

Impact of Immigration on transfer activity by English football clubs

ABSTRACT

Rising immigration has led to a larger proportion of foreign players in each league. This paper aims to explore the relationship between rising immigration and average transfer fees. This paper also studies the impact of the Bosman Ruling in 1996 on the football transfer market. The variables are studied pre and post the ruling. In order to build the economic model, data of all teams from the English Premier League for the past 28 years is collected. The variables for which data are collected include the Relative Average Transfer Price (inclusive of inflation), Relative Broadcast Revenues earned per club, and the league coefficient of the English Premier League. A multivariable linear regression is performed on these data with the Relative Average Transfer Price as the response variable and other variables as explanatory variables.

Further, dummy variables are created for each team and each year to account for unaccounted changes. After analyzing the regression, the model is found to be relatively strong in its prediction power with an adjusted R Squared of 0.642 and a standard error of the regression of 21.528. The model's results suggest that broadcast revenues and immigration numbers have the greatest impact on transfer fees, while the league coefficient is not as important as the general public's view of it. However, it is seen that before the ruling it was the league coefficient that had a major impact on transfer fees. After the ruling in 1996, broadcast revenues and number of immigrants took precedence.

Introduction

Soccer, or football, is the most popular sport in this world. To put it into context, according to FIFA (International Federation of Association Football), the 2018 World Cup final between France and Croatia reached an average live audience of 517 million viewers, with more than 1.1 billion people tuning in over its 90 minutes. In comparison, the 2021 Super Bowl pales, having had an average TV viewership of 91.6 million in the U.S. plus an estimated 30 to 50 million viewers around the world.

Soccer's popularity has led to it being one of the most valuable sports in the world, evidenced by the fact that there are 9 soccer teams in Forbes' 50 most valuable sports teams in 2021.

The soccer market has also seen an incredible rise in valuations. Spending on transfer fees increased significantly from USD 2.85bn in 2011 to USD 7.35bn in 2019. A transfer fee is a financial compensation paid by the buying club to the club that possesses the player's exclusive contracted playing rights. It is an accurate indication of the rise in valuation of the market as it shows that the prices of the "products" in the market are increasing at a rate higher than inflation. Another trend that shows the growth of the soccer market is the increase in the number of transfers from 11,890 in 2011 to 18,079 in 2019.

This growth of the soccer market has coincided with the globalization of the sport. The English Premier League has global media rights revenues of around \$3.9bn in 2021 out of which around \$1.8bn came from international rights. Most European clubs play pre-season friendly games in foreign countries such as the USA, Australia, Thailand, Malaysia, and China to increase their presence in such growing markets. Playing games in these countries, allows the locals to build an emotional connection with the visiting team, which leads to expenditures on merchandise and TV subscriptions.

A rise in global audiences has corresponded with a rise in foreign players in these top European leagues. On the 14th of February 2005, Arsenal welcomed Crystal Palace to their old ground Highbury for a Premier League game. In Arsene Wenger's squad, there were six French players, three Spanish players, and two Dutch players. There were members of the team from Germany, Cameroon, the Ivory Coast, Brazil, and Switzerland. The most noteworthy

thing, however, was that there were no English players in his squad whatsoever. It was a watershed moment for English football, the first time an entire squad contained not one player from England. Today, a team having more local players than foreign players is the exception rather than the norm. This was, however, not always the case.

When the Premier League was formed in 1992, the labor market for football players was largely divided by national boundaries. Very few British players played in overseas leagues, and very few foreign players played in the UK. This was reinforced by UEFA, which limited the number of foreign players that clubs could field in their tournaments, justifying this restriction by the need to protect the incentives for clubs to invest in youth development. By the early 1990s, the retain-and-transfer system had been reformed to some degree under pressure from both players' associations and the courts. 'Freedom of contract' was introduced in British football in 1977, giving the right of out-of-contract players to move to other clubs but with a transfer fee still payable and provision for arbitration if clubs could not agree on the transfer fee.

