

How the NBA Turned a Trickle of Underclassmen Leaving School Early into a Flood

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ABSTRACT

In this paper I show that the 1995 and 1999 collective bargaining agreements (CBAs) in the National Basketball Association (NBA) greatly increased the costs of staying in school, especially for prospective superstars. Since the 1995 agreement, the institution of below market price maximum salaries for first round draft picks in their first four seasons in the league (rookie scale contracts) has reduced their compensation by half relative to veteran first round picks. In addition, maximum salaries that are dependent on the number of seasons in the NBA were instituted as part of the 1999 CBA. Eager to complete their rookie scale contracts as early as possible, the number of college freshman and high school seniors declaring for the NBA draft has increased 2,000 percent since the period prior to the 1995 agreement.

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1. Introduction

The increase in number of young players entering the National Basketball Association (NBA) has been nothing short of extraordinary, resulting in calls for reform from both the National Collegiate Athletic Association (NCAA) and the NBA (Wiecks, 2001). In the twenty NBA drafts prior to the 1996 draft, a total of seven college freshmen and high school seniors declared themselves eligible for the NBA. In the eight drafts since that time, 61 such players declared themselves eligible – an increase of more than 2,000 percent. Only about half of these 54 players were drafted in the first round with a significant fraction of the remaining half never playing more than a handful of games in the NBA. The conventional wisdom attributes this flood of young players into the NBA to the success of Kevin Garnett and Kobe Bryant, two of the first players who entered the NBA straight from high school (Mandel, 2000; Nielson, 2001; and Hoffman, 2003).

However, the conventional wisdom largely ignores the fact that in the last two collective bargaining agreements, the NBA has dramatically increased the cost of staying in school (more than \$15 million per year of school for some players). Such an unintended consequence is a common outcome of these collective bargaining agreements. I describe how in response to rising salary costs, especially for less experienced players, the NBA instituted salary controls for players with less experience and high productivity. These salary controls in turn dramatically increased the incentives for players to enter the NBA before finishing (or even starting) college, thereby opening the floodgate of young players entering the NBA. This is the classic story of unintended consequences that result in a “cure” of an economic

problem, in this case a form of price control, possibly being worse than the original disease.¹

The implementation of these salary controls occurred as a result of a collective bargaining process between the NBA owners and the union that represents the NBA players, the National Basketball Players Association (NBPA). The costs of these salary controls have tended to be borne by two groups of players who have very little representation (high productivity players) or no representation (future NBA players) in the NBPA. Thus, this paper may shed light on the behavior of other unions with high incomes or strong bargaining positions, such as pilots or autoworkers.² In addition, these increases in players leaving early for the NBA may affect more than just the NBA and its players. First of all, losing many of their best young players to the NBA lowers the quality of the top college basketball programs and this has resulted in calls for reform (Vitale, 2001 and ESPN.com, 2002). Second, to the extent that college no longer is seen as a prerequisite for an NBA career, it may affect the educational aspirations of large numbers of youth (Oriand, 1995 and Berkowitz et al, 1997).

The focus of this paper is describing the precise way in which various aspects of these collective agreements have combined to create greater incentives (1) for teams to select younger players earlier in the draft and (2) for younger players to enter the NBA earlier. After describing the surge in young players entering the NBA, I first outline the NBA collective bargaining process and how it has resulted in a greater number of labor market distortions in more recent collective bargaining agreements. Next, I describe team incentives for drafting younger versus older players, and then I detail the incentives for young players. I conclude by examining recent proposals to stem the flow of young players into the NBA, including imposing an age limit.

¹ See Friedman et al (1981) and Rockoff (1988) for a description of the unintended consequences of other forms of price controls, such as rent controls and price controls on gasoline or wages.

