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# How influential are presidents in club football? A study of Upper Echelons Theory in the highest football division of Spain

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## Abstract

The present thesis examines the 'upper echelons theory' in the highest football division of Spain (*La Liga*). It evaluates panel data of professional football clubs that played in *La Liga* between the 1997/1998 and 2016/2017 seasons, where every club owns a president who is in charge. The main objective of the present thesis is to assess, by means of a three-segment model, whether presidential characteristics predict the performance of clubs within three areas, namely, the club's *on-field* football results, *off-field* recruiting and *off-field* financial results. The six presidential characteristics considered are the presidents' age, nationality, gender, former professional athletic experience, former education and former educational track. The main conclusion is that most presidential characteristics do not show statistical robustness with increased regression specification, thus have limited to no impact on the performance areas. Nevertheless, the presidential characteristics that showed reasonable robustness are whether the president completed a higher education degree and some of the educational tracks. To some extent, these predict better financial performance of *La Liga* football clubs through increased investment of a club's human capital (wage bill). Overall, it cannot be concluded that upper echelons theory is present among the *La Liga* football clubs.



## Key Words

Upper echelons theory, Strategic sports management, Top management, Club performance



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# 1 - Introduction

According to FIFA, approximately 3.5 billion people watched some part of the official coverage of the 2018 FIFA football world cup held in Russia (Vyas & Davis, 2018). Relatedly, the highest football division in Spain (from now on *La Liga*) attracts millions of watchers at the local and global level. In the first half of the 2018-2019 season, *La Liga* had attracted 76 million viewers in Spain only and the match between FC Barcelona and Real Madrid C.F. was the most watched broadcast with just over 2.6 million viewers in Spain only (Lara, 2018). Thus football, an everyday activity practiced by countless individuals globally, has massive social relevance and captures the gaze of millions or even billions around the world. Besides, Evans (2019) argues that football is moving towards the world of big data analysis, and that football data analysts have more significant impact on both football game outcomes and performance of football entities than ever before. Football is becoming a data-driven sport and is being recognized as an attractive research area because, as argued by Zuberoa (2015), the amount of data the football industry generates is huge.

The present research develops analysis within the football industry specific to strategic management. The foundation of this research lies on the 'upper echelons theory' (from now on UET). A theory originally published by Hambrick & Mason (1984) , recognising that top management decisions are influenced by their own experiences, individual values, personalities and other personal characteristics. The UET predicts that personal characteristics of top management affect both strategic choices and performance levels of firms and hence affect organizational outcomes (Hambrick & Mason, 1984). This led to the development of my research question:

*To what extent do personal characteristics of club presidents in La Liga explain performance of Spanish clubs?*

The setting of the present research is *La Liga* because UET research in Spanish football is limited, whereas for other sports and leagues this is not necesarily the case. For example, a study that applies UET to the national basketball association (NBA) argues that personal characteristics of general managers can predict winning and effectiveness of teams (Juravich, Salaga, & Babiak, 2017). Peeters, Salaga & Juravich (2019) indicate

that general managers (top managers of baseball clubs) in major league baseball (MLB) may bring substantial surpluses to a club if they generate positive results because they are relatively cheaper than the star players. Thus, hiring an efficient general manager in the NBA or MLB for better club performance is a noteworthy argument in the UET sports literature, therefore a strong motive for the present research to examine UET in a new setting such as *La Liga*.

Additionally, another motive for the present research to study the existence of UET in a sports league is that the theory has previously demonstrated its validity in diverse other industries. Industries such as logistics (Finkelstein & Hambrick, 1990), accounting and finance (Hiebl, 2014; Plöckinger et al. 2016), information technology (López-Muñoz & Escribá-Esteve, 2017), product innovation (Carpenter, Geletkanycz, & Sanders, 2004) and the family firm context (Tretbar, Reimer, & Schäffer, 2016). Consequently it is of interest to analze if UET applies to *La Liga*.

## 1.1 Theoretical framework

To answer the research question, the present study measures the performance of *La Liga* clubs between the 1997/98 and 2016/17 seasons and then attempts to work back on the underlying presidential characteristics that cause this. From now on, for simplicity, seasons are referred to with the year where the season ends, e.g. season 1997/98 is referred to as 1998, and so forth.

This paper builds a three-segment model as demonstrated in Figure 1. The model is designed to incorporate both *on-field* and *off-field* results because these are fundamental indicators for club success (Pinnuck & Potter, 2006).

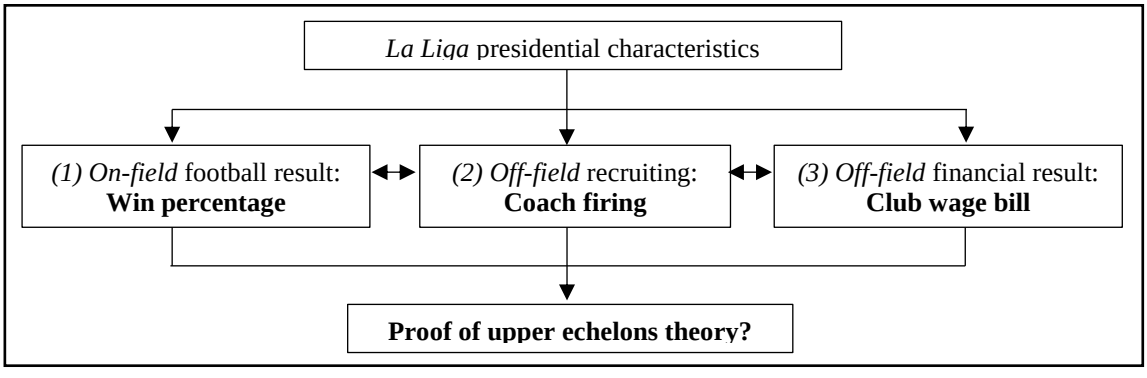


*Figure 1: Illustration of the three-segment model*

On the one hand, *on-field* football results represent all results inside a football pitch, e.g. points obtained in a full season, league place at end of season, goals scored in a season, to name a few. Therefore, the first segment of the model attempts to explain the effect of *La Liga* presidential characteristics on one *on-field* football measure, namely the *La Liga* **win percentage** of Spanish football clubs. Goodall et al. (2011) illustrate that players' past technical attainment in the national basketball association (NBA) influences win percentages when these players become coaches later on in their careers. Their study showed that win percentages are strong predictors of *on-field* results thus is taken as a performance variable for this paper too. Hence, the study of Goodall et al. together with Hambrick & Mason's research on UET are the motives for which the first dependent variable, *La Liga* win percentage, is incorporated to the model.

On the other hand, o*ff-field* encompasses a wider spectrum of outcomes and refer to those results outside a football field, e.g. profits, recruitment of staff, asset value, wages, to name a few. Therefore, the second segment of the model attempts to explain the effect of characteristics of *La Liga* presidents on *off-field* recruiting, namely, whether a coach is **fired or not**. This is the chosen response variable because a coach firing is a visible statistic in that can be influenced by presidents of *La Liga* football clubs. Kleen (2019) explains in a news article that top management of club Indiana Fever (team in the woman national basketball association) had highly influenced the firing of their coach at the time when the team were having positive results. Also, there are other examples where top management did not have clear arguments for the firing of their coaches (Bell, 2007; Wojnarowski, 2019). These examples might suggest that the reason of such coach firings might be explained by some characteristic of top management. So, the second segment of the model in Figure 1 tries to understand whether there are certain presidential characteristics in *La Liga* that explain coach firings. Hambrick & Mason's research on UET together with the aforementioned readings are the motives for which the second dependent variable, coach firing, is incorporated to the model.

Lastly, the third segment of the model attempts to explain the effect of characteristics of *La Liga* presidents on *off-field* financial results, namely the **wage bill** of Spanish football clubs. Financial results (similar to coach firings) are a visible statistic in *La Liga* that might be influenced by a president. Authors Smart & Wolfe (2003) stress the importance of human capital and a good human resource management team because it leads to

financial success of an organization. Besides, a detailed study on the governance model of club FC Barcelona and re-election of their presidents in the 2003-2008 period showed that policy change did not hamper performance at the financial level (Hamil, Walters, & Watson, 2010). These studies explain the importance of both a presidents' ability to manage human capital and the presidents' individual views on policy change. Both studies together with Hambrick & Mason's research on UET are the motives for which the third dependent variable, wage bill, is incorporated to the model.

In this research, the same presidential characteristics are integrated to each of the three segments of the model shown in Figure 1. The **six presidential characteristics** considered are the presidents' age, nationality, gender, former professional athletic experience, former education and former educational track. The arguments to include these specific characteristics are developed next and are backed up by UET literature where these characteristics also appear.

