Revenue Per Quality of College Football Recruit

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Abstract

There is significant debate about compensation of college athletes in revenue generating sports. In college football, the potential heterogeneity in player value has received little attention in the discussion. The relationship between player quality, team performance, and sport-specific revenue should inform any compensation scheme for college football players. In this paper, we provide estimates of player monetary value in college football. This is the first study to exploit player specific *ex ante* recruit ratings, team performance, and football specific revenue and profit (revenue net of expenditures) to infer player valuations. This allows us to estimate value for players whose performance can be difficult to measure given traditional sport metrics. We use a unique data set which records individual recruits by *ex ante* star rating annually for every Football Bowl Division (FBS) school and combine that data with data on team performance, bowl appearances by type, and football specific revenue. Using a valuation approach which links player-specific quality to team performance and subsequently to revenue, we infer the value of recruits by their *ex ante* recruit rating. We estimate that five-star recruits increase annual revenue by $650,000, and, four-star recruits increase revenue by roughly $350,000 and, three-star recruits increase revenue by $150,000 and two-star recruits, however, are negatively related to revenue and profit, with two star athletes reducing annual revenue by $13,000. Overall, our results imply that player valuations are heterogeneous, and that *ex ante* ratings of player quality are strongly related to school-specific football revenue and profit and may be predictive measures in a compensation scheme.

1. Introduction

The issue of player compensation in revenue generating college sports has taken center stage in policy debates surrounding college athletics. Some have argued that increased compensation for college athletes will align the interest of the student athlete with institutional goals and could prevent scandals which damage the reputation of universities. Others argue that compensating players would lead to unnecessary professionalization of amateur athletics, further blurring the distinctions between students who play sports for extracurricular benefit as opposed to those doing so as an occupation (Nocera 2016, Benedict and Keteyian 2013). A recent USA Today (Estes 2019) article examined the increase in recruiting budgets and spending from college football programs. In the last 5 years college football programs have increased their spending upwards of 300%. Athletic directors understand the importance of increasing budgets to compete with the best competition.

The existing debate has been about whether athletes in revenue generating sports should be paid, but not how much they should be paid. The debate over compensation has largely neglected the important issue of player valuations—the benchmark that would guide player compensation schemes. Presumably, player valuations should be a guiding principle in any compensation scheme. Proponents of compensation have avoided the issue of how productivity differences between players should factor into any compensation formula. The compensation scheme may need to be more sophisticated

and, as in the labor market for professional sports, be tied to player performance or expected performance.

Institutionally, the revenue structure in many athletic conferences is designed to equalize revenues between member schools, which is similar to revenue sharing in professional sports. Revenue sharing is ever changing within conferences.[1] Compensation for athletes may differ substantially *between* conferences as opposed to within conferences as a result. If this is true, it could be the case that all players within any conference have the same value since so much revenue is redistributed. If player value is found to be heterogeneous despite conference institutional features such as revenue sharing, value could be tied to a variety of additional metrics as they are in most professional sports.

Determining player values in professional sports is inherently difficult. Depending on the sport studied, detailed evidence of player performance is usually lacking. For example, defensive players in football should be compensated based upon what does *not* occur, which can be difficult to measure accurately. Extending such analysis to college sports is even more difficult as position specific valuations have no precedent and the majority of professional sports use salary caps, signing bonuses, and other labor union and league negotiated particulars which depart from traditional labor theories of wages. There are no existing compensations schemes which could be applied

[1] "The [Big 10] revenue total was driven by new TV agreements that took effect at the start of the 2017-18 school year and resulted in payments of roughly $54 million to each of the 14-team conference's 12 longest-standing members. Maryland and Rutgers received smaller revenue-share amounts, but both schools also received loans from the conference against future revenue shares. In February, the Southeastern Conference reported just under $660 million in revenue for fiscal 2018, resulting in an average of $43.7 million being distributed to the 13 member schools that received full shares. Mississippi did not get a full share because its football team was banned from postseason play."

to amateur sports in a straightforward fashion. Similarly, new entrants into professional sports are compensated based on draft position and/or other criteria related to their expected future performance, which does not exist at the college level.

Theoretically, player value should not be uniform. It would follow from a simple labor model that players should be paid their marginal revenue product of labor. This would naturally vary by player and result in differences in compensation. In sports, this is usually estimated with player specific metrics, although its applicability varies by sports. In professional settings the value of the contract can be estimated related to the revenue or profit of a player based upon their performance. In the absence of such information in college sports, we concentrate here on *ex ante* ratings of players and their relationship to revenue

With these ideas in mind, this paper seeks to estimate the value of college football players using their *ex ante* star rating determined before a player commits to a specific school. This allows us to infer the values of both offensive and defensive players based upon their expected productivity as cardinally contained in their ratings as high school athletes. Furthermore, *ex ante* ratings are not biased by the presence or absence of player-specific statistics which could bias productivity estimates of players by position. We are also able to exploit conference- and school-specific effects to estimate valuations using within-conference and within-school variation in recruit quality, team performance, and revenues, allowing more precise estimates of value which account for a variety of institutional revenue features.