2. Patterns of NBA Entry by Young Players

Table 1 shows the number of non-college seniors declaring and being selected in the first round of the draft during the 1976 through 2003 drafts. The 1996 draft immediately following the 1995 collective bargaining agreement unleashed the period when underclassmen and high school players started entering the NBA in large numbers. Prior to the 1996 draft, juniors declaring for the NBA draft were not uncommon (about eight per year over the previous twenty year period), while the number of sophomores was relatively small (about two per year). The number of college freshman and high school seniors was vanishingly small with just seven declaring themselves eligible for the NBA in the twenty years leading up to the 1996 draft.

And then the floodgates opened. In the 1996 through 1998 drafts, more than twice as many juniors declared per year (relative to the previous ten drafts), nearly three times as many sophomore declared, and the number of college freshmen and high school seniors declaring increased more than ten-fold. The 1999 collective bargaining agreement further eroded the salaries of first round picks during their first four years and created other salary constraints that encouraged early entry for prospective superstars. The result was a 57 percent increase in the number of college sophomores, college freshmen, and high school seniors declaring for the draft, while the number of juniors declaring fell by almost 30 percent. Moreover, of the 63 college freshman and high school seniors declaring for the draft between 1996 and 2003, almost half were not selected in the first round with many of these players never making it into the NBA. Finally, foreign players under age 22 are declaring themselves eligible for the NBA in increasing numbers with on average about 46 percent of the eight foreign early entries being selected in the first round.

² Rosenbaum (2003a) discusses the collective bargaining process in more detail.

3. NBA Collective Bargaining Agreements and the Increase of Labor Market Distortions

The labor market for player talent in the NBA is characterized by an incredibly complex web of salary constraints – constraints that stem from a variety of forces. Understanding these forces is important, because they are responsible for changing the incentives for players to enter the NBA before completing college. To begin with, as in most professional sports leagues, teams operate as a cartel, henceforth referred to as the League.³ The League seeks to maximize profits through limiting output (in this case the number of teams) and through reducing costs in markets in which it exercises market power (such as in the market for player talent).⁴

However, the League also faces market imperfections that are rare outside professional sports leagues. As described by Rosen and Sanderson (2001), wins (or championships) are an important product produced by teams, but league-wide the number of wins is fixed. Thus, an investment in winning made by one team generates negative externalities (losses) for other teams. A second but related consideration for the League is competitive balance. Part of the attraction of sporting events is that each contest is an elaborate “resolution of uncertainty.” Yet, if “rich” teams from large markets are able to make investments that remove almost all of this uncertainty, then the demand for the NBA product may decline, in particular if the removal of this uncertainty becomes a multi-year proposition for some teams. Because of the negative externalities associated with winning and concerns about competitive balance, most professional sports leagues, including the NBA, have instituted regulations

³ Yet, unlike many cartels, the collusive behavior of teams is largely limited to formal agreements entered into with their respective unions. Outside of these agreements with their unions, collusive behavior between teams generally is prohibited and has resulted in expensive lawsuits in baseball (Scully, 1989).

⁴ Another manifestation of this market power is the League’s ability to secure public funding for the construction of arenas.

restricting spending on player talent for high-spending teams (salary caps) or have instituted tariffs for spending over a certain amount (luxury taxes) or both (as in the NBA). In addition, the League has often sought to make it easier for teams to retain their own players in free agency, perhaps due to players' team-specific human capital.

Prior to the formation of the NBPA, the League exercised significant control over player compensation. Players were allocated to teams in a draft based upon the reverse order of team performance and exclusive rights to those players remained with the drafting team until that player was traded, sold, or waived. The formation of a rival league, the American Basketball Association (ABA), in 1967-68 introduced competition for player talent in the NBA, resulting in a dramatic increase in salaries. After the ABA folded in 1976, the NBPA negotiated for a very limited form of free agency for veterans. Since that time, free agency restrictions for veterans have been relaxed, but in their place a variety of salary constraints have been introduced.

