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Quinn Keefer
California State University San Marcos

Thomas J. Kniesner
Syracuse University and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Compensation Peer Group Effects: Evidence from NFL Professional Football

Our research interest is in the existence and size of possible peer effects in pay or whether a worker may get a higher salary because another worker does rather than being related to a change in the worker's productivity or market forces. Previous research, which has concentrated on executive pay, suffers from the inability to control for labor market forces. We net out market forces by studying a group of particular U.S. pro football players who are subject to a tightly budgeted unionized institutional arrangement affecting certain players pay set in the offseason. Our empirical results for NFL wide-receivers and cornerbacks during 2013-2022 are that there is an elasticity of average contract value with respect to the largest contract already signed in the offseason of about 0.17. Players we study who sign the largest contract during the offseason at the time of signing generate significant pay spillovers to players signing subsequent offseason contracts, suggesting that their compensation is economically and statistically significantly impacted by peer group reference points.

JEL Classification: J31, J33, Z21

Keywords: labor market reference point effects, NFL player pay, fixed effects, quantile regression, influence analysis

Corresponding author:
Thomas J. Kniesner
Syracuse University
900 S Crouse Ave
Syracuse, NY 13244
USA

E-mail: tom.kniesner@cgu.edu

Introduction

The economics literature has documented several ways that peers influence each other in labor markets (Azoulay, Graff Zivin, and Wang 2010; Cornelissen, Dustmann, and Schönberg 2017; Falk and Ichino 2006; Gould and Winter 2009; Grodner and Kniesner 2006, 2008; Grodner, Kniesner, and Bishop 2011; Guryan, Kroft, and Notowidigdo 2009; Mas and Moretti 2009). We are interested in potential peer effects in compensation, asking the simple question does a worker's pay increase simply because a peer earns more? More thoroughly, do workers experience non-productivity changes in pay based on changes to peer compensation that are not dictated by market forces?

Past research has focused on the market for executive compensation. When determining executive compensation, it is commonplace for firms and boards of directors to compare, or benchmark, compensation to a group of peer firms. In an effort to promote transparency concerning executive compensation, in December 2006 the Securities Exchange Commission (SEC) began mandating the disclosure of such compensation peer groups (Faulkender and Yang 2010). The peer groups are selected by firms based on a variety of characteristics such as industry, firm size, and a previous history of worker flows between firms (Bizjak, Lemmon, and Naveen 2008; Faulkender and Yang 2010). However, firms also seem simply to select highly paid executives, perhaps to justify high compensation (Faulkender and Yang 2010). An example is that former Chairman of the New York Stock Exchange Richard Grasso's compensation peer group was comprised of much larger financial firms and none of the other stock exchanges (Faulkender and Yang 2010). Not surprisingly, due to the endogenous nature of peer group formation in the high-level executive context, the compensations of the peer groups' members seem to have been shown as explaining the variation in CEO pay (Bizjak, Lemmon, and Naveen

2008; Faulkender and Yang 2010).[1] However, the question of whether compensation is causally affected by the compensation of one's peers remains.[2]

To answer such a causal question, one would ideally examine how compensation changes when pay within the peer group changes. In other words, does an increase in peer group compensation generate a spillover, and if so, how large is the spillover effect? Importantly, the changes in peer group compensation cannot be generated by market conditions or changes to the peer group itself. Here, we attempt to provide evidence about the impact of peer group compensation by using, to the best of our knowledge, a novel setting. The setting allows us to analyze changes in peer group compensation that are not generated by changes in market conditions and when the peer group is not endogenously determined, as it is for executive compensation.

The labor market setting we exploit is the National Football League (NFL), a case where workers are also highly skilled and highly compensated, similar to top executives. Specifically, we examine how contracts signed in a given offseason affect subsequent contracts signed in the same offseason for other players at the same position. Because contracts are signed during the offseason, there are no changes to worker productivity.[3] Furthermore, as we discuss in detail below, within a given offseason the labor market forces in the NFL are constant. Finally, by examining a specific position the peer group is well defined and cannot be manipulated in a way

[1] There have been other consequences shown to result from the use of compensation peer groups. For example, Hsu, Huang, and Koedijk (2023) found effects of compensation peers on firm innovation.

[2] A similar phenomenon occurs in real estate when a house's sold price affects the prices of subsequent homes sold in the area (Fischer, Füss, and Stehle 2021). Like executive compensation, this is the result of an explicit practice of using comparable houses to benchmark prices and negotiations. However, also similar to executive compensation, it is very difficult to disentangle the spillover from changes in market conditions. For example, a new record sale in a neighborhood may generate higher prices for other homes but may just also be an indication of changes in market conditions.

[3] It could be the case that expected productivity for the upcoming season depends on the quality of the other players on the team. In this sense, a player's expected productivity could be dependent on the team he signs with. We address this by considering teams' spending at each position, a proxy for teammate quality at each position.

to influence pay. Our results suggest players experience a significant pay increase stemming from increases in peer group compensation that is not related to performance or market conditions.

1. Institutional Setting

As previously noted in (Kahn 2000), there are many unique and interesting features of professional sports labor markets that can be exploited by researchers. In the NFL, player contracts and compensation are governed by the collective bargaining agreement (CBA) between the players union (NFLPA) and teams' owners. Player contracts are for league years or seasons, and they cannot expire during the offseason. Interestingly, NFL players' contracts are not guaranteed. Players may be released prior to their contract expiring and they are not entitled to be paid the remaining money. Players' pay can be broken into three categories: base pay, signing bonus, and other bonuses. Base pay is paid weekly during the NFL regular season. The signing bonus is paid at the time the contract is signed and is the only guaranteed portion of all contracts. Other bonuses can be stipulated for individual or team performance, making the roster, and working out with the team in the offseason, among other things.

Player compensation is also subject to the salary cap; each year teams have a cap on total player compensation. The cap is a hard cap meaning teams may not exceed the limit, unlike other professional sports leagues such as the National Basketball Association. The salary cap is set as a percentage of predicted league revenue. Total player costs for the league are defined as 55% of predicted league media revenue, or broadcasting rights, 45% of predicted NFL ventures and postseason revenue, and 40% of predicted local revenue (NFL 2020). Each team's cap is then 1/32 of total player costs, as there are 32 NFL teams. The 2024 salary cap is $255.4 million per team, a $30.6 million increase from 2023, the largest one-year increase in league history. The

most important aspect of the salary cap for our analysis is that it gives all teams a fixed budget for a year. When players are signing new contracts the salary cap is known and constant for all market participants.

1.1 *When Do Players Sign New Contracts?*

In the NFL there are several situations where players sign new contracts, each with varying degrees of monopsony exploitation, due to the limited number of teams. The simplest is for veteran players -- those with more than four years of NFL experience, whose contracts have expired, or have been released by the team, known as unrestricted free agents. Such players may negotiate and sign a contract with any NFL team. However, players who have not accumulated the required four years of experience face restrictions on their bargaining. Players with three prior years are restricted free agents. Teams can offer their restricted free agents one-year contracts, called tenders. In the case where a restricted free agent is offered a tender and chooses not to sign it, he can negotiate with any NFL team. However, his original team has the right to match any offer, and if the original team chooses not to match an offer, they are compensated based on the level of tender offered to the player. Players with less than three years of experience do not qualify for free agency, they are subject to a reserve clause and may only negotiate with their original teams. When a player with less than four years of experience is released by his team prior to his contract expiring, he is subject to waiver claims. That is, teams may claim the player and his contract with the order of first right to claim to be the reverse order of team success from the previous season. If a player is not claimed on waivers, he becomes an unrestricted free agent. Holzman-Escareno (2022) provides a detailed description of NFL free agency.

Players may also sign a new contract when their existing contract is still valid. First, players may sign contract extensions. For example, Justin Herbert, the very talented young quarterback for the Los Angeles Charges, finished the third season of a four-year contract in 2022. The average annual value of his contract was $6.645 million. However, in the offseason he signed an extension with the Chargers for an additional five years, with an average annual value of $52.500 million. Contract extensions may also take place as part of a trade, where a player is traded to a new team and signs an extension before playing with the new team, to protect the acquiring team. For example, going into the 2022 season A.J. Brown was set to earn $3.986 million in the final year of his contract with the Tennessee Titans. However, prior to the season he was traded to the Philadelphia Eagles where he immediately signed a four-year contract extension with an average annual value of $25.000 million. In other cases, the parties can agree to rework the terms of an existing contract. As an example, A.J. Hawk had a five-year contract with the Green Bay Packers lasting from 2011 to 2015 with an average annual value of $6.750 million. However, following the 2012 season the two sides agreed to a new restructured contract covering the same seasons with an average annual value of $3.533 million.

In terms of timing for the market, in January NFL teams may begin to sign any free agent players, those not under contract, for the following season. This is also the earliest teams may begin to offer contract extensions to players on their rookie contracts. However, NFL contracts expire at the end of the league year in March. Thus, teams may begin signing unrestricted free agents whose contracts have expired when the new league year begins. For the 2025 NFL season, teams may begin signing free-agent players on January 6, 2025. They may also start offering extensions to players on their initial contracts who were either drafted in 2022 or undrafted in 2023 on the same date. Players who are in the final year of a contract during the 2024 season and

are set to be unrestricted free agents become available to negotiate with on March 10, 2025, unless they agree to an extension beforehand. Teams may begin signing these unrestricted free agents on March 12, 2025, the official beginning of the NFL league year (NFL Operations 2024).

2. Empirical Method

Each season there is a given supply of players looking to sign new contracts and the quality of players in the group can change from year to year. Furthermore, due to the NFL salary cap, each year there is a limited amount of money that will be spent on signing players. As a result, we look at the within-season effect. Let y_{itd} be the value of player *i*'s contract signed in year *t* on day of the year *d*. We define the variable r_i to be highest-value contract signed in the same year prior to player *i* signing his contract. Thus, $r_{itd} \equiv \max_{\forall j \neq i, l<d} y_{jtl}$, or the maximum value of all prior contracts signed in the same year. Importantly, players who sign a contract in the same year may not have the same reference, due to variation in when they sign.

