THE BECKHAM RULE:

MAJOR LEAGUE SOCCER WAGE INEQUALITY AND

TEAM PERFORMANCE

by

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In the quest for international soccer relevancy, MLS faces strong competition.
Established European soccer leagues and strong domestic competition from the NFL,
NBA, MLB, and NHL create steep barriers for league growth. To boost its
international profile, MLS created the Designated Player (DP) Rule in 2007. This rule
resulted in increased average salary and wage dispersion among the existing teams.
This study examines the effects of these large wage changes on team performance. In
the constructed model, the results of this increased wage dispersion remain
inconclusive. Nonetheless, although the results from the average salary and team
performance examination stand just outside the significance test cutoff, this model
presents similar findings to previous literature in finding a substantial positive
relationship between the two.

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Introduction

This study contributes to existing research on the impact of Designated Players on Major League Soccer (MLS) salary equality and on-field production. Major League soccer presents a unique opportunity to study this relationship due to the 2007 implementation of the Designated Player Rule, also known as the Beckham Rule. MLS implemented the Designated Player Rule to allow clubs to sign high-quality players primarily from overseas without exceeding the soft salary cap, which limits the amount of money teams can spend on players. This rule directly changed the dynamics of the salary system in MLS. Over the course of less than a decade, MLS' system expanded from a $2M soft salary cap for all players in 2007 to several players making upwards of $1M a year in 2015 (Major League Soccer Players Union, 2015).

Nonetheless, as the salary cap expanded, MLS paid these superstars monumental wages, creating wage inequality throughout MLS. For example, in 2007, the first season of the Designated Player Rule, David Beckham received over $6.5M in guaranteed compensation while his teammate Kyle Varis earned just above $17,000. This extreme salary distribution creates interesting team dynamics on the field as some players are motivated to improve to earn the top wages and others feel injustice for receiving much lower wages for similar work. Therefore, this study compares the increasing wage inequality and on-field production as a result of the Beckham Rule.

Moreover, this study expands the dialog concerning these vastly important players and renews some of the previous conclusions regarding wage inequality and team production, particularly with regards to Designated Players in Major League Soccer. Frankly, MLS releases little information to the public detailing the importance

of these players to their respective MLS teams. Thus this study presents viable research

to help renew the dialog about the rule that changed the face of Major League Soccer.

Background of the Beckham Rule Implementation

Where Did Soccer Stand in the US at the Time?

The 2006-2007 season marked MLS' 11th season. Over those seasons, MLS

expanded dramatically, and planned to continue that trend with the introduction of

Toronto FC the following season. Despite this progress, however, MLS lacked

profitability. Like typical early-stage companies, such as Tesla Motors and Amazon,

MLS operated at a loss in order to promote growth. Perhaps more concerning than their

financial troubles, however, MLS lacked credibility in the sports world. Despite strong

growth in the first decade, MLS struggled to compete with other professional sports

leagues both domestically and internationally.

Domestic Competition

In 2007, MLS stood firmly in the shadow of their domestic competitors: the

National Football League (NFL), Major League Baseball (MLB), the National

Basketball Association (NBA) and National Hockey League (NHL). MLS was smaller,

and averaged lower attendance and revenues than their four main domestic competitors.

The 2006 MLS featured 12 teams. In the same year, 32 teams competed in the

NFL, while 30 competed in the NBA, NHL and MLB respectively. Furthermore,

attendance for the 2006 MLS season was 15,404, their fourth highest total since the

inaugural 1996 season. Despite this relatively high attendance, MLS trailed each of their

major domestic competitors, NBA (17,759), NHL (16,957), NFL (67,738), and MLB (31,404) (Plunkett, 2008).

International Competition

MLS' competition in the market expands far beyond the United States. In 2007, MLS struggled to not only attract fans away from these more established leagues, but they also had to divert these fans away from the superior leagues overseas.   These established leagues featured the highest quality players, stadiums, coaches, and most importantly skill. For perspective, the 30 players who received the most votes for the 2007 FIFA World Player of the Year each played in one of the five top leagues in Europe: the Premier League (England), La Liga (Spain), Serie A (Italy), Bundesliga (Germany) and Ligue 1 (France).

To further illustrate the size of the gap between MLS and the top European leagues, 2006 marked the introduction of jersey sponsorship deals in MLS. In a groundbreaking deal for between $500,000 and $1 million annually, Real Salt Lake announced a four-year sponsorship agreement with XanGo to place XanGo's logo on the front of all RSL jerseys. By this time, the jersey sponsorship practice was well-established in Europe. In 2005, English club Manchester United announced a similar four-year deal with American International Group (AIG) for $106 million (Bell, 2016).

This superior play overseas attracted many U.S. soccer fans. Thus these fans faced the difficult decision of watching the lower quality domestic talent in MLS or watching the highest quality soccer in the world on TV.

Competitiveness Inside MLS

Contrary to many of their international soccer competitors, one of Major League Soccer's strengths was competitiveness within the league. Since MLS began in 1996, 10 different teams have won the MLS Cup. D.C. United won three of the first four, but Kansas City (Wizards and Sporting), San Jose Earthquakes, LA Galaxy, Houston Dynamo, Columbus Crew, Real Salt Lake, and the Portland Timbers have all won since. For perspective, the English Premier League, which is widely considered to be one of the most competitive in the world, has featured five different winners since its inception in 1992.

Major League Soccer Salary Structure in 2007

One of the primary reasons for the strong competition within MLS is the league salary structure. MLS operates a single-entity structure in which the club operators own a stake in the league itself, not just their individual teams. MLS' structure is an anomaly in the sports world both domestically and internationally. Unlike most other professional leagues where separate owners or investors own the teams, in MLS, the league itself owns the teams (Cotignola, 2015). For this reason, MLS retains a greater amount of control over its operations and teams than most other leagues. Specifically, individual players sign their contracts through MLS, not the individual teams. Thus, theoretically, MLS maintains the responsibility of negotiating salaries, recruiting players, compensating players using league funds, and maintains immense control over the employment of its players.

More importantly, however, this single-entity salary structure, which featured a $2.1million salary cap in 2007, meant that the league maintained power to adjust the

rules if necessary to recruit better players and boost the profile of the league (Keh, 2010). In 2007, Major League Soccer did just that through the implementation of the Designated Player Rule, better known as "The Beckham Rule."

