Do NFL Player Earnings Compensate for Monopsony Exploitation in College?

Robert Brown

Journal of Sports Economics 2012 13: 393 originally published online 22 June 2012
DOI: 10.1177/1527002512450266

Journal of Sports Economics
13(4) 393-405

DOI: 10.1177/1527002512450266
http://jse.sagepub.com

Do NFL Player Earnings Compensate for Monopsony Exploitation in College?

Robert Brown[1]

Abstract

This paper examines the extent to which a college player's future income in professional football offsets his monopsony exploitation experienced at the college level. Stated differently, it attempts to measure whether a future NFL draftee's professional earnings compensates for his monopsony-induced loss in income at the college level. This is an important issue in the debate surrounding compensating college players, opposed by many on grounds that the top college players ultimately receive lucrative financial rewards as professionals.

First, this paper uses a quantile regression method to account for differences in player marginal revenue products across college teams with different revenue-generating capabilities; for instance, players at high-revenue college teams produce higher marginal revenue products and thereby experience greater degrees of monopsony exploitation to overcome at the professional level. Next, it approximates professional players' earning profiles using NFL salary data, and then weighs these earnings against a player's foregone college compensation resulting from monopsony-induced restrictions in college football. The results indicate that between 33 and 38 percent of this sample of players (active and inactive) will earn NFL incomes sufficient to offset their monopsony-lost college earnings: A handful of these NFL players earn huge net surpluses but most can expect more modest net earnings.

Keywords

Marginal Revenue Product, monopsony, economic rent

[1] Department of Economics, California State University, San Marcos, CA, USA

Corresponding Author:
Robert Brown, Department of Economics, California State University, San Marcos, CA 92096, USA
Email: rbrown@csusm.edu

Introduction

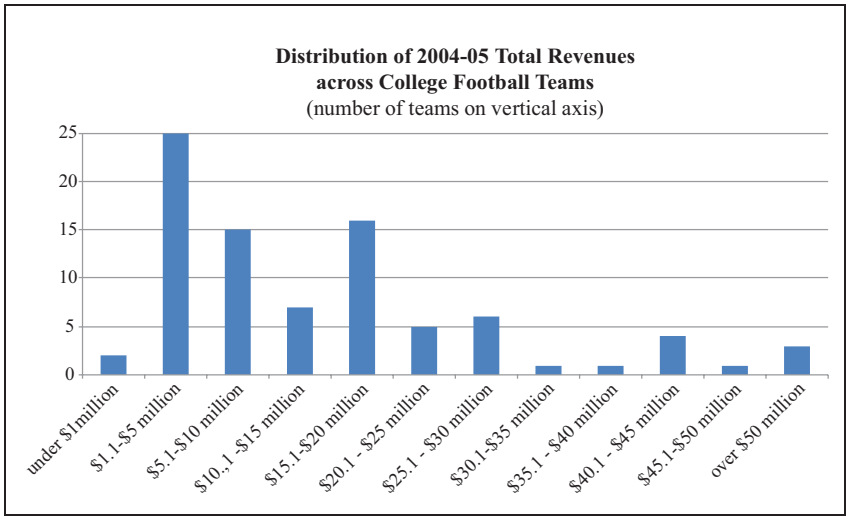
An early paper by Brown (1993) used 1988-1989 college football team revenue data to estimate the value to a school from acquiring a premium player, measured as one who is ultimately drafted into the National Football League (NFL). The estimation regresses college team revenues on the number of its future NFL draftees, the coefficient interpreted as the marginal revenue product (MRP) of a premium college player—an additional future NFL draftee is worth over $500,000 for his college team, other factors constant. Brown (2010) updated these estimates with more recent and comprehensive data on the 2004-2005 college football season; these estimates report a premium player's MRP exceeds $1 million in annual football revenues, some 30% higher than previous estimates after adjusting for inflation.[1]