We begin by estimating the following model

$$y_{itd} = \alpha + \beta r_{itd} + \mathbf{x}'_{itd}\boldsymbol{\lambda} + \theta_t + \delta_1 d + \delta_2 d^2 + \epsilon_{itd}, \quad (1)$$

where **x** is a vector of other factors affecting player *i*'s contract value. The specification also includes year fixed effects, θ_t, and a quadratic time trend. Year fixed effects are important to control for any factors affecting all players in a given year (the available pool of money to sign players based on team budgets and the salary cap). For our baseline specification the vector **x** contains player-related performance measures and characteristics. With respect to performance, we include prior season games started, number of plays, and position-specific productivity measures (for wide receivers (WR) we use receptions, yards, and touchdowns, and for cornerbacks (CB) we use interceptions, passes defended, and total tackles). As a result, we omit

any players who did not play in the NFL the prior season, primarily rookies.[4] We also focus on contracts signed in the offseason, the large majority of signings. We do so because in-season signings are challenging with respect to productivity, as the within-season performance likely has a substantial influence. In terms of characteristics, we use a quadratic specification for experience[5], whether the player is a restricted or unrestricted free agent, the round in which a player was drafted[6], height, and weight.[7] We also include whether the transaction was a signed tender or contract extension. In the Results section we present estimates for our baseline specification and specifications including team fixed effects, team performance variables, and per-game player performance. One concern with the estimation of compensation data is the large skewness and the presence of large outlier values. Thus, we estimate the parameters of equation (1) using both OLS and quantile regression (Koenker and Bassett 1978), which is commonly used for analyses of compensation data (Buchinsky 1994, 1998; García, Hernández, and López-Nicolás 2001; Hallock, Madalozzo, and Reck 2010; Koenker and Hallock 2001).

3. Data

As noted in other studies examining the NFL, positions should be treated as distinct markets (Keefer and Kniesner 2023; Leeds and Kowalewski 2001). Positions have distinct and specific roles and, as such, have unique performance measures. We estimate the reference-point

[4] Models including teams' spending on each offensive (defensive) position for WR (CB) yield very similar results. Furthermore, estimations including the change in positional spending from a player's previous season to upcoming season teams also yield very similar results. Lastly, models including the interaction of individual performance with positional spending variables, and changes in positional spending variables, also yield nearly identical conclusions. These estimation results are available from the authors.

[5] The correlation between experience and age in the data is 0.89 for WR and 0.90 for CB.

[6] Each offseason the NFL conducts its seven-round amateur draft. Teams alternate selecting players in a reverse order based on previous season performance (the Super Bowl champion has the rights to last selection in each round). Teams are allowed to trade selections for other selections in the same year, in subsequent years, or for current players. Draft rules are governed by the Collective Bargaining Agreement (NFL 2020).

[7] There is research suggesting that race plays an important role in labor market outcomes in the NFL (Berri and Simmons 2009; Conlin and Emerson 2006; Ducking et al. 2017; Keefer 2013, 2016; Volz 2017). However, both positions, WR and CB, lack racial diversity. According to Gertz (2017), in 2016, there were 215 Black WR out of 244 total WR, and there were 238 Black CB out of 244 total CB.

effect separately for the two largest NFL markets, WR and CB.[8] To do so, we use ten years of data, covering 2013 to 2022. The data come from two sources. Contract data are from Spotrac. Spotrac maintains a database of all transactions occurring in the NFL; thus, the data represent all offseason contract signings from 2013 to 2022. The transaction data include the length of the contract, total value, initial-year cap value, guaranteed amount, the amount guaranteed at signing,[9] and details of the transaction. We focus on the average annual value of the contracts. Performance and characteristics data are from Pro Football Reference.

As mentioned in the Empirical Method section, we focus on offseason signings. Because the NFL regular season commences in early September, we define the offseason as contracts signed prior to September of a given year. Also, our sample represents the final contract signed by a player in a given offseason. For a variety of reasons, a player can sign multiple contracts in a given offseason. For instance, Adam Thielen, a wide receiver for the Minnesota Vikings, was a restricted free agent for the 2017 season. On March 4, 2017, he signed a tender offer from the team worth $2.746 million. However, less than two weeks later, on March 15, 2017, he signed a four-year extension with an average annual value of $4.812 million. We use the contract extension as the relevant signing for the 2017 season. Another example is Tajae Sharpe, who signed a one-year contract with the Kansas City Chiefs on March 29, 2021. He was released by the Chiefs on May 17, 2021, and signed a one-year contract with the Atlanta Falcons one week later, where he played the full season. In the Results section, we present results for all signings

[8] There are more linebackers (LB) than either WR or CB; however, there is a distinction between inside and outside LB that has become increasingly more important in recent years. Also, there are more offensive lineman (OL) than WR and CB, but OL comprise several positions (center, guard, and tackle).

[9] Data for amounts guaranteed and guaranteed at signing are not complete (59% of the WR in the estimation sample have monetary guarantee information).

and results defining the offseason as pre-August signings, as NFL training camps begin in August.

Our samples consist of 661 WR and 618 CB offseason contract signings with complete information.[10] Figures 1-4 display the average contract value over time for each year. Also, Table 1 displays descriptive statistics. The two groups, WRs and CBs, are very similar. For both groups 6% of the signings are tenders and contract extensions comprise 10% and 6% of signings for WRs and CBs respectively. The large majority of signings are for free agent players, 84% for WRs and 85% for CBs, with the largest share being unrestricted free agents, 65% for WRs and 70% for CBs. Despite many players signing as free agents, over half of signings, 56% of WRs, and 52% of CBs, result in the player remaining with the same team. The samples are also similar with respect to player characteristics such as experience, height, and weight.

4. Results

Since each of our regressions transforms compensation data using the natural logarithm, as is common practice for earnings regressions (for example, Blau and Kahn (2017)), our results are estimated elasticities.

4.1 *Wide Receivers*

We begin by presenting the results for WRs. Our OLS estimations are presented in Table 2. Our baseline specification, column 1, shows the estimated elasticity of average annual value with respect to the reference value, the highest-value contract signed earlier in the offseason, is 0.17 and statistically different from zero; the standardized coefficient is 0.13. Columns 2-4 present specification robustness checks for the inclusion of team fixed effects, team offensive performance measures, and per-game individual performance rather than total performance

[10] Our estimation sample does not include those players who sign the highest-value contract, the market setters. Our conclusions remain the same when including these signings. The estimation results are available from the authors.

measures respectively. The estimated elasticity is robust across specifications, ranging from 0.17 to 0.18. Therefore, we estimate that a 20% increase in the average value of the market-setting contract yields a 3.4% increase in subsequent contract values, which is approximately equivalent to an additional 26 yards receiving.

Next, we present evidence from the sample of all signings, including multiple signings by a player in the same offseason, in Table 3. Again, the estimated elasticity is robustly significant across all specifications. The estimates range from 0.16 to 0.17, which is very similar to our baseline sample results. From the results, a 20% increase in the market-setting contract has approximately the same effect as 24 additional receiving yards. Table 4 presents further robustness checks by analyzing only those contracts signed before August, as NFL training camps begin in August. The results are consistent with those presented thus far. The estimated elasticity ranges from 0.16 to 0.18.

We present our quantile regression results for our baseline specification, column (1) in Tables 2-4, in Figure 5.[11] Each graph presents the estimated elasticity across the distribution of average value by estimating the effect from quantile 0.05 to 0.95 in increments of 0.05 and 95% confidence intervals based on robust standard errors (Koenker 2005). The estimated elasticity is significant across the distribution. Furthermore, it remains relatively constant between 0.10 and 0.20.

4.2 *Cornerbacks*

Our OLS results for CBs are reported in Table 5. Similar to our results for WRs the estimated elasticity of average annual value with respect to reference value is robust across specifications. The elasticity for the baseline specification is 0.16; a standardized coefficient of

[11] In the Appendix, we present quantile regression results for all specifications in Tables 2-4.

0.16, and ranges from 0.17 to 0.20, which is very close to our results for WRs. A 20% increase in the market-setting average value increases a player's contract annual average value by approximately the same amount as an additional pass defended in the previous season. Tables 6 and 7 present results for our samples of all signings and those contracts signed before August respectively. For the sample of all signings, the estimated elasticity again ranges from 0.17 to 0.20. Furthermore, examining pre-August contract signings the estimated elasticity ranges from 0.15 to 0.19. Thus, our results indicate a high degree of robustness in terms of specifications and samples for CBs.

In Figure 6 we present quantile regression results for our baseline specification, column (1) in Tables 5-7.[12] The graphs present the estimated elasticity of average annual value with respect to reference value, estimated at quantile 0.05 through 0.95 in increments of 0.05, along with 95% confidence intervals based on robust standard errors (Koenker 2005). The elasticity is significant across the distribution except at the highest quantiles. It also remains relatively constant across the distribution between 0.10 and 0.20.

4.3 *Budget Constraint Effects*

Our results, taken together, indicate there is a small but meaningful effect of the market-setting contract on subsequently signed contracts. Furthermore, the estimated effect is remarkably robust across specifications, samples, estimation methods, and markets. However, one may be concerned that the estimated effect is not due to a new reference point being established but rather teams' budget constraints. Because the NFL has a strict salary cap on players' pay, budget constraints may be very important in our context. For example, consider the case where teams are competing for the best available player. Here, they may not be likely to

[12] The Appendix also presents quantile regression results for all specifications in Tables 5-7.

sign other players, especially not in the same position as the player they are pursuing. Once these coveted players sign a contract, the teams that lost out may then use the money they had reserved for landing the coveted free agent to sign other players. This may result in a positive correlation between the value of the highest contract signed and subsequent contract values. We address this concern by estimating our regressions using only cases in which the market-setting contract is an extension. As a result, other teams cannot compete for the player who signs the highest-valued contract, eliminating the effect of other teams' budget constraints.

We present results examining only instances in which the market setting contract is an extension in Tables 8 and 9 for WRs and CBs respectively. By focusing only on market-setting extensions we significantly reduce our sample making our estimates noisier. The results in Table 8 indicate the estimated elasticity for WRs is similar to our results using all market-setting signings. The estimated elasticity ranges from 0.13 to 0.21. The estimates for CBs, in Table 9, are all positive and larger than when examining all market-setting signings. Furthermore, quantile regression results are similar to those from OLS. Table 10 presents quantile regression estimates for the sample of market-setting extensions.[13] In total, examining only market-setting extensions tends to support the conclusion that the establishment of a new reference value affects subsequent contracts not due to teams' budget constraints.

4.4 *March Signing Period*

Based on the CBA, many unrestricted free agents, which are a substantial proportion of signings, cannot be signed until the new league year begins in March. It is important to note that we include binary variables for free agency status, which are very important to account for the fact that unrestricted free agents earn the highest salaries, due to the least amount of monopsony

[13] We present quantile regression results in table form, compared to our graphical representation earlier, as the small sample size creates very large standard errors for the lowest quantiles rendering the graph uninformative.

power from the NFL labor market rules. However, as an additional robustness check, we estimate our model for signings beginning in March of each offseason. The results are contained in Table 11. The results are similar to our previous conclusions; there are small but meaningful effects in both the WR and CB markets.[14]

4.5 *Placebo Test*

To further evaluate our conclusions, we conduct a placebo test. We specify the reference value to be the largest subsequent average value signed in the concurrent offseason. If our results are from peer group comparisons being made when a contract is signed, any subsequent signings should have no effect. As a result, we would expect the reference value to not affect contract value and for the performance effects to remain the same as our previous estimations. Results from our baseline specifications for WR and CB in Table 11.[15] The estimated elasticity for the reference value based on future signings is extremely small, -0.0008 and 0.0019 for WR and CB respectively, and highly statistically insignificant. Furthermore, all performance measures for both positions have very similar estimated effects.

