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A Study of the Determinants of Transfer Fees For French Ligue 1 Soccer Players

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Section 1

Introduction

In light of the increasing flow of millions of dollars into the sports industry during the last two decades, notably the international soccer market, the repercussions from the wave of economic activity have come under scrutiny by economists. In France alone, while the real Gross Domestic Product for the country has grown at an annualized rate of 2.75%, the soccer industry in France has experienced a 500% growth in ticket sales, 3,300% growth in sponsorship income, 122,000% increase in income from television contracts overall during the same time period (Bourg and Gouget, 2005). Sports have become such a pivotal facet of the economic structure due to their status as an integral part of today's society with upwards of 20% of French citizens partaking in licensed athletic events and 75% claiming to be participants in sporting activities, both professional and recreational. It has been increasingly evident that the actions taken by professional sports teams have a far reaching impact on the global market. For the 2008-2009 season the combined budget of the teams in Europe's top five leagues (England, France, Italy, Germany and Spain) reached a level of $7.9 billion, a figure that continues to grow from year to year (Deloitte, 2010). Evidence of this drastic increase in economic activity can be seen by the recent introductions of more than 40 professional soccer teams into various capital markets. The vast majority of the teams who have introduced capital stock into trading markets are British teams, since the practice was just recently put in place in France. Only two French teams have tested the market thus far, with Olympique Lyon and FC Istres being the first. Another trend in the funding of professional soccer teams is privatization with the purchasing of clubs by enterprises and billionaire investors for record setting amounts. Examples include the recent

acquisition of French team Paris Saint-Germain in 2011 by the billionaire investment group QIA and the purchase of English side Manchester City by Abu Dhabi United Group in 2008. Lastly, the drastic growth in the soccer market can be attributed to the globalization of the sport and increased revenues through national and international television and sponsorship contracts. All of these actions have had a hand in not only improving revenues for the teams involved, but in increasing the fees paid for the transferring of players and the wages that professional soccer players receive annually. This research seeks to quantify the determinants of a modern soccer player's market value when being transferred within the country of France while taking into consideration the ramifications at a macro level of an ever increasing and globalized sports economy.

The purpose of this research is to analyze the changes that have transpired in the French Ligue 1 transfer market in the post-Bosman ruling era and to estimate a statistical model using the ordinary least squares regression method that estimates the market value of a player in the French sector of the international player transfer market. The independent variables will be a combination of statistics from the player's in game performance and personal data, the characteristics of the purchasing clubs, and the characteristics of the selling clubs. The transfer market of soccer players is an international market established by the governing body, FIFA (Federation Internationale de Football Association), which allows the member clubs to participate in an active market for the buying and selling of their players twice a year in July-August and again in January. In the last twenty years numerous academic studies have been published focusing on the viability of the soccer transfer market as an economic market similar to other traditional trading markets, with much research devoted to the determination of players' market values. However, little research has been done on the French sector of the transfer

market, with studies traditionally focusing on the English and German sectors of the market. This study will be based on the modern theory on the transfer market and take into account recent developments such as the existence of monopoly rents (Dobson et al., 1999), the superstar effect (Franck et al., 2008) and the ramifications of the Bosman ruling. These subjects will be further discussed later in Section II of this paper. The international transfer market and soccer economy have both undergone numerous changes during the last twenty-five years, which have led to an increasing amount of leniency on the part of the governing bodies and have liberalized the business. This, in turn, has created a lucrative and attractive industry conducive to growing revenues that has enticed the placement of new capital into soccer teams and players. This wave of liberalization and influx of large amounts of capital into the soccer market, both in France and abroad, has allowed the transfer market to grow to the size that it is today, with £190 million being spent in 2011 alone by French teams on the transferring of players to teams in the Ligue 1.

The paper will be structured in the following manner. Relevant existing literature on the topics of the foundation of French professional soccer and recent developments in the transfer market is presented in Section II. Special attention will be given in this section to the expansion of the French soccer transfer market on the macro level, and the changes in the business of soccer in France, including the Bosman ruling, that have allowed for the increase in transfer prices. Section III will present the data to be used, discuss the hypothesized results, and present the regression model for the empirical study. The results from the empirical study will be highlighted and discussed in Section IV and Section V will serve as the conclusion and highlight further research opportunities.

Section 2

Literature Review

The literature review section of this paper consists of three separate subsections due to the breadth of the topics being discussed. The first section, Section 2.1, will serve as a review of the history of the French Ligue 1, discussing the evolutions of the corporate structure of teams and the structure of the transfer market. This section will also explore the 1995 landmark Bosman ruling. The following section, Section 2.2, will discuss the current literature concerning the growth in the overall soccer transfer market. This macro approach explains the evolution of the revenues of clubs during the last 20 years which have led to the increase of transfer fees. Lastly, Section 2.3 will focus on the micro aspect of the transfer market and will compare literature that is directly related to the empirical study that will be executed in subsequent sections of the paper.

2.1 Development of Football in France

Professional soccer made its first appearance in 19th century England with the creation of the first association, the Football Association (FA). The FA arose in 1863, with the member clubs seeking to band together in order to create common rules and to promote the playing of the fledgling game (Drut, 2011). Despite the fact that the first clubs were still considered amateur, they were able to see the potential for revenue in the sport through the sale of tickets to the matches. In 1885, in order to foster transparency and avoid the scandals that had been frequent during the days of amateurism, the Football Association officially instituted professionalism and created the world's first professional soccer league. While soccer first crossed the English Channel to France with the creation of Le Havre AC in 1872, it would be another sixty years

before France would follow the growing trend of professionalism, with the French soccer teams remaining amateur clubs until 1932. At the turn of the century, soccer in France was still not widely accepted by the citizens of the République. The sport, mostly played by the bourgeoisie and lower social classes in France, was frowned upon by the upper classes. With the remuneration of players being considered, "inelegant and vulgar," it is clear why French society did not make the switch from amateurism to professionalism until after most of the other European states. (Drut, 2011)