Sports economists generally view National Collegiate Athletic Association (NCAA) rules as restrictions on the player recruitment market that give schools monopsony power in recruiting college athletes. The result is that schools capture most of player-generated revenue as economic rent, the difference between the player's MRP and his effective compensation of an athletic scholarship. These rent estimates, however, exclude future lifetime income a player receives at the professional level and thereby may overstate the true rent transfer from players to schools. That is, absent NCAA restrictions in the college recruitment market, a college player in a competitive recruitment (labor) market may voluntarily choose to forego some current collegiate income in turn for playing on a college team that provides better training and exposure, thus ultimately raising his expected lifetime earnings in the NFL. In this sense, his expected future NFL earnings offset his monopsony-induced lower earnings at the college level.[2] This article takes a step toward measuring the degree to which a future NFL draftee's professional earnings compensate for his monopsony-induced lost income during his college playing years. This is an important issue in the debate surrounding compensating college players, opposed by many on grounds that these top players ultimately receive lucrative financial rewards as professionals.

Variations in Player MRPs Across College Teams

Brown (2010) estimates the MRP of a premium college football player with team revenues reported to the NCAA for the 2004-2005 football season. These data, collected by *The Indianapolis Star* newspaper through public records requests, detail 15 revenue categories from 86 Division I-A football teams (see Brown [2010] for a detailed description). College football teams exhibit wide variations in total revenues ranging from a low $793,065 to a high over $53 million with mean approximately $14.8 million, median $10.4 million, and standard deviation $13.5 million. Exhibit 1 illustrates the distribution of total revenues across college teams . Likewise, the distribution of NFL players drafted varies widely across college teams: These teams averaged 8.14 future NFL draftees with median 7 and standard deviation 6.36; two teams failed to send a player to the NFL, while one team produced 25 draftees.

Exhibit 1.



The results in Brown (2010) are based on estimating the MRP of a college football player on the conditional mean of team revenues. The widely dispersed nature of college football team revenues, however, indicates that a player's MRP may depend on where his team falls on the revenue distribution—that is, the marginal value of a future NFL draftee may be considerably lower than 1 million dollars among lower revenue-generating teams and much greater for teams on the high end of the revenue distribution. This is an important empirical distinction in the context of this article since, other factors constant, a player at a high-revenue program thereby requires higher future NFL earnings to compensate for the greater rent transfer (from player to school) produced during his college career.

I address variations in revenue-producing capabilities across teams by applying a quantile regression method to Brown's (2010) MRP estimates. The relatively few high-revenue teams skew the distribution, pulling the mean above the median. Ordinary least squares (OLS) estimates on the conditional mean are sensitive to the existence of such outliers. However, the quantile regression estimates the conditional median and conditional quantile functions for the dependent variable to produce coefficient estimates that are robust to the presence of outliers. In addition, the quantile regression allows for estimating different parts on the conditional distribution of the dependent variable, while OLS estimates are based solely on the conditional mean. In the context of this article, the quantile regression can estimate the coefficient on a college team's future NFL draftees at specified quantiles of the conditional distribution, allowing for comparisons of MRPs at different parts of the conditional distribution of team revenues.[3]

Brown's (2010) estimation method treats a team's overall performance as endogenous to its future NFL draftees which, in turn, is endogenously determined by

Table 1. Player Marginal Revenue Products (MRP) Coefficient Estimates on a College Team's Number of Future NFL Draftees

	Quantile Regression MRP Estimates				
Two-Stage Least Squares MRP Estimates Brown (2010)	10th Percentile	30th Percentile	50th Percentile	70th Percentile	90th Percentile
$1,176,826	$187,760	$832,442	$931,658	$1,472,169	$2,587,415

Dependent variable = College football team's gate receipts, contributions, game day sales.

recruiting and market characteristics; traditional two-stage least squares estimates a system of three equations to account for the endogeneity of team performance and future NFL draftees. The first column of Table 1 reports the coefficient of $1,176,826 on the number of premium players (future NFL draftees) on a college team from Brown's (2010) paper where revenues include ticket sales, ticket-related contributions, and game day concessions or parking fees. For comparison purposes, the remaining columns report coefficients on the number of future draftees for quantile regressions at the 10th, 30th, 50th, 70th, and 90th revenue percentiles using the identical data, variables, and specification (coefficients on other variables are not reported, but available from the author).[4]