4.5 *Discussion*

In total, our results are very consistent across specifications, samples, estimation methods, and positions.[16] The elasticity of average contract value with respect to the largest contract already signed in the offseason is approximately 0.15 to 0.20. Players who sign large contracts, the largest during the offseason at the time of signing, generate a significant spillover

[14] In our baseline data 77% of signings occur between March and May, for both positions. Our results estimated on the sample of signings only from March to May yield very similar results and are available from the authors.
[15] Results from our other specifications yield similar results and are available from the authors.
[16] In the Appendix we also present results from influence analysis using the standardized change in the estimated effect from removing each observation.

to players signing subsequent contracts, which suggests compensation is indeed impacted by peer group reference points.

5. Conclusion

We find evidence that workers' pay can be significantly affected by the compensation of their peers. Specifically, NFL players experience a spillover from other players' compensations. When a player signs a contract that is the highest valued at his position other players signing after him experience an increase in their pay. In both the WR and CB markets, the largest labor markets in the NFL, the elasticity of average contract value with respect to the highest-valued contract previously signed at a player's position in the same offseason is approximately 0.17. Furthermore, due to the NFL's compensation rules, governed by the CBA, our within-season estimates do not reflect changes due to market forces or endogenously chosen peer groups. We interpret our results as evidence that workers' peers can serve as a reference for the determination of compensation.

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Table 1. Descriptive Statistics

VARIABLES	WR	CB
LN(Average Value)	14.31	14.26
	(0.972)	(0.865)
LN(Reference Average Value)	16.35	16.08
	(0.752)	(0.815)
Experience	4.711	4.869
	(2.574)	(2.547)
Height	72.56	71.46
	(2.347)	(1.603)
Weight	200.2	193.3
	(14.77)	(9.282)
Day of Year	102.4	98.63
	(52.41)	(52.63)
Games Started (t – 1)	4.952	5.570
	(5.335)	(5.600)
Receptions (t – 1)	25.81	
	(25.29)	
Yards (t – 1)	322.6	
	(324.3)	
Touchdowns (t – 1)	1.891	
	(2.403)	
Offensive Plays (t – 1)	379.5	
	(298.3)	
Interceptions (t – 1)		0.835
		(1.184)
Passes Defended (t – 1)		4.837
		(4.799)
Total Tackles (t – 1)		30.44
		(23.36)
Defensive Plays (t – 1)		418.4
		(343.8)
Tender	0.0575	0.0599
Extension	0.103	0.0583
RFA	0.192	0.155
UFA	0.648	0.699
New Team	0.439	0.477
Observations	661	618

Note: Means with standard deviations in parentheses. Proportions reported for binary variables *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason.

Table 2. Wide Receiver Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.170***	0.170***	0.172***	0.183***
	(0.0378)	(0.0414)	(0.0375)	(0.0387)
Tender	0.174*	0.167*	0.168*	0.117
	(0.0918)	(0.0942)	(0.0919)	(0.0981)
Extension	0.560***	0.578***	0.564***	0.616***
	(0.0876)	(0.0917)	(0.0878)	(0.0883)
Games Started (t – 1)	0.0392***	0.0392***	0.0370***	0.653***
	(0.0101)	(0.0104)	(0.0101)	(0.128)
Receptions (t – 1)	0.00863**	0.00801**	0.00845**	0.0816*
	(0.00343)	(0.00361)	(0.00352)	(0.0469)
Yards (t – 1)	0.00130***	0.00130***	0.00132***	0.0178***
	(0.000289)	(0.000306)	(0.000287)	(0.00395)
Touchdowns (t – 1)	0.0336**	0.0338**	0.0368**	0.731***
	(0.0160)	(0.0164)	(0.0162)	(0.215)
Offensive Plays (t – 1)	-0.00112***	-0.00107***	-0.00111***	-0.0137***
	(0.000246)	(0.000263)	(0.000247)	(0.00304)
Experience	-0.0437	-0.00876	-0.0386	-0.0342
	(0.0494)	(0.0497)	(0.0490)	(0.0473)
Experience^2	0.00202	-0.000120	0.00183	0.00116
	(0.00310)	(0.00307)	(0.00306)	(0.00291)
RFA	0.482***	0.437***	0.473***	0.450***
	(0.0771)	(0.0789)	(0.0767)	(0.0790)
UFA	0.603***	0.539***	0.586***	0.581***
	(0.117)	(0.117)	(0.116)	(0.115)
New Team	0.234***	0.245***	0.232***	0.209***
	(0.0451)	(0.0465)	(0.0453)	(0.0450)
Height	-0.00782	-0.00600	-0.00849	-0.0185
	(0.0119)	(0.0126)	(0.0120)	(0.0124)
Weight	-0.000568	-0.000401	-0.000297	0.000234
	(0.00191)	(0.00201)	(0.00193)	(0.00193)
Day of Year	-0.00993***	-0.0102***	-0.00988***	-0.0114***
	(0.00233)	(0.00242)	(0.00232)	(0.00240)
Day of Year^2	2.84e-05***	2.93e-05***	2.84e-05***	3.40e-05***
	(8.09e-06)	(8.45e-06)	(8.07e-06)	(8.36e-06)
Pass Attempts (t – 1)			-0.000416	
			(0.000322)	
QB Rating (t – 1)			-0.00342*	
			(0.00196)	
Sacks (t – 1)			-0.00320	
			(0.00218)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	11.70***	11.54***	12.28***	12.05***
	(0.813)	(0.925)	(0.861)	(0.844)
Observations	661	661	661	661
R-squared	0.767	0.777	0.769	0.761

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 3. Wide Receiver All Signings Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.155***	0.156***	0.157***	0.167***
	(0.0390)	(0.0409)	(0.0390)	(0.0401)
Tender	0.171**	0.168*	0.166*	0.0993
	(0.0864)	(0.0890)	(0.0865)	(0.0933)
Extension	0.551***	0.573***	0.554***	0.608***
	(0.0875)	(0.0913)	(0.0878)	(0.0882)
Games Started (t – 1)	0.0399***	0.0404***	0.0377***	0.662***
	(0.0101)	(0.0103)	(0.0100)	(0.127)
Receptions (t – 1)	0.00925***	0.00861**	0.00900**	0.0911*
	(0.00346)	(0.00363)	(0.00356)	(0.0469)
Yards (t – 1)	0.00129***	0.00127***	0.00131***	0.0175***
	(0.000289)	(0.000305)	(0.000287)	(0.00390)
Touchdowns (t – 1)	0.0324**	0.0335**	0.0357**	0.718***
	(0.0160)	(0.0164)	(0.0162)	(0.212)
Offensive Plays (t – 1)	-0.00114***	-0.00109***	-0.00114***	-0.0140***
	(0.000245)	(0.000260)	(0.000247)	(0.00302)
Experience	-0.0483	-0.0125	-0.0426	-0.0383
	(0.0493)	(0.0496)	(0.0488)	(0.0471)
Experience^2	0.00224	5.70e-05	0.00202	0.00135
	(0.00309)	(0.00307)	(0.00304)	(0.00290)
RFA	0.471***	0.431***	0.463***	0.438***
	(0.0753)	(0.0763)	(0.0747)	(0.0768)
UFA	0.606***	0.542***	0.589***	0.583***
	(0.116)	(0.115)	(0.115)	(0.114)
New Team	0.230***	0.243***	0.229***	0.205***
	(0.0438)	(0.0452)	(0.0439)	(0.0437)
Height	-0.0101	-0.00883	-0.0104	-0.0210*
	(0.0116)	(0.0123)	(0.0117)	(0.0121)
Weight	-0.000168	2.19e-05	6.25e-05	0.000629
	(0.00189)	(0.00197)	(0.00191)	(0.00191)
Day of Year	-0.00871***	-0.00927***	-0.00871***	-0.0103***
	(0.00228)	(0.00233)	(0.00228)	(0.00236)
Day of Year^2	2.44e-05***	2.63e-05***	2.46e-05***	3.04e-05***
	(7.93e-06)	(8.16e-06)	(7.94e-06)	(8.21e-06)
Pass Attempts (t – 1)			-0.000387	
			(0.000317)	
QB Rating (t – 1)			-0.00356*	
			(0.00192)	
Sacks (t – 1)			-0.00368*	
			(0.00212)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	11.96***	11.83***	12.56***	12.37***
	(0.815)	(0.913)	(0.857)	(0.847)
Observations	678	678	678	678
R-squared	0.768	0.778	0.770	0.762

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 4. Wide Receiver August Cutoff Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.155***	0.165***	0.158***	0.178***
	(0.0383)	(0.0415)	(0.0383)	(0.0397)
Tender	0.183**	0.174*	0.180*	0.121
	(0.0927)	(0.0965)	(0.0926)	(0.0993)
Extension	0.435***	0.470***	0.444***	0.501***
	(0.0855)	(0.0901)	(0.0867)	(0.0878)
Games Started (t – 1)	0.0409***	0.0426***	0.0393***	0.669***
	(0.0101)	(0.0104)	(0.0101)	(0.128)
Receptions (t – 1)	0.00694**	0.00635*	0.00704**	0.0501
	(0.00339)	(0.00369)	(0.00354)	(0.0471)
Yards (t – 1)	0.00153***	0.00149***	0.00153***	0.0211***
	(0.000294)	(0.000317)	(0.000299)	(0.00408)
Touchdowns (t – 1)	0.0344**	0.0365**	0.0374**	0.718***
	(0.0161)	(0.0166)	(0.0163)	(0.218)
Offensive Plays (t – 1)	-0.00125***	-0.00120***	-0.00125***	-0.0147***
	(0.000243)	(0.000260)	(0.000245)	(0.00304)
Experience	-0.0416	0.000845	-0.0373	-0.0168
	(0.0557)	(0.0567)	(0.0553)	(0.0535)
Experience^2	0.00227	-0.000297	0.00211	0.000281
	(0.00363)	(0.00367)	(0.00360)	(0.00346)
RFA	0.495***	0.437***	0.486***	0.449***
	(0.0790)	(0.0803)	(0.0787)	(0.0822)
UFA	0.634***	0.554***	0.617***	0.588***
	(0.121)	(0.122)	(0.121)	(0.120)
New Team	0.240***	0.256***	0.240***	0.215***
	(0.0461)	(0.0477)	(0.0462)	(0.0460)
Height	-0.00749	-0.00977	-0.00835	-0.0192
	(0.0121)	(0.0128)	(0.0123)	(0.0126)
Weight	-0.000191	0.000526	8.08e-05	0.000559
	(0.00196)	(0.00207)	(0.00198)	(0.00198)
Day of Year	-0.00938***	-0.0102***	-0.00942***	-0.0119***
	(0.00257)	(0.00261)	(0.00259)	(0.00264)
Day of Year^2	2.73e-05***	3.00e-05***	2.76e-05***	3.76e-05***
	(9.66e-06)	(9.83e-06)	(9.75e-06)	(9.82e-06)
Pass Attempts (t – 1)			-0.000401	
			(0.000341)	
QB Rating (t – 1)			-0.00296	
			(0.00202)	
Sacks (t – 1)			-0.00250	
			(0.00220)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	11.76***	11.67***	12.29***	12.07***
	(0.832)	(0.939)	(0.893)	(0.860)
Observations	622	622	622	622
R-squared	0.764	0.776	0.765	0.758