But elsewhere in the EU, the reform of football's transfer system was much more limited. In Belgium, the retain-and-transfer system remained intact. This was the case until it was challenged by a Belgian player called Jean-Marc Bosman, who had been denied a transfer to a French club. Bosman took his case to the European Court of Justice claiming that football was in breach of the Treaty of Rome (the foundational document of the EU) by limiting the free mobility of players. The European Court of Justice agreed, handing down what became known as the 'Bosman ruling' in September 1995. This ended the payment of transfer fees for out-of-contract players – unless these fees represented compensation for the development costs of young players – as well as abolishing restrictions on the number of foreign players. The Bosman ruling transformed the labor market for professional players within the EU. A globally competitive labor market for players began to emerge just as Premier League revenues started to grow exponentially. Free mobility of labor allowed Premier League clubs to offer the best wages to attract the best foreign players, and the removal of the payment of transfer fees for out-of-contract players increased the bargaining power of players.

This has translated to a rise in the average transfer fees per player. This paper aims to further explore this relationship between the rise in immigration and the rise in transfer fees through an accurate statistical model using multivariable linear regression. Various variables are considered in this model.

Methods

A transfer fee is the financial compensation paid by the buying club to the club that possesses the player's exclusive contracted playing rights. However, not all transfers follow this format. Players whose contracts have expired are called 'free agents'. Free agents can sign with any team, without any payment of compensation to the player's previous club. Transfers of free agents are called 'free transfers.' Free transfers are included in the scope of this study as they represent an important type of labor transfer. A player becomes a free agent because of two possible reasons: Firstly, if the club believes the player to be surplus to needs. This shows a decrease in value of the player not represented by transfer fees. Secondly, if the player demands higher wages than what the club can offer. This represents an increase in the value of a player not represented by transfer fees. Free agents are included in this model because they form a statistically significant portion of the population. According to FIFA's report on 10 years of international transfers, 70% of total transfers in the world were through out of contract players. Further, they induce a domino effect wherein if a club acquires a target on a free transfer, their budget for their other targets increases. Therefore, including free transfers eliminates this artificial inflation of prices.

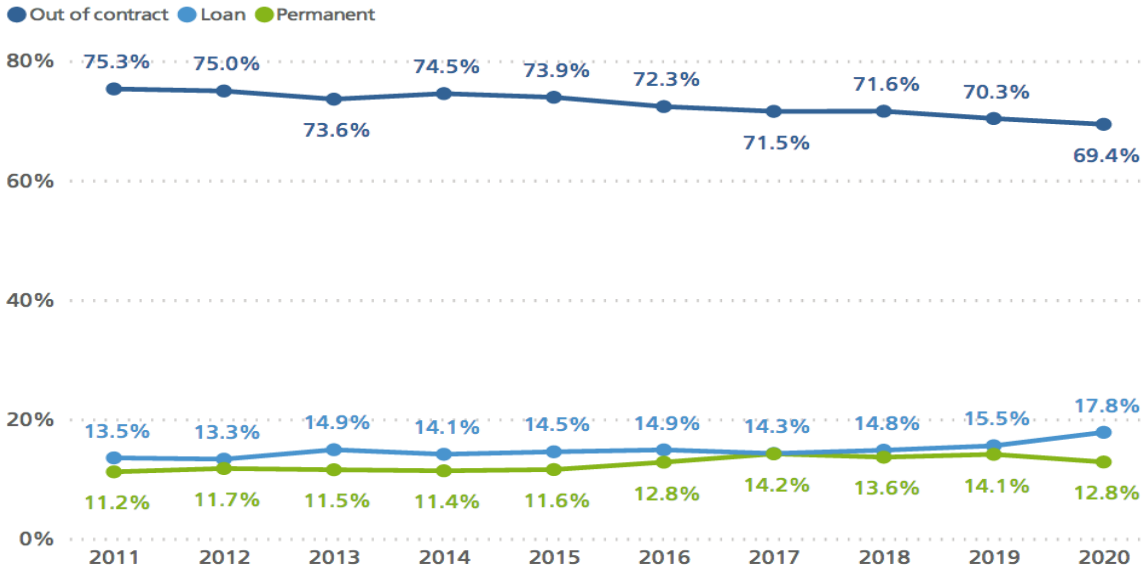


Figure 1. Types of transfer from 2011-2020. The graph above shows the proportion of different types of transfers over the last decade.