The quantile results show a wide variation in player MRPs across the conditional distribution of team revenues. An additional future NFL-draftee produces $187,760 in annual revenues for a college team conditional at the 10th percentile of the revenue distribution, jumping to $832,442 at the 30th percentile and $931,658 at the conditional median; a player's MRP reaches nearly $1.5 million at the conditional 70th percentile team and over $2.5 million at the conditional 90th percentile. Not surprisingly, players on higher-revenue teams generate considerably more revenues and, as a result, produce greater monopsony rents for their schools. However, higher-revenue teams may also acquire the most-talented future NFL draftees who, in turn, ultimately receive higher NFL earnings to offset their collegiate monopsony exploitation. The next section sketches NFL earnings profiles of players drafted from college teams at different points on the college revenue distribution (i.e., teams with different revenue-producing capabilities).

Player Earnings in the NFL

This section takes five college teams representative of the revenue percentiles used in the quantile estimates (10th, 30th, 50th, 70th, and 90th percentiles) and calculates the NFL earnings among players drafted from these 2004-2005 college rosters. Next, I compare the NFL earnings of these players against the MRPs generated for the schools during their collegiate careers, using the respective conditional quantile estimates from Table 1 to account for teams' varying revenue-producing levels. Table 2

Table 2. Description of Representative Teams Across the Distribution of Revenue

Point on Revenue Distribution	Approximate 2004-2005 Football Revenues	Approximate Number of Draftees
10th percentile	$1,950,000	2
30th percentile	$4,900,000	5
50th percentile	$10,500,000	10
70th percentile	$18,300,000	12
90th percentile	$36,500,000	20

presents the approximate total revenues and the number of future NFL draftees as representations of team characteristics at each revenue percentile.

Table 3 takes a college team representative of the respective revenue percentiles and compares each draftee's MRP during his college years (i.e., career MRP) weighed against his NFL earnings through 2011. The objective here is to approximate the extent to which a future draftee's NFL earnings offset the monopsony rents extracted from him during his college career. Recall that the quantile regression estimates a future draftee's impact on annual (2004-2005) college team revenues *alone*, although a typical future draftee contributed to revenues during other seasons. A college player's career MRP is adjusted by the percentage of games played over his college career: Specifically, a player's annual MRP (from Table 1) is multiplied by the number of his active college seasons weighted by his percentage of games played (relative to total games). For example, a player on the 10th-percentile team who played 80% of all team games over a 3-year career produces a $450,624 career MRP.

These approximations should be viewed with the following qualifications. First, the calculations exclude the dollar value of athletic scholarships, which varies across schools to a maximum $40,000. Second, an athletic scholarship may alter a player's human capital investment decisions and, thus, his future earnings. Third, nearly half of draftees from these 2004-2005 college teams are currently *active* NFL players, so that their lifetime football earnings are indeterminate at this time—Table 3 underestimates the true NFL lifetime earnings of these players. Fourth, college football participation may be correlated with future earnings (or other benefits) independent of whether a player received income in the NFL; for instance, Long and Caudill (1991) find a 4% increase in annual income for men who participated in college sports, although they do not control for specific sports.

Table 3 separates drafted players from each representative college team into *inactive* players (no longer playing in the NFL) and *active* players (on an NFL roster in 2011). To illustrate, the team representing the 10th percentile of revenues sent two players from its 2004-2005 roster to the NFL, both of whom were inactive as of the 2011 season. Premium players at these lower-revenue college teams exhibit a smaller MRP for their colleges and, therefore, require less NFL income to counter monopsony rent losses incurred during their college careers. The first player, a junior college transfer, played every game of his 2-year career and earned just over $1.7