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 5. Cornerback Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.165***	0.174***	0.166***	0.195***
	(0.0448)	(0.0506)	(0.0451)	(0.0522)
Tender	0.209***	0.229***	0.208***	0.210***
	(0.0679)	(0.0758)	(0.0684)	(0.0740)
Extension	0.548***	0.564***	0.550***	0.576***
	(0.114)	(0.111)	(0.114)	(0.121)
Games Started (t – 1)	0.0649***	0.0607***	0.0648***	0.592***
	(0.0132)	(0.0136)	(0.0133)	(0.163)
Interceptions (t – 1)	0.0959***	0.102***	0.0963***	1.404***
	(0.0308)	(0.0307)	(0.0311)	(0.353)
Passes Defended (t – 1)	0.0299***	0.0281***	0.0305***	0.164
	(0.0109)	(0.0106)	(0.0110)	(0.147)
Total Tackles (t – 1)	-0.00474*	-0.00400	-0.00477*	-0.0791**
	(0.00266)	(0.00266)	(0.00266)	(0.0353)
Defensive Plays (t – 1)	2.84e-05	4.16e-05	2.31e-05	0.0101***
	(0.000303)	(0.000307)	(0.000303)	(0.00368)
Experience	-0.0770	-0.0880	-0.0770	-0.0874*
	(0.0566)	(0.0589)	(0.0563)	(0.0526)
Experience^2	0.00201	0.00301	0.00202	0.00277
	(0.00367)	(0.00384)	(0.00364)	(0.00331)
RFA	0.465***	0.505***	0.464***	0.447***
	(0.0857)	(0.0891)	(0.0857)	(0.0893)
UFA	0.803***	0.837***	0.802***	0.756***
	(0.134)	(0.139)	(0.135)	(0.133)
New Team	0.0659	0.0807*	0.0651	0.0532
	(0.0470)	(0.0466)	(0.0480)	(0.0482)
Height	-0.0186	-0.0174	-0.0183	-0.0304**
	(0.0158)	(0.0157)	(0.0158)	(0.0153)
Weight	0.00548**	0.00569**	0.00545**	0.00669**
	(0.00262)	(0.00274)	(0.00262)	(0.00262)
Day of Year	-0.00659***	-0.00703***	-0.00671***	-0.00811***
	(0.00234)	(0.00248)	(0.00237)	(0.00264)
Day of Year^2	1.11e-05	1.25e-05	1.15e-05	1.53e-05*
	(7.88e-06)	(8.31e-06)	(7.98e-06)	(8.91e-06)
Pass Attempts (t – 1)			-0.000356	
			(0.000670)	
Yards Allowed (t – 1)			2.45e-05	
			(6.93e-05)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	11.64***	11.27***	11.72***	11.82***
	(1.100)	(1.111)	(1.130)	(1.100)
Observations	618	618	618	618
R-squared	0.650	0.676	0.650	0.638

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 6. Cornerback All Signings Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.167***	0.179***	0.168***	0.198***
	(0.0441)	(0.0497)	(0.0444)	(0.0513)
Tender	0.208***	0.230***	0.207***	0.213***
	(0.0675)	(0.0755)	(0.0681)	(0.0722)
Extension	0.559***	0.572***	0.563***	0.586***
	(0.113)	(0.111)	(0.113)	(0.119)
Games Started (t – 1)	0.0655***	0.0615***	0.0653***	0.599***
	(0.0132)	(0.0137)	(0.0132)	(0.161)
Interceptions (t – 1)	0.0977***	0.101***	0.0979***	1.438***
	(0.0307)	(0.0304)	(0.0310)	(0.352)
Passes Defended (t – 1)	0.0295***	0.0281***	0.0301***	0.155
	(0.0109)	(0.0106)	(0.0109)	(0.146)
Total Tackles (t – 1)	-0.00498*	-0.00437	-0.00501*	-0.0838**
	(0.00265)	(0.00267)	(0.00265)	(0.0348)
Defensive Plays (t – 1)	3.65e-05	5.44e-05	3.18e-05	0.0104***
	(0.000302)	(0.000305)	(0.000301)	(0.00362)
Experience	-0.0676	-0.0831	-0.0670	-0.0817
	(0.0559)	(0.0577)	(0.0556)	(0.0519)
Experience^2	0.00155	0.00286	0.00153	0.00252
	(0.00364)	(0.00376)	(0.00361)	(0.00327)
RFA	0.440***	0.472***	0.438***	0.426***
	(0.0831)	(0.0866)	(0.0831)	(0.0862)
UFA	0.765***	0.801***	0.763***	0.728***
	(0.132)	(0.135)	(0.132)	(0.129)
New Team	0.0738	0.0892*	0.0739	0.0594
	(0.0463)	(0.0458)	(0.0472)	(0.0475)
Height	-0.0214	-0.0187	-0.0212	-0.0324**
	(0.0156)	(0.0154)	(0.0155)	(0.0150)
Weight	0.00574**	0.00581**	0.00571**	0.00688***
	(0.00260)	(0.00270)	(0.00259)	(0.00258)
Day of Year	-0.00655***	-0.00695***	-0.00666***	-0.00794***
	(0.00225)	(0.00236)	(0.00228)	(0.00255)
Day of Year^2	1.12e-05	1.26e-05	1.16e-05	1.50e-05*
	(7.58e-06)	(7.95e-06)	(7.67e-06)	(8.60e-06)
Pass Attempts (t – 1)			-0.000336	
			(0.000652)	
Yards Allowed (t – 1)			1.37e-05	
			(6.78e-05)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	11.76***	11.27***	11.87***	11.87***
	(1.079)	(1.092)	(1.110)	(1.078)
Observations	635	635	635	635
R-squared	0.650	0.675	0.650	0.639

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 7. Cornerback August Cutoff Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.154***	0.164***	0.156***	0.192***
	(0.0465)	(0.0512)	(0.0469)	(0.0541)
Tender	0.230***	0.249***	0.228***	0.235***
	(0.0695)	(0.0789)	(0.0702)	(0.0752)
Extension	0.531***	0.531***	0.536***	0.561***
	(0.115)	(0.110)	(0.114)	(0.121)
Games Started (t – 1)	0.0689***	0.0660***	0.0689***	0.707***
	(0.0143)	(0.0147)	(0.0144)	(0.184)
Interceptions (t – 1)	0.0943***	0.0983***	0.0940***	1.405***
	(0.0317)	(0.0313)	(0.0319)	(0.356)
Passes Defended (t – 1)	0.0315***	0.0294***	0.0318***	0.205
	(0.0112)	(0.0110)	(0.0113)	(0.151)
Total Tackles (t – 1)	-0.00493*	-0.00467	-0.00493*	-0.0771**
	(0.00284)	(0.00286)	(0.00284)	(0.0368)
Defensive Plays (t – 1)	-1.82e-05	4.92e-07	-2.26e-05	0.00789**
	(0.000323)	(0.000326)	(0.000323)	(0.00398)
Experience	-0.0677	-0.0921	-0.0665	-0.0751
	(0.0589)	(0.0616)	(0.0586)	(0.0543)
Experience^2	0.00135	0.00324	0.00128	0.00190
	(0.00380)	(0.00401)	(0.00377)	(0.00339)
RFA	0.480***	0.533***	0.477***	0.450***
	(0.0882)	(0.0927)	(0.0883)	(0.0917)
UFA	0.828***	0.897***	0.824***	0.770***
	(0.140)	(0.145)	(0.140)	(0.139)
New Team	0.0784	0.0937*	0.0802	0.0674
	(0.0499)	(0.0499)	(0.0505)	(0.0508)
Height	-0.0221	-0.0201	-0.0222	-0.0366**
	(0.0172)	(0.0170)	(0.0172)	(0.0163)
Weight	0.00600**	0.00643**	0.00598**	0.00732***
	(0.00281)	(0.00291)	(0.00282)	(0.00281)
Day of Year	-0.00637**	-0.00681**	-0.00646**	-0.00815***
	(0.00254)	(0.00264)	(0.00259)	(0.00282)
Day of Year^2	9.84e-06	1.15e-05	1.02e-05	1.49e-05
	(9.58e-06)	(1.01e-05)	(9.77e-06)	(1.08e-05)
Pass Attempts (t – 1)			-0.000220	
			(0.000689)	
Yards Allowed (t – 1)			-9.83e-06	
			(7.20e-05)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	11.93***	11.45***	12.07***	12.20***
	(1.161)	(1.179)	(1.193)	(1.149)
Observations	581	581	581	581
R-squared	0.649	0.676	0.649	0.640