French professional soccer took a setback during the invasion by Germany and the onset of World War II. The Vichy government mimicked the sentiments of the upper class French society, rendering professionalism illegal stating that the career as a professional soccer player was, "decadent and immoral." While soccer was played in Vichy France and by French soccer players in exile in England, it was not until the liberation of France by Allied forces in 1945 that a professional league was restored in the République. With the creation of the *Groupement des Clubs Autorisés* (Group of Authorized Clubs), certain clubs were picked by the league creators to join as professional teams, allowing the remuneration of players. A distinct separation between the group of professional teams, the *Ligue de Football Professionnel* (LFP), which exists in perpetuity today, and the amateur leagues, would last until 1970. Then, in 1970, a link was created between the LFP and the teams of the lower leagues of the *Fédération de Football Française* (FFF) allowing for the promotion and relegation of teams between Ligue 1 and Ligue 2, which are the two professional leagues of the LFP, and the amateur leagues of the FFF. The FFF is now France's governing body that oversees all aspects of its member teams which include the teams of the LFP, lower division teams that comprise the departmental and regional leagues,

and France's National Team structure which represents the country in all national team competitions.

In the last forty years, the evolution of the commercial status of teams has contributed to increased capital and allowed for the teams in France to gain increasing revenues and profits. Originally, the teams in France were considered by the government as associations of the Law of 1901, which labeled the teams as *but non lucrative* (nonprofit). It was not until 1975 that the first commercialization arrived in French football at the team level. In 1975, a law allowed teams to pass from *Associations à but non lucrative* to *Société D'économie Mixte Locoale* (semi-public company), which allowed teams to receive both public funding from local entities, such as departmental, regional, and municipal government, while also maintaining private investment. The teams however were not allowed to be publicly traded. After a succession of failed attempts by the French government to effectively liberalize the professional team structure, a new law was passed in 1999 which allowed the teams of the LFP to become highly attractive investments. In 1999, the status of *Société Anonyme Sportive Professionnel* (SASP) ushered into French professional soccer a new era of expanded rights very similar to traditional companies and corporations. The new corporate structure enticed outside investment as the law authorized teams to both pay dividends and salary to the directors of the club. In contrast to the other forms of structure, the financial capital of an SASP team is not restricted to a fixed limit. The creation of the SASP structure was extremely important in the evolution of professional soccer as the teams approached the economic idea of a rational enterprise, whose objective, "according to neoclassical theory is to maximize profits," (Drut, 2011). As noted by Drut (2011), as of the 2011 season, all forty teams of the LFP and six teams located in the highest division of the FFF structure, *Ligue National,* have professional status. Likewise, of the twenty teams in the top

flight league, Ligue 1, only two teams, Auxerre and Ajaccio, do not have SASP status as both are associations. As the restraints were loosened on the French professional teams, their corporate structure became increasingly attractive for private investors, which has already been highlighted by the recent landmark purchase of Paris St. Germain by QIA.

In 1995, a landmark court ruling by the European Court of Justice changed the face of the soccer transfer market. Prior to this decision, a player was bound to the team for which he played, due to the fact that the team held their professional registration. A player was not allowed to play for another team unless that player's registration was purchased or transferred to another team. A problem arose in 1990 when Jean-Marc Bosman, a player for RFC Liège in Belgium, had his contract expire with no negotiated extension. At the end of his contract, it became apparent that RFC Liège no longer wanted the services of Bosman. However, the only team willing to purchase him, French team USL Dunkerque, was unwilling to pay the transfer fee demanded by RCL Liège for the transfer of Bosman. Since Bosman was unable to transfer teams, RCL Liège cut his pay and dropped him down from their top flight team, with Bosman being unable to join any other professional teams. Bosman soon brought suit against RCL Liège in a case that was brought before the European Court of Justice, citing restrict of trade as being infringed upon by the Belgian team.

The outcomes of the court ruling have permanently changed the nature of the European transfer market. The court ruled that any team restricting the movement of a citizen of the European Union at the end of their contract was in violation of article 48 of the Treaty of Rome. This portion of the document guarantees the right to free movement of workers for European citizens between two member states of the European Union. The ruling created in European soccer a free agent market for when player's contracts have ended. While this has been a staple

part of American sports for a long time, the idea was brand new at its inception for Europe. The change for the transfer market comes in the form of free transfers once a player's contract ends, since the team no longer controls his registration. This has led to teams being forced to sell their players earlier in their contracts and possibly for a lower price than their perceived value for the player in an attempt to realize some value from their investment before the expiration of the contract. Numerous studies have been done highlighting the outcomes of the Bosman ruling, with the majority highlighting that globally transfer fees will see a rise due to increased competition of teams for the players. Drut (2011) highlights that the rate of transfer for individual players has increased after the ruling. This has allowed superstar players to demand higher wages with the increased competition amongst teams. The interaction between time left on a player's contract and the transfer fee has however not yet been explored due to the nondisclosure of contract information of soccer players.