Table 3. Player's NFL Earnings Minus His College MRP

Inactive NFL Players		Active NFL Players (in 2011)	
Net Gain (Loss)	Years in NFL	Net Gain (Loss)	Years in NFL
(a) College team at 10th percentile (2 players drafted)			
Player annual MRP to school = $187,760			
$1,341,960	3		
($366,660)	1		
(b) College team at 30th Percentile (5 players drafted)			
Player annual MRP to school = $832,442			
($2,220,009)	4	$19,070,931	8
($2,630,420)	1	($449,269)	3
($1,555,700)	2		
(c) College team at 50th percentile (10 players drafted)			
Player annual MRP to school = $931,658			
($2,576,632)	3	$1,606,495	6
($2,096,783)	2	$8,142,026	5
($3,083,168)	1	$3,084,681	5
($2,827,015)	2	$1,441,366	4
($2,433,982)	3	($1,594,529)	4
(d) College team at 70th percentile (11 players drafted)			
Player annual MRP to school = $1,472,169			
($4,033,186)	2	$24,071,884	5
($5,279,284)	2	$13,514,554	5
($3,516,697)	4	($601,261)	5
($5,299,830)	1	($1,763,714)	3
($4,970,300)	1	($3,079,938)	3
		($5,380,930)	1
College team at 90th percentile (20 players drafted)			
Player annual MRP to school = $2,587,415			
$6,166,511	6	$9,303,752	4
($1,846,451)[a]	1	$5,314,466	6
($2,712,282)	4	$1,745,152	6
($4,281,064)	3	$1,157,403	6
($5,278,086)	2	$558,983	6
($6,436,574)	2	($727,175)	3
($6,602,169)	1	($5,169,697)	5
($6,830,200)	1	($5,216,437)	5
($7,311,269)	1	($7,353,599)	2
($7,472,982)	4	($7,639,678)	4

[a]This player's career MRP was calculated for 1 year, although he played 3 years at another (lower-revenue) football program.

million over 3 years in the NFL. Alternatively, the second player contributed nearly every game over 4 years in college but played just one NFL season, incurring a $366,660 net loss.[5]

A premium player on a team near the 30th percentile of college football revenues exhibits a sharp increase in his annual MRP to $832,444; as a result, he must earn more in the NFL to offset his collegiate monopsony-induced losses. None of the three inactive players received NFL earnings sufficient to offset their college career MRP. Among the active players, one earned over $19 million in excess of his college career MRP after eight NFL seasons; at the other active player's current salary, he will exceed his college career MRP in the 2013 NFL season.[6]

Four of the active NFL players from the 50th percentile college team surpassed their college career MRPs after completing between 4 and 6 years in the NFL; the remaining active player needs nearly three more NFL seasons at his current salary. None of the inactive players earned sufficient NFL incomes to offset their monopsony exploitation in college, falling short by between 2 and 3 million dollars.

A premium player on a college team near the 70th revenue percentile required $1.47 million to compensate for his annual college MRP. Only two of the active players' NFL incomes exceeded their college MRP (and by large amounts for both players) with another player expected to earn a surplus with another NFL season; the other active players require between 3.2 and 5.5 additional NFL seasons (at their current salaries) to offset their lost college earnings. The inactive players received sizable net losses of between $3.5 and $5.2 million: Each of these players experienced short NFL careers at relatively low salaries, and all but one contributed MRP in four college football seasons.

One inactive player at the 90th percentile college team produced substantial net earnings (over 6 million dollars); this player contributed just 2 years MRP in college and then signed fairly lucrative NFL contracts. The remaining inactive players incurred substantial net losses ranging between $1.8 million and 7.47 million. Five active players exceeded their lost college earnings, with the other active players experiencing net losses that require between one to 13 years of their current NFL salaries to offset their college career MRP.

The overwhelming majority of college football players are not drafted into the NFL. Many of these players, however, may generate sizable rents for their college teams without capturing any income in the NFL. Unfortunately, sufficient individual productivity measures are unavailable for these players, making it impossible to reliably estimate their MRPs. With this in mind, I conclude this section with some back-of-the-envelope calculations to crudely approximate MRPs of college players never drafted into the NFL.