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 8. Wide Receiver Market Setting Extensions Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.134[a]	0.164*	0.135[b]	0.207**
	(0.0814)	(0.0898)	(0.0825)	(0.0989)
Tender	0.171	0.131	0.177	0.183
	(0.165)	(0.182)	(0.168)	(0.178)
Extension	0.747***	0.769***	0.750***	0.796***
	(0.120)	(0.132)	(0.119)	(0.124)
Games Started (t – 1)	0.0531***	0.0473***	0.0499***	0.837***
	(0.0149)	(0.0156)	(0.0150)	(0.181)
Receptions (t – 1)	0.00151	0.00165	0.000271	0.0128
	(0.00480)	(0.00518)	(0.00504)	(0.0668)
Yards (t – 1)	0.00141***	0.00147***	0.00146***	0.0196***
	(0.000390)	(0.000425)	(0.000392)	(0.00561)
Touchdowns (t – 1)	0.0336	0.0255	0.0394	0.690**
	(0.0238)	(0.0253)	(0.0246)	(0.303)
Offensive Plays (t – 1)	-0.000869**	-0.000794**	-0.000807**	-0.0117***
	(0.000345)	(0.000380)	(0.000345)	(0.00445)
Experience	-0.0624	0.00860	-0.0481	-0.0593
	(0.0715)	(0.0791)	(0.0724)	(0.0684)
Experience^2	0.00319	-0.00101	0.00250	0.00318
	(0.00443)	(0.00489)	(0.00447)	(0.00421)
RFA	0.524***	0.471***	0.503***	0.482***
	(0.109)	(0.120)	(0.108)	(0.110)
UFA	0.655***	0.497***	0.615***	0.621***
	(0.170)	(0.190)	(0.171)	(0.164)
New Team	0.264***	0.259***	0.255***	0.228***
	(0.0658)	(0.0670)	(0.0667)	(0.0639)
Height	-0.0255	-0.00646	-0.0282*	-0.0339*
	(0.0164)	(0.0189)	(0.0169)	(0.0173)
Weight	0.000988	-0.000691	0.00145	0.00150
	(0.00265)	(0.00297)	(0.00273)	(0.00268)
Day of Year	-0.0148***	-0.0130***	-0.0149***	-0.0164***
	(0.00364)	(0.00404)	(0.00362)	(0.00357)
Day of Year^2	4.49e-05***	3.85e-05***	4.55e-05***	4.96e-05***
	(1.23e-05)	(1.38e-05)	(1.22e-05)	(1.22e-05)
Pass Attempts (t – 1)			0.000149	
			(0.000547)	
QB Rating (t – 1)			-0.00485	
			(0.00295)	
Sacks (t – 1)			-0.00236	
			(0.00327)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	13.65***	11.88***	14.15***	13.07***
	(1.486)	(1.669)	(1.506)	(1.791)
Observations	348	348	348	348
R-squared	0.783	0.800	0.785	0.785

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

***p < 0.01, **p < 0.05, *p < 0.1; [a]p = 0.101, [b]p = 0.103.

Table 9. Cornerback Market Setting Extensions Results

Dependent Variable = LN(Average Value)				
VARIABLES	(1)	(2)	(3)	(4)
LN(Reference Average Value)	0.492***	0.318**	0.474***	0.563***
	(0.104)	(0.121)	(0.100)	(0.133)
Tender	0.696***	0.817**	0.612**	0.643***
	(0.222)	(0.339)	(0.239)	(0.199)
Extension	0.449*	0.381	0.441*	0.539*
	(0.233)	(0.242)	(0.238)	(0.281)
Games Started (t – 1)	0.0410	0.0230	0.0382	0.390
	(0.0289)	(0.0299)	(0.0290)	(0.313)
Interceptions (t – 1)	0.337***	0.330***	0.348***	4.902***
	(0.0923)	(0.0931)	(0.0936)	(0.929)
Passes Defended (t – 1)	-0.0286	-0.0124	-0.0239	-0.484
	(0.0273)	(0.0228)	(0.0272)	(0.323)
Total Tackles (t – 1)	-0.00552	-0.00730	-0.00630	-0.102
	(0.00556)	(0.00588)	(0.00560)	(0.0816)
Defensive Plays (t – 1)	0.000553	0.000729	0.000557	0.0107
	(0.000635)	(0.000630)	(0.000627)	(0.00706)
Experience	0.103	0.0983	0.0846	0.0879
	(0.0782)	(0.108)	(0.0795)	(0.0975)
Experience^2	-0.00721	-0.00577	-0.00623	-0.00607
	(0.00494)	(0.00659)	(0.00500)	(0.00662)
RFA	-0.0840	0.0225	-0.0734	-0.157
	(0.147)	(0.206)	(0.149)	(0.173)
UFA	0.135	0.248	0.180	0.0829
	(0.201)	(0.283)	(0.202)	(0.235)
New Team	0.0514	0.0641	0.0238	0.0272
	(0.0852)	(0.0868)	(0.0898)	(0.0883)
Height	-0.0262	-0.0185	-0.0223	-0.0489*
	(0.0261)	(0.0341)	(0.0268)	(0.0270)
Weight	0.00692*	0.00590	0.00667*	0.00938**
	(0.00351)	(0.00508)	(0.00370)	(0.00379)
Day of Year	-0.00725*	-0.00439	-0.00686*	-0.00973*
	(0.00384)	(0.00541)	(0.00374)	(0.00531)
Day of Year^2	1.19e-05	4.86e-06	1.04e-05	2.11e-05
	(1.26e-05)	(1.71e-05)	(1.23e-05)	(1.71e-05)
Pass Attempts (t – 1)			-0.00124	
			(0.00107)	
Yards Allowed (t – 1)			0.000187*	
			(9.62e-05)	
Fixed Effects	Round & Season	Round, Team, & Season	Round & Season	Round & Season
Constant	6.537***	8.420***	6.617***	6.695***
	(2.033)	(2.575)	(2.002)	(2.384)
Observations	124	124	124	124
R-squared	0.768	0.869	0.773	0.728

Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason. Column (4) uses per-game performance measures.

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

Table 10. Market-Setting Extensions: Quantile Regression Results

Quantile	WRs	CBs
0.1	0.127	0.363
	(0.197)	(2.232)
0.2	0.143*	0.415***
	(0.0847)	(0.122)
0.3	0.0634	0.225*
	(0.127)	(0.123)
0.4	0.165	0.484***
	(0.115)	(0.140)
0.5	0.139	0.501
	(0.174)	(0.684)
0.6	0.165***	0.405***
	(0.0540)	(0.0849)
0.7	0.201**	0.442***
	(0.0917)	(0.114)
0.8	0.229	0.566**
	(0.168)	(0.250)
0.9	0.148	0.553
	(0.244)	(0.361)

Note: Robust standard errors in parentheses (Koenker 2005). Specifications correspond to column (1) of Tables 2 and 5 for WRs and CBs respectively.
***p < 0.01, **p < 0.05, *p < 0.1

Table 11. March to September Results

Dependent Variable = LN(Average Value)		
VARIABLES	WR	CB
LN(Reference Average Value)	0.139***	0.127**
	(0.0499)	(0.0633)
Tender	0.151	0.116
	(0.0966)	(0.0767)
Extension	0.540***	0.572***
	(0.0914)	(0.126)
Games Started (t – 1)	0.0398***	0.0656***
	(0.0103)	(0.0136)
Receptions (t – 1)	0.00905***	
	(0.00344)	
Yards (t – 1)	0.00129***	
	(0.000288)	
Touchdowns (t – 1)	0.0325**	
	(0.0160)	
Offensive/Defensive Plays (t – 1)	-0.00117***	2.57e-05
	(0.000245)	(0.000306)
Interceptions (t – 1)		0.0992***
		(0.0309)
Passes Defended (t – 1)		0.0277**
		(0.0111)
Total Tackles (t – 1)		-0.00546**
		(0.00267)
Experience	-0.0454	-0.0867
	(0.0507)	(0.0584)
$Experience^2$	0.00212	0.00285
	(0.00316)	(0.00374)
RFA	0.500***	0.500***
	(0.0815)	(0.0919)
UFA	0.617***	0.811***
	(0.121)	(0.139)
New Team	0.229***	0.0716
	(0.0461)	(0.0501)
Height	(0.0732)	(0.0981)
	-0.0109	-0.0208
Weight	(0.0123)	(0.0167)
	0.000131	0.00573**
Day of Year	-0.0139***	-0.0161***
	(0.00284)	(0.00344)
$Day\ of\ Year^2$	4.21e-05***	4.29e-05***
	(9.81e-06)	(1.15e-05)
Fixed Effects	Round & Season	Round & Season
Constant	12.53***	12.94***
	(1.067)	(1.356)
Observations	628	569
R-squared	0.762	0.634

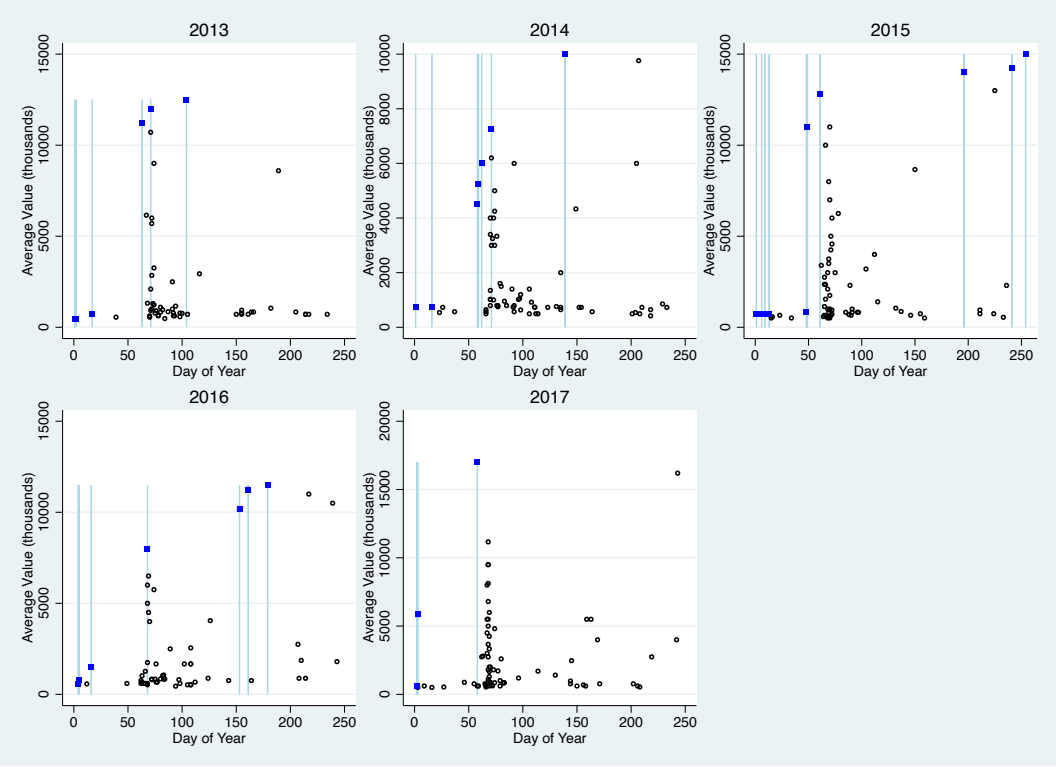
Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest average value previously signed in the current offseason.
***p < 0.01, **p < 0.05, *p < 0.1