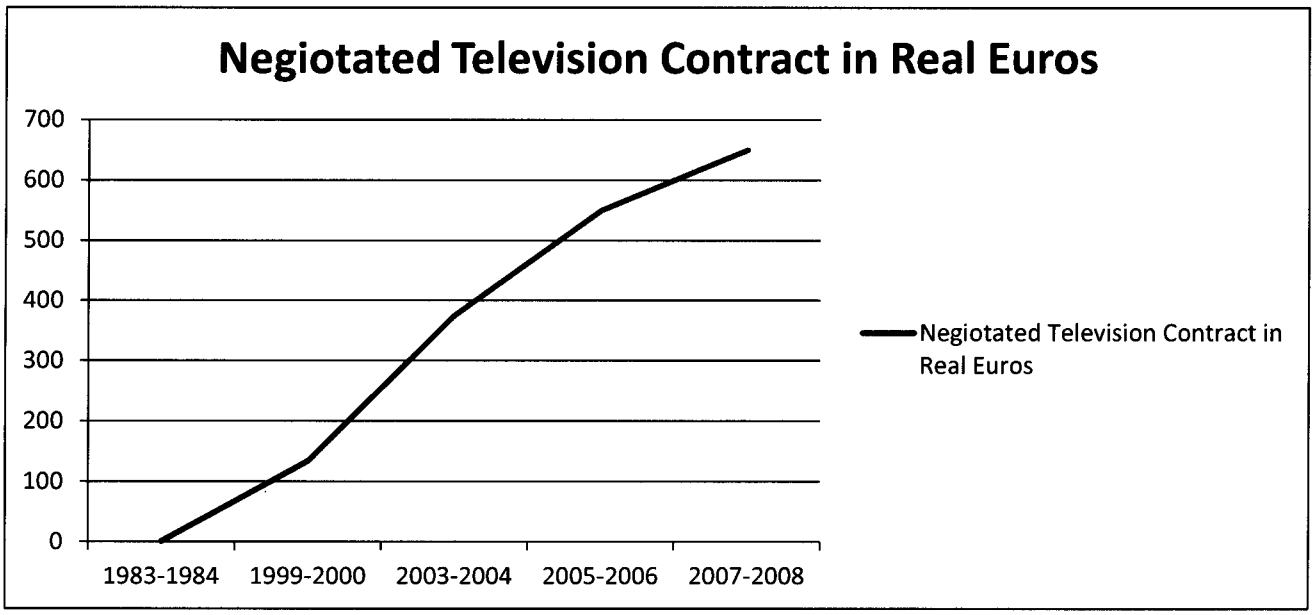
2.2 Macro Literature Review

In 2009, a transfer fee of £80 million was paid by Spanish team Real Madrid for the transfer of then Manchester United forward and Portuguese national, Cristiano Ronaldo, eclipsing the previous international record of £53 million paid by Real Madrid for French midfielder, Zinedine Zidane in 2001. Instantly, a debate started over whether Real Madrid had over paid for the player's ability and if the overall increase in transfer prices was sustainable and beneficial to the soccer economy as a whole. While the economies of the European Union were dealing with the worst national debt crisis in history and a recession that had plagued economic growth following the 2008 economic downturn, the soccer industry appeared to be continuing to grow. In fact, 11 of the top 20 transfers of all-time, when adjusted for inflation, transpired between the years of 2008 and 2011. In France, Paris St. Germain, after the acquisition by the new Qatari management, paid a French team record of £36.6 million in 2011 for their newest superstar, the Argentinian midfielder, Javier Pastore. While the consumption of items such as match tickets, traditionally a team's main source of revenue, are thought to be income elastic due to their status as luxury goods, the recent increase in transfer fees paid would suggest that the soccer industry has become recession proof with a diversification of their revenue while allowing teams to continue bidding higher prices for new soccer talent.

On a macro level, according to Drut (2011), the overall increase in the magnitude of transfers can be attributed to three major sectors of a soccer team's revenue making ventures. Traditionally, a soccer team's main revenue source has been the gate ticket sales. For the 2003-2004 season, Manchester United, an English Premiere league team, attributed 40% of their annual revenue to ticket sales, representing the largest portion of their income (Bourg and

Gouguet, 2006). However, in France, the importance of the gate sales has diminished as income from television sponsorships, merchandising and advertising sponsors have grown to be the most important source of income. In comparison, Olympique Marseille, a team of the French Ligue 1, attributed 16% of their revenue from soccer operations to ticket sales for 2010-2011 season. For the teams of the French Ligue 1, income from television contracts has changed drastically over the past twenty years. For the 1997 season, 25% of a team's revenue was linked to TV contracts, while the same teams had 52% of their revenue derived from the TV contracts for the 2003-2004 season. This number has approached 60% for the most recent seasons. Table 1 shows the evolution of television contracts over the last 30 years with an increase from € .8 million in 1983 to the present contract of €650 million negotiated in 2007-2008. Drut (2011) argues that these staunch increases in television contracts have been a direct determinant of the increased fees paid for the transfer of players. As is presented in the following section, research has been conducted that links the profit of a team to the price it pays for a player in the transfer market. Drut (2011) also argues in his book that the disparity in teams' revenues are due to many achievement based earnings, such as the UEFA Champions League, advertising money, and merchandising deals. Along with the relegation-promotion league structure these have led to great disparities between the top tier and lower tier teams, allowing the top tier teams to continue to perform better in a more costly transfer market.

Table I



One example of such performance based incentives is the allocation of television contracts. For the 2010 season, the French Ligue 1 champion, Marseille, received as part of the television rights contract with the LFP €50.8 million, of which €17.9 million were given due to their performance from the prior year. The three new teams that were promoted to the Ligue 1 for the 2010 season received zero compensation for the year before, and thus were the lowest compensated teams through the television contract with €14 million total each for Le Mans, Boulogne-Sur-Mer, and Grenoble. As part of the contract, teams also receive an unequally weighted portion based on their notoriety as a team. Auxerre, who finished in 3rd place, but is located in a small market region, received only €2.8 million extra, while Paris St. Germain, who finished a lowly 13th place, but is located in the lucrative television market of Paris, received an additional €12.9 million for their notoriety, (Drut, 2011). With the larger market teams and the teams who perform best each year receiving a much larger amount of money, these teams are

able to purchase the best players in the transfer market, thus perpetuating their domination of the league. In France, and in most major European professional soccer leagues, there is a system of promotion and relegation, where each year the last 3 teams in the Ligue 1 are relegated down to Ligue 2, a lower competition level with much lower revenues, and the first 3 teams of Ligue 2 are promoted to join the Ligue 1 teams. With the current revenue structure very few promoted teams are able to compete on a consistent basis with the established Ligue 1 teams due to a large disparity in income and thus caliber of players. Between the years of 1990 and 2010, in France, 63% of the seasons were won by the same three teams, (Lyon, Marseille and Bordeaux). This trend of domination amongst a few teams is common in Europe. In Scotland and Greece, three teams have won the championship every year during the same time period, while Portugal, Turkey, England, Spain, and the Netherlands each have had 90% or more of their seasons won by the same three teams, (Drut, 2011). The presented facts demonstrate how the revenue structure from television contracts and the league formation with promotion and relegation has led to a competitive imbalance as the perpetual champions are able to continue paying the increasing transfer prices for the most skilled players.