We adopt the standard approach of inferring values, using a two-step procedure. First, we estimate the value of recruits on wins and bowl appearances, controlling for both conference and school-specific heterogeneity. Next, we estimate the revenue impact of wins and bowl appearances and use those estimates to infer the value of recruits by *ex ante* recruit rating. Our methodology gives us a flexible structure which allows us to see how much recruit quality valuations change when analyzing revenue and performance across schools (with OLS), within conferences (using conference fixed effects), and within schools themselves (using school fixed effects).

Our results show that there is significant heterogeneity in player valuations by recruit rating. Controlling for school heterogeneity (school fixed effects), we find that schools who recruit 5 or 4 star rated recruits can increase total revenue by over $500,000. Schools like USC, Ohio State and Alabama, who on average bring in several highly rated recruits per recruiting class, will bring in millions of dollars more in revenue per incoming class. Overall, we find a high degree of variability in profit by *ex ante* recruit rating, consistent with the concept that players of higher quality should be better compensated than players of lesser quality. Institutionally, the results show that revenue sharing among conferences does not lead to a weak relationship between player ratings and revenues.

The paper proceeds as follows. We briefly review other work that examines the relationship between recruit quality and on the field performance. We then describe the data and our methodology. We then present our results and the final section concludes with a discussion of the implications for potential player compensation schemes.

2. Literature Review

Previous work has found a positive correlation between recruit ratings and on-the-field success (Bergman and Logan 2014, Langlett 2003). Even when controlling for between school heterogeneity, the correlation of recruit quality and on-the-field performance is positive and statistically significant. Bergman and Logan (2014) find that when schools recruit higher quality athletes the predicted number of wins in a given season increases by more than one third. While the relationship between performance and recruits has been studied, the extension to the value of that performance, in terms of revenue and economic profit (revenue net of expenditures), has not been investigated.

There have been a limited number of studies examining the relationship between college recruits and the revenue college teams generate. The Power Five conferences (Big Ten, Big 12, Pac 12, SEC, and ACC) will each bring in a baseline of $50 million dollars per year under the new college football playoff format which began with the 2013-2014 college football season (USA Today 2014). The payouts for post season events make up a large portion of athletic revenues for both sports. Borghesi (2015), for example, examined the relationship between basketball recruit quality, on the field performance, and total revenue. He estimates that 5-star rated basketball recruits generate $600,000 in marginal revenue, with 4-star recruits generating $150,000 in marginal revenue. Similar studies in football are lacking.

The existing football studies have explored the relationship between wins and revenue. Brooks (2016), for example, examined the two main factors of revenue growth

in college football: on the field performance and fan attendance. Chung (2015) examines the relationship between wins and the effects on short-run and long-run total revenue. He estimates that a single win in college football increases total revenue by 3%. He finds that for better established programs, regular season wins contribute the most to total revenue in football and invitations to post season bowls are more meaningful for lesser established schools. This is intuitive insofar as well established schools are more likely to receive bowl invitations if they meet the minimum criteria for wins, and to receive invitations to better-paying bowls due to their strong tradition and larger fan bases.

While there are few studies which estimate player value for college football, there are numerous studies which estimate values in professional sports. Previous works have used the inference method to determine NBA and MLB players' value. Fearnhead and Taylor (2011) used previous statistics for NBA players to infer the value of a player for one season. Berri (1999) measured the marginal productivity of a NBA player's individual statistics to team wins. Berri (1999) expanded on the use of points scored and sports surrendered by including individual player factors (i.e Assists, Rebounds, Blocked Shots) to estimate the value to team wins. Berri (2011) subsequently built on previous studies by looking at individual positions' marginal productivity. Fields (2001) used on-field statistics of MLB players and infers values with a regression of individual statistics to team revenue. Similar to our analysis, we take recruit quality and the relationship it has with wins and infer player values through the relationship between wins and total revenue.

3. Data

In this study, we extend the previous literature of the effect of recruit quality on performance to estimate the value for college football players. We collected a unique set of data from Office of Postsecondary Education (OPE) for all college football bowl subdivision (FBS) schools for the years of 2002-2012. This data includes annual football specific revenue and expenses for each school. We combine this financial data with detailed recruit data and team performance data to infer player values.

To infer the monetary value of college football recruits we compiled data from various sources. We use recruit data from Rivals.com for ex ante recruit quality. This data records the rating of each specific recruit for each year over the sample period (2002-2012). The recruit ranking data is an ex-ante consensus evaluation as recorded by Rivals.com where five-star is the best possible rating. It is important to note that ratings are cardinal ratings—a five star recruit in any year is a five star recruit in every year. Players are not ordinal ranked by recruiting season. One of the concerns with our recruiting data from Rivals is whether it is a predictor of recruit quality. ESPN, 247, Rivals, and Scout all offer high school recruiting news services and ratings for football and basketball recruits.