Table 12. Placebo Test Results

Dependent Variable = LN(Average Value)		
VARIABLES	WR	CB
LN(Reference Average Value)	-0.000753	0.00193
	(0.0348)	(0.0593)
Tender	0.193**	0.179**
	(0.0936)	(0.0727)
Extension	0.436***	0.482***
	(0.0847)	(0.105)
Games Started (t – 1)	0.0367***	0.0533***
	(0.0106)	(0.0137)
Receptions (t – 1)	0.00806**	
	(0.00359)	
Yards (t – 1)	0.00154***	
	(0.000303)	
Touchdowns (t – 1)	0.0253*	
	(0.0152)	
Offensive/Defensive Plays (t – 1)	-0.00116***	0.000292
	(0.000246)	(0.000315)
Interceptions (t – 1)		0.112***
		(0.0295)
Passes Defended (t – 1)		0.0308***
		(0.0109)
Total Tackles (t – 1)		-0.00581**
		(0.00275)
Experience	-0.0728	-0.0787
	(0.0469)	(0.0562)
Experience^2	0.00418	0.00197
	(0.00288)	(0.00366)
RFA	0.498***	0.490***
	(0.0738)	(0.0860)
UFA	0.645***	0.844***
	(0.111)	(0.137)
New Team	0.238***	0.0966**
	(0.0446)	(0.0472)
Height	-0.00334	-0.0178
	(0.0118)	(0.0152)
Weight	-0.000430	0.00581**
	(0.00195)	(0.00268)
Day of Year	-0.000759	0.00105
	(0.00130)	(0.00130)
Day of Year^2	-3.36e-06	-1.46e-05***
	(5.64e-06)	(5.03e-06)
Fixed Effects	Round & Season	Round & Season
Constant	13.66***	13.56***
	(0.917)	(1.417)
Observations	672	661
R-squared	0.764	0.658

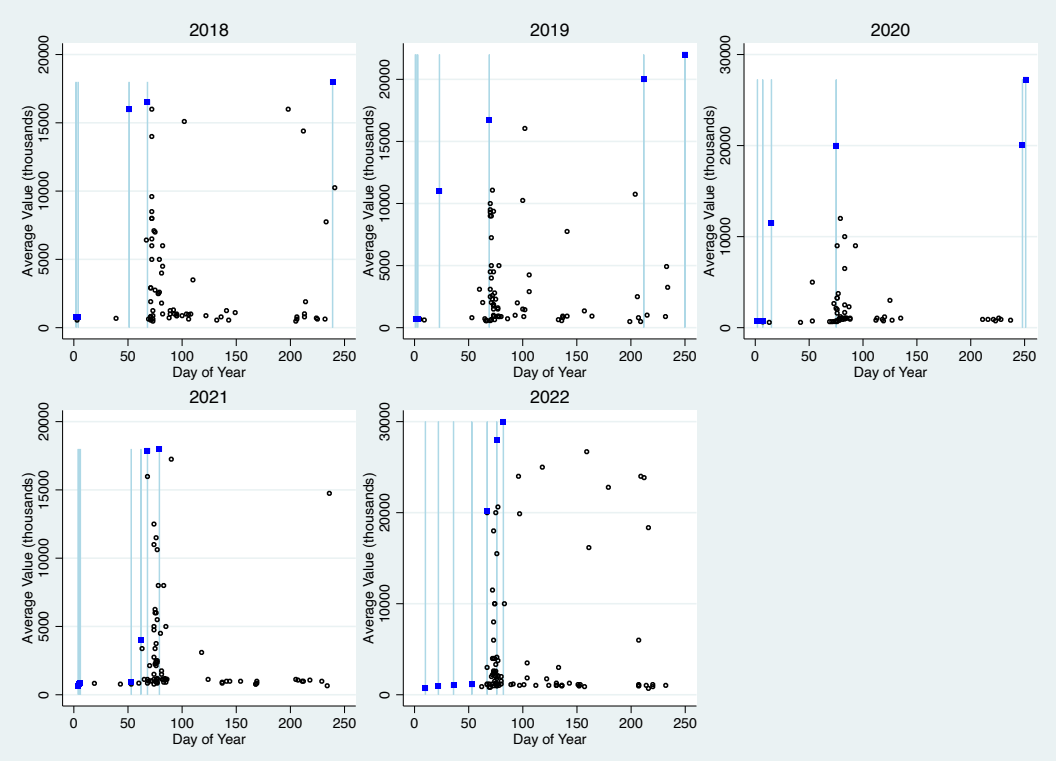
Note: Robust standard errors in parentheses. *LN(Reference Average Value)* is the natural log of the largest subsequent average value signed in the current offseason.
***p < 0.01, **p < 0.05, *p < 0.1

Figure 1. Wide Receiver Contracts by Year



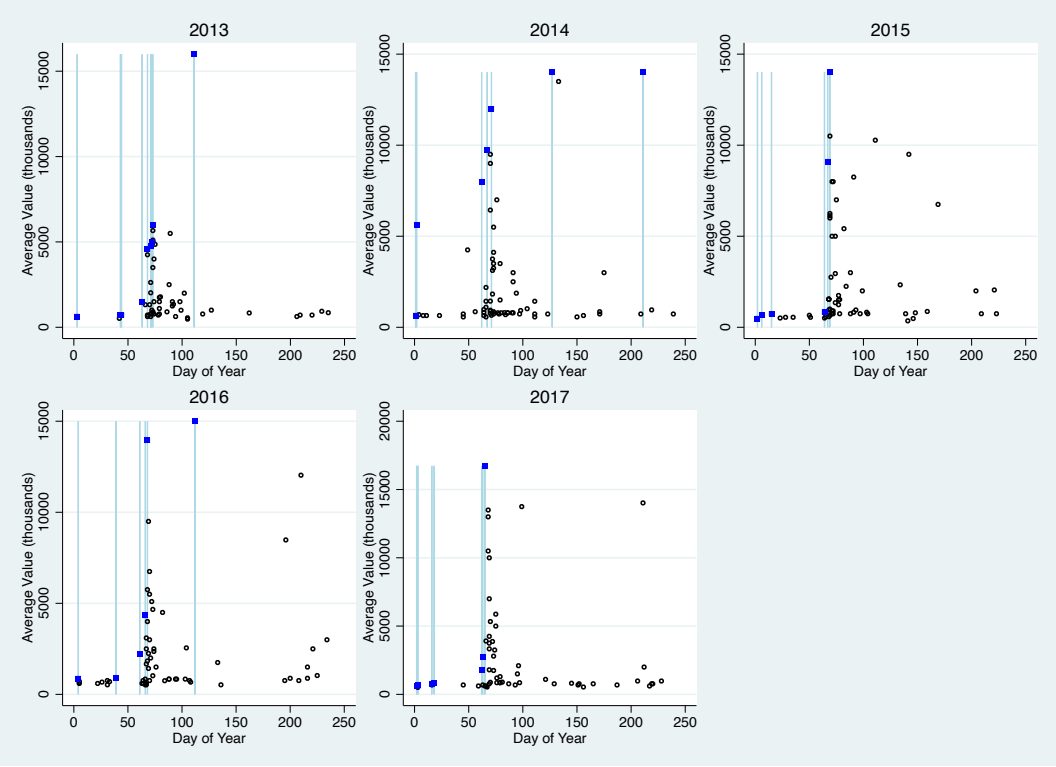
Note: Blue bars indicate the highest average value to that point in the given year.

Figure 2. Wide Receiver Contracts by Year



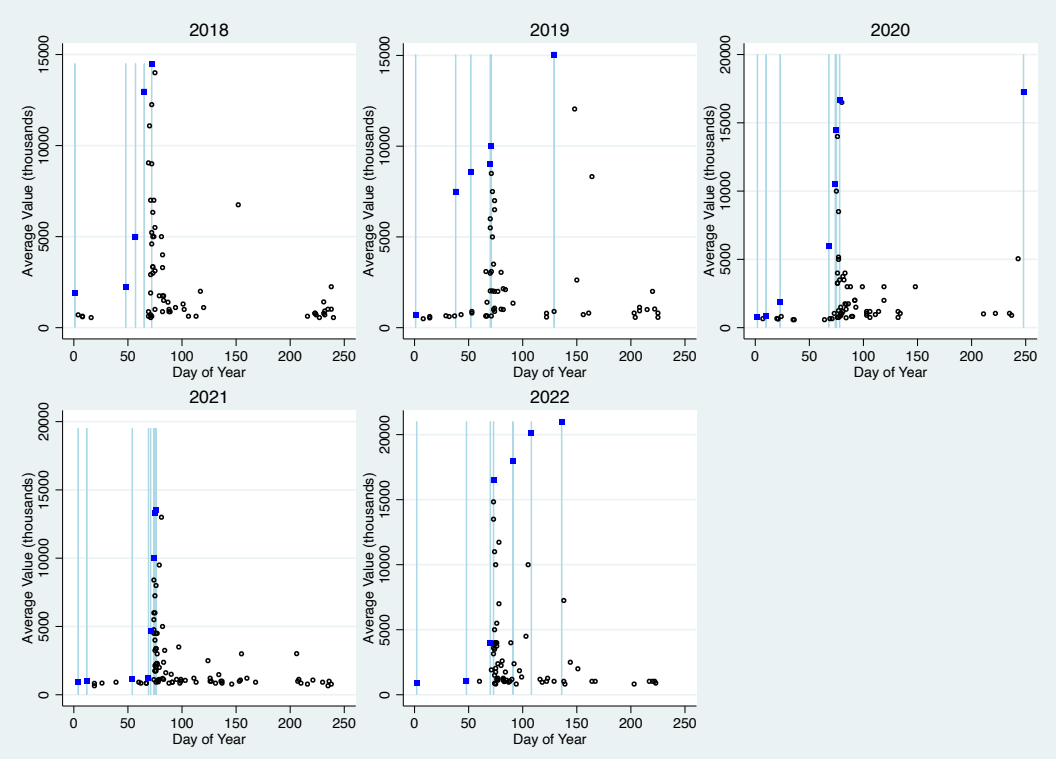
Note: Blue bars indicate the highest average value to that point in the given year.

Figure 3. Cornerback Contracts by Year



Note: Blue bars indicate the highest average value to that point in the given year.

Figure 4. Cornerback Contracts by Year



Note: Blue bars indicate the highest average value to that point in the given year.