Other performance-based disparities that have raised the revenue of the league's top teams include the UEFA Champions League and merchandising revenues. The Champions League is a yearly tournament that matches the champions from all the leagues in European countries plus an allotted number of teams from various leagues in Europe. For example in France, the champion and the next two finishers qualify for the Champions League, while in England, due to a stronger field of teams, the champion and the next three finishers qualify for the tournament. A country with a low level professional league such as Liechtenstein can only qualify one team in the tournament. For the 2009-2010 season €746 million were paid to the

thirty two clubs who qualified for the opening rounds of the Champions League. This money is added to the already skewed revenues of the teams who are performing well. Teams earn additional revenue for winning games as they progress through the tournament, with the winner earning €19.3 million for the final game. In France, during the ten year span from 2000-2010, Olympique Lyon appeared in every edition of the Champions League, which generated a total of 225.4 million euro, which averages to 22.5 million euro a year. Other teams in France such as Marseille and Bordeaux were able to earn over 80 million euros during the same span. Not surprisingly, these are the same three aforementioned teams who won the majority of league titles during a twenty year period. Merchandising revenues have been linked to a team's location, due to the potential population of fans, and the number of celebrity soccer players on the team. Even though merchandising revenues only constitute about 10% of a team's budget in the Ligue 1, there are still significant discrepancies between top and bottom flight teams that affect the ability to pay the higher transfer fees. In 2009, when Real Madrid purchased Cristiano Ronaldo from Manchester United, the team was able to recuperate a large portion of the €94 million fee that it paid by selling 1.2 million jerseys of the new celebrity for a price of €85 a piece, of which 30% was profit. This yields around €30.6 million for Real Madrid, a large portion of the fee paid for Ronaldo. Such financing tools however are only valuable to teams that have a large enough fan base and are capable of attracting celebrity star players. The teams that are capable of attracting such players are the teams that are consistently winning, thus perpetuating the performance gap. A similar situation to Real Madrid's merchandise financing can be expected with the recent purchase of fan-favorite Javier Pastore by Paris St.-Germain in the large market of Paris. Further research will have to be conducted however as his first year at the club has not yet been completed.

2.3 Micro Literature Review

At a micro level, research on the determination of players' individual transfer fees has become increasingly available as the field grows. Tough competition amongst teams vying for the same limited skilled capital, in this case the superstars of the soccer world, has prompted an expansion in the attempts to accurately value players and to seek to identify the qualities that determine the values. Dobson and Gerrard (1999) and Carmichael et al. (1999) are two of the more recent papers that attempt to create empirical formulas to derive a player's market value. Their research however has been solely focused on the players in the English divisions of soccer. This study will fill a gap in academic research by creating a study on the French sector of the transfer market. Likewise, a variety of studies have been conducted on nontraditional aspects of the market. Reilly and Witt (1995) looked for, but found no evidence of, racial discrimination in the amount paid for the transfer of players in English soccer. Torgler and Schmidt (2007) searched the Bundesliga, German professional soccer league, for evidence of increased performance as a function of increased absolute or relative income finding a non-linear relationship between pay and performance. Lastly, Franck and Nuesch (2008) searched the Bundesliga to find the determinants of superstar formation in finding that both on-field performance and the cultivation of popularity through media sources and other outlets add to a player's star quality.

The soccer transfer market fulfills two major roles in the international soccer world. According to Carmichael and Thomas (1993), the role of the transfer market is, "to facilitate and organize the acquisition and exchange of players by the clubs to enable the reconstitution of teams with the aim of increasing playing strengths…and to facilitate the movement of players between clubs in their search for better opportunities, higher earnings, and increased job

satisfaction." The soccer transfer market however differs when compared to the American method of player movement. In American sports, traditionally, players are traded from one team to another in return for a combination of other players, draft picks, and in rare cases, monetary compensation. The soccer transfer market operates mostly in a cash for player method, where one team makes a cash offer for the contracted player of another team. During two time windows, July 1st through midnight August 31st and January1st through midnight January 31st, teams are free to enter into negotiations for the transfer of players. For a player who is currently under contract by a team, the potential buying team must approach the selling team directly in negotiations over a transfer price. Once the two teams come to an agreement, the buying team is allowed to speak to the player concerning salary figures. Either the team or the player has the right to reject a transfer, at which point the transfer will not take place. Also, players may undergo temporary transfers in which the player is loaned to another team for 1, 3, 6, or 12 months, with the buying club often paying the salary commitments for the loan period. The flow of players from different countries and continents is common as many players play in countries different from their home country. Some leagues such as the Major League Soccer in the United States and the English Premiere League have tried to take measures to limit the impact of non-nationals by creating quotas for players from the home country on the rosters of teams. As mentioned before, the Bosman ruling of 1995 guarantees the free flow of European Union citizens for employment purposes within the European Union, but the quota for non-citizens is created by the individual leagues. In order to promote fairness and to limit disputes the transfer market is highly regulated by FIFA and the individual national organizations.