We use Rivals due to the length of the coverage of the service and its use in existing studies of player quality (Bergman and Logan 2014). To check that Rivals is a good predictor for recruit quality we used Scouts as an instrumental variable (IV) for

Rivals in a two stage least squares regression framework to purge Rivals estimates from any endogeneity between player rating and school characteristics. When using the Scouts ratings as the instrumental variable for Rivals, we find little difference in the predicted effects of recruit rating, suggesting that the OLS estimates with Rivals are not biased.

Additional data on game outcomes and specific bowls was compiled from ESPN, *USA Today College Football Encyclopedia,* and *ESPN College Football Encyclopedia.* Bergman and Logan (2014) match the recruiting data to each team's corresponding performance for every year.

We then compiled data from the Office of Postsecondary Education (OPE) Equity in Athletic Disclosure website. This source lists school reported total revenue, for football for each school from 2002-2013. Beginning with the formation of the College Football Playoff and the creation of conference television networks, revenue for conferences changes discontinuously and we therefore restrict attention to years in which the revenue was predicated on conference-specific agreements with television and bowl games. Total revenue consists of all intercollegiate athletic activities pertaining to that sport. This includes appearance guarantees and options, contributions from alumni, royalties, sponsorships, sport camps, tickets, student activity fees, and government support.

The recruit quality summary statistics are given in Table 1. The average number of five star and four star recruits are far less then the average number of lower rated recruits per class. Since there are a smaller amount of five and four star recruits per class,

we would expect that the average for the higher rated recruits to be lower. The difference in average recruit quality varies between conferences.

We are careful to use contemporaneous conference alignment in our analysis. If college X is aligned with conference A for the first three years of data and then moves to conference B for the remaining years, we assign that school to the aligned conference for those specific years. For instance, we assigned Miami Florida to the Big East from 2002-2004. When Miami moved to the ACC in 2005, we assigned Miami to the ACC for the remaining years. The SEC on average brings in the highest amount of five stars per recruiting class and has the highest average recruit quality. During the time frame we studied, an SEC team won the national championship 8 out of the 11 years.

The financial summary statistics are given in Table 2. The average annual total revenue for an FBS football program is more than $20 million. The highest grossing conferences are the Big Ten and SEC with each conference team on average bringing over $35 million in revenue.. While the average school sees a profit of over $8 million, those in the SEC and Big Ten have close to $20 million in football profit annually.

4. Methodology

We approximate player values using an inferential approach described below. The procedure is an intuitive two-step approach which is standard in the literature on player valuation. First, we estimate the relationship between recruit quality and team performance—wins and bowl appearances. We estimate this relationship in three ways: (1) we use simple OLS regression to look across teams, years, and schools; (2) we

estimate the relationship using fixed effects for conferences since schools play others within the same conference and, to a first approximation, compete most intensively with each other for the same recruits; (3) we estimate the relationship with school fixed effects to estimate the relationship controlling for between school heterogeneity in recruit quality. Controlling for fixed effects allows us to better control for variations within schools and estimate the marginal revenue effect of a school improving their recruit talent relative to their average.

In the second step, we estimate the effect of performance (wins and bowl appearances on total revenue. As with the relationship between team performance and recruits, we estimate the financial relationships with (1) OLS, (2) conference fixed effects, and (3) school fixed effects. These separate estimates of the performance and financial effects give us a range of estimates which allow us to see how sensitive player valuation is to controls for conference and school heterogeneity in recruit quality and financial performance.

Formally, our OLS estimate of the relationship between performance and recruit quality with

$$Y = B_0 + \beta_1 5star + \beta_2 4star + \beta_3 3star + \beta_4 2star + \mu$$

Similarly, the fixed effects specification is

$$Y = B_0 + \beta_1 5star + \beta_2 4star + \beta_3 3star + \beta_4 2star + \theta_i + \mu$$

Where Y is the performance outcome of interest (wins, likelihood of bowl appearance, Championship bowl appearance), Star is the ex ante recruit rating, and θ is the individual school or conference fixed effect.

The regressions for the financial relationship regressions is

$$F = B_0 + \beta_1 wins + \beta_2 bowl\ appearance + \beta_3 BCS\ Appearance + \mu$$

And the fixed effects specification is

$$F = B_0 + \beta_1 wins + \beta_2 bowl\ appearance + \beta_3 BCS\ Appearance + \theta_i + \mu$$

Where F is the total revenue.