These salary constraints have not affected all players equally, and the players who have benefited most are those most heavily represented in the NBPA. The NBPA is comprised of all active players and each player has one vote. In particular, it should be noted that low salary players are an important voting block in the NBPA. In 2002-03 about 23 percent of players earned the minimum salary and the lowest-paid third of players received only six percent of the total player salaries. On the other hand, the highest-paid ten percent of players received 36 percent of total player salaries.

While an argument can be made that high salary players are underrepresented at the negotiating table, there can be no doubt that *future* NBA players are underrepresented, since future players do not have a single League or NBPA vote. Consequently, while collective bargaining between the League and NBPA has resulted in greater freedom in free agency among veterans, especially among low and

middle salary veterans, players drafted in the first round face unprecedented restrictions in their rights to negotiate their initial contracts. These restrictions are a direct result of the 1995 and 1999 collective bargaining agreements.

Prior to these agreements, the NBA in 1983 had been the first sports league to institute a salary cap, which restricts teams from spending over a certain specified amount (usually a function of projected league revenue). However, the NBA's salary cap has always been a "soft cap" with numerous exceptions, which allowed teams to re-sign their own players at any salary (the "Bird" exception) and allowed various exceptions for middle and lower salary players. These exceptions resulted in average salaries increasing by 250 percent between 1987-88 (prior to the previous agreement) and 1994-95, while the salary cap (a function of projected league revenue) only increased by 160 percent (Staudohar, 1998). Moreover, with large rookie contracts being signed by Glenn Robinson (\$80 million over 11 years) and Jason Kidd (\$65 million over 8 years), there was a consensus among owners that player salaries were out of control, especially for rookies.

After tumultuous negotiations, the 1995 collective bargaining agreement granted veteran players greater free agency rights and increased the share of total revenue going to the players. However, there was one group of players who were worse off after this agreement – future rookies. Rookies drafted in the first round of the 1995 draft were restricted to signing three-year guaranteed "rookie scale" contracts with below market maximum salaries. These rookie scale contracts resulted in the first round draft picks in 1995 being paid 15 percent less (adjusting for inflation but not for NBA salary growth) than first round draft picks in 1994 in their respective rookie seasons. In their second seasons, they

were paid about 23 percent less, while the deficit increased to 39 percent in their third seasons.⁵ After their third seasons, these first round draft picks were eligible for restricted free agency, i.e. the players' teams retained the right to match offers made by other teams (the right of first refusal).

The 1995 agreement allowed the League to re-open negotiations if the players' share of revenue was greater than 51.8 percent, and their share shot up to 57 percent in 1997-98. After a lockout by the League that resulted in nearly half of the 1998-99 season being lost, the League gained major concessions from the players in the form of an escrow system (that taxed players up to 10 percent of their salary and benefits if total player compensation was greater than 55 percent of revenue) and a luxury tax system (that taxed teams a dollar for every dollar they were over a certain threshold if total player compensation was greater than 61.1 percent of revenue).⁶

Yet, even with these concessions, low and middle income veterans stood to benefit from the agreement with higher minimum salaries, especially for older veterans (including League subsidization of some of these salaries and a new salary cap exception for "mid-level" players. The players that paid the highest price for this agreement were a group of players that has very few votes in the union – high salary and future players. These new provisions, provisions that greatly affected the returns to leaving school early, were the following.

- (a) Maximum salaries for individual players (a first in professional sports history) – The maximum salary for the first season of a new contract could be no more than 25 percent of the salary cap level for players with less than 7 years of NBA experience, no more than 30 percent of the salary cap level for players with 7 to 9 years of NBA experience, and no more than 35 percent for players with 10 years or more of NBA experience.⁷

⁵ Increases in these maximum salaries for later draft years were ten percent or less. These increases were considerably smaller than average salary growth for veterans, resulting in declines in the relative value of these rookie scale contracts over time.

⁶ See Rosenbaum (2003b) for more detail on the luxury tax.