In order to best understand the transfer of players in the transfer market it is important to consider that soccer teams act as rational decision makers in the transfer market, searching to

maximize profits, both financial and performance based, when looking to restructure their team. While the field has yet to be explored extensively, a debate has surfaced between two different schools of thought on the correct way to determine the value of players. Articles have been written by Carmichael and Thomas (1993), Reilly and Witt (1995), Dobson and Gerrard (1999), and Dobson, et al (2000) that focus on the estimation techniques on a bilateral monopoly bargaining model within a Nash-bargaining framework. Carmichael and Thomas (1993) note that, "the evaluation of any player would be expected to be based on player characteristic criteria which would include age, experience, playing record, star quality, together with a number of subjective factors such as potential. The fee paid should be based on the present value of the future expected rents to be earned by the club from the player's employment during the period of the contract." When two profit maximizing teams enter into negotiations, there are numerous acceptable choices for the final transfer fee that would satisfy both teams. The resulting negotiated fee is thus the product of a negotiation that falls between the maximum amount of money that the buying team is willing to pay for the player and the reservation price, or minimum amount for which the selling team is willing to part with the player. A two-person Nash-bargaining model, as stated in Nash (1950), is characterized by two individuals who are both assumed to be highly rational, able to accurately compare their desires, and have equal bargaining skills and knowledge of the opposite individual. With the institution of fair financial practices in FIFA and increased transparency in the world soccer market, it is assumed that teams meet the qualities demanded of a Nash equilibrium. In order to quantify the relative bargaining strengths of the two teams, the inclusion of characteristics for both the buying and selling team are necessary in the model. Variables that capture playing success, attendance, and financial standing were found to be statistically significant in all of the studies.

Dobson and Gerrard (1999), which focuses on the players of the English Football Association and Dobson et al. (2000), which focuses on the teams that are not in the top four leagues of English football, vary slightly from the other aforementioned article in their approach to the bargaining model in that they search for evidence of monopoly rents present in the determination of transfer fees. As explained in Dobson et al. (2000), "Monopoly rents are present when the selling club extracts some of the excess of the buying club's net valuation of a player over the selling club's reservation price." A club's reservation price is the lowest price for which it is willing to sell its player. The inclusion of monopoly rents shows that the potential price for the player will lie on a span between the vectors for the buying and selling clubs, with the vectors being a function of player characteristics and the respective club characteristics. This reaffirms the models used previously in the Carmichael and Thomas (1993) and Reilly and Witt (1995) articles. The results showing monopoly rents in English Premiere football through the two studies can be assumed to apply directly to the transfer market in French soccer, therefore the model used in this study will be similar in construction to the model used in the previous studies.

The results found in Dobson and Gerrard (1999) and Dobson et al. (2000) show significant impact of the variables included in their research on the dependent variable, the transfer price. The first study searches for the impact of these variables in the top four leagues of English soccer (called league football) while the second is a similar study that proves a similar relationship for the variables in the non-league sector of English professional football. Dobson and Gerrard (1999) were able to attribute just over 79% of the variation in the transfer prices of English league players to the variables included in the model. This high level of systematic variation in the determination of transfer fees reiterates the importance of the variables in

determining a player's market value. All of the variables that accounted for the player's current form and personal characteristics were found to be significant at the .05 level or better. For the variables concerning the clubs, the characteristics of the buying club were found to be significant at the .05 level while only the selling team's league position in the year prior to the transfer and the selling team's goal difference in the preceding year were found to be significant. The significance of the buying club's variables serves as evidence of monopoly rents. With the joint significance of the buying team's variables with the selling team's variables, it can be concluded based on the theoretical evidence presented in Dobson and Gerrard (1999) that the selling team does indeed extract monopoly rents in the market, thus making the transfer price of a player a function of the player's characteristics and both clubs' variables.

In contrast to the aforementioned studies, Carmichael et al. (1999) use a different approach from the previous bargaining models to establish their quantitative study. The authors argue that the previous studies failed to address the determinants of player mobility, which for the season covered in the study was a rarity with only 12.3 percent of the population being transferred. The authors state that with a subsection of the population being more likely to transfer than another, the players who are transferred are not part of a random sample, but yet possess skills that influence the fee paid by the buying club and make their transfer atypical. Since there exists a section of the population that is more likely to be transferred the authors write that an equation that uses Ordinary Least Squared estimation techniques will suffer from selection bias, which could lead to inconsistent and biased coefficients. The model employed utilizes the Heckman two-step technique which calls for a preliminary equation which determines the likelihood of a player's transfer. The residuals from this equation are then employed to try to correct for any selection bias found in the secondary equation, which is the

transfer fee determining model. As noted in Dobson and Gerrard (1999), this model has come under scrutiny for its departure from the bargaining and competition models previously employed. Dobson and Gerrard (1999) respond by suggesting that the selection-correction model, as the Carmichael et al. (1999) model is referred to, suffers from the exclusion of the buying team's characteristics in the preliminary model of the Heckman two-step process. In the preliminary step of the model, all players, both those who were transferred and those who were not, are included in the data set in order to determine the likelihood of a player's transfer. The model does suggest that team characteristics do have an impact on the likeliness of a player to be transferred. However due to the inclusion of players who were not transferred during the period, characteristics for the buying club could not be included since these players do not have any purchasing club. It is suggested by Dobson and Gerrard (1999) that the effects of the buying club characteristics will be observed in the estimation of the transferred players, but that the exclusion of these variables from the preliminary model will cause model misspecification errors when the selection-correction model is constructed in the second portion of the process. It is for this reason that this method has not been employed in the specification of the model for this paper.

The results for the fee determinant equation of the two-step Heckman process used in Carmichael et al. (1999), yield similar results to the model in Dobson and Gerrard (1999). Variables for age were significant showing a negative parabola for the fit of the data. Likewise, experience in the league in previous years was significant and had a positive coefficient. Goals scored in both the league and one of the national tournaments was significant with a positive impact on the transfer price of the individual player. As in the study by Dobson and Gerrard (1999), international team experience was linked to a higher transfer price at the full national team level, not the youth team squad level. One difference between the two models was that in

the study by Dobson and Gerrard (1999), the positional dummy variables for the three major positions (forward, midfielder, and defense) were statistically significant, whereas in the Carmichael et al. (1999) study, the dummy variables were not shown to be significant. Overall the explanatory power of the Carmichael et al. (1999) model was relatively low with 41% of the change in transfer fees explained by the included variables. This is well below the .79 R^2 reported by Dobson and Gerrard (1999), and is most likely due to the exclusion of data accounting for the impact of the two clubs involved in the transfer.