It clearly shows the importance of free transfers. However, a note of caution is required when looking at these numbers of free transfers. This data is FIFA data, collected from each registered association. The number of free transfers is higher in smaller associations where there is a lack of money. The scope of this study, however, is only the English Premier League, where free transfers (while still important) are not that prevalent.

Another common type of transfer is a loan. A loan in football is when players temporarily leave their club to play for a different one. While transfers are permanent, loans are provisional, with the player returning to the club they are originally contracted to at the conclusion of their loan spell. According to FIFA's report on 10 years of international transfers, 15.5% of global transfers in 2019 were loans. Loans are included in this study for two reasons. Firstly, loan transfers often carry a loan fee similar to a transfer fee. Secondly, loans are a financially efficient way to satisfy demand for players. As it is a determinant in demand for players, we must include it in the model.

Most models studying the impact of immigration on prices, use wages as the basic metric. This model however uses transfer fees instead of wages for two reasons. Firstly, wage data is not reliably available. Clubs often do not release the wages of players to not provide a bargaining edge in the market to their competitors. Therefore, the wage data available is not reliable, but hearsay reported by journalists. Secondly, wage data is not truly representative. Basic wages do not account for bonuses and other performance-based clauses. Transfer fees eliminate this by being a one-time payment. While transfer fees too may contain incentive based add-ons, it is rarer and not to the extent of wages. For the course of this study, we will consider these add-ons to be statistically insignificant as they are very small as compared to the actual transfer fees. Further, all transfers have similar add-ons, allowing us to accept it as a common trend across all transfers.

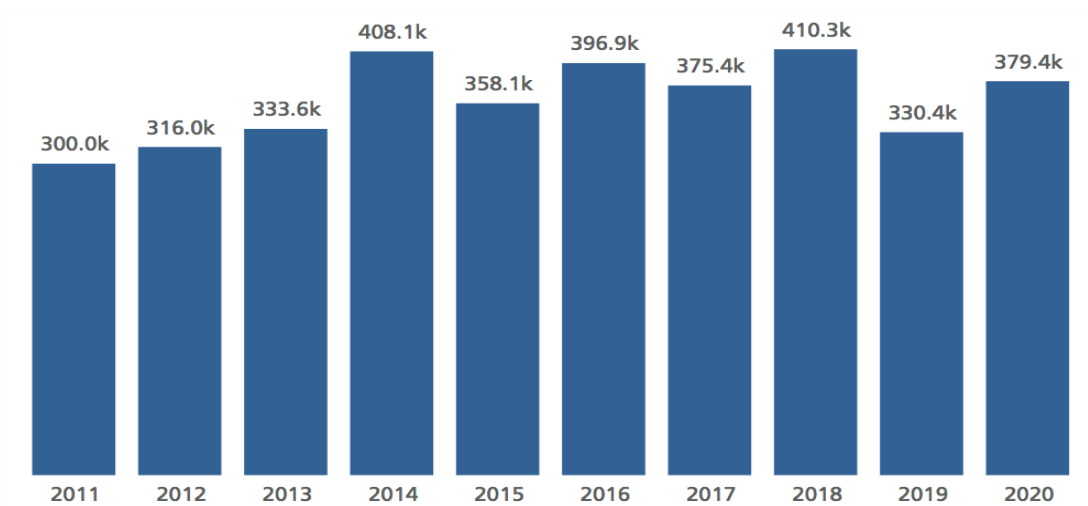


Figure 2. Median Transfer Fee per Transfer (USD). This graph shows the median transfer fees across the last decade. Transfer fees provide an accurate representation of market changes, as compared to wages.