First, the **age** of the president is included because, as other authors argue, age of top management explains organizational results (McClelland & O'Brien, 2011 ; Davidson et al. 1990). Besides, Wiersma & Bantel (1992) conclude that lower average age encourages corporate strategy change and hence firm performance. Second, the **origin** of the president is included because Nielsen, B. & Nielsen, S. (2013) conclude that international top management teams perform better than full domestic teams. Third, the **gender** of the president is included because a study on gender diversity in the board room showed that female participation improved financial performance of firms (Campbell & Mínguez-Vera, 2008). Fourth, **professional sportive experience** is included because as argued by Goodall et al. (2011) an individual that has former high-level playing experience makes their teams perform better that an individual that does not have that experience. Fifth, whether the president completed **higher degree education** is included because, as concluded in several papers, education explains organizational performance results (Goldfarb & Xiao, 2011; Darmadi, 2013; Bertrand & Schoar, 2003). Plus, Wiersma & Bantel (1992) and Darmadi (2013) conclude that higher education encourages corporate strategy change and hence firm performance. Sixth, the **educational track** is included because as Hitt & Tyler (1991) explain in their paper, the education type is relevant (not only the amount of education) because these affect the preferences and beliefs of leaders, and hence affect performance of firms.

Notice that there might be effects between the three performance areas of the three-segment model (Figure 1), several of these effects are explained next. Firstly, Chase & Glickman (2016) discuss that low win percentages are often a reason to fire a coach. Secondly, another example shows that *on-field* football success impacts the *off-field* financial performance of clubs (Pinnuck & Potter, 2006). In another paper, Van Ours & van Tuijl (2016) attempted to explain the effect of coach fires on match results. Finally, other research illustrates that expensive coaches increase club wage bills but also rises expectations (Frick, Barros, & Prinz, 2010). Frick et al. confirm that poor performance very often leads to an immediate dismissal of the coach because of this high expectation.

To avoid the abovementioned effects and any possible omitted variable bias, the regressions of the present research include different controls that are added to each of the segments of the three-segment model. The controls added to the first segment on **win percentage** include the wage bill of Spanish clubs, whether the coach is a former international player[1] and whether the coach played in the big four leagues[2]. The **club wage bill** (in lag form) is the aggregated wage bill of team staff (players and coaches) at season *T-1*[3]. It is added as a control because previous season wage bills are different for every club and hence controls for the talent difference between clubs. Goodall et al. (2011) use a similar method, the authors include relative team payroll to control for talent differences of clubs. Consequently, their method is, similarly, applied here. Moreover, whether the **coach is a former international player** or whether the **coach is a former big four league player** proves a coach's experience and brings positive results to the team. As explained by Goodall et al. (2011) a coach's prior professional playing experience positively affects the win percentage of a club when they become coaches later on. Therefore, these variables are included to control for win percentage differences of *La Liga* clubs.

The controls added to the second segment on **coach firing** include whether the coach of the club is an intern hire, whether the coach played in one of the big four leagues, and a points per million euro wage bill variable. Firstly, firing an external hired employee

[1] Former football player of a national team
[2] Big four leagues: Spain, England, Italy and Germany
[3] The T-1 refers to the season before season T

usually involves higher costs compared to an internally hired one (Bidwell, 2011), thus in *La Liga*, presidents might think twice when making the decision on firing an externally hired coach. Therefore, whether the coach is an **intern hire** is added to control for coach firing differences of clubs. Secondly, according to Goodall et al. (2011) coaches with playing experience at the highest level have better coaching success than coaches with no experience. Presidents might be more lenient when firing experienced coaches in *La Liga* and is the motive why **former big four league player** is added as a control.

Thirdly, the **points per million euro wage bill variable** is a ratio of the previous season total points and the wage bill (in millions). Essentially this variable takes on a similar role than the relative team payroll variable presented in the paper by Goodall et al. (2011) where the authors include the relative payroll variable to control for club talent differences. In this paper the wage bill represents investment in human capital of a *La Liga* club; therefore, the points per million euro wage bill controls for differences in investments of human capital. Considering the ratio, for a million-euro wage bill increase the expected marginal change in points is different for every club. Hence, the points per million euro wage bill variable may affect whether a coach is fired or not because, for instance, clubs with higher expectations will fire their coaches quicker if performance is below expectation. For example, in the 2016 season Barcelona had a 372 million euro wage bill and a 91 point total in *La Liga*. Thus, for every extra million euros Barcelona invests for the 2017 season (on top of their 2016 season wage bill) the *La Liga* total points for Barcelona's 2017 season are expected to increase by ~0.2 points[4]. Conversely, in the 1999 season Celta de Vigo had a 4.5 million euro wage bill and a 60 point total in *La Liga*. Thus, for every extra million euros Celta de Vigo invests for the 2000 season (on top of their 1999 season wage bill) the *La Liga* total points for their 2000 season are expected to increase by ~13.3 points[5]. These examples show a twofold conclusion; certain clubs already have higher performance expectations compared to others, and performance expectations are different across clubs for equivalent increases in human capital. Hence is added as a control variable in segment two of the model.

Finally, the control added to the third segment (the **club wage bill of** *La Liga* clubs) is the **lag of win percentage**. It controls for the win percentage of a club at season T-1.

[4] 'Points per million euro wage bill' Barcelona 2017 = 91pts / 372mil = ~0.2 pts per million euros.
[5] 'Points per million euro wage bill' Celta de Vigo 2000 = 60 pts / 4.5mil = ~13.3 pts per million euros.

Leach & Szymanski (2015) argue that a decrease in talent investment is associated with a fall in win percentage. Thus, a higher season win percentage at season T-1 attracts better performing players and coaches (human capital) for season T. This extra investment in human capital increases the club's wage bill, thus, win percentage in season T-1 is added to control for club wage differences.

# 2 – Data & methodology

## 2.1 Data

To establish a start on the research, data was collected across twenty *La Liga* seasons, from 1998 to 2017. *La Liga* hosts 20 football clubs every season, each club play away and home matches against every team in the competition. As a whole, the dataset contains 400 observations.

By searching for data predominantly on club websites[6] and *transfermarkt* (2019), available statistics on presidential characteristics was collected. Club websites have direct information of their own presidents thus are reliable sources of information. Also, according to German IVW[7] (Schröder, 2010) *transfermarkt* is a reliable source, and a paper by Bryson et al. (2009) states that it provides accurate information. The rest of the data was provided by the Erasmus Centre for Applied Sports Economics (Peeters, 2019). Appendix T1 presents a description of the variables used in this research, these are also clarified next.

To begin with, descriptive statistics for each of the dependant variables of the three-segment model are shown in Table 1. Firstly, the mean **win percentage** of *La Liga* football clubs between the 1998 and 2017 seasons is ~38 percent, with a maximum of ~84 percent (Real Madrid in 2012 & Barcelona in 2013) and a minimum of ~5 percent matches won in a season (Sporting Gijon in 1998). Secondly, Table 1 demonstrates that 134 **coach firings** happened in *La Liga*. This averages to 6.7 fired coaches per season, which results in a seasonal ~34 percent (out of twenty *La Liga* clubs) firing a coach. Thirdly, **club wage bill** of *La Liga* teams is, on average across the 20 seasons, ~44 million euros.

Finally, the model adds club wage bill in the natural logarithm form for better regression results and easier interpretation. As illustrated in Figure 2 the variable *wage* has a clear

[6] See bibliography for club websites: (Club Real Madrid CF, 2019) (Club FC Barcelona, 2019) (Club Atletico de Madrid, 2019) (Club Sevilla FC, 2019) (Club RCD Espanyol, 2019) (Club Villareal CF, 2019) (Club Valencia CF, 2019) (Club Real Betis, 2019) (Club Athletic Bilbao, 2019) (Club Real Sociedad, 2019) (Club RC Deportivo, 2019) (Club Malaga CF, 2019) (Club Celta de Vigo, 2019) (Club Cadiz CF, 2019) (Club Sporting Gijon, 2019) (Club Granada, 2019) (Club Atletico Osasuna, 2019) (Club RCD Mallorca, 2019 ) Other clubs presidential data from (Wikipedia, 2019).