Section 3

For the quantitative portion of this research, I constructed a micro level study of transfer prices using 3 years worth of data on players transferred between teams in the French professional soccer leagues. In using Ordinary Least Squares regression analysis, I test the impact that certain player and team specific variables have on the negotiated transfer fee paid for a player. The regression uses a compilation of individual variables for the players transferred, including variables that represent (i) the player's on-field performance and personal characteristics, (ii) aspects of the selling club, (iii) aspects of the buying club, (iv) dummy variables to test for the positional aspects of the transfer. For the study, the dependent variable is the natural logarithm of the transfer fee negotiated between the two clubs for the purchase of a player (LNPrice). The form of the natural logarithm is assumed in order to best fit the data and to insure homoscedasticity, or a constant variance in the variables. The price listed in the data set is the nominal price paid for the player listed in British pounds. British pounds are used in this study due to the reporting standards of the database used. Due to the brevity of the time span, it is assumed that the nominal fees will suffice in accurately determining the impact of the independent variables. Also, for this study, the price is reported in British pounds due to the method of reporting transfer prices by the website used to find the data.

The data on the French sector of the player transfer market for the empirical study was compiled from a German website that specializes in the compilation of data on soccer players.[1] All variables were extracted from this website for the seasons spanning from June 1st, 2008 to January 31st, 2011. The three seasons included in the data represent six different transfer windows, during which a total of 116 unique transfers that satisfy the requirements for inclusion

[1] www.transfermarkt.de

in the study took place. Only transfers between two French teams, with the buying club being a member of the Ligue 1 at the time of the purchase were included in the data set to provide consistency in the variables. The data set only includes the transfers that had a disclosed fee reported to be greater than 0, which excludes the free transfers that take place due to the termination of contracts (linked to the Bosman ruling) and the rare case of a player being transferred for an undisclosed amount. Likewise, Goalkeepers were excluded from the set as it is believed that their pricing is based on a separate set of variables that differ from those of field players, and thus do not have a place in this empirical study. For the data set, a total of £347,410,000 was spent by teams, with the highest transfer of £19,390,000 being paid for French national Yoann Gourcuff of Olympique Lyon. In contrast, the lowest fee recorded was £110,000 for the purchase of the American national defender, Carlos Bocanegra by St. Etienne.

Table II-Table of Descriptive Statistics

City or Town	PRICE	GOLS	ASSISTS	MINS	FULLCAP	AGE	BCLP	BCGD	BCATT	SCLP	SCGD	SCATT
Mean	**2994913.79**	**4.98**	**2.62**	**24.20**	**19.67**	**24.70**	**9.75**	**6.76**	**22.78**	**15.30**	**0.20**	**17.60**
Std. Dev.	**3591871.16**	**5.56**	**2.99**	**8.83**	**21.81**	**2.97**	**6.01**	**15.30**	**13.62**	**9.28**	**14.99**	**11.26**
Kurtosis	**5.64**	**3.45**	**2.38**	**0.00**	**1.31**	**0.19**	**0.92**	**-0.60**	**-0.32**	**-0.26**	**0.26**	**1.12**
Skew	**2.32**	**1.75**	**1.51**	**-0.60**	**1.30**	**0.37**	**0.26**	**0.13**	**0.76**	**0.63**	**0.24**	**1.26**

I chose for the set of independent variables, variables from four different subcategories in accordance with the research discussed in the literature review section of the study. To capture the player's on-field and personal characteristics into the model, six distinct variables were created. GOLS, ASSISTS, and MINS are a player's total goals scored, assists recorded, and total minutes played respectively for the season preceding the transfer. FULLCAP is a combined variable that is the total number of games played for their respective country's national team and youth national teams. All four of these variables have hypothesized positive signs, as it is believed that the more goals, assists and minutes a player has played, plus the greater experience a player has gained through national team call-ups, the greater their market value in the transfer market. Also in the player's characteristics category are the variables AGE and AGESQ. These variables represent the player's age at the time the transfer was executed as well as the squared value of the age. The squared value of age is included in the model so as to allow for the non-linear fit that is expected with age. Since a player typically increases in skill until reaching a plateau at their maximum potential, at which point their expected returns begin to diminish, age is best represented by a parabolic function, which is the result of squaring age. For these two variables there are contradictory hypotheses. AGE is expected to have a positive sign which suggests that the transfer fee increases as age also increases, while AGESQ is expected to have a negative sign. AGESQ being negative would suggest a negative parabola form which has its stationary point at the y-value where a player's market value has reached its maximum and begins to decrease. The same theory holds true for the variables GOLSQ and FULLCAPSQ, which are the squared values of goals and national team appearances respectively. The two variables are also hypothesized to have negative signs.

In order to capture the effects of both the buying club and selling club, a congruent list of variables for both team have been included into the model. The variables BCLP and SCLP represent the clubs' finishing positions in the league for the year prior to the transfer (1 being the best possible finish and 40 being the worst). Since some players were transferred from teams that were in the French Ligue 2 system, the variable allows for the continuation from Ligue 1 (positions 1-20) to Ligue 2 with the first place team being listed as 21 and the last place team listed as 40. This technique has been used in prior studies to yield significant results (Dobson and Gerrard, 1999; Carmichael and Thomas, 1993). Both BCLP and SCLP are hypothesized to have negative values. For the buying club's league position, as BCLP gets larger (note that the number getting larger means the team finished in a worse position) it is hypothesized that the price of the transfer will be lower since the better teams have more money with which to make the expensive transfer. Likewise for selling clubs, the relationship is expected to be negative as the better a team's league position (smaller value) the more likely the team is to have better players that are valued higher. Conversely, weaker teams are expected to be selling worse players who cost less. To help capture the teams' playing form the variables BCGD and SCGD have been included into the model. These represent the goal difference (goals scored – goals allowed) for the two respective teams in the season prior to the transfer. Both variables have hypothesized positive signs for similar reasons. If the sign for BCGD is positive, this suggests that a team with a better goal difference would pay more for the transfer of a player, which holds consistent to the research. Likewise, with a positive sign for SCGD, the better a team's goal difference, the higher the cost of the player, which is consistent with the theory that the better teams have more expensive players. The last team variables are BCATT and SCATT, which are the respective average attendance for games in the season prior to a player's transfer. Earlier sections of the