Reason for the Designated Player Rule:

Opportunity

In the summer preceding the 2007 season, MLS faced a tough decision. For the first time, the league had the opportunity to sign one of the biggest names in professional soccer, David Beckham. In 2007, David Beckham captained the English National team, and played for one of the top teams in the world, Real Madrid C.F. Nobody questioned Beckham's talent relative to the MLS. Simply put, if the LA Galaxy pulled off this groundbreaking signing, Beckham would be one of the best, if not the best, players in the league.

More importantly, however, Beckham presented a massive opportunity to boost the profile of the MLS as a whole. Beckham was a phenomenal player, but his value to the league reached far beyond the field. The combined celebrity of Beckham and his wife Victoria Beckham created huge buzz wherever they went. Signing Beckham would inevitably bring attention to the league across the world, while also proving that MLS could host top-quality players.

Nonetheless, Beckham's stardom far from guaranteed increased popularity of soccer in the U.S. Unlike most countries in the rest of the world, in America the sport greatly struggled to attract fans. After all, the games greatest-ever player, Pelé, failed to popularize soccer in the U.S. He played for the New York Cosmos in the North

American Soccer League, the league that preceded MLS. Despite the popularity of the

Brazilian and some other World Cup stars like Germany's Franz Beckenbauer and

Italy's Giorgio Chinaglia, the NASL folded in 1985. Nonetheless, in a star-crazed

market like Los Angeles, the arrival of Beckham presented huge possibilities of

increased revenue and global attraction. In Grant Wahl's "The Beckham Experiment, "

the executive director of the USC Sports Business Institute, David Carter, describes the

star-power of Beckham in Hollywood. He says, "Pelé is an athlete. Beckham and his

wife and their whole aura is entertainment, of which sports is but one piece." He

continues, "In a celebrity-crazed era that we're in, they roll into Southern California in a

rather unique situation. I don't think you see that combination in sports very much.

That's what makes the Beckhams different. They're coming to town ready, literally and

figuratively, for prime time" (Wahl, 2009). Clearly, the Beckhams presented a huge

marketing opportunity for MLS to boost the profile of the league.

Dilemma

For Major League Soccer in 2007, signing David Beckham presented an

exciting but volatile decision. To sign their man, MLS faced numerous obstacles. First

and foremost, the Beckham signing violated MLS' salary cap restrictions. Due in part

to the failures of the North American Soccer League (NASL), MLS owners originally

created the single-entity league system to minimize expenses while the league grew and

waited for revenue to catch up. MLS did not want to follow the lead of NASL, which

disbanded in 1985 due in part to hurried league expansion and rapid player salary

increases. While the New York Cosmos of the NASL successfully paid superstars like

Pelé and Beckenbauer, smaller market teams ran themselves dry trying to compete.

Thus, prior to its inaugural season in 1996, MLS implemented the "soft" salary cap system similar to that of the NBA. In order to promote fairness and maintain financial stability, this "soft cap" limits the amount teams can pay for players, while allowing some overages that incur a luxury tax from the league. MLS distributes this luxury tax to smaller market teams to help promote financial fairness. For a league operating at a deficit, this soft salary cap system helps prevent overspending. For the LA Galaxy and MLS to sign Beckham, however, this salary cap system required adjustment. Beckham's huge proposed wages pushed the LA Galaxy's payroll well above this salary cap. Thus MLS faced a tough decision: stick to their guns about minimizing costs and promoting fairness or change the salary cap rules to accommodate Beckham.

Solution

Ultimately, MLS decided the Beckham opportunity was too great to pass. So, after collective negotiation with the owners of the league, they settled on creating an adjustment to the soft salary cap system called the Designated Player Rule. This rule later became more aptly known as "The Beckham Rule." Under the Designated Player Rule, each MLS team allocated only the first $400,000 of the Designated Player's salary towards the salary cap, which is paid off by the league, while the team owner accepted responsibility for the rest of the salary. Furthermore, each team received one DP slot that they could use or trade as they desired. To maintain fairness, however, MLS allowed a maximum of two DP slots per team.

To put things into perspective, in 2007, the league salary cap floated right around $2M per year (Keh, 2010). At the time, only three players in the league received wages greater than $400,000. As part of the agreement, these players, Landon

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Donovan (LA Galaxy), Eddie Johnson (Kansas City), and Carlos Ruiz (FC Dallas) were "grandfathered" for one year, after which they would count towards the number of Designated Players (MLS Soccer Staff, 2010).

In 2007, only three teams other than the LA Galaxy signed DPs to bring the total number of DPs to 5. Thus, David Beckham, Cuauhtemoc Blanco (Chicago Fire), Denilson (FC Dallas), Juan Pablo Angel (New York Red Bulls) and Claudio Reyna (New York Red Bulls) paved a path for many other superstars to follow.

Since the 2007 season, the Beckham rule evolved greatly. The original DP rule expired after the 2009 season. Thus, MLS maintained the option to renew or discard the rule after reviewing its success after three seasons. In 2010, MLS renewed the rule, but with several notable changes. In 2012, the rule expanded again to include a provision for younger players. The details of these rule changes are explained below:

Designated Player Rule Details

2007: The Original Designated Player Rule[1]

- Each team has one DP slot that be can traded to attain a second

- Maximum of two DPs per team

- Landon Donovan, Eddie Johnson and Carlos Ruiz are grandfathered

- $400,000 of the first designated player's salary is allocated to the salary cap

- $325,000 the second DP's salary is allocated to the salary cap

- Expires in 2009

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[1] Calvert, Wilson. "Designated Players Explained: How They Affect the Salary Cap and What Is the Houston Dynamo DP Situation." *Dynamo Theory*. SB Nation, 15 Jan. 2014. Web. 08 Nov. 2015.

2010: Renewal and Expansion of the Rule

- Two Designated Player slots per team with an option for a third. These slots cannot be traded

- Each team must pay a $250,000 luxury tax to acquire the third DP slot. MLS distributes this luxury tax equally to all teams who have not purchased a third DP slot

- $415,000 of each designated player's salary is allocated to the salary cap

- $325,000 of the second DP's salary is allocated to the salary cap

- Landon Donovan is no longer grandfathered and is considered a DP

- No expiration date on the rule

2012: Rule changes involving younger players

- $335,000 of each designated player's salary for players over the age of 23 is allocated to the salary cap

- For players 21-23 years old this amount decreases to $200,000

- For players under 21 years old this amount decreases to $150,000

- Clubs do not have to purchase a third DP spot for players 23 and younger

*Maximum budget charges for players over 23 years old increased each year after 2012. These charges increased to $368,750 for 2013, $387,500 in 2014, and $436,250 in 2015 (MLS Pressbox, 2015); (Wilson, 2014). Table one summarizes the rule adjustments since 2007.