Consider the following calculation of a college player's ''average'' MRP using salary information from the NFL, assumed here to be a close industry comparison to college football absent the anti-competitive market restrictions imposed by the NCAA. I first calculate the ''average'' NFL salary distribution for a 65-team roster using 2009 NFL salary data, where each player's relative salary share (percentage) of total team payroll is assumed to approximate his annual marginal contributions to team revenues. Zimbalist (2010)

shows that approximately 60% of NFL team revenues flow to player compensation; for our average college team, this means players would receive $8,875,758 of team revenues (or $136,550 per player).[7] Next, I approximate the expected college player salary distribution by applying the NFL salary distribution to 60% of a respective college team's total revenues. To account for the wide range of college team revenues, I apply these average NFL salary shares to college team revenues at the 10th, 30th, 50th, 70th, and 90th revenue percentiles. Appendix A reports the college player expected salary distributions based on this average NFL salary distribution. These crude approximations suggest that many *non-drafted* college players produce sizable revenues for their schools. In particular, the majority of players on teams with above median team revenues appear to generate MRPs well in excess of the dollar value of their college scholarship.

Discussion

The calculations reported from these 2004-2005 college football teams show that only two *inactive* players earned NFL incomes sufficient to offset their college MRPs, and both players may be anomalies: One player experienced 3 years of modest salaries in the NFL after playing just 2 years at a low-revenue (MRP) college; the other player's college career spanned two seasons on a high-revenue team, and he later signed a lucrative NFL contract in free agency but retired 2 years after due to injuries. Twelve of the 22 *active* players currently have net earnings surpluses, a few following lucrative free-agency contracts; another three players should achieve earnings surpluses with another NFL season. At their current NFL salaries, the remaining eight active players require between 2.8 and 13 additional NFL seasons to offset their lost collegiate earnings (five of these players are at, or near, free agency eligibility; two are 5-year veterans.).[8]

The NFL Players Association estimates that player careers average 3.8 years and the NFL reports that a player who makes an opening day roster can expect an average career exceeding 6 years. Based on these expected career lengths, Table 3 indicates that between 33% and 38% of this sample of players (active and inactive) will earn NFL incomes sufficient to offset their monopsony-lost college earnings. A handful of these players earn huge net surpluses but most can expect modest net earnings.

The NFL salary structure underpins the ability for college football draftees to offset their lost college earnings, particularly for recent NFL entrants ineligible for free agency. The fixed salary share allocated to the "rookie salary pool" for new NFL draftees declined from 6.5% in 1997 to 3.7% in 2009, even though rookie players comprise around 16% of NFL rosters (see Vrooman, 2011). And the NFL Collective Bargaining Agreement caps total player payroll, so that these restrictions placed on rookie salaries effectively transfer monies toward paying veteran player salaries.

The result is that recent NFL draftees experience monopsony exploitation and thereby receive salaries below their MRP: Indeed, Krautmann, von Allmen, and Berri (2009) estimate that a typical ''restricted'' NFL player (ineligible for free agency) receives about 50% of his MRP while the typical restricted free agent receives over 75% of his MRP. Put simply, the peculiar nature of the college and professional player labor markets appear to restrict earnings for the vast majority of players such that only approximately one third of all NFL draftees actually capture net surplus earnings across their football careers. From a different perspective, the college and (entry-level) pro football labor markets may serve as a sequence of signals to NFL owners who, given the short careers of most players, face a high level of uncertainty in evaluating the probability that a potential draftee can sustain a career in the NFL: That is, a player's success at a highly competitive college program signals his ability to *enter* the NFL, and the 4-year free agency rule creates a signal to owners about a player's productivity *in* the NFL.

Finally, Table 3 shows that high-revenue college teams acquire a disproportionately high number of premium college players, many of whom experience monopsony exploitation amounting to millions of dollars over their college football careers. Presumably, these players could minimize their exploitation (and maximize net career surplus) by choosing to play at lower-revenue football programs. This raises questions of whether college players accurately perceive themselves as economically exploited and, if so, factor this into their choice of a college team. In the later case, a player may be willing to trade some disutility associated with being exploited for some nonpecuniary benefits associated with competing at a top college football program. For instance, players may simply receive some utility from playing at high caliber football programs. Another possibility is that the potentially huge rents captured by successful high-revenue college programs are allocated toward improving athletic-related facilities and services as ways to attract premium recruits—that is, these amenities act as a form of nonpecuniary compensation that can equilibrate the degree of player exploitation across programs. Premium recruits may also consider the (athletic) human capital investment component of their choices and expect that high-revenue programs (with better facilities, support services, coaching, and the like) contribute more to a player's productivity and thereby his expected future NFL income. Along these lines, players who plan to enter sports-related careers can view participation in college football as a component of academic training, much like choosing a particular major or emphasis of study: Then higher quality football programs can be associated with stronger signaling or human capital effects relevant in the job market.