From the results of the first regression we obtain estimates of the effect of recruit quality on performance. These are then used to infer values through their relationship with the financial variables in the second regression. For example, suppose that a five star recruit increases the number of wins by 0.5, the likelihood of a bowl appearance by 0.1 and the likelihood of appearance in a championship bowl by 0.2. If we know that a win increases revenue by $750,000, a bowl appearance by $100,000, and a championship appearance by $200,000 we would infer the value of the five star recruit to be ($750,000*0.5) + ($100,000*0.1) + ($200,000*0.2) = $425,000.

A key strength of our approach is that the sensitivity of the value of recruit quality to institutional features may be estimated. As discussed earlier, the conference alignment in college football is particularly generous to all member schools irrespective of their individual performance. As such, we would expect player values to differ if conference-specific effects were included in estimating value. Along the same lines, individual schools with strong reputations may see very little fluctuation in revenue due to performance and may exhibit little variation in recruit quality that is related to performance. If that is the case, the inferred value of players would be sensitive to controls for heterogeneity between teams. We discuss all three sets of results below.

5. Results

5.1 Effect of Recruit Quality on the Team Performance

We first examine the relationship between recruit quality and on the field performance. The analysis utilizes on the field performance such as wins, bowl appearances, BCS appearances, and premier bowl appearance. The results with respect to wins and conference standing (a key determinant of appearance in the bowl season) are listed in Table 4. The effect of higher rated recruits on the field performance is significantly greater than the effect measured for lower rated recruits. The results show that five star recruits increase wins by .437 when using an OLS regression and .306 for team fixed effect regression. As a comparison, a four star recruit increases wins by .159 when using OLS and .0623 with team fixed effects. In both instances, the effect of a five star recruit is more than twice as large as the effect of a four star recruit.

For postseason success, we are mindful of the fact that teams are compensated for appearances and do not receive additional payments for winning (although winning may lead to other revenue for the athletics department). We therefore analyze the relationship between the probability of postseason success and recruit quality in Table 5. There, we see that the school fixed effects have a larger impact than their probit equivalent (Columns 2, 5, 8, and 11). We also see that higher rated recruits have larger impact on Bowl Appearances and Premier bowl appearances when we control for conferences compared to the probit regressions. For example, a five star recruit increases the probability of appearing in a BCS bowl by more than 4% with school fixed effects, where

the overall marginal effect is less than 2%. Importantly, five star recruits have no statistically significant effect on the likelihood of appearing in a bowl game overall. From these results, we can conclude that higher rated recruits have a significant impact on performance and the likelihood of appearances in the most lucrative postseason bowls.

5.2 Revenues and Team Performance

To analyze the effect of team performance on financial outcomes, we begin with the OLS and fixed effects regressions of total revenue on team performance. We regress total revenue on wins, bowl appearance, and BCS bowl appearance in Table 6. (In appendix results we also included a specification which included premier bowls- Capital One Bowl, Tangerine Bowl, Cotton Bowl, Gator Bowl or Outback Bowl. These bowls have lucrative payouts and traditionally select teams near the top of their respective conferences.) The OLS regressions show us that each win increases revenue by more than $800k. The result is slightly larger when conference fixed effects are included (Column 2). BCS bowl appearances are the most lucrative and increase revenues by more than $15 million across all schools, but by more than $8 million with conference fixed effects.

The difference between OLS and fixed effects are not uniform, however. Bowl appearances have a positive and significant relationship with total revenue as bowl appearances can increase total revenue for a team by over $5.5 million and over $1.1 million for conference fixed effects and $1.6 million for school fixed effects. At the

same time, BCS appearances increase revenue by only $2.1 million with school fixed effects, and the result is not statistically significant.

We report the results for total expenses and operating expenses in the appendix to streamline the presentation of results, but they are worthy of discussion. When we regress on the field accomplishments on expenses we see a similar relationship as with revenues. The coefficients for BCS appearances are consistently larger than the coefficients for wins. This holds even for conference fixed effects, which should control for many features of athletics "arms races" where schools invest in more expensive facilities, which come with greater operating costs.

As teams have more on the field success and participate in more prestigious post season games, the costs to the program increase as well. Most important, the inclusion of school and conference fixed effects does not eliminate the relationship with expenses.

We create a measure of economic profit by taking the difference between revenue and total expenses for each school for each year. The results show that the profitability of schools as a function of performance varies widely depending on the specification used.

5.3 Inferred Monetary Values

Taking the results with revenue, we can infer the value of recruits for revenue by *ex ante* rating. We do so in Table 8. We show the estimates for revenue by rating using all three specifications. In the OLS results, we see that five star recruits are worth more than $650,000 when wins, bowl appearances, BCS bowl appearances, and premier bowl

appearances are factored into the valuation. The largest share of the total is due to the increased revenue with respect to wins for five star athletes. The results within conferences are similar, where the revenue increase is slightly less than $600,000. Even looking within schools, we see that five star recruits increase revenue by nearly $200,000, while four star recruits increase revenue by nearly $90,000. The heterogeneity by recruit rating is wide. For example, four star athletes increase revenue much less than five star athletes, and two star athletes are related to negative revenue.