Table 1: Designated Player Rule Changes Summary

Year	Salary Cap	DP Slot 1	DP Slot 2	DP Slot 3
2007	$2.1 M	$400,000	$335,000	NA
2008	$2.3 M	$400,000	$335,000	NA
2009	$2.3 M	$415,000	$335,000	NA
2010	$2.6 M	$335,000	$335,000	$335,000+$250,000 tax
2011	$2.7 M	$335,000	$335,000	$335,000+$250,000 tax
2012	$2.8 M	$350,000	$350,000	$335,000+$250,000 tax
2013	$2.9 M	$368,750	$368,750	$368,750+$250,000 tax
2014	$3.1 M	$387,500	$387,500	$387,500+$250,000 tax
2015	$3.5 M	$436,250	$436,250	$436,250+$250,000 tax

*Starting in 2012, DPs age 20 or younger count as a $150,000 charge against the team's salary budget. DPs age 21-23 count as $200,000 against the budget. **If a DP joins midseason the budget charge is halved

Salary Inequality

The Beckham Rule provided a loophole for MLS to attract and pay for top quality talent that largely only existed overseas until 2007. MLS teams were willing to pay huge wages to the top players because they believed they could attract the fans and help their teams on the field. Nonetheless, these new huge salaries brought about by the rule change also directly increased the salary inequality among players in the league.

For example, Orlando SC Designated Player Kaka earned 62% of the team's total payroll in 2015. Furthermore, the top player for 7 out of 20 teams earned at least 25% of their team's total payroll in 2015 (McMahon, 2015). Furthermore, Additional Figures 1 and 2 graphically illustrate the dispersion of team wages by player in 2015 and 2014. One glance at each of these figures, found at the end of this study, illustrates the sheer magnitude of wage inequality that still exists among MLS teams.

In theory, one might think that higher quality talent would directly increase production on the field. These highly paid and highly skilled DPs should score goals,

improve the goal differentials of their teams, and ultimately lead to more wins per season. Nonetheless, these assumptions do not always hold true. In 2009, when discussing the on-field success of Designated Players, DC United's team president Kevin Payne said, "Everybody is naïve because everybody has expectations that are unrealistic. You might say that if you pay a player that much money, you expect results. It doesn't always work out that way" (Bell, 2009). Clearly, just a few years after the inception of the rule, Kevin Payne understood that high pay doesn't always mean great success. No clear-cut formula exists to achieve success in MLS, but the Beckham Rule certainly opened the door for teams trying to buy superstars to lead their teams to victory. Thus this study directly asks and investigates questions involving the effect of DPs on wage inequality and on-field production in the MLS since the inception of the Beckham Rule.

Literature Review

Wage Dispersion Theories

Existing research involving wage dispersion and team performance revolves around a few key theories. In theory of tournaments, Lazear and Rosen (1981) point to situations where wage is determined based on rank within the firm as incentive for employees to boost productivity. In these situations, they see increased wage dispersion as positively related to employee effort and productivity. Similarly, Bloom's hierarchical pay system (1999) positively relates pay dispersion to team performance. This hierarchical pay system incentivizes production by paying high-talent workers higher salaries, thus motivating low-wage workers to boost performance to obtain increased salaries.

Contrastingly, Akerlof and Yellen's wage compression hypothesis (1990) predicts an inverse relationship between wage dispersion and firm productivity. They conclude the dissatisfaction of low-wage workers due to the heavy wage dispersion negatively affects the production of the firm. Furthermore, Levine's Cohesion Theory (1991) implies that increasing wage equality boosts firm productivity due to the increased employee satisfaction and unity, which arises from equal wages.

Relevant Research

Today, a large body of research exists discussing wage dispersion and organizational productivity. Nonetheless, this research remains divided in concluding whether this relationship is negative, positive, or null. Some of the primary arguments for each are outlined below:

Negative Relationship

Existing research comparing these contrasting hypothesis largely points to an inverse relationship between wage dispersion and organizational productivity. For example, Depken's study of wage dispersion in Major League Baseball (2000), which uses data from 1985 to 1998, supports cohesion theory. Depken's evidence shows that increased average salary for a team increases team performance, while increased salary dispersion reduces team performance. Pfeffer and Langton's study of faculty from various colleges and universities (1993) reports a similar negative relationship. Their research suggests that increasing wage dispersion reduces research productivity, research satisfaction, and finally willingness to collaborate on research.

Positive Relationship

Contrary to the findings above, a smaller sample of existing research concludes a positive relationship between wage dispersion and productivity. For example, Shouten's 2012 study of the ideal amount of dispersion to maximize wins in an NBA season finds a significant positive relationship. Furthermore, Berri and Simmons' 2011 investigation of wage inequality and team performance in the NBA from 1990-2008 advances tournament theory. Ultimately, their research concludes that expected pay inequality positively affects team and individual performance and shows no significant relationship between conditional dispersion and individual or team performance.

Null Relationship

Nonetheless, results from these studies remain largely inconclusive. For example, Berri and Jewell's 2004 examination the NBA in the 1990s finds wage

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dispersion statistically indeterminate of team productivity. They cite the quality of

players and quality of coaches as the only relevant factors in determining team success.

Katayama and Nuch's 2011 study uses information from five NBA seasons from 2002-

2006 and three different measurements of salary dispersion. Their research ultimately

demonstrates no causal relationship between salary dispersion on team performance

regardless of the way they measure salary dispersion.

Soccer-Specific Data

The data relating to Major League Soccer primarily declares a negative

relationship between wage inequality and team productivity. Coates, Frick and Jewell's

results from their 2012 study support Levine's cohesion theory. They conclude the

existence of a negative relationship between salary dispersion and on-field performance

in Major League Soccer from 2005-2012. Other similar studies of MLS feature similar

results (Sonntag and Sommers, 2014; Breunig, Garrett-Rumba, Jardin, and Rocaboy,

2014; Hobbs, 2015).

Nonetheless, Franck and Nuesch (2011) found a U-shaped relationship between

wage dispersion and performance in their study of German soccer from the 1995-96 to

2006-07 seasons. They found that the teams with the largest wage dispersion and most

egalitarian systems achieved higher on-field success than those with medium wage

dispersion.