[7] German "information community for the assessment of the circulation of media"

| VARIABLES | (1) Number of observations | (2) Freq. (binary) | (3) Mean | (4) Standard Deviation | (5) Minimum value | (6) Maximum value |
|---|---|---|---|---|---|---|
| Seasons | 397 | | | | 1998 | 2017 |
| **Dependent variables** | | | | | | |
| *On-field:* win percentage | 397 | | 37.58 | 14.3 | 5.26 | 84.21 |
| *Off-field:* coach fired in season (=1, otherwise=0) | 397 | 134 | 0.34 | 0.5 | 0 | 1 |
| *Off-field:* club wage bill (million euros) | 376 | | 43.69 | 60.4 | 4.01 | 406.1 |
| **President characteristics** | | | | | | |
| Age | 373 | | 54.7 | 8.9 | 34 | 74 |
| Spanish (=1, otherwise=0) | 393 | 372 | 0.95 | 0.2 | 0 | 1 |
| Male (=1, female=0) | 397 | 387 | 0.98 | 0.2 | 0 | 1 |
| Professional sports athlete (=1, otherwise=0) | 397 | 47 | 0.12 | 0.3 | 0 | 1 |
| Followed higher degree education (=1, otherwise=0) | 354 | 242 | 0.68 | 0.5 | 0 | 1 |
| **Educational track presidents** | | | | | | |
| Not follow higher degree education (=1, otherwise=0) | 349 | 107 | 0.31 | 0.5 | 0 | 1 |
| Business / Economics (=1, otherwise=0) | 349 | 127 | 0.36 | 0.5 | 0 | 1 |
| Law (=1, otherwise=0) | 349 | 62 | 0.18 | 0.4 | 0 | 1 |
| Engineering / Real-estate (=1, otherwise=0) | 349 | 30 | 0.09 | 0.3 | 0 | 1 |
| Rest (=1, otherwise=0) | 349 | 21 | 0.07 | 0.2 | 0 | 1 |
| **Control variables** | | | | | | |
| [Lag] Wage bill at season T-1 | 359 | | 41.17 | 55.4 | 4.51 | 371.7 |
| Coach former international player (=1, otherwise=0) | 397 | 172 | 0.43 | 0.5 | 0 | 1 |
| Coach former player big 4 leagues (=1, otherwise=0) | 394 | 239 | 0.61 | 0.5 | 0 | 1 |
| Coach is an intern hire (=1, otherwise=0) | 373 | 104 | 0.28 | 0.4 | 0 | 1 |
| Points per million euro wage bill | 310 | | 2.52 | 1.9 | 0.24 | 13.29 |
| Win percentage (lag) | 321 | | 40.35 | 13.2 | 18.42 | 84.21 |
| **Variables in natural logarithm form** | | | | | | |
| [Log] Club wage bill | 376 | | 17.09 | 0.9 | 15.21 | 19.82 |
| [Log] Club wage bill at season T-1 | 359 | | 17.04 | 0.9 | 15.32 | 19.73 |
| [Log] Points per million euro wage bill | 310 | | 0.66 | 0.8 | -1.41 | 2.59 |

*Table 1 : Descriptive statistics for variables of this paper*

right skew and the scale takes very high values, whereas the variable *log_wage* (Figure 3) follows a more normal distribution and controls for extreme values because the scale is more condensed.

Furthermore, the statistics for the six presidential characteristics are shown in Table 1. The average **age** of presidents is ~55 years, the youngest president was 34 years old at the time of his administration and the oldest was 74. Correspondingly, there are 372 **Spanish** president observations and 21 non-Spanish; 387 **male** observations and 10 female observations; 47 observations for presidents that are **former professional athletes** and 350 that are not; 242 observations for presidents that followed **higher degree education** and 112 observations for presidents that did not. The **educational track** of

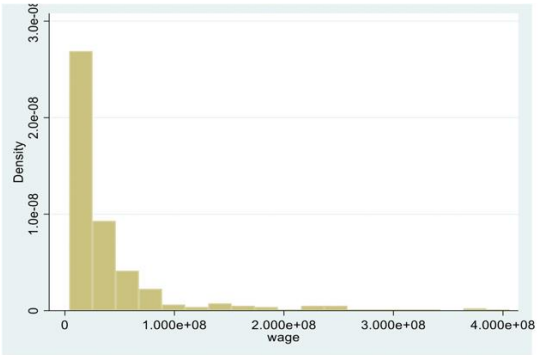


*Figure 2: Absolute wage bill levels for La Liga clubs*

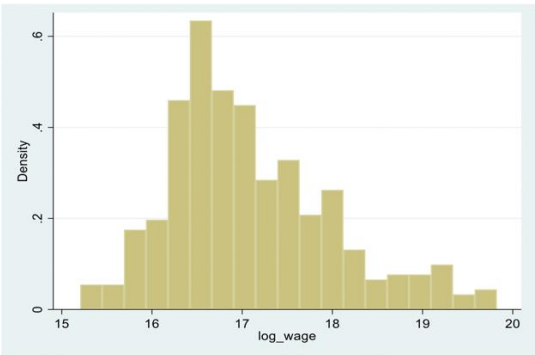


*Figure 3: Logarithm of wage bill levels for La Liga clubs*

presidents in Table 1 illustrates 107 observations for presidents that did not follow a higher degree education (~31%), 127 educational track observations in business or economics (~36%), 62 in law (~18%), 30 in engineering or real estate (~9%), and 21 in the rest category[8] (~7%). Besides, out of all the presidential characteristics notice that the variable whether a president followed higher degree education and the variables for the educational tracks have the lowest number of observations (see column 1 of Table 1). This is because information on education is usually less evident and accessible compared to, for example, gender or nationality. Also, data on whether a president is a former professional athlete is more complete (397 observations) than, for example, whether the president is educated (354 observations) because professional sport athletes are well-known and therefore is a more visible statistic than education.

Moreover, data could not be found for three presidents, these are presidents of Compostela and Merida for the 1998 season, and the president of CF Extremadura for the 1999 season. Compostela was reorganized in 2004, CF Extremadura and Merida were dissolved in 2010 and 2013 respectively, this might explain the absence of data. These three observations were dropped from the dataset.

Firstly, as mentioned earlier, the controls for the first segment of the model include the lag of wage, whether the coach is a former international player and whether the coach played in the big four leagues. Table 1 shows that *La Liga* clubs on average have a **wage bill** of ~41 million euros in season T-1, with a maximum of ~372 million euros (Barcelona in 2017) and a minimum of ~4.5 million euros (Celta de Vigo in 1999). Notice that Table 1 displays a minimum wage bill of ~4 million euros (Villareal in 1999) whereas the minimum *lag* wage bill is ~4.5 million euros (Celta de Vigo in 1999). Villareal did not play the 2000 season because they relegated in 1999 so the ~4 million euros are not included in the *lag* wage bill variable. Plus, there are no figures lower than ~4.5 million euros for the *lag* wage bill. This explains the higher value for the minimum *lag* wage bill compared to the wage bill. Moreover, 172 observations (~43%) record coaches that have **former international playing experience** and 225 observations (~57%) that do not have this experience. Lastly, 239 observations (~61%) record coaches that have **former**

[8] Due to small amount of observations these were comprised together to the rest category, it includes 14 educational track observations in cinematography, 6 in medicine and 3 in physics.

**playing experience in the big four leagues** and 155 observations (~39%) that do not have this experience.

Secondly, the controls for the second segment of the model (coach firings) include whether the coach of the club is an intern hire, whether the coach played in one of the big four leagues, and the points per million euro wage bill variable. Table 1 shows that 104 observations (~28%) record coaches that are intern hires and 269 observations (~72%) that are externally hired. The statistics on coaches that have former playing experience in the big four leagues was shown previously. Lastly, the points per million euro wage bill variable shows that, on average, clubs in *La Liga* gain 2.5 points for every million euros invested on top of their wage bill at season T-1. The points per million wage bill takes the natural logarithm form[9].

Finally, the control for the third segment of the model is the lag of win percentage. Table 1 shows that clubs in *La Liga*, on average, win 40% of their games in season T-1. With a maximum of ~84 percent (Real Madrid in 2012 & Barcelona in 2013) and a minimum of ~18 percent in season T-1 (Malaga in 2011 & Granada and Deportivo la Coruña in 2016).

## 2.2 Methodology

Segments one (win percentage) and three (club wage bill) have continuous dependent variables therefore linear regression models estimate the results by means of OLS. Segment two however, has a binary dependant variable (coach firing) hence a regression model estimates the results by means of a linear probability model (LPM). The LPM is chosen over logistical regression because this paper is looking for constant marginal effects of the explanatory variables rather than predictions for the dependant variable coach firing.

Following is the empirical setup for the three performance segments. The full model takes the following production-function approach:

$$\Upsilon_{ct} = \beta_0 + \beta_k X_{k,c} + \theta_n \mathrm{Z}_{n,c} + clubFE + seasonFE + \varepsilon_{ct}$$

Full regression (Equation 1)

[9] As explained previously in Figure 2 and 3, the natural logarithm form follows a more normal distribution and controls for extreme values

Where for each club c and season t, there is a dependant variable $\Upsilon$, $\beta_0$ is the constant for the regressions, independent variables X are the $k$ number of presidential characteristics with $\beta$ coefficients, variables $Z$ are the $n$ number of controls with $\theta$ coefficients, and $\varepsilon$ the error term. Club fixed effects (*clubFE*) and season fixed effects (*seasonFE*) are also added to the regressions.