paper discuss the change in teams' revenues as a function of increased television contracts, merchandising and other soccer revenue. For the teams of the LFP, yearly financial statements are reported by the league on their website. Due to the fact that only the most recent three years of financial data are available, and the fact that some of the teams do not report their revenue in the standard manner, attendance has been deemed an appropriate proxy variable. Over a three year time span, for the teams who had reported revenue, their average attendance and revenue had a .89 correlation coefficient, which makes attendance a suitable proxy for financial success. Both variables have hypothesized positive signs as buying clubs with higher average attendance are expected to have higher income and a better team, and therefore can pay higher amounts for better players. In response, selling clubs with higher attendance numbers are expected to be better teams whose players can command a higher value. The respective squared terms for attendance have been included into the final model in order to allow for a nonlinear fit for the variables. These should have negative estimated coefficients.

The last variables included in the model are positional dummy variables which will account for a significant difference in prices for any of three different positions, forward, midfield, and defense. For the variable FORDUM, a player receives a 1 if the player is a forward and a 0 if the player is not, while for the variable MIDDUM, a player receives 1 if he is a midfielder and a 0 for all other positions. It is difficult, in this situation, to hypothesize the potential sign for the beta coefficient of the positional dummy variables. In previous research significant results were found between a player's position and the price commanded for their transfer. Dobson and Gerrard (1999) found that dummies for both forward and defense were significant at the .05 level, which the beta coefficient for defense being larger than that of forward, suggesting that, *ceteris paribas,* a player who is a defender would have a higher market

value than both a forward and a midfielder. However, in a different country and transfer market, it is unclear as to how the different positions will be interrelated.

Table III

	Table of Variable Definitions and Hypothesized Signs	
Variable	Definition of Variable	Hypothesized Sign
GOLS	Number of goals scored in the season preceding the transfer	+
GOLSSQ	GOLS squared.	-
ASSISTS	Assists recorded in the season preceding the transfer	+
MINS	Minutes played in all competitions in the season preceding the transfer, scaled by 10^-2	+
FULLCAP	Total number of games played for senior and youth national teams	+
FULLCAPSQ	FULLCAP squared	-
AGE	Age of the player at the time of the transfer	+
AGESQ	AGE squared	-
BCLP	Finishing position of the buying club in the season preceding the transfer (1st place=1, positions 1-40)	-
BCGD	The goal difference for the buying club in the season preceding the transfer (Goals For-Goals Against)	+
BCATT	Average attendance for Ligue 1 games in season preceding the transfer for the buying club, scaled by 10^-3	+
BCATTSQ	BCATT squared	-
SCLP	Finishing position of the selling club in the season preceding the transfer	-
SCLPSQ	SCLP squared	+
SCGD	The goal difference for the selling club in the season preceding the transfer	+
SCATT	Average attendance for Ligue 1 games in season preceding the transfer for the selling club, scaled by 10^-3	+
SCATTSQ	SCATT squared	-
FORDUM	1 if the player is a forward, 0 if not	?
DEFDUM	1 if the player is a defender, 0 if not	?

Due to the different roles of players on the soccer pitch, certain positions obtain different amounts of in game playing statistics. Defenders, who stay mainly near their own goal in order to protect the team from being scored against, rarely get the opportunity to score goals for their team. When analyzing the goals variable, a defender should have on average a substantially lower amount of goals scored when compared to either forwards or midfielders, who are judged on their scoring prowess. The same can be held true, but to a lower extent, for assists. Due to this, it becomes hard to create a model that accounts for the differences in the standards created for the different positions on a team, and could lead to a statistically less significant impact of the amount of goals scored on the overall pricing of a soccer player.

As was previously discussed in Section 2.2, the Bosman ruling has had a lasting impact on the transfer system in Europe. Due to the ruling, which created a free agent market for any player whose contract has expired with their previous team, teams are now forced to trade players earlier in the contracts in order to realize their market value without the risk of the player leaving the team for free at the end of their contract. It can be believed that the amount of time left on a player's contract would have a significant impact on the price received by the selling club. As a player's contract comes closer to ending, the reservation price set by the selling club should lower so as to attract a buyer and to realize the value of their player before the end of the contract. It is because of this relationship that the amount of years left on a contract should have a positive beta coefficient with the lowest transfer fee being accepted at essentially nil. Unfortunately, contract information for players remains classified information with a relatively modest amount of disclosed contracts. The addition of this variable to the model could improve its overall standing.

Section 4

The final specification of the model was tested using ordinary least squared regression analysis and runs through numerous econometric tests to validate the robustness of the model. The following equation is the model specified by the regression output:

$$Y=\alpha+\beta_0+\beta_1 GOLS+\beta_2 GOLSSQ+\beta_3 ASSISTS+\beta_4 MINS+\beta_5 FULLCAP+\beta_6 FULLCAPSQ+\beta_7 AGE+\beta_8 AGESQ+\beta_9 BCLP+\beta_{10} BCGD+\beta_{11} BCATT+\beta_{12} BCATTSQ+\beta_{13} SCLP+\beta_{14} SCLPSQ+\beta_{15} SCGD+\beta_{16} SCATT+\beta_{17} SCATTSQ$$

	Results of Regression, Y=LNPRICE			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.6879	3.2324	2.3784	0.0193
GOLS	0.0613	0.0324	1.8929	0.0613
GOLSSQ	-0.0030	0.0014	-2.1198	0.0366
ASSISTS	0.0473	0.0242	1.9550	0.0534
MINS	0.0300	0.0085	3.5057	0.0007
FULLCAP	0.0307	0.0082	3.7380	0.0003
FULLCAPSQ	-0.0005	0.0001	-3.9966	0.0001
AGE	0.4376	0.2577	1.6980	0.0927
AGESQ	-0.0103	0.0051	-2.0136	0.0468
BCLP	-0.0354	0.0142	-2.4970	0.0142
BCGD	0.0099	0.0055	1.7999	0.0750
BCATT	0.0802	0.0185	4.3331	0.0000
BCATTSQ	-0.0010	0.0003	-3.1214	0.0024
SCLP	-0.0608	0.0308	-1.9758	0.0510
SCLPSQ	0.0013	0.0008	1.6732	0.0975
SCGD	-0.0063	0.0051	-1.2311	0.2212
SCATT	0.0662	0.0222	2.9823	0.0036
SCATTSQ	-0.0011	0.0004	-2.5253	0.0132