The results support the notion that higher rated recruits bring higher amounts of revenue for colleges At the same time, however, the results show that the estimates for player value are quite sensitive to whether conference or school effects are included in the estimation. This is consistent with the notion that the institutional features of college football, where revenue is shared between conference members, plays a role. It is also consistent with the notion that factoring the traditional performance of schools alters the value of any individual player to a program.

6. Conclusion

The goal of this study was to quantify a monetary value for college football recruits and exploit the school heterogeneity and establish facts before we discuss policy. Policy recommendations are unclear (you could either pay players and have many fewer sports or you could pay players a set rate and understand that some would be overcompensated and others undercompensated) and we are agnostic to policy recommendation. Beginning with player performance, we set out to infer total revenue, profit, total expenses, and

operating expenses values for college football recruits. We examined both regular season and post season success to help infer these monetary values. We also examined these relationships using conference fixed effects as most teams within the same conference go after the same recruits.

Even though the results are smaller for school and conference fixed effects, the economic impact that higher rated recruits have on colleges is still quite significant. OLS regressions still yield higher total revenue, profit, operating expenses, and total expenditures. The conference fixed effects for total revenue, profit, total expenditure and operating expenditure suggest that not only do the schools reap economic benefits from bringing in higher rated recruits but every team reaps benefits when other teams in the conference bring in higher rated recruits. This makes sense due to the fact that most of the lucrative post season payouts have to be shared equally between teams in a conference. We show that not only do programs who recruit higher rated recruits have more on the field success but they are also more profitable. The importance to college football programs of bringing in higher rated recruits is key to the long term success of the football team, the athletic program and to the university.

The results could be extended in several directions. Using the inferred method to evaluate the relationship between college football recruits, on the field success and monetary value is one way to estimate the relationship. Finding the direct relationship between college football recruits and total revenue would be another way to estimate the relationship. The most intriguing extension is to use these results to continue the discussion if college football players should be compensated. Our results suggest that

players earn far more than what a college scholarship is worth. If you were to include tuition, room and board, books, and stipends, the value of all those perks are still far less than the total revenue estimates and profit estimates. Players may not be getting compensated enough for the value they bring to their university. These extensions would add to the limited number of studies that explore the idea of college athlete compensation. Our work suggests that schools and athletes need to examine the amounts college football athletes are being compensated.

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Table 1: Average Recruit Quality by Conference

Star Rating	Whole Sample	BIG 10	BIG 12	ACC	PAC 10	SEC	BIG EAST	Non-BCS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5 Star	**0.2984**	**0.3415**	**0.448**	**0.5191**	**0.5964**	**0.963**	**0.1463**	**0.3061**
	(0.8241)	(0.7336)	(0.9021)	(0.9872)	(1.3351)	(1.2952)	(0.4746)	(0.2314)
4 Star	**2.7684**	**3.9837**	**4.736**	**4.5649**	**4.921**	**7.1555**	**2.159**	**0.4064**
	(3.9976)	(4.152)	(4.407)	(4.099)	(3.8066)	(5.0621)	-2.472	(1.4008)
3 Star	**8.1108**	**10.5935**	**12.472**	**10.7862**	**11.4561**	**11.4741**	**10.4756**	**4.318**
	(5.6527)	(4.14)	(4.498)	(4.138)	(4.547)	(4.9937)	(5.068)	(4.2709)
2 Star	**11.1777**	**6.8455**	**5.968**	**6.0458**	**5.4649**	**4.9926**	**10.3292**	**16.9455**
	(7.9113)	(5.3101)	(5.1162)	(4.4684)	(4.3926)	(5.6601)	(6.4694)	(6.467618)
1 Star	**0.0484**	**0.0162**	**0.024**	**0**	**0.701**	**0.0962**	**0.0609**	**0.0544**
	(0.4978)	(0.127)	(0.1537)	--	(0.4147)	(0.8799	(0.5521)	(0.53553)
Average Star	**2.6116**	**2.89**	**2.9759**	**2.9521**	**3.0142**	**3.156**	**2.633**	**2.199**
	(0.5446)	(0.4397)	(0.417)	(0.4042)	(0.4241)	(0.4648)	(0.366)	(0.3199)

Note:

*Average Star Quality of teams from BCS Conference (Standard Error is in Parentheses)

** Number of Teams in Each Conference: Big Ten (12), SEC(14), ACC(15), Big East(15), Pac 10(12), Big 12(10)

*** Throughout the analysis definitions we are careful to use contemporaneous conference alignment for each year.For example, if University X was aligned to conference 1 or three years and then conference 2 for the remaining years in the data, we assign University X to their aligned conference for those specific years.