Club and season fixed effects are important to include because these control for club or season invariant variables that affect the outcomes of the regressions. For example, the lowest wage bill of the dataset is Villareal's 1999 season wage bill of 4 million euros whereas in that same 1999 season the highest wage bill was that of Real Madrid (71.5 million euros). Conversely, the highest wage bill of the dataset is Real Madrid's 2017 season wage bill of 406 million euros whereas in the same 2017 season the lowest wage bill was that of Leganes (13.3 million euros). These figures illustrate considerable wage bill differences between clubs and seasons. Therefore, there might be other constant factors that increase wage bills of specific clubs and must be controlled for with club fixed effects. Alternatively, season fixed effects must be included to control for these differences because there might be some constant factor that increases wage bills over time. Club and season fixed effects are added to all segments.

Each segment of the three-segment model runs eight regressions. First, the standard regression predicts the effect of $k$ number of presidential characteristics on *on-field* football results. Second, the regression with controls predicts the previous standard regression and includes $n$ number of control variables. Third, club fixed effects are included to the previous regression. Fourth, season fixed effects are included to the previous regression and completes the full model of Equation 1. These first four regressions include a dummy variable for whether the president followed a higher educational degree. The last four regressions follow the same procedure but include a categorical variable for the educational track of presidents. This whole method is replicated for all three segments of the three-segment model. Thus, in total 24 regressions are ran (eight per segment) and these are analysed next. Lastly, for all regressions robust standard errors are applied to tackle the feasible presence of heteroskedasticity in the regression variables, which is usually the case for linear probability models (Wooldridge, 2012). Hence, it is an effort to be conservative in the estimations.

# 3 – Empirical results

Following are the empirical results for the segments of the three-segment model. Section 3.1 describes results for *on-field* club win percentages, section 3.2 for *off-field* coach firings, and section 3.3 for *off-field* club wage bills. The text follows the results of the tables (displayed in columns) in an ordered manner. Ex-post tests are described at the end of each section.

## 3.1 On-field football results

For the *on-field* football results the variable of interest is the *La Liga* win percentage. The estimates of the OLS regressions are shown in Table 2.

The first column of Table 2 displays the regression results of the standard model. Controls, club and season fixed effects are not accounted for here. Results show that the variables whether the president is Spanish (1% significance level), is male (1% significance level) or has a higher degree education (1% significance level) increase the win percentage of a club correspondingly by ~6, ~10, and ~7 percentage points[10], all other factors fixed. Also, if the president is a former professional athlete the win percentage of the club is expected to, all other factors fixed, decrease by ~6 percentage points, significant at the 1% level. In other words, a club who hires a president who is a former professional athlete would have ~2.1 wins[11] less within a season compared to a club that did not. Some of these results appear surprising, therefore a deeper analysis is performed because there is a chance that these results are spurious due to coincidental relationships, or it might be that a third unknown variable that is not accounted for might be biasing the outcome. In either case the model for win percentage is extended to control for these possible biases.

The second column of Table 2 displays regression results with controls. Presidential characteristics such as if the president is male or completed a higher degree education are not significant anymore. This regression does suggest that a Spanish president, all other

[10] Important remark. An increase of win percentage by 6.3 percentage points means the win percentage increases by 6.3 (e.g. from 50% to 56.3%, or, from 35% to 41.3%).
[11] Calculation: Each club plays 38 games in a *La Liga* season multiplied by the 5.6 decrease. Or, 0.056*38 = 2.128

| VARIABLES | (1) Win Percentage (Standard) | (2) Win Percentage (Controls) | (3) Win Percentage (Club FE) | (4) Win Percentage (FE-Full) | (5) Win Percentage (Standard) | (6) Win Percentage (Controls) | (7) Win Percentage (Club FE) | (8) Win Percentage (FE-Full) |
|---|---|---|---|---|---|---|---|---|
| Pres. Age | 0.00 | -0.09 | -0.11 | -0.14* | -0.05 | -0.08 | -0.12 | -0.14* |
| | (0.09) | (0.07) | (0.10) | (0.08) | (0.09) | (0.07) | (0.09) | (0.07) |
| Pres. Spanish | 6.26*** | 7.37*** | 12.84*** | 10.61*** | 4.25* | 7.10*** | 11.60*** | 9.97*** |
| | (2.34) | (2.28) | (1.90) | (2.12) | (2.29) | (2.30) | (2.05) | (2.23) |
| Pres. Male | 9.67*** | 2.55 | -3.81 | -6.22 | 7.75*** | 2.61 | -2.87 | -5.17 |
| | (2.90) | (3.27) | (5.19) | (5.22) | (2.81) | (3.33) | (5.26) | (5.45) |
| Pres. Former prof. athlete | -5.63*** | -5.02** | -5.74** | -2.28 | -5.46** | -4.89** | -5.30** | -2.19 |
| | (2.16) | (2.12) | (2.78) | (2.28) | (2.14) | (2.12) | (2.58) | (2.16) |
| Business_Economics (Pres.Educ track) | | | | | 5.13*** | 0.97 | -3.39* | -3.00* |
| | | | | | (1.62) | (1.52) | (1.83) | (1.58) |
| Law (Pres.Educ track) | | | | | 8.87*** | 1.99 | -0.41 | -0.03 |
| | | | | | (2.12) | (1.80) | (2.93) | (2.41) |
| Engineering_RealEstate (Pres.Educ track) | | | | | 17.16*** | 2.37 | 2.25 | 0.42 |
| | | | | | (3.59) | (2.44) | (3.50) | (2.83) |
| Rest (Pres.Educ track) | | | | | 8.30** | -0.87 | 0.37 | 1.38 |
| | | | | | (3.38) | (2.62) | (2.32) | (3.74) |
| Pres. Educated | 6.99*** | 1.05 | -2.30 | -2.14 | | | | |
| | (1.41) | (1.36) | (1.77) | (1.67) | | | | |
| Lag of wage (Log) | | 11.10*** | 10.75*** | 14.29*** | | 10.95*** | 9.84*** | 13.58*** |
| | | (0.73) | (1.32) | (1.11) | | (0.76) | (1.34) | (1.26) |
| Coach former international player | | 3.13** | 3.95** | 2.79* | | 3.00** | 3.49* | 2.36 |
| | | (1.33) | (1.58) | (1.51) | | (1.35) | (1.75) | (1.55) |
| Coach former player of one of big 4 leagues | | -3.54*** | -3.08* | -1.59 | | -3.41** | -2.83* | -1.42 |
| | | (1.33) | (1.58) | (1.52) | | (1.35) | (1.63) | (1.63) |
| Constant | 19.09*** | -154.36*** | -144.46*** | -188.89*** | 24.96*** | -152.75*** | -128.84*** | -177.78*** |
| | (6.48) | (13.29) | (25.34) | (18.81) | (5.97) | (13.76) | (25.95) | (20.92) |
| Observations | 350 | 319 | 319 | 319 | 345 | 316 | 316 | 316 |
| R-squared | 0.100 | 0.554 | 0.367† | 0.449† | 0.155 | 0.555 | 0.377† | 0.455† |
| Club FE | No | No | Yes | Yes | No | No | Yes | Yes |
| Season FE | No | No | No | Yes | No | No | No | Yes |
| Educ_Dummy | Yes | Yes | Yes | Yes | No | No | No | No |
| Educ_Category | No | No | No | No | Yes | Yes | Yes | Yes |
| Number of intid | | | 38 | 38 | | | 38 | 38 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1 † Within R-squared

*Table 2 : Regression results for La Liga win percentages of Spanish football clubs between seasons 1998 -2017*

factors fixed, increases win percentage of a club by ~7 percentage points (1% significance level) and on the contrary displays that a president who is a former professional athlete decreases win percentage by ~5 percentage points (5% significance level).

Furthermore, the controls for the second column show statistical significance. The lag of the club's wage bill shows that clubs with higher wage bills in season *T-1* tend to have higher win percentages in season *T*, the result is significant at the 1% level. For example, a club winning one extra match represents a 2.63 percentage point increase in win percentage[12]. On average in *La Liga*, for a club to achieve this 2.63 percentage point increase it should increase its wage bill at season *T-1* by ~27 percent[13], all other factors fixed (1% significance level). In other words, all other factors being equal, the club that invests ~27 percent in their wage bill at season *T-1* gains an extra win at season *T*. Besides, whether the coach is a former international player increases the win percentage by ~3 percentage points (5% significance level) or whether the coach is a former player of one

[12] Calculation: 1/38 = 0.0263; clubs play 38 games over the season.
[13] Calculation: Lag of wage is in the natural logarithm form, so it is exponentiated:
Exp (one extra win / coefficient lag_of_wage) = Exp (2.63/ 11.1) = 1.27

of the big four leagues decreases win percentage by ~4 percentage points (1% significance level).