Appendix A

Approximated College Football Player Salary Distributions

NFL Player Salary Share (% of Payroll)	10th Percentile Team Revenues ($)	30th Percentile Team Revenues ($)	50th Percentile Team Revenues ($)	70th Percentile Team Revenues ($)	90th Percentile Team Revenues ($)
13.09	153,150	384,838	824,653	1,437,252	2,866,651
9.06	105,958	266,253	570,541	994,372	1,983,310
7.20	84,253	211,713	453,672	790,685	1,577,049
6.23	72,945	183,298	392,781	684,562	1,365,382
5.43	63,536	159,654	342,116	596,259	1,189,260
4.75	55,564	139,623	299,193	521,451	1,040,052
4.29	50,250	126,269	270,577	471,576	940,576
3.67	42,977	107,993	231,414	403,321	804,439
3.28	38,359	96,389	206,549	359,985	718,003
2.77	32,359	81,313	174,242	303,679	605,698
2.54	29,741	74,734	160,145	279,110	556,695
2.30	26,909	67,617	144,893	252,528	503,676
2.07	24,181	60,761	130,203	226,925	452,610
1.91	22,377	56,230	120,494	210,003	418,859
1.82	21,276	53,464	114,565	199,670	398,250
1.71	19,972	50,187	107,544	187,433	373,842
1.58	18,485	46,450	99,536	173,477	346,006
1.48	17,320	43,522	93,261	162,540	324,192
1.35	15,849	39,826	85,342	148,740	296,666
1.24	14,544	36,546	78,313	136,488	272,229
1.15	13,445	33,786	72,398	126,180	251,670
1.09	12,707	31,931	68,425	119,254	237,857
1.02	11,942	30,009	64,305	112,075	223,537
0.96	11,255	28,281	60,602	105,621	210,665
0.92	10,719	26,934	57,715	100,590	200,629
0.88	10,249	25,753	55,185	96,179	191,833
0.84	9,813	24,657	52,837	92,088	183,673
0.81	9,448	23,741	50,873	88,664	176,843
0.78	9,074	22,802	48,862	85,159	169,852
0.75	8,778	22,057	47,265	82,376	164,301
0.73	8,564	21,519	46,113	80,368	160,298
0.70	8,198	20,601	44,145	76,939	153,457
0.68	8,010	20,126	43,128	75,166	149,922
0.65	7,646	19,214	41,172	71,757	143,122
0.63	7,327	18,412	39,455	68,765	137,154
0.59	6,952	17,470	37,436	65,245	130,134
0.56	6,518	16,378	35,095	61,165	121,996
0.53	6,189	15,552	33,325	58,080	115,843
0.52	6,070	15,252	32,682	56,960	113,610

(continued)

Appendix A (continued)

NFL Player Salary Share (% of Payroll)	10th Percentile Team Revenues ($)	30th Percentile Team Revenues ($)	50th Percentile Team Revenues ($)	70th Percentile Team Revenues ($)	90th Percentile Team Revenues ($)
0.51	5,912	14,856	31,835	55,484	110,664
0.49	5,753	14,457	30,980	53,993	107,692
0.48	5,657	14,214	30,459	53,085	105,881
0.46	5,383	13,525	28,983	50,513	100,750
0.44	5,186	13,031	27,923	48,665	97,064
0.42	4,894	12,297	26,350	45,925	91,598
0.41	4,753	11,943	25,592	44,602	88,961
0.40	4,623	11,617	24,894	43,387	86,536
0.39	4,546	11,422	24,476	42,658	85,083
0.38	4,477	11,249	24,106	42,013	83,796
0.37	4,291	10,783	23,106	40,271	80,322
0.35	4,128	10,373	22,228	38,740	77,269
0.33	3,878	9,746	20,883	36,397	72,595
0.31	3,644	9,156	19,620	34,195	68,203
0.30	3,458	8,689	18,620	32,452	64,727
0.27	3,192	8,022	17,189	29,958	59,753
0.24	2,818	7,082	15,176	26,449	52,754
0.22	2,536	6,372	13,654	23,798	47,465
0.18	2,143	5,385	11,539	20,110	40,110
0.14	1,637	4,114	8,817	15,366	30,649
0.10	1,120	2,813	6,028	10,506	20,956
0.08	892	2,241	4,801	8,368	16,690
0.05	637	1,601	3,431	5,980	11,927
0.05	556	1,398	2,995	5,221	10,413
0.03	384	964	2,065	3,607	7,179