⁷ This provision did not apply to players with existing contracts. Also, players with existing high salary contracts

- (b) Maximum contract lengths and salary increases – Players signing with their own team were limited to seven-year contracts with annual increases of 12.5 percent of the value of the first year of the contract. Players signing with other teams were limited to six-year contracts with annual increases of 10 percent of the value of the first year of the contract. (In the prior agreement, annual increases were limited to 20 percent of the value of the first year of the contract with the same rules applying to players who signed with their own or other teams.)
- (c) Four-year rookie scale contracts – Players drafted in the first round were restricted to signing three-year guaranteed “rookie scale” contracts with below market maximum salaries with a fourth year at the team’s option (again with a below market price maximum salary) and fifth year restricted free agency.⁸

As will be discussed in the next section, it is the combination of these three provisions that has resulted in the return to leaving school early rising dramatically since the 1999 agreement, especially for players who are likely to be constrained by maximum salaries once they complete their rookie scale contracts.

4. Modeling Team Incentives for Drafting Young Players

In order to understand how these collective bargaining agreements have affected the decisions of players to leave school for the NBA, it is important consider how they affect both the incentives of teams and players. Team incentives matter, because compensation during the first four years of players’ careers is determined almost entirely by where these players are selected in the draft. Thus, if incentives result in teams being more likely to select players with less college experience (even at the expense of lower productivity), then the return to leaving school early increases.

Equation (4.1) models the draft selection decision of teams. Teams seek to maximize the

were eligible for five percent increases in their future contracts, even if this exceeded the maximum salary. In 2002-03, the salary cap level was at \$40.271 million, so the maximum salary for players with less than seven years of NBA experience was just over \$10 million.

⁸ Rosenbaum (2003a) shows that these rookie scale contracts have resulted in first round draft picks being paid about half of what they would have been paid in the absence of these salary restrictions.

expected profit (π) derived from a given draft selection by selecting players whose expected marginal product (MP) most exceeds their salaries (SAL).

$$(4.1) \quad E(\pi) = E\left[\sum_{s=1}^4 (MP_s - SAL_s) + \alpha \sum_{s=5}^S (MP_s - SAL_s)\right]$$

Note, however, that the expected profit derived from post-rookie scale contracts occur with probability α , which captures the possibility that a team may be unsuccessful in re-signing its own player.⁹

At first glance, (4.1) appears to be a fairly standard profit maximization problem, but the idiosyncrasies of the NBA labor market result in some unique features. For example, in recent years, the salary cap has created a labor market where at most only a couple of teams (including the player's current team due to the "Bird" exception) can offer a high productivity or "star" player a contract worth more than the average salary. Due to other salary cap exceptions, the salary cap does not fully constrain teams above the salary cap from offering below average salary contracts. In the free agent season prior to the 2002-03 season, every team was above the salary cap, implying that teams had nearly complete monopsony power over star players, but not over non-star players.¹⁰ Thus, for most teams the largest profit opportunities come from drafting or trading for players before they become star players. Then once they become star players, teams can use their monopsony power to increase their

⁹ This simple model abstracts away from other considerations, such as that (a) teams reserve the right to trade players and (b) the fourth year of the rookie scale contracts for first round draft selections is a team option. It is hard to imagine how the right to trade would play a major role in the decision to select a player with greater or lesser college experience. However, the fourth year team option reduces the risk in selecting a player with highly uncertain future marginal productivity. The option to cut their losses after three years may make teams more likely to select players with less college experience, since these players likely face a more uncertain productivity stream. One final point is that marginal productivity encompasses more than just a player's statistical achievements. Complementarities with other players, team differences in revenue production, and fan preferences for certain players are also part of marginal productivity. For that reason a given player's marginal productivity may differ greatly between teams.