The results of the second column in Table 2 might still contain bias, for example there might be club or time invariant variables in the error term that correlate with any of the independent variables in the regression of the second column. Therefore, to try to avoid this problem and attempt to proof that the model is robust to changes in model specification, the regression results of the third and fourth columns control for club and season invariant variables.

The third column of Table 2 displays regression results with club fixed effects. Results in column 3 suggest that, all other factors fixed, if the president is Spanish win percent increases by ~13 percentage points (1% significance level) and if the president is a former professional athlete decreases win percent by ~6 percentage points (5% level). Besides, similar results to column 2 are displayed for the control. All other variables constant, for a ~28 percent higher wage bill of a club at season *T-1* the given club at season *T* achieves one extra win[14] (1% significance level), whether the coach is a former international player win percentage increases by ~4 percentage points (5% significance level), and whether the coach is a former player of one of the big four leagues decreases win percentage by ~3 percentage points (10% significance level).

Column 4, the full model with club and season fixed effects, present similar coefficients and significance levels than the regression in column 3. All other variables constant, whether a president is Spanish win percentage increases by ~11 percentage points (1% significance level). Moreover, all other factors being equal, for a ~28 percent higher wage bill of a club at season *T-1* the given club at season *T* achieves one extra win[15] (1% significance level), and whether the coach is a former international player win percentage increases by ~3 percentage points (10% significance level).

Furthermore, the four regressions in Table 2 with educational track as a categorical variable (columns 5-8) are slightly more extended versions of the previous four regressions. Notice that, similarly to columns 1-4, the within r-square of columns 7

[14] Exp (2.63/10.75) = 1.28 / See footnote 13 for explanation
[15] Exp (2.63/14.29) = 1.20 / See footnote 13 for explanation

(~0.38) and 8 (~0.46) are lower than the r-square of column 6 (~0.56) because of the added club and season fixed effects constraints to the model.

The results for the standard model in column 5 show that, all other factors fixed, for presidents that are either Spanish (10% significance level) or male (1% significance level) win percent for those club increase by ~4 and ~8 percentage points respectively. Whereas, for clubs that presidents are former professional athletes the win percentage, all other factors being equal, decreases by ~5.5 percentage points (5% significance level). Moreover, column 5 predicts that higher win percentages are achieved by clubs with presidents who, all other factors fixed, studied higher degree business or economics, law, engineering or real estate (1% significance levels), and tracks of the rest category (5% significance level), compared to clubs with non-educated presidents (reference category). The results for the standard model show significant values however this regression has too little constraints to draw conclusions thus must be analysed further.

The sixth column of Table 2 displays regression results with controls. When controls are added to the regression results of column 6, results show that, all other variables fixed, a president that is Spanish increases win percentage by ~7 percentage points (1% significance level), or a president that is a former professional athlete decreases win percentage by ~5 percentage points (5% significance level). Besides, explanatory variables that lose significance are whether a president is male, studied higher degree business or economics, law, engineering or real estate, and tracks of the rest category. The results for the control variables show that, all other variables fixed, for a ~27 percent higher wage bill of a club at season *T-1* the given club at season *T* achieves one extra win[16] (1% significance level), whether the coach is a former international player win percentage increases by ~3 percentage points (5% significance level), and whether the coach is a former player of one of the big four leagues decreases win percentage by ~3 percentage points (5% significance level).

The seventh column of Table 2 displays regression results with club fixed effects. Results of column 7 show that, all other variables constant, a president that is Spanish increases win percentage by ~12 percentage points (1% significance level), or a president that is a

[16] Exp (2.63/10.95) = 1.27 / See footnote 13 for explanation

former professional athlete decreases win percentage by ~5 percentage points (5% significance level). Also, predictions show that win percent decreases by ~3 percentage points (10% significance level) for presidents who studied higher degree business or economics compared to the reference group non-educated presidents, all other factors being equal. Additionally, the results for the control variables show that, all other variables fixed, for a ~31 percent higher wage bill of a club at season *T-1* the given club at season *T* achieves one extra win[17] (1% significance level), whether the coach is a former international player or is a former player of one of the big four leagues results are the same as column 6 but are statistically less significant.

Lastly, the eighth column of Table 2 displays regression results with club and season fixed effects (full model). Results of column 8 show that, all other variables constant, a president that is Spanish increases win percentage by ~10 percentage points (1% significance level). Also, a president that studied higher degree business or economics decreases win percent by ~3 percentage points (10% significance level), compared to the reference group non-educated presidents. The results for the control variables show that, all other variables fixed, for a ~21 percent higher wage bill of a club at season *T-1* the given club at season *T* achieves one extra win[18] (1% significance level).

Overall, these regression results show that most presidential characteristics are not robust to changes in the specification of the regressions because most statistical significance of variables changes inconsistently. Particularly whether the president completed a higher degree education or the educational track fail to show significance in the models with controls and fixed effects, these only showed strong results in the standard models. Whereas the variable for Spanish presidents does show full robustness throughout the regressions and whether the president is a former professional athlete showed reasonable robustness. However, there is a caveat which concerns the validity of these results. Non-Spanish presidents and former non-athlete presidents take only ~5 and ~11 percent of the observations respectively. Therefore, certain conclusions about these cannot be made.

[17] Exp (2.63/9.84) = 1.31 / See footnote 13 for explanation
[18] Exp (2.63/13.58) = 1.21 / See footnote 13 for explanation

Finally, an ex-post Hausman specification test[19] is ran to asses club fixed effects. For the Hausman test the null hypothesis is that the preferred model is random effects versus the alternative, fixed effects. The test results show that for both regressions, education as a dummy variable and educational track as a categorical variable, the p-values are under 0.00. The null hypothesis is rejected thus the regressions include the correct model specification. Moreover, an ex-post F-test[20] is ran to asses season fixed effects. For the F-test the null hypothesis is that all seasons are jointly equal to zero versus the alternative, were the null fails to hold. The test results show that for both regressions, education as a dummy variable and educational track as a categorical variable, p-values are under 0.00. The null hypothesis is rejected thus regressions include the correct model specification.

## 3.2 Off-field recruiting

For *off-field* recruiting results the variable of interest is coach firings and the estimates of the LPM regressions are shown in Table 3. The standard model (column 1) shows no statistical significance for any of the variables on presidential characteristics. The intercept, 0.45 (10% significance level), is the predicted probability of a coach being fired given all other variables are set to zero. In other words, the predicted probability of a coach being fired in *La Liga* is 45 percent given all other factors are set to zero. For columns 2-4 there are some variables that take significant values (e.g. whether the president is a former professional athlete or followed a higher education degree). However, since the standard model is insignificant, the results for columns 2-4 are not looked at any further.

The fifth column of Table 3 displays regression results of the standard model and includes variables for the educational track of presidents. The standard model in column 5 shows that, all other variables fixed, if a president is a former professional athlete the probability of the coach being fired increases by 16 percentage points (10% significance level). Also, all other factors being equal, if the president studied a track of the rest category it increases the probability of the coach being fired by 20 percentage points (10% significance level). Additionally, the constant implies that, setting all variables equal to zero, the predicted

[19] Also known as Durbin-Wu-Hausman test
[20] Command “testparm i.season” in Stata