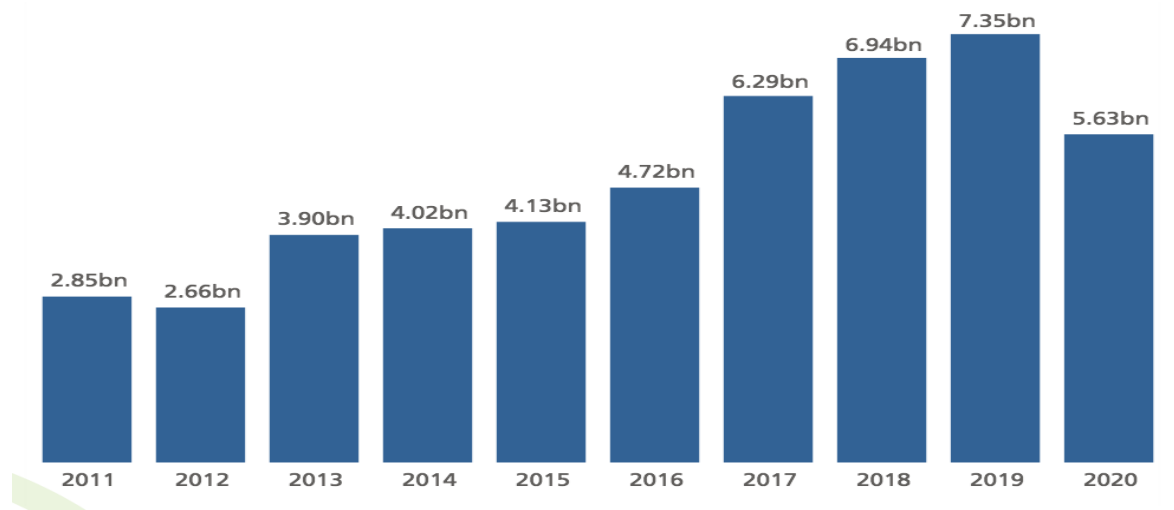


Figure 3. Spending on Transfer Fees (USD). While the median transfer fee has stayed relatively similar, spending on transfer fees has seen a major rise over the last decade, coinciding with an increase in immigration. 2020 is a notable exception due to the impact of the COVID-19 pandemic

Table 1: Variables Used

<u>Sl. No.</u>	<u>Abbreviation</u>	<u>Meaning</u>	<u>Unit</u>
1	NOI	Number of immigrants	Hundred thousand

2	RBR	Relative Broadcast Revenue	Originally million pounds, taken relative
3	LC	League Coefficient	Taken on a scale of 1-15

Number of immigrants entering the country each year (NOI):

The number of immigrants entering the country gives us an accurate representation of the immigration levels of the country. The reason we have picked the total number of immigrants entering the country rather than high skilled laborer on work visas solely, is because of the possibility of dependents joining the market. Even if the immigrating person doesn't play themselves, they can have siblings, children, or friends who join them in the country as dependents who take up the sport.

Relative Average Transfer Price (RATP):

The Relative Average Transfer Price takes every year's average transfer fee with respect to the transfer fee in 1992. 0.06 is then added to this variable to account for inflation. The reason we take the price relative is to account for any industry specific factors that cannot be quantified. Deflating the values allows us to compare these transfer fees and study the impact of different variables on it.

League Coefficient (LC):

It is common intuition that the better leagues will buy the better players. The better players will be the more expensive players on the market. Therefore, the better leagues will always spend more on players independent of immigration. The league coefficient is an excellent way to account for two factors determining the value of transfer fees: player performance and league performance.