¹⁰ The imposition of the luxury tax in the 2002-2003 season did, however, raise the net salary costs for new player contracts for teams with spending above the luxury tax threshold (a little below the average team salary). This, of course, would tend to reduce spending for these teams, but the effect was the same for teams re-signing their own players or signing other teams' players. Thus, the only teams that gained any monopsony power due to the luxury

profits. The profit opportunities due to acquiring non-star players are much less and likely mostly due to team-specific human capital, since for non-star players, profits are usually bid away by market competition.

With maximum salaries and monopsony power over star players, teams are eager to select players with some probability of becoming a star player, in particular a player whose future productivity exceeds the post-rookie scale maximum salary. For example, in Table 2 compare the choices between two sets of players that I refer to as “college players” and “high school players.” College players complete four years of college and high school players enter the NBA straight from high school. College players are worth \$3 million per season over his first four seasons and \$5 million per season over their next six seasons.¹¹ High school players are worth \$2 million per season over their first four seasons; over their next six seasons they have an 80 percent chance of being worth \$2 million per season and a 20 percent chance of being worth \$20.33 million per season. Also, assume for simplicity that α (the probability a given player stays with his current team) is equal to 0.75 for both sets of players, that the average salary for the rookie scale contract is \$3 million per season, and that the maximum salary is \$10 million per season.

Under this scenario, Table 2 shows that each of these sets of players has an expected marginal productivity of \$42 million over the next ten seasons. But assuming that players with productivity below the average salary (about \$5 million) are paid their marginal product in their post-rookie scale contracts,

tax were low-spending teams.

¹¹ In reality future productivity would be characterized by a distribution, but for simplicity I am assuming that the future productivity of college players is known. This assumption, along with the uncertainty assumed for high school players, is intended to capture the greater uncertainty involved with selecting unproven players with little or no college experience.

the expected profit for college players is \$4 million (all in the first four seasons). For high school players, expected profit is \$9.3 million (entirely in the final six seasons). Thus, teams prefer high school players despite the fact that during their first four years, they are less productive than the more experienced college players. It is the option value due to the higher probability of high school players becoming superstars that makes them more profitable than college players, even though both sets of players have the same expected marginal productivity. Furthermore, with rookie scale contracts set at about half of the marginal productivity of these players (as detailed in Rosenbaum, 2003a), the League has largely eliminated the downside risk of selecting a player with little or no college experience.

Thus, for most teams drafting a future superstar has become an overriding objective, especially for early selections in the draft. Hughes (2001) captures this sentiment: “Still, teams apparently are willing to take the gamble on the potential of the four high schoolers – [Kwame] Brown, [Eddy] Curry, [Tyson] Chandler and [DeSagana] Diop – rather than the safe pick of [Shane] Battier, the only four-year college guy in the group, because, as Sonics CEO Wally Walker said, ‘I think every player is different, but a team wants to try to draft a potential star.’ ” In fact, players who stay in school are at risk of revealing that they are likely not to become a potential star, even if they become great college players. Hughes (2001) continues with the following: “Left unsaid in that statement is the insinuation that [college player of the year] Battier is the player he is, meaning he does not have a great deal more growth left. He is a safe pick, to be sure, and might be a nice addition to a team that already is established, but he is not going to be the home run player that eventually might take a team to a title run.”

The large profits to be made from “home run players” present risks to players who stay in school. An additional year of school likely increases their marginal productivity (although maybe no

more so than an NBA season), but it also reduces the variance of the estimate of their projected NBA marginal productivity. Thus, *even if they meet or slightly exceed expectations*, this reduced variance could sharply reduce the projected probabilities of such players becoming “home run players,” perhaps even resulting in staying in school hurting rather than helping their draft status.

5. Player Incentives for Leaving School Early¹²

This phenomenon of players’ draft status falling even if they meet or exceed expectations in college is important, because improving their draft status is their primary benefit of staying in school.¹³ The negative consequences of staying in school are many, including (1) the risk of injury or poor play hurting their draft chances, (2) the opportunity cost of the salary they would receive in the NBA in their rookie scale contracts, (3) delay of the receipt of post-rookie scale salaries, and (4) the delay of the receipt of maximum salary increases (important for maximum salary players).