Contrastingly, Bucciol, Foss and Piovesan's study of professional Italian soccer

(2014) presents evidence involving pay dispersion and team production that is both

mixed and inconclusive. For example, in the same data set, they see negative, null, and

positive effects of pay dispersion on team performance depending on the way they

define team. Ultimately, they find that no significant relationship between pay

dispersion and performance exists.

Average Wage Studies

　　Despite the different conclusions of the relationship between wage inequality

and dispersion of Franck and Nuesch, Sonntag and Sommers, and Hobbs, each of these

soccer-related studies concludes that increasing average salary positively relates to on-

field success. Similarly, Depken's study of MLB finds a positive relationship between

average salary and on-field production. Thus, existing research largely confirms a

positive relationship between on-field success and average salary.

Hypothesis Development:

To ultimately fulfill the goal of adding to the existing dialogue regarding the impact of Designated Players on team performance in Major League Soccer, I crafted a set of hypotheses to examine. These hypotheses are based on the findings of the large existing body of research.

Hypotheses #1-6 are derived from existing literature examining the effects of wage dispersion and average wage increases on team performance. Based on Levine's cohesion theory (1991) and Akerlof and Yellen's wage compression hypothesis (1990), Hypothesis 1 predicts that increased standard deviation in salary leads to decreased on field production (measured in PPG).

I expect that the negative externalities from increased wage inequality summarized by these two theories will decrease on-field productivity. Furthermore, I predict that my results will align with similar studies such as Coates, Jewell, and Frick (2012), Sonntag and Sommers (2014), and Hobbs (2015), which found a negative relationship between wage dispersion and team production.

Nonetheless, many of the findings in existing studies are tempered by a positive relationship between average team salary and organizational productivity. Coates, Frick and Jewell (2012), Sonntag and Sommers (2014), Hobbs (2015), and Depken (2000) express these findings in their research of MLS and MLB respectively. Based upon these findings, I expect teams with more DPs to have higher average salaries because DPs by nature typically receive the lion's share of team salary. Due to this previous literature, Hypothesis 2 states that increased average team salary results in increased on-field production measured in points per game.

Furthermore, due to this positive relationship between salary and productivity, I anticipate that teams who invest heavily in DPs will score more goals. Thus Hypothesis 3 states: teams with more DPs score more goals than those who have fewer DPs. Similarly, Hypothesis 4 predicts teams with more DPs will allow fewer goals and Hypothesis 5 combines Hypothesis 3 and 4 and states that teams with more DPs have a greater goal differential. Futhermore, Hypothesis 6 states: teams with more DPs average more points per game than those who have fewer or no DPs.

Hypotheses 7-8 examine questions that both fulfill my curiosity and contribute to the existing narrative regarding the impact of the Designated Player on MLS. These hypotheses do not clearly fit with the existing research regarding wage dispersion and team performance, but I utilize other existing literature to form my expectations.

For example, Humphrey, Morgeson, and Mannor (2009) argue that high levels of experience and job-related skill are crucial for predicting firm performance. Nonetheless, they conclude that these same traits are significantly more important when they are characteristics of core-role holders on the team. Thus, Hypothesis 7 predicts that non-DP skill level will be more important in the presence of DPs. The rationale behind this hypothesis is derived from the DPs typical placement as core-role holders on the team (striker, central midfielder, central defender, goalkeeper, etc.). Finally, based on these studies, Hypothesis 8 states that the interactive effect of DP skill and Non-DP skill has an impact on team performance.

Methods

To examine these hypotheses, I began by researching the changing payrolls of Major League Soccer teams from 2007-2015. MLS first introduced the DP Rule in 2007, thus I used the 2007-2008 season as the starting point for my research. Every year, MLSPU releases a list showing the base salary and guaranteed compensation for all players club by club. By using this data, I analyzed club salaries across a several year period with consistent data from a reliable source. Using the annual salary information published by the MLS Players' Union, I measured wages of each club from 2007-2015 by calculating the average, variance and standard deviation of player salaries.

After conducting this initial team salary research, I turned to find an adequate measurement of team success each season. Using the information from MLS.com I manually entered team statistics for all regular season games. I chose to use points-per-game (PPG), the goals for (GF), goals against (GA), and goal differential (GD) statistics as my primary indicators of team performance. Note: points-per-game indicates the average points gained from wins, losses, and ties over the course of the season. In MLS, the winning team receives 3 points, the losing team receives 0, and each team collects 1 point in the event of a tie.

After much debate, I decided against using postseason information for my analysis. Several factors contributed to this decision. First, I feared that postseason data could cloud some of the data used for analysis such as goals for, goals against, games played, etc. By adding statistics from a few more games for a few teams, I feared that

the universality of my findings could be affected. Thus by using only regular season

data, the on-field production was measured fairly and uniformly.

Following the addition of in-game statistics for each team, my focus again

turned towards identifying and separating the Designated Players from the rest of the

data pool. To do so, I identified each teams' DPs season by season, and recalculated the

average, standard deviation, and variance of these player's salaries and ran additional

calculations excluding these high wage earners.

After combining this wage information with the regular season statistics of each

team, I used IBM's SPSS software to test my hypotheses and analyze the data. This

program allowed me to examine correlations, direct and moderating effects, and find p-

values to potentially reject or support my hypotheses.

In each of these tests, my null hypothesis states that the independent variables I

examine will have no effect on the dependent variable. On the other hand, I use the p-

value technique to explain how well the data supports the null hypothesis that there is

no effect. High p-values indicate that the null hypothesis is likely true. Low p-values,

defined as a p-value less than .05 indicate that the data fails to support the null

hypothesis. Therefore, if my results illustrate a p-value less than .05, then there is

enough evidence to reject the null hypothesis.