Table 2: Average Financial Data by Conference

Star Rating	Whole Sample	BIG 10	BIG 12	ACC	PAC 10	SEC	BIG EAST	Non-BCS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total Revenue	**$ 20,800,000.00**	**$ 36,900,000.00**	**$ 30,800,000.00**	**$ 19,800,000.00**	**$ 25,300,000.00**	**$ 38,400,000.00**	**$ 17,500,000.00**	**$ 7,771,085.00**
	(18900000)	(17200000)	(20300000)	(9557253)	(10100000)	(21700000)	(5582632)	(5442466)
Total Operating Expense	**$ 2,432,669.00**	**$ 3,146,789.00**	**$ 2,777,194.00**	**$ 2,770,630.00**	**$ 3,631,707.00**	**$ 2,836,597.00**	**$ 3,229,479.00**	**$ 1,521,412.00**
	(1690748)	(1768102)	(1295126)	(1522111)	(1666421)	(1748169)	(1380662)	(975413)
Total Expense	**$ 12,200,000.00**	**$ 17,100,000.00**	**$ 14,700,000.00**	**$ 14,200,000.00**	**$ 15,300,000.00**	**$ 16,000,000.00**	**$ 14,000,000.00**	**$ 7,350,394.00**
	(7089710)	(6829929)	(4812850)	(5161679)	(4579178)	(7191472)	(3894792)	(3899593)
Total Profits	**$ 8,643,581.00**	**$ 19,800,000.00**	**$ 16,200,000.00**	**$ 5,607,085.00**	**$ 10,100,000.00**	**$ 22,300,000.00**	**$ 3,549,545.00**	**$ 420,691.00**
	(1340000)	(13000000)	(16900000)	(6181981)	(7173433)	(16000000)	(3893258)	(2472211)

Note:

*Average Star Quality of teams from BCS Conference (Standard Error is in Parentheses)

** Number of Teams in Each Conference: Big Ten (12), SEC(14), ACC(15), Big East(15), Pac 10(12), Big 12(10)

*** Throughout the analysis definitions we are careful to use contemporaneous conference alignment for each year.For example, if University X was aligned to conference 1 or three years and then conference 2 for the remaining years in the data, we assign University X to their aligned conference for those specific years.

Table 3: Regression: Wins on Recruit Qaulity

Estimation Method	OLS	Fixed Effects
	Dependent Varibale	
	WINS	WINS
Recruit Quality	(1)	(2)
Five Star	0.437***	0.306***
	(0.12)	(0.117)
Four Star	0.159***	0.0623*
	(0.0301)	(0.0373)
Three Star	0.046**	0.0555***
	(0.0184)	(0.02)
Two Star	-0.0455***	-0.0103***
	(0.0167)	(0.0163)
Constant	6.103***	6.927***
	(0.355)	(0.79)
Observations	1,300	1,300
R-Squared	0.18	0.443

Note: Standard errors are in parentheses

*Signifincant at 10% level; **Significant at 5% level;***Significant at 1% level

Data of all FBS Teams (Recruiting Statistics and Wins) used in these regressions

Table 4. OLS and Fixed Effect regressions of conference wins and conference standings on recruit quality

Estimation Method	OLS	Fixed Effects	OLS	Fixed Effects	OLS	Fixed Effects
	(1)	(2)	(3)	(4)	(5)	(6)
			Dependent Variable			
Recruit Rating	Wins	Wins	Conference Wins	Conference Wins	Conferene Standings	Conference Standings
Five Star	0.437***	0.306***	0.376***	0.395***	-0.423***	-0.435***
	(0.12)	(0.117)	(0.0919)	(0.0873)	(0.106)	(0.0989)
Four Star	0.159***	0.0623*	0.0821***	0.128***	-0.0734***	-0.125***
	(0.0301)	(0.0373)	(0.0231)	(0.023)	(0.0268)	(0.0261)
Three Star	0.0460**	0.0555***	0.0153	0.0419***	0.0168	-0.0476***
	(0.0184)	(0.02)	(0.015)	(0.015)	(0.0164)	(0.017)
Two Star	-0.0455***	-0.0103***	-0.00776	-0.0370***	0.0217	0.0465***
	(0.0167)	(0.0163)	(0.0126)	(0.0126)	(0.0148)	(0.0143)
Constant	6.103***	6.927***	3.493***	3.012***	4.188***	4.922***
	(0.355])	(0.79)	(0.319)	(0.319)	(0.316)	(0.361)
Observation	1300	1,300	1300	1300	1300	1300
R-Squared	0.18	0.443	0.196	0.069	0.069	0.217

