PITCHERG^+, HITTERG^+, PITCHERL^-, PLAYERL^-] \]

This equation was estimated in the same manner as Equation 4 with the following results.

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23 Missing from this formulation are the less accessible personnel changes — retirements, rookie additions, and trades. If anything, the exclusion of this information should bias our estimates against free agents affecting team performance. The reasoning is simple. Teams can attempt to improve themselves in any or all of three ways — by developing their own rookies through their farm system, through trades, or through the reentry draft. The coefficients on free agent gains are estimated by comparing changes in winning percentage of teams actively involved in the draft versus teams who are not. If, as seems reasonable, teams who are more active in the draft are also less active in utilizing the other two modes, then the lack of adequate control for the other modes will bias the free agent coefficients downward.

24 This formulation differs from the production-function rendering commonly found in the rent-redistribution literature. There, current performance is estimated to be a function of current team aggregates, such as team batting average, slugging average, earned run average, and strikeout-to-walk ratio. An individual's contribution to team performance is then calculated as their prorated share of a team aggregate times that aggregate's impact on winning. While this formulation is appropriate in calculating the value of a player's marginal product, it is not appropriate for our purposes. That is, a newly acquired free agent plays in place of another player, and a free agent lost is replaced by a different player. We are interested in determining free agents' marginal impacts over the other players.
The $R^2$ for the equation is 0.58. The results indicate that a team which has neither acquired nor lost free agents starts out with a winning percentage of 132 and then adds on 74% of its winning percentage from last year. Thus an average team (WPCT of 500) from last year is predicted to remain average this year (WPCT of 502). Adding pitchers through the draft is predicted to improve winning percentage, but adding hitters has no statistically significant impact. On the other hand, losing pitchers or hitters to the draft is detrimental to the ensuing season. To get an idea of the impact on WPCT and SREV, consider the effects of gaining (or losing) the best pitcher and hitter during the free-agent period. Rollie Fingers (1976 draft) is estimated to be the best pitcher to enter the draft and sign with another club. His index value of 3.027 implies a rise of 26 points in his new team's winning percentage (revenue gain of $354,900) but a decline of 35 points to his old team ($477,750). Dave Winfield, with an index value of 0.485, appears to be the best hitter of the period. Adding a player of his calibre to a team is predicted raise winning percentage by 10 points ($136,500) while his loss by a team will cost 13 points ($177,450). While not statistically significant, the free-agent coefficients from the revenue equation provide the best point estimates of their turnstile effects. The turnstile draw of Rollie Fingers is predicted to have been $230,022 for a total revenue increase of $584,922. Dave Winfield's direct effect on the gate is estimated at $200,077 for a total of $336,577. Once again, we stress that such impacts will be under-
stated, perhaps dramatically, should these players have made the difference in getting their respective teams into the playoffs.

IV. Summary and Conclusions

A fundamental difference exists between the traditional model of baseball’s labor market and the alternative model developed in this paper. The alternative view emphasizes joint rather than individual wealth-maximizing conduct, the rationale for which is strengthened by the league’s institutional structure and protected by baseball’s unique legal status. Contrary to the traditional model, the reentry draft is predicted to have competitive impacts. The basis for this prediction is that the reentry draft obscures detection of violators of an implicit agreement and thus encourages defections. Of course, there must also be a sufficient lure for defectors. In the case of baseball, that incentive is posited as the revenue gains that may be attributed to free-agent movements. Our results indicate that free-agents have had substantial revenue impacts, ceterius paribus, both for teams gaining and losing their services. Defined in this financial context, competitive balance does appear to have been altered. Furthermore, this revenue effect can be interpreted as an incentive for owners to bid in the reentry auction, and, accordingly, a source for cartel instability.

However, whether the revenue additions justify the spectacular salaries of recent years is quite another story. In a casual sense, we would surmise probably not. Indeed, realization of this likely fact should reaffirm the wisdom of joint wealth-maximizing conduct. This reasoning leads us to the longer-term prediction for league conduct which was raised at the close of Section II. Recall that, considering the learning process that occurs in
an inter-temporal game setting, we hypothesized a settling trend in the nature and intensity of free-agent activity. Some very preliminary evidence that this trend may be occurring is presented in the above table. There, various measures describe the quantity and quality of free agent activity for each year of the reentry draft. Observe that the general trend in the market is for it to rise and then subside. This trend is discernable in both the quality and quantity of activity. Also note the rising proportion of free agents signing with their original teams. Admittedly, the results presented above are rather cursory, but they are suggestive of directions for future research. For example, other more revealing indicies of this possible trend would be the value of contracts negotiated as well as the average number of teams bidding and number of bids per player.
References