Tables 3 and 4 illustrate the combined importance of these factors in determining the cost of staying in school, first for players expecting maximum salary post-rookie scale contracts in Table 3,¹⁴ and second for players with an average veteran salary in Table 4.¹⁵ Measuring these costs requires assumptions about the discount rate, the growth rate of the salary cap, future maximum salaries, future

¹² This section, along with the previous section, could benefit from the presentation of statistical evidence to support the many assumptions in these two sections. The next draft of the paper will incorporate a rich description of how the rich description of evidence on playing careers in the NBA in order to substantiate these assumptions.

¹³ Of course, receiving a college education is a benefit of staying in school, but given the very low graduation rates of basketball players at premiere college programs and the dramatic difference in these players’ earnings potential as basketball players versus other professions, the value of a college education for most players is likely to be dwarfed by other considerations.

¹⁴ In the 2002-2003 season, greater than 20 percent of first round picks with four or more years of experience earned the maximum salary.

¹⁵ In the 2002-2003 season, the average salary for all veterans with four or more years of experience was \$5.5 million. Limited to those veterans who were first round picks, the total rises to \$6.65 million. Thus, I choose a salary in the

maximum salary increases, future rookie scale contracts, and the effect of staying in school on draft status.¹⁶

Table 3 suggests that for players who are highly likely to receive maximum salary post-rookie scale contracts, staying in school for four years costs them about \$66 million dollars (in present dollars), about 28 percent of their NBA career earnings if they enter the NBA straight from high school. The foregone earnings during the years spent in college are only 16 percent of these salary costs; the bulk of the costs come from the delay in receiving maximum salary contracts and maximum salary increases.¹⁷ In fact, staying in school all four years results in at least a \$2 million lower salary every year up until age 35. In other words, players who stay in school all four years are still paying for that decision more than ten years after they leave school.

Table 4 shows that for average first round picks, the costs of staying in school are lower. Staying in school all four years costs these players about \$13 million dollars, about 21 percent of their career NBA earnings if they enter the NBA from high school. However, these players face a greater risk of not getting selected in the first round of the NBA draft, so that alone may persuade them to stay in school longer. These players pay for staying in school during their time in college and during their rookie scale contracts. Once these players have finished their rookie scale contracts, their salaries no longer depend on how many years they attended college, unlike their maximum salary counterparts in

middle, \$6 million.

¹⁶ More specifically, I make the following assumptions. Dollar amounts are in millions of present day dollars, assuming a three percent discount rate. The salary cap is assumed to rise at a three percent (nominal) rate. Maximum salary increases are assumed to be a (nominal) ten percent. Assumptions about the rookie scale contracts and maximum salaries are assumed to follow the rules set for in the 1999 Collective Bargaining Agreement. Players are assumed to be paid their marginal product over the life of a given contract, unless constrained by maximum salaries or maximum salary increases. Finally, I assume that staying in school does not affect NBA productivity, but does improve draft status. Relaxing this last assumption results in the costs of staying in school growing larger.

¹⁷ For these superstar players, the costs of staying in school are, in essence, the value of the players' highest salaries

Table 3.

Tables 3 and 4 assume that players can improve their draft status by staying in school, but the earlier discussion of team incentives suggests that this may not be true. If instead it is assumed that staying in school does not improve draft status, the costs of staying in school four years rises to \$73 million for likely superstars and to \$19 million for likely high productivity, non-superstar players.

Before leaving this section, there is another very important point to make. In the absence of labor market distortions, players would be paid their marginal product (or perhaps some constant fraction of their marginal product) and the cost of staying in school for all four years would be just the marginal productivity during their years in college. For the projected superstars, this cost would be just \$6.8 million (10 percent of the actual cost) and for the projected average players, this cost would be just \$3.2 million (25 percent of the actual cost). In other words, the incentives for players to leave school early for the NBA are almost entirely an unintended consequence of labor market distortions created by past collective bargaining agreements.