Note: Due to rapid league expansion, the number of games played increased as new teams entered the league. The league additions are listed below:

Table 2: Timeline of Inaugural Season for MLS Expansion Teams

Inaugural Season	MLS Team
2007	Toronto FC
2009	Seattle Sounders SC
2010	Philadelphia Union
2011	Vancouver Whitecaps FC & Portland Timbers
2012	Montreal Impact
2015	New York City FC & Orlando City SC

Results

Figure 1: Correlation Table for Key Variables

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Year															
2	Team Average Salary	.36**														
3	Team Standard Deviation	.14	.84**													
4	Average Salary-DPs Excluded	.65**	.47**	.27**												
5	Standard Deviation-DPs Excluded	.04	.14	.53**	.31**											
6	DP Average Salary	.12	.87**	.82**	.21**	.06										
7	Games Played	.86**	.26**	.06**	.45**	-.04	.07									
8	Points Per Game	.02	.15	.11**	.03	-.02	.10	.00								
9	Goals For	.34**	.34**	.28**	.22**	.12	.25**	.37**	.66**							
10	Goals Against	.33	.14	.12	.19*	.09	.13	.36**	-.69**	-.09						
11	Goal Differential	.006	.13	.11	.02	.02	.08	.00	.92**	.74**	-.74**					
12	Designated Players	.61**	.60**	.42**	.35**	-.02	.46**	.53**	.06	.27**	.25**	.01				
13	Defensive DPs	.25**	.39**	.28**	.29**	.08	.22**	.18	.12	.25**	.00	.16*	.43**			
14	Midfield DPs	.39**	.36**	.27**	.21*	-.02	.34**	.32**	-.06	.07	.23**	-.10	.69**	.00		
15	Forward DPs	.52**	.45**	.28**	.26**	-.04	.31**	.48**	.11	.26**	.19*	.05	.77**	.26**	.15	
16	Goalkeeper DPs	-.01	.16*	.17*	-.05	-.02	-.02	.06	-.01	.06	.01	.04	.13	.28**	-.07	.04

Note: ** $p < .01$. * $p < .05$

This figure demonstrates the correlations of the key variables of the study. Some of the key variables to focus attention are the team average salary and team standard deviation with and without Designated Players (AVG, STDEV, AVG-NoDP, and STDEV-NoDP respectively). Furthermore, this figure contains the number of Designated Players (DP) organized by positions of goalkeeper (GK), defense (DEF), midfield (MID) and forward (FWD) as well as key in-game statistics including points per game (PPG) and goal differential (GD).

Table 3: Hypothesis 1 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
1	PPG	STDEV	.95	7.195E-8	Fail to reject

The results of the *Hypothesis 1* test of the relationship between wage dispersion and on-field production failed to reject the null hypothesis. The unstandardized regression coefficient B of STDEV was 7.195E-8 while the significance level of .95 was greater than the traditional p-value significance test ($p \leq 0.05$). Thus our results

failed to conclude the hypothesis indicating a negative relationship between standard

deviation of wages (pay dispersion) and on-field production.

Table 4: Hypothesis 2 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
2	Points Per Game	Avg Salary	.029	3.609E-7	Reject

The results for *Hypothesis 2* showed significance. The p-value of $.029 \leq 0.05$

provides enough evidence to reject the null. This p-value and the unstandardized

coefficient of 3.609E-7 suggest that the team average salary (AVG) has a strong effect

on PPG. Thus these results match the findings of previous studies, which describe a

positive relationship between team average salary and team performance.

Table 5: Hypothesis 3 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
3	Goals For	DEF	.008	6.34	Reject
3	Goals For	MID	.294	.580	Fail to Reject
3	Goals For	FWD	.008	2.62	Reject

Furthermore, the results of the one-tailed *Hypothesis 3* test showed a strong

significance between Goals For (GF) and the number DPs playing forward (FWD) and

defense (DEF). Interestingly, the number of midfielders (MID) was not significant in

predicting GF. The p values of .008 and .008 for DEF and FWD respectively was less

than the .05 cutoff, while the p-value for MID was .294. Based on the unstandardized

regression coefficient B, DEF contributed 6.34 goals and FWDs contributed and

additional 2.62 goals to their teams.

Table 6: Hypothesis 4 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
3	Goals Against	DEF	.313	-1.290	Fail to Reject
3	Goals Against	MID	.007	2.714	Reject
3	Goals Against	FWD	.024	2.188	Reject

Interestingly, one-sided results from Question 4 directly contradicted the null hypothesis. MID and FWD DPs were significant in predicting Goals Against (GA) based on their p-values of .007 and .024 respectively. Their unstandardized coefficients B of 2.714 and 2.188 indicate that each additional MID and FWD DP resulted in an average of 2.7 and 2.2 more goals per season. With a p-value of .313, DEF DPs surprisingly failed to reject the null hypothesis and significantly impact the number of GA per season.

Table 7: Hypothesis 5 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
4	Goal Differential	DEF	.03	7.556	Reject
4	Goal Differential	MID	.0965	-2.123	Fail to Reject
4	Goal Differential	FWD	.398	.426	Fail to Reject

Nonetheless, in the results of Hypothesis 5, DEF showed a p-value of .03 in predicting Goal Differential (GD). This p-value provides enough evidence to reject the null and demonstrates a significant positive relationship between the number of defensive DPs and GD. Furthermore with a Std. Error of 3.983, the results suggest that defensive DPs contribute substantially to team performance measured in GD. On the other hand, MIDs and FWDs failed to reject the null hypothesis though the p-value of .0965 trends towards MIDs having a significant positive effect on GD.

Table 8: Hypothesis 6 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
6	PPG	DPs	.246	.016	Fail to Reject

Based on the p-value of .246, the results from the one-sided Hypothesis 7 fail to reject the null hypothesis. The results do not indicate a substantial positive relationship between the number of DPs and PPG.

Table 9: Hypothesis 7 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
7	PPG	NDPAvgxDPyes_no	.369	2.250E-6	Fail to Reject

The results from Question 7 do not support the alternative hypothesis that Non-DP skill level is more important in the presence of DPs. With a p-value of .369 and unstandardized coefficient of 2.250E-6, the results of this interaction failed to reject the null. Nonetheless, the effect trends towards DPs having an interactive effect with Non-DPs in positively affecting performance as measured by PPG.

Table 10: Hypothesis 8 Results

Hyp.	Dep. Variable	Ind. Variable	P-value	B	Conclusion
8	PPG	DPAvgxNDPAvg	.584	-2.129E-13	Fail to Reject

Furthermore, the results of Hypothesis 8 proved unsubstantial to reject the null hypothesis. The p-value of .584 failed to provide evidence that the relationship of DP on performance is moderated by non-DP skill level.

Discussion

Summary of findings:

      The results of this study largely failed to reject my null hypothesis. First, based on the results of this study, the standard deviation of wages fails to significantly affect team PPG. This result interestingly contradicts much of the existing literature that details a negative relationship between wage dispersion and team performance (Depken, 2000; Pfeffer and Langton, 1993; Coates, Frick, and Jewell 2012). Nonetheless, this existing literature remains far from one-dimensional with many other studies indicating contrasting positive relationships (Shouten, 2012; Simmons and Berri, 2011) or reporting similar findings to this study of no significant relationship whatsoever (Katayama and Nuch, 2011; Berri and Jewell, 2004).