| VARIABLES | (1) Recruting (Standard) | (2) Recruting (Controls) | (3) Recruting (Club FE) | (4) Recruting (FE-Full) | (5) Recruting (Standard) | (6) Recruting (Controls) | (7) Recruting (Club FE) | (8) Recruting (FE-Full) |
|---|---|---|---|---|---|---|---|---|
| Pres. Age | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) |
| Pres. Spanish | -0.19 | -0.06 | -0.09 | -0.09 | -0.19 | -0.04 | -0.03 | -0.05 |
| | (0.11) | (0.12) | (0.18) | (0.17) | (0.11) | (0.12) | (0.18) | (0.19) |
| Pres. Male | -0.15 | -0.24 | -0.12 | -0.09 | -0.16 | -0.24 | -0.15 | -0.13 |
| | (0.15) | (0.20) | (0.23) | (0.25) | (0.15) | (0.20) | (0.24) | (0.26) |
| Pres. Former prof. athlete | 0.15 | 0.15 | 0.27* | 0.32* | 0.16* | 0.14 | 0.24 | 0.30 |
| | (0.09) | (0.11) | (0.16) | (0.18) | (0.09) | (0.11) | (0.16) | (0.18) |
| Business_Economics (Pres.Educ track) | | | | | 0.04 | 0.12 | 0.29** | 0.29** |
| | | | | | (0.07) | (0.08) | (0.11) | (0.13) |
| Law (Pres.Educ track) | | | | | 0.02 | -0.00 | 0.15 | 0.15 |
| | | | | | (0.08) | (0.09) | (0.16) | (0.21) |
| Engineering_RealEstate (Pres.Educ track) | | | | | 0.02 | 0.09 | 0.08 | 0.08 |
| | | | | | (0.10) | (0.12) | (0.19) | (0.24) |
| Rest (Pres.Educ track) | | | | | 0.20* | 0.23* | 0.19 | 0.29 |
| | | | | | (0.12) | (0.14) | (0.39) | (0.36) |
| Pres. Educated | 0.06 | 0.10 | 0.25** | 0.27** | | | | |
| | (0.06) | (0.07) | (0.11) | (0.13) | | | | |
| Points per million euro wage bill (log) | | 0.07* | 0.06 | 0.05 | | 0.06 | 0.03 | -0.01 |
| | | (0.04) | (0.08) | (0.07) | | (0.04) | (0.08) | (0.10) |
| Coach is an intern hire | | -0.01 | -0.07 | -0.12 | | -0.03 | -0.11 | -0.15* |
| | | (0.07) | (0.07) | (0.08) | | (0.07) | (0.07) | (0.07) |
| Coach former big 4 league player | | -0.03 | -0.02 | -0.01 | | -0.04 | -0.02 | -0.00 |
| | | (0.06) | (0.08) | (0.08) | | (0.06) | (0.08) | (0.08) |
| Constant | 0.45* | 0.40 | 0.17 | 0.29 | 0.51** | 0.51* | 0.20 | 0.42 |
| | (0.24) | (0.28) | (0.41) | (0.41) | (0.25) | (0.30) | (0.42) | (0.44) |
| Observations | 350 | 265 | 265 | 265 | 345 | 262 | 262 | 262 |
| R-squared | 0.021 | 0.030 | 0.041† | 0.093† | 0.029 | 0.042 | 0.050† | 0.102† |
| Club FE | No | No | Yes | Yes | No | No | Yes | Yes |
| Season FE | No | No | No | Yes | No | No | No | Yes |
| Educ_Dummy | Yes | Yes | Yes | Yes | No | No | No | No |
| Educ_Category | No | No | No | No | Yes | Yes | Yes | Yes |
| Number of intid | | | 34 | 34 | | | 34 | 34 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1 † Within R-squared

*Table 3 : Regression results for coach firings of Spanish football clubs between seasons 1998 – 2017*

probability of the coach being fired is 51 percent for *La Liga* clubs (5% significance level). The results for the standard model show fair significant values however has too little constraints to draw conclusions, therefore must be analysed further.

The sixth column of Table 3 displays regression results of the standard model and includes the control for points per million euro wage bill. Similarly to column 5, the results in column 6 show that, all other variables constant, if the president studied a track of the rest category it increases the probability of the coach being fired by 23 percentage points (10% significance level) compared to the reference group non-educated presidents, and, setting all variables equal to zero, the predicted probability of the coach being fired is 51 percent (10% significance level). Moreover, the variable whether the president is a former professional athlete loses significance compared to column 5.

The seventh and eighth columns show results for the regressions with club and season fixed effects. The variable whether a president studied a track of the rest category is not significant anymore. The variable that shows some significance is whether the president studied business or economics. However, for the business economics educational track

the coefficients were insignificant in the standard model of column 5, therefore these results are not looked at any further.

The controls show little to no significance for columns 2-4 and 6-8. The points per million euro wage bill control only showed significance at the 10% level when included in column 2. This result illustrates that, all other variables fixed, for each additional million euro invested in a *La Liga* club wage bill (relative to total league points), the probability of a coach being fired increases, on average, by 7 percentage points (10% significance level). In other words, since increments in wage bill investment raises expectations, clubs in *La Liga* perform, on average, below their expectation levels. Therefore, there is a higher change of coaches being fired if they do not perform according to club expectations. For the remaining regressions, the point per million euro wage bill control loses significance. Furthermore, notice all coach firing regressions have lower r-squared results (ranging between 0.02 and 0.1) than regressions in segments 1 and 3 of the model (where dependent variables are continuous). This lower r-squared is usually the case for LPM models because the dependant variable is binary (it takes values of 0 or 1) and therefore a linear model fits the data less accurately. However, as explained before, the LPM model is chosen because this paper is looking for constant marginal effects of the explanatory variables rather than predictions for the dependant variable coach firing.

Overall these results show sporadic significance levels for the presidential characteristics on coach firing, it seemed like the tracks of the rest category carried some significance, however lost significance for the models with club and season fixed effects. Conclusions of the effect of presidential characteristics on coach firing cannot be drawn.

Finally, an ex-post Hausman specification test is ran to asses club fixed effects. For the Hausman test the null hypothesis is that the preferred model is random effects versus the alternative, fixed effects. The test results show that for both regressions, education as a dummy variable and educational track as a categorical variable, p-values are 0.7 and 0.8 respectively. These are higher than the 0.05 standard p-value, the null hypothesis is not rejected thus the regressions have model misspecification. Moreover, an ex-post F-test is ran to asses season fixed effects. For the F-test the null hypothesis is that all seasons are jointly equal to zero versus the alternative, were the null fails to hold. The test results show that for both regressions, education as a dummy variable and educational track as a

categorical variable, p-values are over the standard 0.05. The null hypothesis is not rejected thus regressions have model misspecification.

## 3.3 Off-field financial

For the *off-field* financial results section, the variable of interest is the wage bill of football clubs (in log form). The estimates of the OLS regressions are shown in Table 4.

The first column of Table 4 displays the regression results of the standard model; controls, club and season fixed effects are not accounted for here. Results show no significance for variables age of a president, whether the president is Spanish, male, or is a former professional athlete. However, results do show that, all other variables constant, for clubs where the president completed a higher education degree the wage bill is 61 percentage points[21] higher (1% significance level) compared to clubs where presidents did not. This result on education seems large, therefore the model for win percentage is extended to control for a possible bias in the result of the education variable.

| VARIABLES | (1) Log wage (Standard) | (2) Log wage (Controls) | (3) Log wage (Club FE) | (4) Log wage (FE-Full) | (5) Log wage (Standard) | (6) Log wage (Controls) | (7) Log wage (Club FE) | (8) Log wage (FE-Full) |
|---|---|---|---|---|---|---|---|---|
| Pres. Age | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 |
| | (0.01) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) |
| Pres. Spanish | -0.07 | -0.32 | -0.99*** | -0.54** | -0.23 | -0.39* | -1.03*** | -0.56** |
| | (0.25) | (0.24) | (0.19) | (0.23) | (0.23) | (0.23) | (0.19) | (0.22) |
| Pres. Male | 0.43 | -0.09 | 0.21 | 0.22 | 0.30 | -0.12 | 0.28 | 0.27** |
| | (0.39) | (0.41) | (0.31) | (0.16) | (0.35) | (0.38) | (0.25) | (0.12) |
| Pres. Former prof. athlete | 0.01 | 0.26** | 0.17 | -0.16 | 0.03 | 0.25* | 0.25 | -0.10 |
| | (0.12) | (0.13) | (0.20) | (0.19) | (0.13) | (0.14) | (0.23) | (0.19) |
| Business_Economics (Pres.Educ track) | | | | | 0.42*** | 0.22** | 0.29* | 0.17 |
| | | | | | (0.11) | (0.10) | (0.16) | (0.14) |
| Law (Pres.Educ track) | | | | | 0.76*** | 0.34*** | 0.53** | 0.41* |
| | | | | | (0.12) | (0.11) | (0.20) | (0.20) |
| Engineering_RealEstate (Pres.Educ track) | | | | | 1.38*** | 0.61*** | 0.98*** | 0.89*** |
| | | | | | (0.21) | (0.14) | (0.19) | (0.19) |
| Rest (Pres.Educ track) | | | | | 0.75*** | 0.50*** | 0.52* | 0.25 |
| | | | | | (0.19) | (0.15) | (0.27) | (0.22) |
| Pres. Educated | 0.61*** | 0.30*** | 0.42*** | 0.25 | | | | |
| | (0.09) | (0.08) | (0.14) | (0.15) | | | | |
| Win percentage (lag) | | 0.05*** | 0.03*** | 0.03*** | | 0.05*** | 0.03*** | 0.02*** |
| | | (0.00) | (0.00) | (0.00) | | (0.00) | (0.00) | (0.00) |
| Constant | 15.90*** | 15.30*** | 15.80*** | 15.15*** | 16.33*** | 15.59*** | 15.97*** | 15.42*** |
| | (0.54) | (0.46) | (0.52) | (0.45) | (0.49) | (0.45) | (0.46) | (0.37) |
| Observations | 333 | 277 | 277 | 277 | 328 | 272 | 272 | 272 |
| R-squared | 0.110 | 0.561 | 0.491† | 0.647† | 0.195 | 0.578 | 0.550† | 0.711† |
| Club FE | No | No | Yes | Yes | No | No | Yes | Yes |
| Season FE | No | No | No | Yes | No | No | No | Yes |
| Educ_Dummy | Yes | Yes | Yes | Yes | No | No | No | No |
| Educ_Category | No | No | No | No | Yes | Yes | Yes | Yes |
| Number of intid | | | 34 | 34 | | | 34 | 34 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1 † Within R-squared

*Table 4: Regression results for total wage bill (log form) of Spanish football clubs between seasons 1998 – 2017*

[21] In a log-level model the coefficient has a percentage interpretation when it is multiplied by 100.