6. Conclusion¹⁸

The third paper discusses how recent changes in NBA collective bargaining agreements have greatly increased the incentives for players to leave school early, resulting in a large increase in the number of players leaving school early for the NBA. Through revenue sharing and complex sets of rules affecting the labor market for players, NBA officials strive to constrain costs and maintain (or increase)

during their careers minus any benefits for getting selected earlier in the draft.

¹⁸ This discussion needs to be expanded, and I need to discuss recent proposals to stem the tide of young players entering the NBA, such as imposing an age limit. I also need to talk more about how the educational choices of these star NBA players might be affecting the educational choices of a much larger group of youth who aspire to be NBA players.

competitive balance. For example, in the last two collective bargaining agreements, the League and the Union agreed to below-market-price salary scales for players in their first four years, as well as experience-specific maximum salaries for all players. While these mechanisms may have been effective in meeting the League's other objectives, they dramatically increased the incentives for players to leave school early for the NBA – an outcome that the NBA Commissioner has repeatedly voiced concerns about. Such unintended consequences are common outcomes of these collective bargaining agreements and are a good lesson in the limits of social planning.

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Table 1
The Growth of Underclassmen Entering the NBA

Years	College Experience				
	Juniors	Sophomores	Freshmen	High School	Foreign
	<u>Average number of players selected in first round</u>				
1976-85	3.7	0.4	0.1	0.0	0.0
1986-95	3.6	1.4	0.1	0.1	0.1
1996-98	5.7	3.0	1.7	1.3	1.3
1999-03	4.8	5.4	2.2	2.6	3.8
	<u>Average number of players declaring for draft but not selected in first round</u>				
1976-85	3.0	0.6	0.1	0.0	0.0
1986-95	6.2	1.3	0.3	0.0	0.2
1996-98	15.0	4.3	1.3	1.3	1.0
1999-03	9.8	5.8	3.2	1.2	4.4

Notes: These figures do not include players who pulled out of the draft prior to draft day.

Table 2
Expected Profits by Level of College Experience

		Marginal Productivity			Salary			Team Expected Profit		
		Seasons			Seasons			Seasons		
Player	Prob.	1-4	5-10	Total	1-4	5-10	Total	1-4	5-10	Total
College Players	1.00	\$3	\$5	\$42	\$2	\$5	\$38	\$1	\$0	\$4
High School Players	0.80	\$2	\$2	\$20	\$2	\$2	\$20	\$0	\$0	\$0
	0.20	\$2	\$20.3	\$130	\$2	\$10	\$68	\$0	\$7.75	\$46.5
	Total	\$2	\$5.67	\$42	\$2	\$3.6	\$37.6	\$0	\$1.55	\$9.3

Notes: Because players are assumed to have a 75 percent chance of re-signing with their own team, *team expected profit* in seasons five through ten is equal to 75 percent of the difference between marginal productivity and salary in seasons five through ten.