      On the other hand, some of the results of this study confirmed expectations based on previous literature. For example, similar to Depken (2000) and Hobbs (2015), the results show increased wages in MLS does contribute to on-field success. Though the p-value of .029, the results from Hypothesis 2 provide evidence to reject the null and indicate a significant positive relationship between average pay and team performance as measured through PPG.

Theoretical Implications:

      From a theoretical standpoint, this study fails to conclude a negative or positive relationship between wage dispersion as described by compression theory, cohesion theory, tournament theory, or the hierarchal pay system. These inconclusive findings perhaps result from a combination of factors described by these studies such as

employee dissatisfaction resulting from wage inequality and internal motivation of low-wage employees to achieve the massive salaries of some of the Designated Players.

Furthermore, due to results that largely failed to reject the null hypothesis, it remains possible that overestimation of the importance of Designated Players occurred. These highly demanded, highly paid international superstars largely fail to have the dominating impact on PPG predicted prior to the tests. Nonetheless, these big-name players confirm expectations on a few fronts. For example, the results suggest that Defensive DPs substantially positively affect goal differential. Furthermore, DPs playing defense and forward demonstrate significance in predicting goals for. Finally, DPs playing in midfield and forward significantly related to an increase in goals scored against their teams. Thus though DPs failed to significantly impact the bottom line measurement of points per game for their teams, they clearly made impacts in different statistical categories.

Management Implications:

From a managerial perspective, this study suggests that increasing the team average salary will increase on-field production. Nonetheless, the evidence involving the most successful amount of wage dispersion remains inconclusive. Furthermore, the results offer little evidence of an interactive effect causing Non-DPs to improve performance in the presence of DPs. Nonetheless, the positive relationship between defenders and forwards on goals for, and the impact of defensive players on goal differential offers some evidence to promote the spread of key players across numerous positions.

The Impact of the Designated Player Rule on League Growth:

Since the implementation of the Designated Player Rule, MLS has achieved impressive growth. League attendance figures, team values, and new player signings illustrate this growth and offer perspective on the current state of MLS in the new Designated Player era.

Attendance

MLS ranks seventh in attendance among other major soccer leagues in the world and third among major professional sports leagues in the US (MakeEverdayGameday). Nonetheless, over the past two years, average attendance in MLS rose from 18,600 fans to 21,100 per game. These figures push MLS well beyond the NBA's 17,800 fans per game and NHL's 17,500 (Statista). Thus, while MLS remains fifth in revenue among professional sports leagues in the U.S., they place third in attendance trailing MLB and NFL. Figure 2 demonstrates MLS' attendance growth since the inaugural 1996 season.

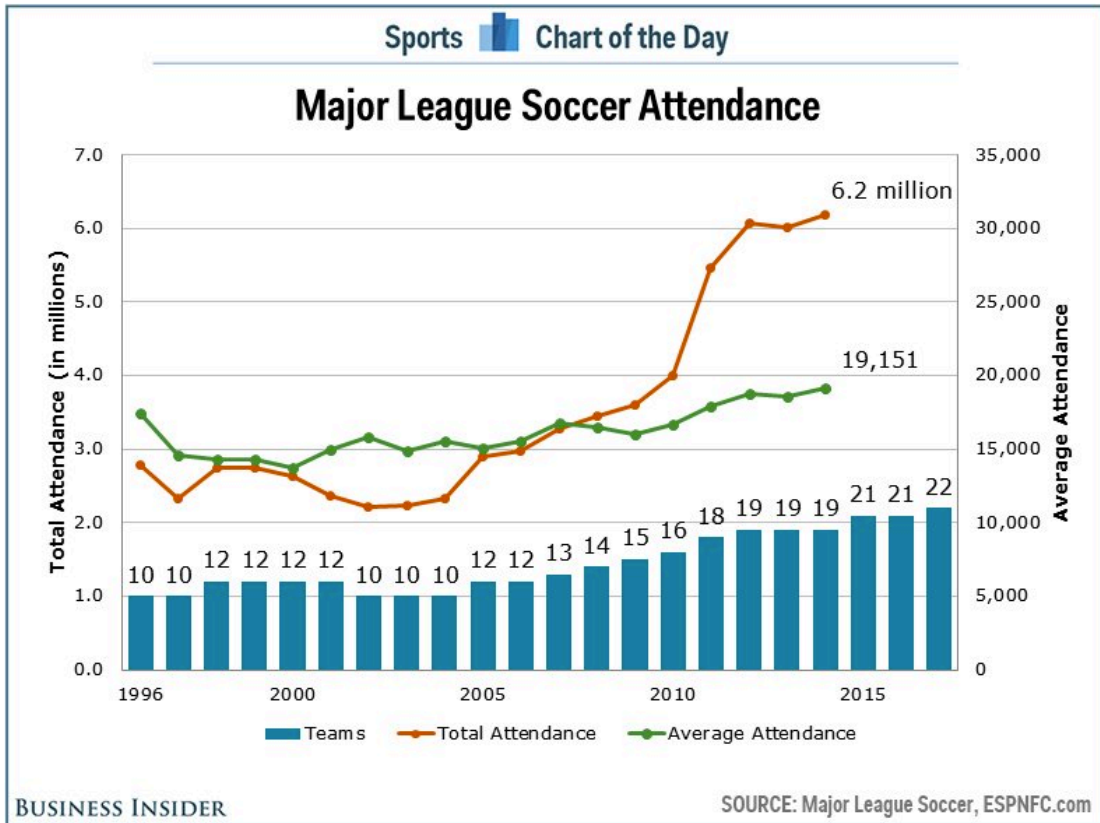Figure 2: MLS Attendance Growth

Figure 2 illustrates the growth of MLS since the inaugural season in average
attendance and total attendance. This figure shows clear growth and offers projections
for upcoming seasons (Gaines, 2014).

Team Values

Furthermore, since 1996 the team values for MLS have increased. At the
moment, three MLS teams are valued at $200 million or greater. While the MLS team
valuations remain dramatically lower than the top three football teams in the world,
which each feature valuations greater than $3 billion, they show the current standing of
MLS teams relative to the top clubs in the world. Tables 3 and 4 illustrate the values of
the most highly valued MLS teams and international clubs.