Of the seventeen variables included in the model a total of sixteen have a statistically significant impact on the change in transfer prices at the accepted .1 level or better. As shown in the table below, the explanatory power, R^2, was reported as .718, which suggests that the variables included in the model account for about 72% of the variation in transfer prices. The reported F-statistic of 14.72 rejects the null hypothesis for the model that the estimated coefficients are zero, thus providing validation of the coefficients.

	Goodness of Fit Statistics		
R-squared	0.718587	Standard Error	0.616955
Adjusted R-squared	0.669771	F-statistic	14.72018

Diagnostic Test Statistics	
Durbin-Watson stat	1.962244
White F-statistic	0.959217
Ramsey RESET F-Statistic	0.426631

When testing the diagnostics of the model, no abnormalities were found in the results. The Durbin-Watson statistic of 1.97 is well above the critical value which fails to reject the null hypothesis that no serial correlation exists. Likewise, in observing the data, there exists no evidence of multicollinearity. The White test for heteroskedasticity provided an F-value of .95, which is well below the critical chi-square value, failing to reject the null hypothesis that the model is homoskedastic. Lastly, the Ramsey RESET test for misspecification and omitted variables returned an F-statistic that failed to reject the null hypothesis that there is not model misspecification. Also, the addition of the fitted variables was insignificant which reinforces the lack of error in the specification of the model.

For the variables concerning a player's individual characteristics, all are significant at the.05 level. GOLS and GOLSSQ are both significant with a negative sign on the squared term, suggesting the negative nonlinear shape predicted in the theory section of the study. ASSISTS and MINS are significant at the .05and .01 level respectively, suggesting that the two variables are better fit in a linear form, rather than goals which is best represented by a non-linear fit. The variables FULLCAP and FULLCAPSQ are both significant at well beyond the .01 level with the correct hypothesized signs. The inclusion of this variable in the model shows the increasing diversity in the French soccer leagues and the importance that national team experience at both the youth and senior team levels has on the development of a player in the eyes of the professional teams. The last player specific variables, AGE and AGESQ, are significant at the .1 and .05 levels respectively. The hypothesized signs of positive and negative were present, thus confirming the theorized nonlinear relationship between age and price.

When analyzing the results for the club characteristics portion of the model, evidence of monopoly rents are found, as is the case in other studies of this nature cited earlier in Section II. The joint significance of both buying and selling club variables reinforces the competition model outlined in Dobson and Gerrard (1999) and Dobson et al. (2000), which states that the significance of buying team variables jointly with selling team's variables is evidence of the selling team's ability to extract a portion of the nonnegative difference between their reservation price and the maximum price a buying team is willing to pay. For the buying club both their previous year's league position (BCLP) and their goal differential from the previous year (BCGD) are significant with the p-value for BCLP reported as .01 and BCGD as .07. The league position coefficient has a negative sign which reinforces the theory that the better teams (best league position = 1) are paying higher prices for the players *ceteris paribus,* but could also be

seen as the better are also buying better, more expensive players. Goal differential has a positive coefficient and follows the same theory as league position. BCATT and BCATTSQ are shown to have an impact on the price of a player with significance beyond the .01 level. The negative coefficient follows the hypothesis that the better teams, with higher revenue from gate tickets, are able to pay higher prices for the players with a nonlinear fit. For the selling club, two of the three variables are shown to have significance; with the significant variables, SCATT and SCLP, found to have a nonlinear relationship. The significance of both squared terms shows a nonlinear relationship with the dependent variable, the natural logarithm of the transfer price. Lastly, when constructing the model, dummy variables were included to test for the impact that a player's position has on their market value; however these variables are excluded from the final model due to a lack of statistical significance.

Section 5

This study expanded upon previous research in showing that many of the variables and theories surrounding English transfer markets hold true for the French sector of the transfer market. On a macro level, transfer fees have been on the rise around the world driven by increased investment in soccer teams, increased revenue for the teams due to a boom in television contracts, and merchandising revenue. Superstars are commanding higher prices and the elite teams are competing for the same limited skilled capital, thus raising the prices globally. The competitive disparity between the best teams and the rest of the league has led to a top heavy league, with the same teams winning the vast majority of the titles and gaining the highest

revenues each year. This trend, when combined with the continuing rise in revenue for the top teams, has led to a rise in transfer prices around the market.

The micro aspect of the study generated a model that was able to account for around 72% of the variation in the transfer price of a player when transferred between French teams. Variables for a player's on-field abilities and characteristics were shown to have a significant impact on the player's transfer price. Evidence of monopoly rents were found in the joint significance of variables for both the buying and selling club. Overall the model provides a high level of explanatory power, and provides a model which is capable of estimating the transfer value of an individual player.

Future research on the subject is possible as there remains a portion of the variation of transfer prices that is not explained by the current model. As explained in Section III of the study, the inclusion of the years left in a player's contract would likely be a significant factor due to the Bosman ruling. Other playing variables could provide an even clearer look into the valuation of player's by professional teams. Likewise, financial disclosure, which is a growing trend in FIFA due to new legislation called Fair Play, could provide increased explanatory power for the model. It is hypothesized that the profit for a team for the previous year and potentially for several lagged years could have an effect on the price paid by a team. Lastly, the model did not include goalkeepers. This unique position, with distinct judging criteria, was unable to be placed in the same model as field players. This could allow for another study that derives a model for the transfer price of goalkeepers.

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