The second column of Table 4 displays regression results with the win percentage control. The regression results illustrate that, all other factors being equal, for clubs where the president completed a higher education degree the wage bill is 30 percentage points higher (1% significance level) compared to clubs where presidents did not complete a higher degree education. Notice that this result has halved compared to column 1 because the control of win percentage is included. Besides, the win percentage at season T-1 shows statistical significance at the 1% level. All other variables fixed, for every additional win percentage point in season T-1 the club's wage bill increases by ~5 percent in season T. A club winning one match represents a 2.63[22] percentage point increase in win percentage, so the ~5 percent effect is 2.63 larger for an extra win compared to an additional win percentage point. In other words, all other variables constant, an extra win in season T-1 increases the wage bill of a club in season T by ~13 percent[23] (1 % significance level).

Moreover, to attempt to proof that the model is robust to changes in model specification the regression results of the third and fourth columns control for club and season invariant variables. The results of the third column of Table 4 indicate that, all other factors fixed, for clubs where the president completed a higher education degree the wage bill is 42 percentage points higher (1% significance level) compared to clubs where the presidents did not complete education. Besides, the win percentage at season T-1 shows that, all other variables constant, for every additional win percentage point in season T-1 the club's wage bill increases by ~3 percent in season T (1% significance level). In other words, all other factors being equal, an extra win in season T-1 increases the wage bill of a club in season T by ~8 percent[24].

The fourth column of Table 4 displays regression results with club and season fixed effects. The variable if the president completed a higher education degree does not show statistical significance anymore. However, the win percentage at season T-1 is significant at the 1% level. The control shows that, all other factors fixed, for every additional win percentage point in season T-1 the club's wage bill increases by ~3 percent in season T

[22] Calculation: 1/38 = 0.0263; clubs play 38 games over the season.
[23] Calculation: 2.63 (footnote 22: pct increase 1 extra win) * 5 (pct wage bill increase for every additional win percentage point) = 13.15
[24] 2.63 * 3 = 7.89 / See footnote 23 for explanation

(1 % significance level). In other words, an extra win in season T-1 increases the wage bill of a club in season T by ~8 percent[25].

For models 1-3, the variable whether a president completed a higher education degree has significance and shows effect on the wage bill of *La Liga* clubs, and none for regression 4 (the full model). Analysis of the effect of specific educational tracks on the wage bill of clubs is performed next.

The fifth column of Table 4 displays regression results of the standard model and includes variables for the educational track of presidents. Results show no significance for variables age of a president, whether the president is Spanish, male, or is a former professional athlete. Whereas the educational tracks do show significant results. For clubs where the president completed a higher degree in, business or economics, law, engineering or real estate, or a track of the rest category, club wage bills are respectively, all other variables constant, ~42, ~76, ~138 and ~75 percent higher (1% significance levels) compared to clubs with non-educated presidents (reference category). The results for the standard model show significant and positive values on education tracks of presidents however this regression has too little constraints to draw conclusions, therefore must be analysed further.

The sixth column of Table 4 includes the win percentage in season T-1 as a control. Results show that, all other variables fixed, for clubs where the president completed a higher degree education in business or economics the club has a ~22 percent higher wage bill (5% significance level) compared to clubs with non-educated presidents. For presidents who studied law, engineering or real estate, or a track of the rest category, club wage bills are respectively, all other variables constant, ~34, ~61, and ~50 percent higher (1% significance levels) compared to clubs with non-educated presidents. Moreover, the win percentage at season T-1 shows that, all other factors being equal, for every additional win percentage point in season T-1 the club's wage bill increases by ~5 percent in season T (1% significance level). That is, all other variables constant, an extra win in season T-1 increases the wage bill of a club in season T by ~13 percent[26].

[25] 2.63 * 3 = 7.89 /See footnote 23 for explanation
[26] 2.63 * 5 = 13.15 / See footnote 23 for explanation

The seventh column of Table 4 displays regression results with club fixed effects and are very similar to results of column 6. Results show that, all other variables constant, for clubs where the president completed a higher degree education in business or economics have ~29 percent higher wage bills (10% significance level) compared to clubs with non-educated presidents. For a president who studied law, engineering or real estate, or a track of the rest category, club wage bills are respectively, all other variables fixed, ~53 (5% significance level), ~98 (1% significance level), and ~52 (10% significance level) percent higher compared to clubs with non-educated presidents. Moreover, the win percentage at season T-1 shows that, all other factors being equal, for every additional win percentage point in season T-1 the club's wage bill increases by ~3 percent in season T (1% significance level). I.e. an extra win in season T-1 increases the wage bill of a club in season T by ~8 percent[27].

The eighth column of Table 4 displays regression results with club and season fixed effects (full model). Results of column 8 show that, for clubs where the president completed a higher degree in law or, engineering or real estate, club wage bills are respectively, all other variables constant, ~41 (10% significance level), and ~89 (1% significance level) compared to clubs with non-educated presidents (reference category). Additionally, in the full model the educational tracks business or economics and the rest category are not significant anymore. Besides, the win percentage at season T-1 shows that, all other variables fixed, for every additional win percentage point in season T-1 the club's wage bill increases by ~2 percent in season T (1% significance level). In other words, an extra win in season T-1 increases the wage bill of a club in season T by ~5 percent[28].

Overall, these regression results show that whether the president completed a higher degree education and different educational tracks do show strong results in the standard models with controls and club fixed effects, however significance levels drop for the full models (when season fixed effects are included). The control win percentage at T-1 also showed significant results. Furthermore, a president's age, origin, gender or whether the president is a former professional athlete are not robust to changes in model constraints. Besides, the characteristics whether the president is Spanish, male or a former

[27] 2.63 * 3 = 7.89 / See footnote 23 for explanation
[28] 2.63 * 2 = 5.26 / See footnote 23 for explanation

professional athlete demonstrated some statistical significance in the more controlled models. However, these variables did not show any significance for the standard models of column 1 and column 5, therefore these variables with sporadic significance were not looked at any further.

Finally, an ex-post Hausman specification test is ran to asses club fixed effects. For the Hausman test the null hypothesis is that the preferred model is random effects versus the alternative, fixed effects. The test results show that for both regressions, education as a dummy variable and educational track as a categorical variable, p-values are under 0.00. The null hypothesis is rejected thus the regressions include the correct model specification. Moreover, an ex-post F-test is ran to asses season fixed effects. For the F-test the null hypothesis is that all seasons are jointly equal to zero versus the alternative, were the null fails to hold. The test results show that for both regressions, education as a dummy variable and educational track as a categorical variable, p-values are under 0.00. The null hypothesis is rejected thus regressions include the correct model specification.

# 4 – Conclusion

This research provides results on upper echelons theory in *La Liga* by looking specifically at three areas of performance that, conceivably, club presidents have influence on. To begin with, the section that attempts to explain the effect of presidential characteristics on win percentage does not show strong results towards upper echelons theory. Specific educational tracks or a presidents' past sportive career hint towards the existence of upper echelons yet do not show enough robustness in models with increased specifications. Clear conclusions cannot be drawn for the effect of presidential characteristics on win percentage. Additionally, notice that whether a coach is a former international player affects win percentages positively and whether a coach is a former big 4 league player affects win percentages negatively. Thus, these two effects cancel out, meaning that coach experience does not necessarily justify higher win percentages in *La Liga* as discussed in the opening stage of the present paper. Interestingly, though not related to characteristics of presidents, results show that the club wage bill in season T-1 positively affects the win percentage of clubs in season T. In any case, this is no proof for the existence of upper echelons in *La Liga* but is an attractive research area to build on.

Moreover, presidents should feel the urge to be responsible for the performance of the staff they recruit and therefore should also take responsibility for the ones they have to let go. As mentioned earlier, between the 1998 and 2017 seasons 134 coaches were fired in *La Liga*. That is, 6.7 coaches per season, or, per season ~34 percent of *La Liga* clubs fire a coach. These are considerable figures to lay eyes on and this paper showed that presidential characteristics did not show any effect on the firing of a coach. It seemed like the rest category of the educational tracks carried some significant results however was not robust enough for models with increased specification. A further research suggestion for this is to look deeper into the different professional football divisions of Spain. Football clubs relegate and promote throughout the *La Liga* seasons and there are clubs that only make it to the top level for a year or two; one or two season observations is not sufficient to perform meaningful season fixed effects regression. Therefore, as more professional football divisions are accounted for, the greater the number of clubs the dataset will contain with higher number of season observations.