Note: standard error are in parentheses

*Significant at 10% level; ** Significant at 5% level;***Significant at 1% level

Table 5. Post Season Success and Recruit Quality: Probit Estimates

Esitmation Method	Probit	School Fixed Effects	Conference Fixed Effects	Probit	School Fixed Effects	Conference Fixed Effects
Recruit Rating	(1) Conference Championship	(2) Conference Championship	(3) Conference Championship	(4) BCS Bowl Appearance	(5) BCS Bowl Appearance	(6) BCS Bowl Appearance
Five Star	0.0438***	0.0748***	0.0481***	0.0145***	0.0428**	0.0184***
	[-0.0107]	(0.0217)	(0.0107)	[-0.00438]	[-0.0172]	(0.00595)
Four Star	0.0025	0.000590	0.00785**	0.00103	-0.0044	0.00185
	[-0.00293]	(0.00773)	(0.00311)	[-0.00132]	[-0.00665]	(0.00178)
Three Star	-0.00347*	-0.00525	-0.00108	-0.00112	-0.00591	-0.00145
	[-0.00197]	(0.00472)	(0.00217)	[-0.00964]	[-0.005]	(0.00138)
Two Star	-0.00145	-0.00757*	-0.00381**	-0.00518***	-0.0204***	-0.00634***
	[-0.00175]	(0.00431)	(0.00186)	[-0.000988]	[-0.0052]	(0.00141)
Observations	1,275	567	1,228	1,300	396	1,096

Esitmation Method	Probit	School Fixed Effect	Conference Fixed Effects	Probit	School Fixed Effect	Conference Fixed Effect
Recruit Rating	(7) Second Tier Bowl Appearance	(8) Second Tier Bowl Appearance	(9) Second Tier Bowl Appearance	(10) Bowl Appearance	(11) Bowl Appearance	(12) Bowl Appearance
Five Star	0.00429	0.00429	0.011	0.0356	0.0222	0.0432
	[-0.00543]	(0.0194)	(0.0143)	[-0.0265]	[-0.0328]	(0.0267)
Four Star	0.00316	0.00316	0.00681	0.0294***	0.0174*	0.0366***
	[-0.00173]	(0.00689)	(0.00431)	[-0.00618]	[-0.0095]	(0.00662)
Three Star	0.00299	0.00299	0.00319	0.0130***	0.0148***	0.0151***
	[-0.00119]	(0.00541)	(0.00344)	[-0.0035]	[-0.00489]	(0.00396)
Two Star	0.00473	0.00473	-0.00193	-0.00651**	-0.000772	-0.00582*
	[-0.00127]	(0.00607)	(0.00368)	[-0.00313]	[-0.00406]	(0.00328)
Observations	1,300	418	637	1,300	1,157	1,285

*Note: S*tandard error in parentheses. *Significant at 10% level; ** Significant at 5% level;***Significant at 1% level

All estimates were done with a probit estimation

Table 6: Regression: Total Revenue on Performance including Premier Bowl

Performance	OLS (1)	Conference Fixed Effects (2)	School Fixed Effects (3)
Wins	827,692***	1.056e+06***	243,168*
	(284,456)	(202,884)	(137,307)
Bowl Appearanc	5.538e+06***	1.100e+06	1.660e+06**
	(1.618e+06)	(1.169e+06)	(738,576)
BCS	2.408e+06	5.974e+06***	2.188e+06*
	(2.705e+06)	(1.942e+06)	(1.238e+06)
Premier Bowl	1.547e+07***	3.001e+06**	-833,574
	(2.015e+06)	(1.504e+06)	(963,340)
Constant	9.457e+06***	1.227e+07***	2.246e+06
	(1.304e+06)	(1.366e+06)	(2.193e+06)
Observations	1,152	1,152	1,152
R-squared	0.244	0.624	0.877

Standard errors in parentheses

* Significant at 10% Level, ** Significant at 5% Level, *** Significant at 1% Level

Premier Bowl includes the following bowls Capital One Bowl, Tangerine Bowl, Cotton Bowl, and Outback Bowls

Table 7: Regression: Total Revenue on Performance

	OLS	Conference Fixed Effects	School Fixed Effects
Performance	(1)	(2)	(3)
Wins	1.038e+06***	1.093e+06***	232,615*
	(290,184)	(202,289)	(136,748)
Bowl Appearanc	6.614e+06***	1.254e+06	1.622e+06**
	(1.652e+06)	(1.168e+06)	(737,145)
BCS	1.521e+07***	8.363e+06***	1.555e+06
	(2.183e+06)	(1.531e+06)	(998,599)
Constant	8.637e+06***	1.223e+07***	2.293e+06
	(1.332e+06)	(1.367e+06)	(2.193e+06)
Observations	1,152	1,152	1,152
R-squared	0.205	0.623	0.877

Standard errors in parentheses

* Significant at 10% Level, ** Significant at 5% Level, *** Significant at 1% Level