Figure 5. Wide Receiver Quantile Regression Results

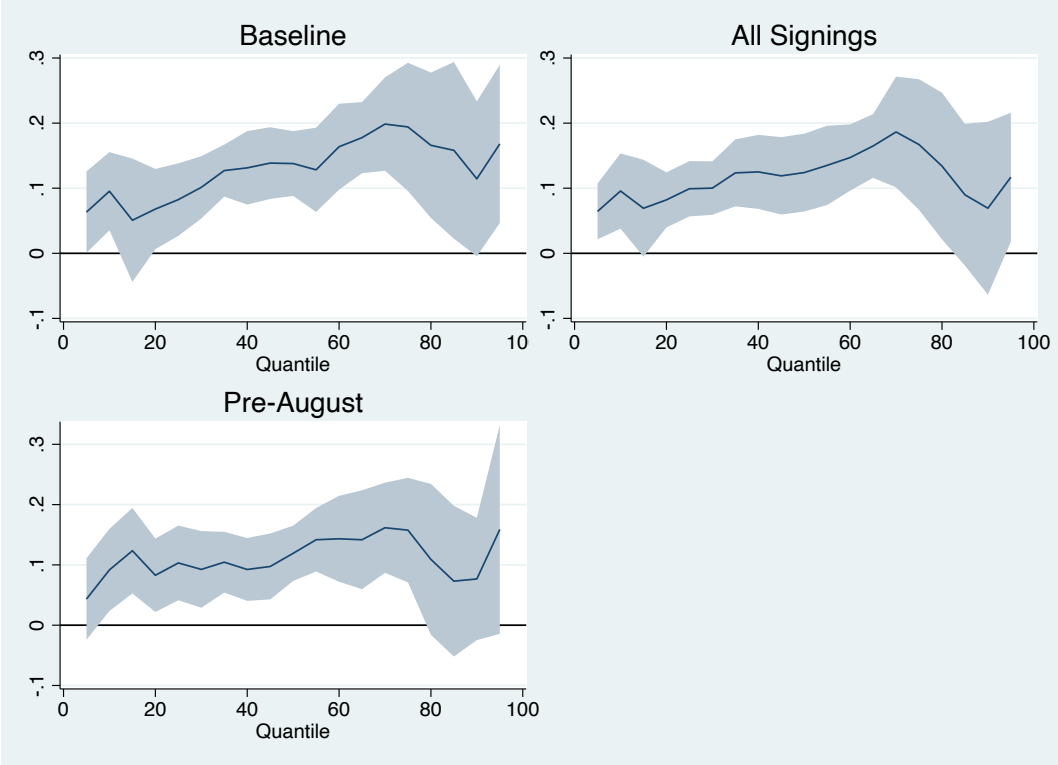
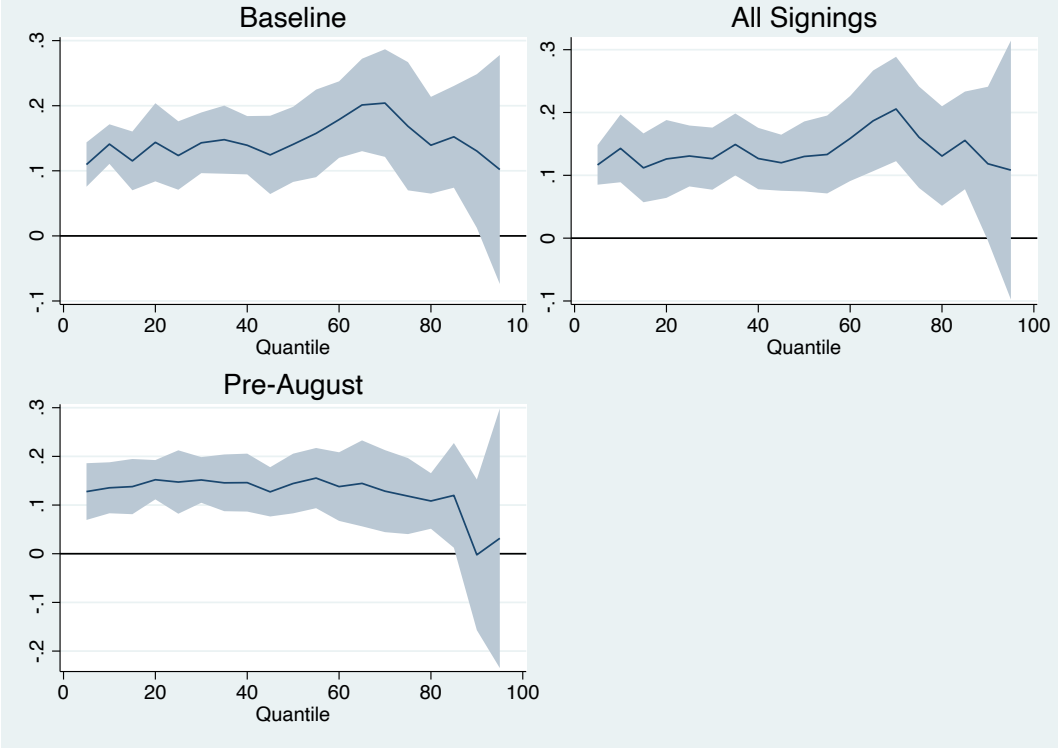


