An Empirical Analysis of the Factors Affecting College Quarterback Prospect Signing Bonuses

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I. Abstract

This paper provides an empirical analysis of the factors that affect the NFL signing bonuses for college quarterbacks. Our sample data is drawn from the official ESPN website, Spotrac, and the official NFL website for the years 2005-2016. It is composed of bonus data for college quarterbacks who were drafted into the NFL and received a signing bonus. Our explanatory variables include the quarterbacks' total quarterback rating (QBR), height, weight, and dummy variables that control for the major conferences. We found that QBR and ratio of height to weight significantly affect signing bonuses.

II. Empirical Model and Variables

$LOG(BON_i) = \beta_0 + \beta_1 TOTQBR_i + \beta_2 HTWT_i + \beta_3 ACC_i + \beta_4 BIG12_i + \beta_5 BIG10_i + \beta_6 PAC12_i + \beta_7 SEC_i + e_i$

Dependent Variable

LOG(BON)i: The signing bonus amount given to the drafted college quarterback prospect measured in US dollars.

Explanatory Variables

TOTQBRi: This is a rating from 0-100 which grades the quarterback based on his performance. The rating increases with performance. Seven components are used to calculate it.

HTWTi: A ratio of the player's height in inches divided by his weight in pounds.

ACCi: A dummy variable equal to 1 if the drafted quarterback played in the ACC conference.

BIG12i: A dummy variable equal to 1 if the drafted quarterback played in the Big 12 conference.

BIG10i: A dummy variable equal to 1 if the drafted quarterback played in the Big 10 conference.

PAC12i: A dummy variable equal to 1 if the drafted quarterback played in the Pac 12 conference.

SECi: A dummy variable equal to 1 if the drafted quarterback played in the SEC conference.

*i denotes players where i = 1-90

III. Theory and Hypothesis

TOTQBR: This variable is hypothesized to have a positive relationship with signing bonuses. Quarterbacks with greater ratings have a greater skill, therefore this will increase their bonus.

HTWT: This ratio variable is hypothesized to have a negative effect on signing bonuses since a taller, lightweight quarterback will not be able sustain a hard tackle and continue playing.

ACC: This variable is used to differentiate quarterbacks from the Atlantic Coast Conference. The variable is equal to 1 if the quarterback is from the ACC and 0 if not.

BIG12: This variable is used to differentiate players from the Big 12 conference. The variable will be equal to 1 if the quarterback is from the Big 12 and 0 if not.

BIG10: This variable is used to identify quarterbacks who played in the Big 10 conference. This variable will equal 1 if the quarterback is from the Big 10 and 0 if not.

PAC12: This variable is used to discern quarterbacks who played in the Pac 12 conference. This variable will be equal to 1 if the quarterback is from the Pac 12 and 0 if not.

SEC: This variable is used to discern quarterbacks who played in the Southeastern Conference. This variable will equal 1 is the variable if the quarterback is from the SEC and 0 if not.

IV. Data

Data Sources

- Official ESPN website - quarterback rating data
- Spotrac - quarterback signing bonuses

Challenges & Limitations

- Missing data - Not every variable for each athlete was available, specifically from the 2005-2009 period. These drafted prospects were excluded from the study. In total, our regression included 90 observations.

V. Empirical Results

Dependent Variable: LOG(CPI_DATA)
Method: Least Squares
Date: 03/22/17   Time: 20:14
Sample: 1 137
Included observations: 90

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	20.47222	4.930799	4.151908	0.0001
TOTAL_QBR	**0.066097**	**0.019167**	**3.448545**	**0.0009**
HTWT	**-52.43967**	**14.40239**	**-3.641039**	**0.0005**
DUMMY1ACC	-0.222097	0.583902	-0.380368	0.7047
DUMMY2BIG12	**1.382173**	**0.557522**	**2.479136**	**0.0152**
DUMMY3BIG10	-0.363888	0.589172	-0.617627	0.5385
DUMMY4PAC12	0.118827	0.473221	0.251104	0.8024
DUMMY5SEC	**-0.849191**	**0.474685**	**-1.788955**	**0.0773**

R-squared	0.286971	Mean dependent var	7.657828	
Adjusted R-squared	0.226102	S.D. dependent var	1.690769	
S.E. of regression	1.487394	Akaike info criterion	3.716616	
Sum squared resid	181.4120	Schwarz criterion	3.938821	
Log likelihood	-159.2477	Hannan-Quinn criter.	3.806222	
F-statistic	4.714612	Durbin-Watson stat	0.885700	
Prob(F-statistic)	0.000175			

VI. Conclusion

- Our adjusted R squared indicates 22.6% of the variation in quarterback signing bonuses is determined by our model.

- The effect of TOTQBR was significant, for every one point increase in QBR, the signing bonus of the quarterback increases by 6.0%.

- The effect of HTWT was significant, for every additional inch per pound, the signing bonus of the quarterback decreases.

- The effect of Big 12 was significant, if a player is from a university in the Big 12 conference, the signing bonus increases.

- The effect of SEC was significant, if a player is from a university in the SEC conference, the signing bonus decreases.

- High school quarterbacks who dream about playing football in the NFL, may benefit by choosing a university in the BIG 12 conferences versus a university in the SEC conference, especially if they measure success by amount of dollars earned.

- Recruiters and coaches could use this information as a baseline for understanding how quarterback prospects are valued during the NFL draft.