The segment that provided results on the effect of presidential characteristics on the wage bill of *La Liga* clubs showed more significant conclusions compared to the previous two segments. Results showed that there is a positive effect between presidents who had formerly educated themselves and the wage bill of clubs. Plus, most educational tracks also showed positive effects on the wage bills of clubs. However, before making sturdy conclusions, there might be omitted variable bias here. For example, FC Barcelona and Real Madrid are on average the two most winning clubs of *La Liga* because they invest heavily in their human capital (club wage bill) to perform well. These clubs have many followers and elect their presidents by means of a voting procedure hence presidents are expected to be professional and well qualified. As a result, these big and more successful clubs attract more highly educated presidents. It is a detail to look at, and, other cases might also confront the robustness of the results and therefore should be accounted for in further research. Nevertheless, results of this paper show that former education and type of education do predict, to some extent, higher investments of human capital (wage bill of clubs).

Furthermore, a limitation of this study is that presidents are a non-random share of the population because they are non-randomly selected through the electoral procedures of their clubs. Since June 1992, under Spanish sports law[29], it has become mandatory for *La Liga* Spanish football clubs to become privately owned companies (BOE, 1990) however six[30] clubs were exempted from this law. These are fan-based clubs that elect their presidents by democratic fan vote. Presidents of the other clubs are typically designated by their own board of directors, which can become an extensive process too (La Vanguardia, 2012). Usually, to be a potential candidate for the elections of a *La Liga* football club, candidates are already affluent or well-known, therefore, the share of the population that this research deals with is non-random.

Also, another limitation is the existence of hidden data that is not recorded that influences club performance. For instance, presidents deciding who is playing instead of the coach, or, fiscally dishonest clubs that present financial figures different to the actual ones. This underlying hidden data might affect the results of the performance areas in much sturdier ways than that we think. Moreover, a final limitation is that sampling errors may be

[29] Law 10/1990 of Sport, Article 19.1. (BOE, 1990)
[30] Athletic Bilbao, CA Osasuna, Deportivo de La Coruña, FC Barcelona, SD Eibar and Real Madrid C.F

present in the results because weaker teams appear less in the dataset. This harvests an under-representation of weaker teams, and an over-representation of stronger teams that have not relegated from *La Liga* between the 1998 and 2017 seasons; thus, the statistical characteristics of *La Liga* presidents are predominately assessed from a subset of clubs.

A suggestion for further research is to increase the number of seasons or clubs of the dataset. Increasing the number of seasons, rather than clubs, might be of additional value because then one can observe many different presidents (hence more observations of presidential characteristics) acting on one same club across time. Though, one should recognize that in the 1995/1996 season of *La Liga* the scoring point format was changed from two to three points for a match win. Hence if performance is to be analysed through the total amount of points in *La Liga* prior to that season, analysis must be performed with regard to this change.

All in all, the results in this thesis cannot determine with certainty that characteristics of presidents among the *La Liga* football clubs influence win percentages or recruiting behaviours of these clubs. Nonetheless, former education and type of education do predict, to some extent, better financial performance of *La Liga* football clubs through increased investment of a club's human capital (wage bill). Overall, as shown by the results, it cannot be concluded that UET is present among the *La Liga* football clubs.

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# Appendix

## Appendix T1: Variables & descriptions

| Variable | Description | Type |
|---|---|---|
| team | Name of team in *La Liga*. e.g. Barcelona | String |
| season | Year where end of season occurred. e.g. 2009 = 2008/2009 | Continuous |
| intid | Team international id number | Continuous |
| **Presidential data** | | |
| pres_name | President's name | String |
| Pres_Current_Age | President's age at time of season (+/-1 year) | Continuous |
| Pres_YoB | President's year of birth | Continuous |
| Pres_gender | President's gender. M=male, F=female | String |
| Pres_male | President is male (1) or female (0) | Binary |
| Pres_Citizen | President's citizenship | String |
| Pres_Spanish | President is spanish (1) or not (0) | Binary |
| Pres_Player | President is former professional athlete (1), no professional athlete (0) | Binary |
| Pres_Educ | President completed a higher degree study (1) or not (0) | Binary |
| Pres_educ_track | President's higher degree educational track. For presidents who completed a higher degree study. | String |
| 1 Pres_not_educated | President did not complete a higher degree study, defined as an entrepreneur (1). Other (0) | Binary |
| 2 Business_Economics (Pres.Educ track) | President completed a higher degree study in business or economics (1). Other (0) | Binary |
| 3 Law (Pres.Educ track) | President completed a higher degree study in law (1). Other (0) | Binary |
| 4 Engineering_RealEstate (Pres.Educ track) | President completed a higher degree study in engineering or real estate (1). Other (0) | Binary |
| 5 Rest (Pres.Educ track) | President completed a higher degree study in cinematography, medicine or physics (1). Other (0) | Binary |
| **Club financial data** | | |
| wage | Present season total aggregated wage bill in euros | Continuous |
| log_wage | The natural logarithm of wage | Continuous |
| lag_wage | Past season total aggregated wage bill in euros | Continuous |
| log_lagwage | The logarithm of lag_wage | Continuous |
| **Coach data** | | |
| Coach_fire | A club's coach was fired in the season (1) or not (0) | Binary |
| man_name | Name of coach | String |
| man_id | International ID number of coach | Continuous |
| coach_expint | Coach played for his country (1) or not (0) | Binary |
| coach_playbigfour | Coach played in the big gour leagues (1) or not (0). Big four= Spain, England, Germany, Italy | Binary |
| coach_numbseasbigfour | Coach's number of seasons playing at big four (Spain, England, Germany, Italy) | Continuous |
| coach_internhire | Coach was an internhire (1) or not (0) | Binary |
| **Club data** | | |
| liga_pts | Club's accumulated points season | Continuous |
| prom | Cliub promoted last season (1) or not (0) | Binary |
| liga_games | Number of games played in *la Liga* | Continuous |
| liga_w | Club's league wins | Continuous |
| win_pct | Percentage of games won in *la Liga* of total games played | Continuous |
| lag_win_pct | Past season total aggregated wage bill in euros | Continuous |
| Points per million euro wage bill | Ratio : league points in season T / wage bill in season T-1 | Continuous |

# Appendix T2: Overview of abbreviations

| **Abbreviation** | **Stands for** |
|---|---|
| *La Liga* | Highest football division in Spain |
| UET | Upper echelons theory |
| OLS | Ordinary least squares |
| LPM | Linear probability model |
| NBA | National Basketball Association |
| MLB | Major League Baseball |
| NFL | National Football league |

# Appendix T3: Hausman test results

Segment 1: *on-field* club win percentages

- Model with education as a dummy variable

```
Test:  Ho:  difference in coefficients not systematic

                  chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       29.92
                Prob>chi2 =      0.0002
```

- Model with education as a categorical variable

```
Test:  Ho:  difference in coefficients not systematic

                 chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       28.75
                Prob>chi2 =      0.0025
```

Segment 2: *off-field* coach firings

- Model with education as a dummy variable

```
Test:  Ho:  difference in coefficients not systematic

                  chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        5.76
                Prob>chi2 =      0.6736
```

- Model with education as a categorical variable

```
Test:  Ho:  difference in coefficients not systematic

                chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                         =         6.82
              Prob>chi2 =       0.8134
```

Segment 3: *off-field* club wage bills

- Model with education as a dummy variable

```
Test:  Ho:  difference in coefficients not systematic

                 chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                         =      143.63
              Prob>chi2 =      0.0000
```

- Model with education as a categorical variable

```
Test:  Ho:  difference in coefficients not systematic

                 chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                         =      141.25
              Prob>chi2 =      0.0000
```

# Appendix T4: F-test results

Segment 1: *on-field* club win percentages

- Model with education as a dummy variable

```
F( 19,     37) =     9.07
     Prob > F =     0.0000
```

- Model with education as a categorical variable

```
F( 19,     37) =     8.10
     Prob > F =     0.0000
```

Segment 2: *off-field* coach firings

- Model with education as a dummy variable

```
F( 18,     33) =     1.78
     Prob > F =     0.0746
```

- Model with education as a categorical variable

```
F( 18,     33) =     1.02
     Prob > F =     0.4650
```

Segment 3: *off-field* club wage bills

- Model with education as a dummy variable

```
F( 18,     33) =     7.90
     Prob > F =     0.0000
```

- Model with education as a categorical variable

```
F( 18,     33) =    31.41
     Prob > F =     0.0000
```