Table 3
The Costs of Staying in School for Projected Superstars

Age	Salary Cap	Marginal Product		Salaries		
		Percentage of Salary Cap	Dollar Value	Leaving School as		
				High School Senior (6 th Pick)	College Sophomore (3 rd Pick)	College Senior (1 st Pick)
18	\$40.0	1%	\$0.4	\$2.4	\$0.0	\$0.0
19	\$40.0	2%	\$0.8	\$2.5	\$0.0	\$0.0
20	\$40.0	4%	\$1.6	\$2.6	\$3.3	\$0.0
21	\$40.0	10%	\$4.0	\$3.2	\$3.4	\$0.0
22	\$40.0	25%	\$10.0	\$10.0	\$3.6	\$4.2
23	\$40.0	38%	\$15.0	\$10.7	\$4.4	\$4.4
24	\$40.0	50%	\$20.0	\$11.3	\$10.0	\$4.5
25	\$40.0	50%	\$20.0	\$11.9	\$10.7	\$5.5
26	\$40.0	50%	\$20.0	\$12.4	\$11.3	\$10.0
27	\$40.0	50%	\$20.0	\$12.9	\$11.9	\$10.7
28	\$40.0	50%	\$20.0	\$13.4	\$12.4	\$11.3
29	\$40.0	50%	\$20.0	\$14.0	\$12.9	\$11.9
30	\$40.0	50%	\$20.0	\$15.0	\$13.4	\$12.4
31	\$40.0	50%	\$20.0	\$15.8	\$14.0	\$12.9
32	\$40.0	45%	\$18.0	\$16.7	\$15.0	\$13.4
33	\$40.0	40%	\$16.0	\$17.4	\$15.8	\$14.0
34	\$40.0	35%	\$14.0	\$18.1	\$16.7	\$15.0
35	\$40.0	30%	\$12.0	\$18.8	\$17.4	\$13.0
36	\$40.0	25%	\$10.0	\$10.0	\$11.1	\$10.0
37	\$40.0	20%	\$8.0	\$8.0	\$8.0	\$8.0
38	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$6.0
Total			\$275.8	\$233.1	\$201.3	\$167.3
Salary cost of freshman and sophomore years					\$31.7	13.6%
Salary cost of junior and senior years					\$34.1	16.9%

Notes: Dollar amounts are in millions of present day dollars, assuming a three percent discount rate. The salary cap is assumed to rise at a three percent (nominal) rate. Maximum salary increases are assumed to be a (nominal) ten percent. Assumptions about the rookie scale contracts and maximum salaries are assumed to follow the rules set for in the 1999 Collective Bargaining Agreement. Players are assumed to be paid their marginal product over the life of a given contract, unless constrained by maximum salaries or maximum salary increases. Bolded borders are placed around the years for multi-season contracts.

Table 4
The Costs of Staying in School for Average First Round Picks

Age	Salary Cap	Marginal Product		Salaries		
		Percentage of Salary Cap	Dollar Value	Leaving School as		
				High School Senior (18 th Pick)	College Sophomore (10 th Pick)	College Senior (5 th Pick)
18	\$40.0	1%	\$0.4	\$1.2	\$0.0	\$0.0
19	\$40.0	1%	\$0.4	\$1.2	\$0.0	\$0.0
20	\$40.0	2%	\$0.8	\$1.3	\$1.8	\$0.0
21	\$40.0	4%	\$1.6	\$1.9	\$1.9	\$0.0
22	\$40.0	8%	\$3.2	\$3.2	\$1.9	\$2.7
23	\$40.0	11%	\$4.4	\$4.4	\$2.4	\$2.9
24	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$3.0
25	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$3.7
26	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$6.0
27	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$6.0
28	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$6.0
29	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$6.0
30	\$40.0	15%	\$6.0	\$6.0	\$6.0	\$6.0
31	\$40.0	10%	\$4.0	\$4.0	\$4.0	\$4.0
32	\$40.0	5%	\$2.0	\$2.0	\$2.0	\$2.0
Total			\$58.8	\$61.1	\$56.0	\$48.2
Salary cost of freshman and sophomore years					\$5.1	8.4%
Salary cost of junior and senior years					\$7.7	13.8%

Notes: Dollar amounts are in millions of present day dollars, assuming a three percent discount rate. The salary cap is assumed to rise at a three percent (nominal) rate. Maximum salary increases are assumed to be a (nominal) ten percent. Assumptions about the rookie scale contracts and maximum salaries are assumed to follow the rules set for in the 1999 Collective Bargaining Agreement. Players are assumed to be paid their marginal product over the life of a given contract, unless constrained by maximum salaries or maximum salary increases. Bolded borders are placed around the years for multi-season contracts.