Figure 6. Cornerback Quantile Regression Results



Appendix

Figure A1. Baseline Sample Wide Receiver Quantile Regression Results

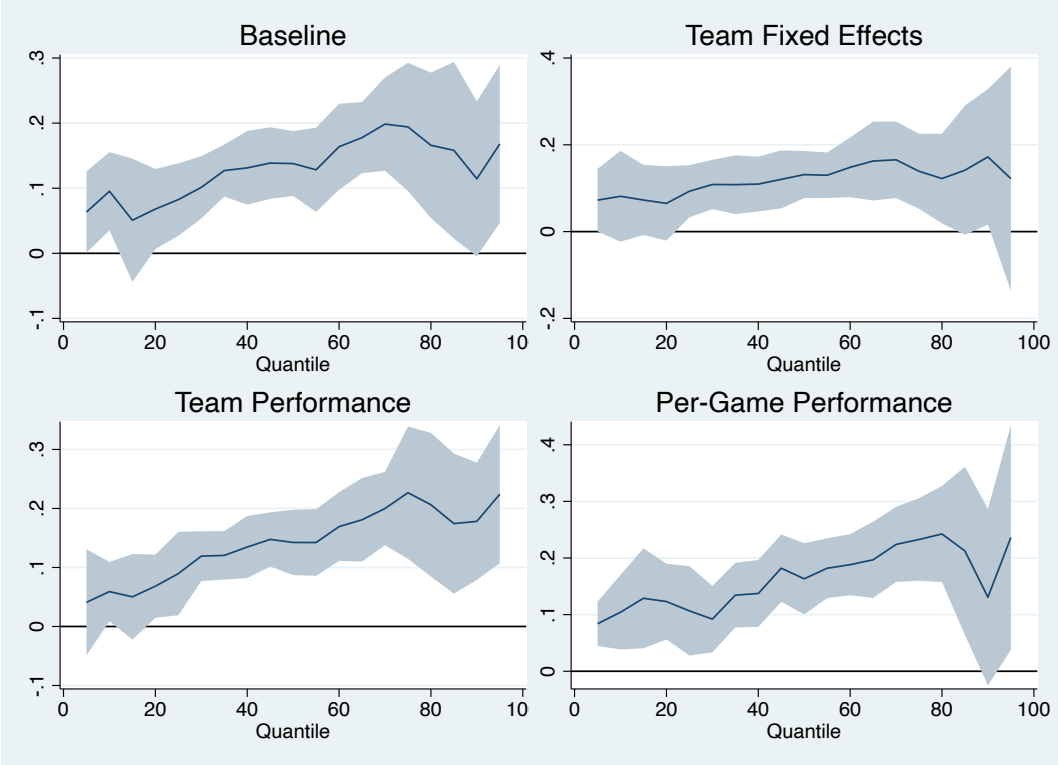


Figure A2. All Signings Sample Wide Receiver Quantile Regression Results

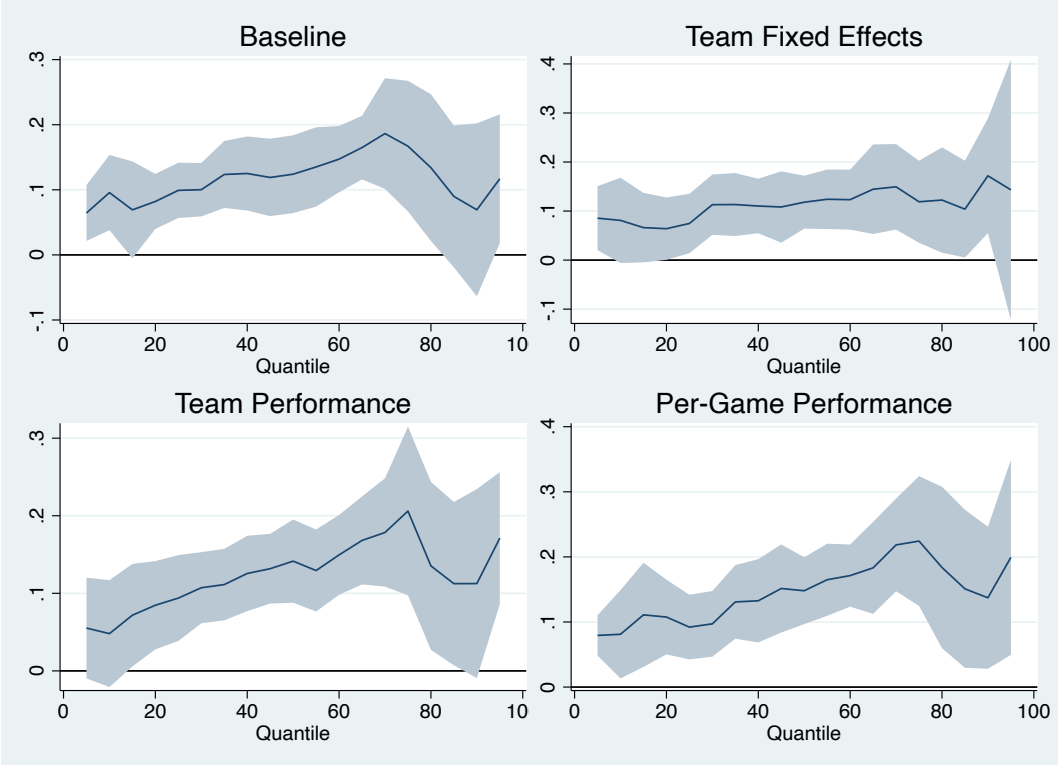


Figure A3. Pre-August Sample Wide Receiver Quantile Regression Results

Figure A4. Baseline Sample Cornerback Quantile Regression Results

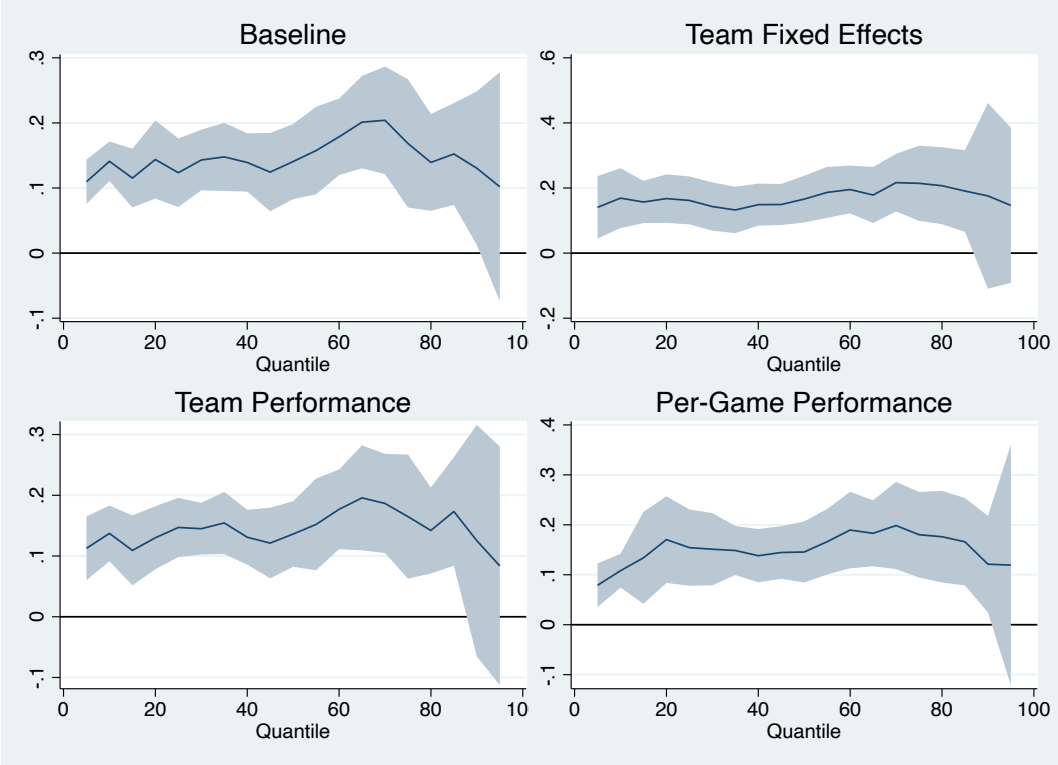
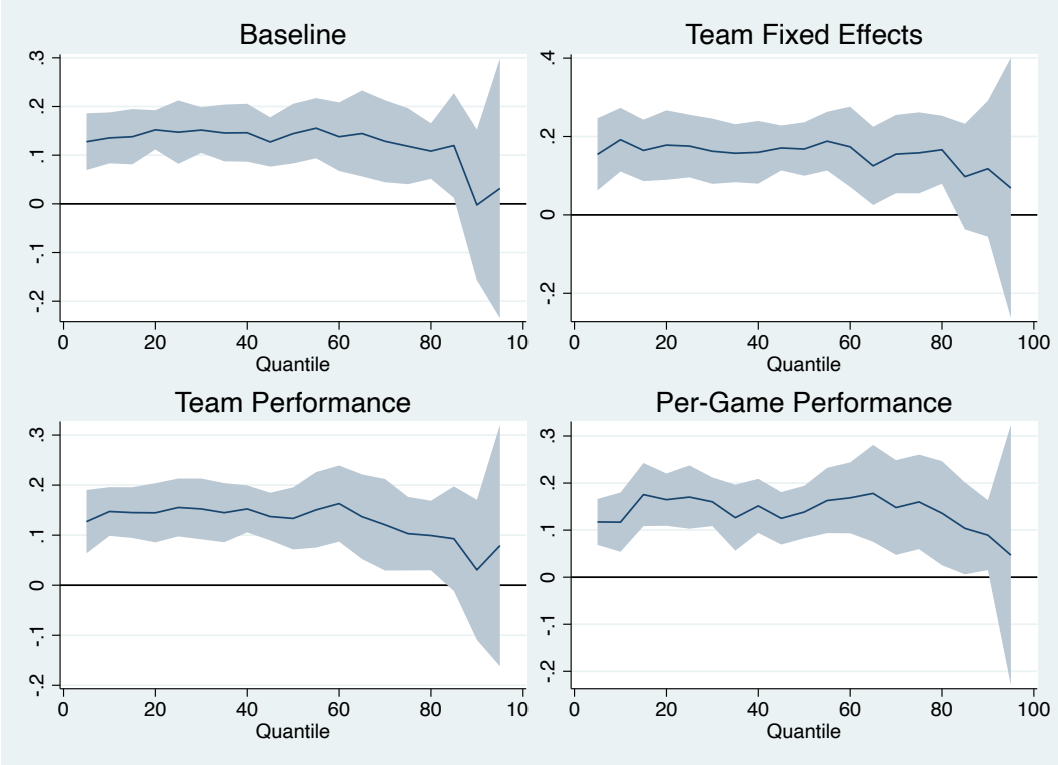


Figure A5. All Signings Sample Cornerback Quantile Regression Results

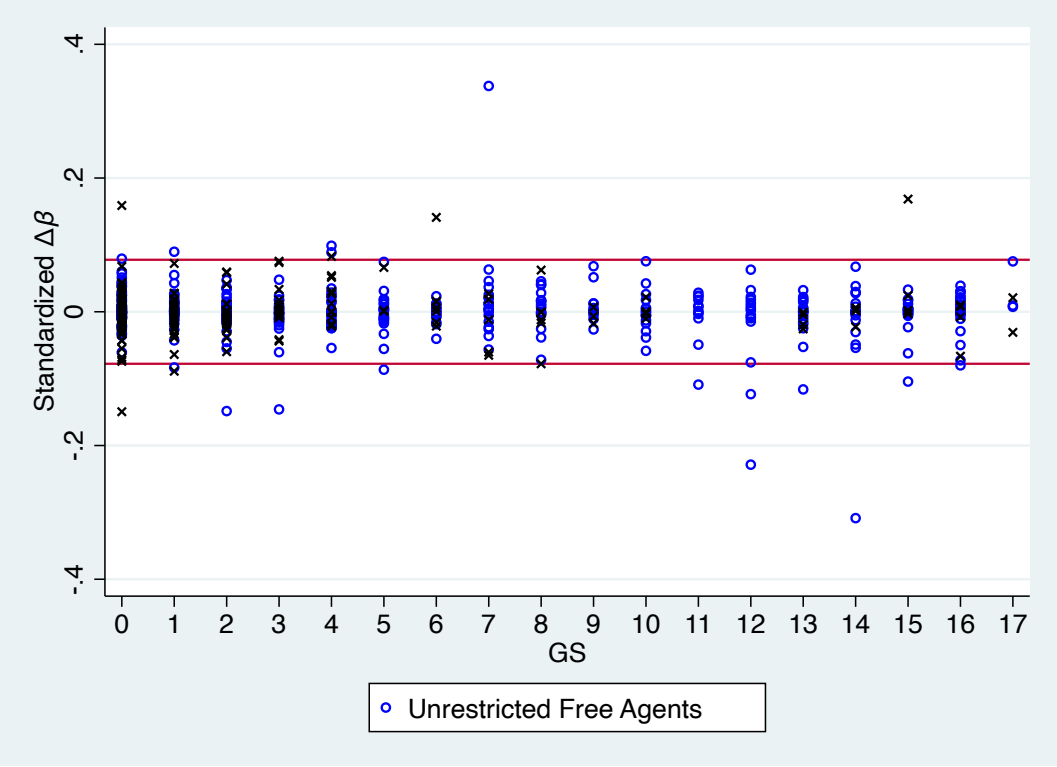
Figure A6. Pre-August Sample Cornerback Quantile Regression Results



Influence Analysis

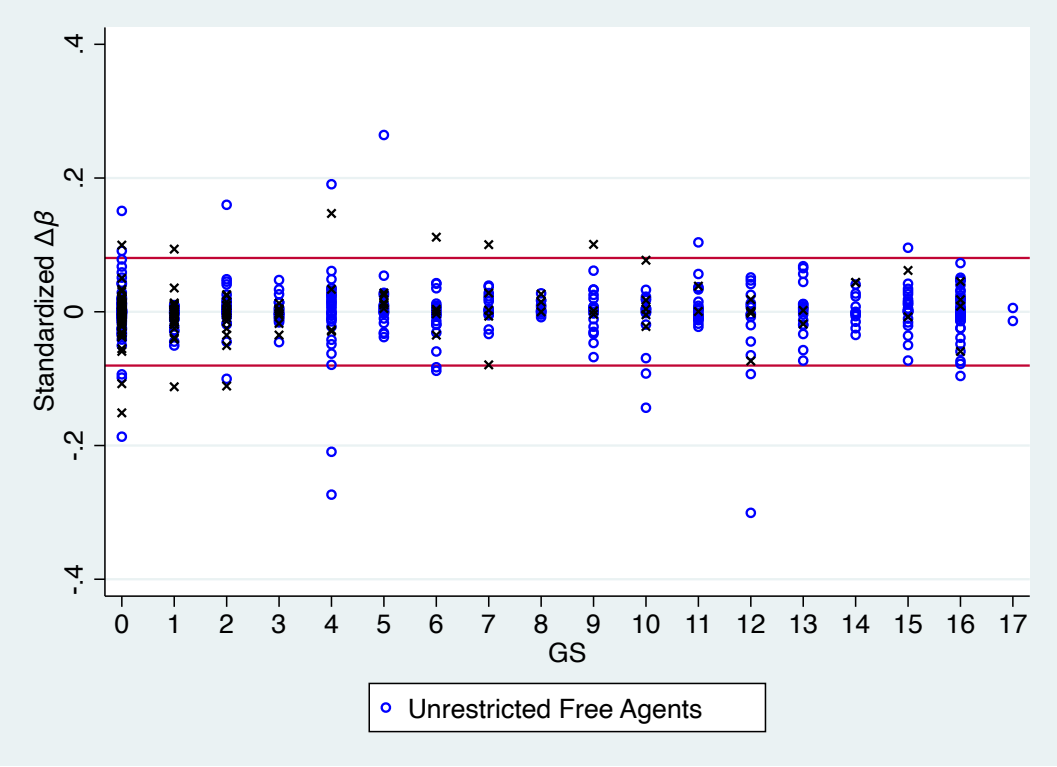
As is common with compensation data, our data on average contract value are highly positively skewed. Our use of the natural logarithm transformation does reduce the skew; however, one may be potentially concerned with outlier values driving the results. Thus, we conduct an influence analysis by estimating our models and removing each observation to determine the effect on our coefficient of interest. Figures A7 and A8 present results from our influence analysis, for WR and CB respectively, by plotting the difference in the coefficient for reference value compared to our full sample results presented in the text standardized by the standard error of the estimate. When estimating the models and removing those observations with an absolute value of standardized delta beta of greater than $\frac{2}{\sqrt{n}}$ (Belsley, Kuh, and Welsch 1980) the results are very similar to those presented in the main text.

Figure A7. WR Influence Analysis



Note: Horizontal lines are at $\pm\frac{2}{\sqrt{661}}$.

Figure A8. CB Influence Analysis



Note: Horizontal lines are at $\pm\frac{2}{\sqrt{618}}$.