Table 8: Inferred Total Revenue OLS

VARIABLES	Total Revenue			Wins	Infer wins	Bowl Appearance	Infer Bowl Appearance	BCS Appearance	Infer BCS	Premier Bowl	Infer Premier Bown	Total
Wins	827,692***	$ 827,692.00	**Five Star**	0.437	$ 361,701.40	0.0356	$ 197,152.80	0.0145	$ 34,916.00	0.00429	$ 66,366.30	**$660,136.50**
	(284,456)		**Four Star**	0.159	$ 131,603.03	0.0294	$ 162,817.20	0.0013	$ 3,130.40	0.00316	$ 48,885.20	**$346,435.83**
Bowl Appearance	5.538e+06***	$ 5,538,000.00	**Three Star**	0.046	$ 38,073.83	0.013	$ 71,994.00	-0.00112	$ (2,696.96)	0.00299	$ 46,255.30	**$153,626.17**
	(1.618e+06)		**Two Star**	-0.0455	$ (37,659.99)	-0.00651	$ (36,052.38)	-0.00518	$(12,473.44)	0.00473	$ 73,173.10	**$ (13,012.71)**
BCS	2.408e+06	$ 2,408,000.00										
	(2.705e+06)											
Premier Bowl	1.547e+07***	$ 15,470,000.00										
	(2.015e+06)											
Constant	9.457e+06***											
	(1.304e+06)											
Observations	1,152											
R-squared	0.244											

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 9: Inferred Total Revenue School Fixed Effect

VARIABLES	Total Revenue			Wins	Infer wins	Bowl Appearance	Infer Bowl Appearance	BCS Appearance	Infer BCS	Premier Bowl	Infer Premier Bown	Total
Wins	243,168*	$ 243,168.00	**Five Star**	0.437	$ 106,264.42	0.0356	$ 59,096.00	0.0145	$ 31,726.00	0.00383	$ (3,192.59)	**$193,893.83**
	(137,307)		**Four Star**	0.159	$ 38,663.71	0.0294	$ 48,804.00	0.0013	$ 2,844.40	0.000534	$ (445.13)	**$ 89,866.98**
Bowl Appearance	1.660e+06**	$ 1,660,000.00	**Three Star**	0.046	$ 11,185.73	0.013	$ 21,580.00	-0.00112	$ (2,450.56)	-0.00356	$ 2,967.52	**$ 33,282.69**
	(738,576)		**Two Star**	-0.0455	$ (11,064.14)	-0.00651	$ (10,806.60)	-0.00518	$(11,333.84)	0.00079	$ (658.52)	**$ (33,863.11)**
BCS	2.188e+06*	$ 2,188,000.00										
	(1.238e+06)											
Premier Bowl	-833,574	$ (833,574.00)										
	(963,340)											
Constant	2.246e+06											
	(2.193e+06)											
Observations	1,152											
R-squared	0.877											

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: Inferred Total Revenue Conference Fixed Effects

VARIABLES	Total Revenue			Wins	Infer wins	Bowl Appearance	Infer Bowl Appearance	BCS Appearance	Infer BCS	Premier Bowl	Infer Premier Bown	Total
Wins	1.056e+06***	$ 1,056,000.00	**Five Star**	0.437	$ 461,472.00	0.0356	$ 39,160.00	0.0145	$ 86,623.00	0.00383	$ 11,493.83	**$ 598,748.83**
	(202,884)		**Four Star**	0.159	$ 167,904.00	0.0294	$ 32,340.00	0.0013	$ 7,766.20	0.000534	$ 1,602.53	**$ 209,612.73**
Bowl Appearanc	1.100e+06	$ 1,100,000.00	**Three Star**	0.046	$ 48,576.00	0.013	$ 14,300.00	-0.00112	$ (6,690.88)	-0.00356	$ (10,683.56)	**$ 45,501.56**
	(1.169e+06)		**Two Star**	-0.0455	$ (48,048.00)	-0.00651	$ (7,161.00)	-0.00518	$ (30,945.32)	0.00079	$ 2,370.79	**$ (83,783.53)**
BCS	5.974e+06***	$ 5,974,000.00										
	(1.942e+06)											
Premier Bowl	3.001e+06**	$ 3,001,000.00										
	(1.504e+06)											
Constant	1.227e+07***											
	(1.366e+06)											
Observations	1,152											
R-squared	0.624											

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11: IV Regression Rival and Scouts Points

	Rival Total Points
Scout Total Points	0.439***
	(0.0130)
Constant	240.6***
	(21.48)
Observations	1,300
R-squared	0.469

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source	SS	df	MS
Model	29262160	1	29262160
Residual	33196427	1298	255750.59
Total	62458588	1299	480820.54

Number of	1300
F(1,1298)	1144.17
Prob>F	0
R-Squared	0.4685
Adj R-Squa	0.4681
Root MSE	505.72