Table 11: MLS Team Values

MLS Rank	MLS Team	Value
1	Seattle Sounders	$245 Million
2	LA Galaxy	$240 Million
3	Houston Dynamo	$200 Million

Table 11 illustrates the team values of the 3 highest valued teams in MLS (Smith, 2016)

Table 12: Highest Valued World Football Clubs

World Rank	Club (Country)	Value
1	Real Madrid (Spain)	$3,263 Million
2	Barcelona (Spain)	$3,163 Million
3	Manchester United (England)	$3,104 Million
20	Galatasaray (Turkey)	$294 Million

Table 12 illustrates the values for the world football clubs with the highest value (Smith, 2016)

Sebastian Giovinco's Success

While the MLS attendance and team values figures offer strong perspective on the growth and current of MLS, perhaps the greatest example of MLS' newfound strength internationally is Sebastian Giovinco. Toronto FC's signing of Giovinco evidences the type of player that was impossible to sign prior to the Designated Player Rule. Giovinco left Italian giant Juventus to join MLS in 2015. In his first season with Toronto, Giovinco immediately displayed his talent. He broke MLS' points record for the combination of goals and assists scored in a season. After recording 22 goals and 16 assists in 33 appearances, Giovinco won MLS Golden Boot, Newcomer of the Year, and earned the MLS MVP award (MLS Soccer Staff, 2016).

While Giovinco's MLS success surprised no one who saw his skill when he played for Juventus and the Italian national team, his story is unique to MLS. Unlike

many of the aging international DPs MLS signed since 2007, Giovinco left to play in MLS at arguably the prime of his career, age 27. He left Juventus at the point in his career where his services were in high demand and he could have forged success at a number of the top clubs in Europe. Despite Giovinco's strong alternatives abroad, he ultimately decided to pursue a career in North America (Clough, 2016). Giovinco's unprecedented success and mid-career move marks MLS' new ability to compete for top talent and the type of signing MLS hopes to replicate moving forward.

Limitations/Suggestions for future research:

This study analyzes team success at a basic level by comparing and separating DPs and Non-DPs into different categories. Nonetheless, not all of these DPs and Non-DPs have the same impact and should not be treated as such. Finding adequate player-by-player statistics was one of the limitations of this study. Nonetheless, with additional statistics and more readily available information, future researchers should separate contributing Non-DPs from Non-DPs who are simply roster players or by moderating results based on the actual time spent on the field. Furthermore, DPs do not play every game, so a game-by-game analysis could add depth to future studies. Finally, this study uses information from the regular season only, so the addition of postseason success measures could provide an interesting wrinkle to the team performance conversation.

Moreover, this study employs one vital assumption when examining the hypotheses. Due to the inability to acquire robust player-by-player statistics to measure skill level of DPs and Non-DPs, this study employs pay as a proxy for skill. The rationale behind this assumption is simple: in many professional sports leagues, the players with the greatest amount of skill receive the highest wages and vice versa.

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Similarly, low-skill players typically garner small contracts. Traditionally, teams and players negotiate contracts based on the player's skill relative to others who play the same position. Thus, this study assumes that the compensation for DPs and Non-DPs within MLS reflects skill level. Nonetheless, this assumption poses the greatest limitation to this research because of the numerous cases where pay fails to reflect skill. For example, highly skilled players sometimes fail to receive top wages due to their position or age. Similarly, MLS owners might pay average-quality DPs top-quality salaries because of the impact such a signing can have on team attendance and revenue. Finally, in the event of a serious injury to a highly paid player, a low-skill player may play more significant minutes. Thus this study calls for more accurate measures of individual skill level than the rough proxy of pay in future research.

On a slightly different note, due to the advanced age of some of these big-name DP signings when they come to the MLS, their main impact on MLS may not be on the field. Rather, these big-name older players, which include Beckham, Gerrard, Kaka, and Lampard, may have a larger impact on the bottom line of their respective clubs. Thus this study calls for additional research regarding the financial impact of these players on revenue through increased attendance, TV viewership, merchandise sales, and more.   Furthermore, future research could focus on the unanswered questions regarding the true impact of Designated Players on league attendance and team valuations.

Finally, the use of points per game (PPG) as the bottom line measurement for team success may not fit the statistical goals of the study. In other sports, team success can be measured more directly. For example, NBA teams can directly measure

offensive success through points for or defensive success through points against. These

numbers can consistently hit triple digits and the NBA plays 82 games per season.

Nonetheless, in professional soccer, where these numbers are much smaller and teams

play fewer games in a season, measurements of success can be more difficult to

calculate. For example, a shot bouncing out off the crossbar late in the game can be the

difference between three points and one point recording in the overall standings. Thus,

the use of points per game as the underlying statistic to measure team performance in

professional soccer does not always reflect the team success on the field. Future

research can account for this problem by employing a greater array of data that includes

statistics such as time of possession, number of shots, number of shots on goal,

percentage of passes completed, etc.

Supplemental Analysis:

Due to the issues involving the use of PPG as a measure of team performance

described above I performed a supplemental analysis to provide more granular data.

This analysis investigates alternative measures of team success, such as goals for, goals

against, goal differential, wins, and losses to better understand the earlier questions.

Table 13: STDEV Supplemental Regression Results

Dependent Variable	Independent Variable	Unstandardized Coefficient (B)	Significance (p-value)
Wins	Standard deviation of team wages	9.607E-7	.182
Goal For	Standard deviation of team wages	5.416E-6	.001
Goal Differential	Standard deviation of team wages	3.082E-6	.190
Goals Against	Standard deviation of team wages	2.307E-6	.147
Losses	Standard deviation of team wages	-3.177E-7	.637

First and foremost, the relationship between increased wage dispersion (STDEV) and team performance (originally measured in PPG) requires additional measurements. After running several regressions with results shown in Table 13, the results indicate a clear positive relationship between wage dispersion and goals for. Interestingly, the p-values suggested by the goal differential, win, and goals against regressions trend towards significance, but rest above the .05 p-value threshold. The relationship between losses and wage dispersion fails to demonstrate significance.

Table 14: NDPAvgxDPyes_no Supplemental Regression Results

Dependent Variable	Independent Variable	Unstandardized Coefficient (B)	Significance (p-value)
Points Per Game	Non-DP average skill & whether or not team has DPs	2.250E-6	.369
Goals For	Non-DP average skill & whether or not team has DPs	4.78E-5	.492
Goals Against	Non-DP average skill & whether or not team has DPs	-.7641E-5	.275
Goal Differential	Non-DP average skill & whether or not team has DPs	.000	.248

Moreover, the additional regressions involving Question 7 and the relation between DPs affecting the performance of Non-DPs fail to support the hypothesis regardless of the measurement of performance. Though the p-values of each of these regressions trends towards affecting performance, each remains well above the .05 mark.