Acknowledgement

Brad Humphreys and session participants at the Western Economic Association International Conference, San Diego, CA, July 2011 provided helpful comments on an early draft of this paper. The author thanks an anonymous referee for insightful suggestions during the review process and also Robert Rider for helpful discussions. Travis Tesarek contributed valuable research assistance.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

Notes

1. See Brown (1993), Brown (2010), and Brown and Jewell (2004) for detailed estimation methods and data.
2. A college player's training costs, skill development, exposure, and the like, can be viewed as general training in the context of the labor economics literature. An individual firm may provide general training to employees to increase loyalty to the firm (thereby raising employee productivity) or to screen employee productivity; in monopsony labor markets, a firm is less concerned about incurring general training costs since employees are restricted in moving to substitute employment.
3. See Koenker and Hallock (2001) for a review of the quantile regression method.
4. The endogeneity issue complicates the quantile estimates. The quantile regressions use an instrumental variables approach to estimate the fitted values for the draft variable; the standard errors are not corrected. Brown (2010) also reports estimates with dependent variables comprising various revenue categories.
5. NFL salaries include base salaries and guaranteed signing bonuses reported at *USA Today NFL Salaries* (http://content.usatoday.com/sportsdata/football/nfl/salaries/team?loc=interstitialskip) and at Spotrac (http://www.spotrac.com). Salaries exclude endorsement or other outside income of players.
6. Active player calculations include guaranteed earnings contracted through the 2011 NFL season.
7. The NFL Collective Bargaining Agreement (NFL-CBA) negotiated a system with 60% of "Total Revenue" distributed to players, leaving sufficient money for the owners to earn a profit. There is also 5% "credit" for operating expenses, making the effective split 57/43. At this time, I have not completely compared the NFL-CBA "team revenues" definition with the categories of college team revenues used in this article. Also, the Appendix A calculations assume a 65-member team roster, about 20 fewer than the current number of scholarship players allowed under NCAA rules. Furthermore, the industry comparison may be less appropriate for college teams at the lower end of the revenue distribution.
8. Players are eligible for unrestricted free agency after four NFL seasons.

References

Brown, R. W. (2010, August). Research note: Estimate of college football rents. *Journal of Sports Economics*, *12*, 200-212.

Brown, R. W. (1993). An estimate of the rent generated by a premium college football player. *Economic Inquiry*, *31*, 671-684.

Brown, R. W., & Jewell, R. T. (2004). Measuring marginal revenue product of college athletics: Updated estimates. In F. Rodney & F. John (Eds.), *Economics of college sports*. Westport, CT: Praeger.

Koenker, R., & Hallock, K. F. (2001). Quantile regression. *Journal of Economic Perspectives*, *15*, 143-156.

Krautmann, A. C., Allmen, P. V., & Berri, B. (2009). The underpayment of restricted players in North American sports leagues. *International Journal of Sport Finance*, *4*, 75-93.

Long, J. E., & Caudill, S. B. (1991). The impact of participation in Intercollegiate Athletics on income and graduation. *Review of Economics and Statistics*, *73*, 525-531.

Vrooman, J. (2011). "The Football Player's Labor Market," in *Economics of the National Football League: The State of the Art,* edited by Kevin Quinn, Springer Publishing.

Zimbalist, A. (2010). "Reflections on salary shares and salary caps." *Journal of Sports Economics*, *11*, 17-28.

Bio

Robert Brown is Professor of Economics at California State University, San Marcos. His primary research areas are the economics of college sports, environmental economics, land use, and real estate economics.