Table 15: DPAvgxNDPAvg Supplemental Regression Results

Dependent Variable	Independent Variable	Unstandardized Coefficient (B)	Significance (p-value)
Points Per Game	Interactive effect between DP average skill & Non-DP average skill	-2.129E-13	.584
Goals For	Interactive effect between DP average skill & Non-DP average skill	-6.581E-12	.544
Goals Against	Interactive effect between DP average skill & Non-DP average skill	-6.377E-12	.565
Goal Differential	Interactive effect between DP average skill & Non-DP average skill	-1.417E-13	.993

Finally, the additional regressions for Question 8, which investigates the moderation of DP performance by Non-DP skill level, fails to reject the null. The high p-values for each of these regressions demonstrate little evidence of the significance of Non-DPs as moderators for the relationship between DPs and performance.

Conclusion:

The study investigated the relationship between increased salary dispersion, increased average salary, and team performance as a direct result of MLS' 2007 implementation of the Designated Player Rule. The results concluded no significant relationship between increased standard deviation and team performance. These results failed to support the wage compression hypothesis or cohesion theory, which suggest a negative relationship. Similarly, they failed to support the hierarchical pay system or tournament theory, which indicate a positive relationship. Thus this study fits in the

highly divided existing body of research as another study that indicates no significant

relationship between the two.

Moreover, the results of the average team salary and performance relationship

matched expectations based on prior research. The one-sided p-value provides evidence

to reject the null hypothesis and indicates a positive relationship between average salary

and performance.

Furthermore, this study examined the possibility of an interactive effect between

DPs and Non-DPs impacting team performance. While the results of this investigation

failed to reject the null hypothesis, these results create an interesting possibility for

future exploration. Utilization of more precise statistical data such as the number of

minutes played for DPs and Non-DPs could present evidence of such an interaction.

From a managerial perspective, the results of this study imply that on-field

success can be improved by increasing the average salary of the team. Furthermore, the

results of the wage dispersion-team performance tests suggest that spreading a few top

quality players across different positions can have a substantial effect on goals for, goals

against, and goal differential. Nonetheless, from a business standpoint, signing a few-

high quality rather than several average players could substantially affect team

revenues. Simple conjecture suggests that signing superstars attracts fans and boosts

revenue, but additional research investigating this relationship may be worth exploring.
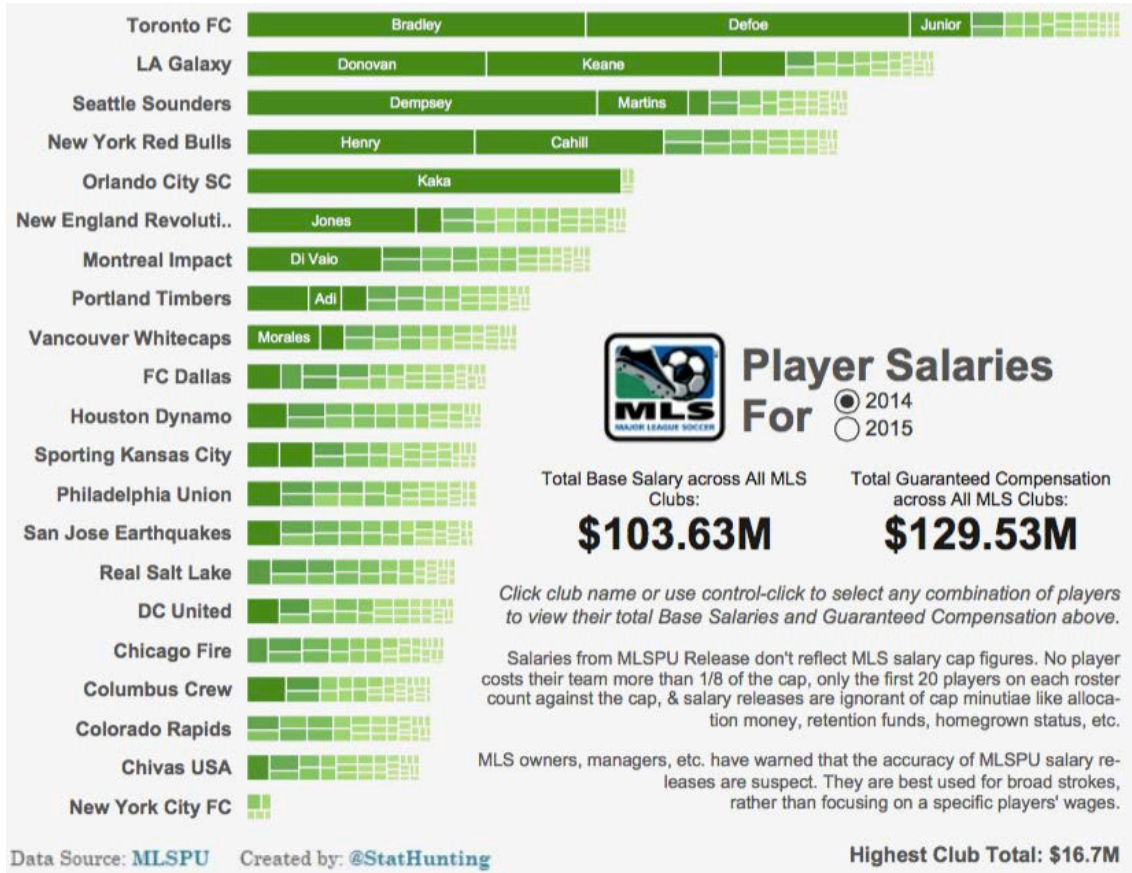
Appendix

Figure 3: 2015 Distribution of Player Salaries

This figure demonstrates the cumulative salaries of the various clubs for the 2015 season. Each of the blocks illustrates the proportionate size of the salary of one player relative to the rest of his team and the salaries of other clubs (Davis, 2015)

Figure 4: 2014 Distribution of Player Salaries

This figure demonstrates the cumulative salaries of the various clubs for the 2014 season. Each of the blocks illustrates the proportionate size of the salary of one player relative to the rest of his team and the salaries of other clubs (Davis, 2015).

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