UEFA coefficients are based on the performance of clubs in the European Cups during a five-year period. During those 5 years match results (2 points for a win and 1 point for a draw) are awarded from the group stage of CL, EL, and ECL onwards. However, in the knockout round play-offs after the EL group stage and the ECL group stage and before the round of 16, match results do count for the country ranking but not for the club ranking. In addition, one bonus point is allocated for reaching the quarter finals (but not for ECL-QF), the semifinals and the finals. Qualification for the group-stage of the Champions League is awarded with 4 bonus points, qualification for the round of 16 of the Champions League is awarded with 5 bonus points, and qualification for the round of 16 of the Europa League is awarded with 1 bonus point. Furthermore, there are bonus points for the winners and runners-up of the EL and ECL group stages: 4 bonus points for the winners of the EL groups, 2 bonus points for the runners-up of the EL groups, 2 bonus points for the winners of the ECL groups, and 1 bonus point for the runners-up of the ECL groups. Matches in qualifying rounds are awarded with 1 point for a win, and 0.5 point for a draw, but only for the country coefficient. Clubs that are eliminated in qualifying rounds of the Europa Conference League are rewarded with a number of points for the club coefficient based on the reached (qualifying) round.

Table 2. Point system for UEFA coefficient ranking

Bonus Points (RED) and Max Match Points	CL	EL	ECL
Group Stage	4 +12	12	12
Group Stage Winner (runner-up)	-	4(2)	2(1)
Round of 16	5+4	1+4	4
Quarter Final	1+4	1+4	4
Semi Final	1+4	1+4	1+4
Final	1+2	1+2	1+2
Max total points per club	38	34	30

CL: Champions League

EL: Europa League

ECL: Europa Conference League

Broadcasting revenue per club per year (BR):

Broadcasting revenue is taken as a variable in this study for two main reasons. Firstly, it shows the brand value of the sport. Higher broadcasting revenues mean there are higher levels of audiences. This is important for two reasons. A higher brand value leads to higher prices for players, as players become higher sources of revenues. If more people are watching, TV subscriptions and merchandise can be sold to more people. The money the club earns from the player, excluding their contribution to winning, increases. For example, with an increase in Southeast Asian viewers, clubs now have the opportunity to play pre-season games in South East Asia and expand the market. Higher levels of audiences also means that the market becomes favorable to investment. Sponsors are presented with a larger target audience, and this leads to more sponsors coming in at higher prices. An increase in sponsorships allows clubs to pay higher levels of transfer fees.

An increase in Broadcast Revenue also directly implies an increase in revenue for the club, allowing them to pay higher transfer fees. It is interesting to note, however, that one of the causes for an increase in broadcast revenue through the years is immigration itself. When players from diverse countries play in the league, fans from those diverse countries tune in to watch the game. This leads to more viewers and higher broadcast revenues.

Scope of the model

This model studies data from seven English Premier League clubs, namely, Manchester United, Manchester City, Tottenham Hotspur, Arsenal, Liverpool, Chelsea, and Everton. Data from these seven clubs is taken from the years 1992-2019. This time set is chosen because 1992 marks the rebranding of England's top league from the First Division to the Premier League. This rebranding brought about major monetary reforms which make this change noteworthy. The most important change was that broadcast revenue was now shared only between the teams in the league. Previously, the revenue was shared by all clubs in the English footballing ecosystem. As a result, the revenues of clubs rose massively. It is thus unfair to compare data pre and post 1992. Our dataset also ends in 2019 because of two major factors: the COVID-19 pandemic and Brexit. Both events have led to major challenges in spending. The COVID-19 pandemic led to record low spendings, and Brexit presents a unique challenge in the labor market.

These seven clubs are specifically chosen for a few reasons. Firstly, six out of the seven clubs have never

been relegated from the Premier League allowing for easy comparison of data. Manchester City was relegated for a brief period between 1996 and 2002, but their place as the English Football hegemon since 2012 makes them integral to this data. Secondly, these clubs represent clubs who have consistently been near the top of the league for the last thirty years. As a result, these clubs are unlikely to have financial difficulties that force them to discriminate between local and foreign players.

It is also seen that all seven clubs are from England. This research is limited to England because of three major reasons. Firstly, the Premier League has consistently been seen as the richest and highest quality league. Secondly, the Premier League has a reputation of being open to immigrants, unlike the Serie A which is often perceived as having racist fans. Thirdly, the Bosman Ruling of 1996 allows us to study the market before and after liberalization.

Running of the model

Multivariable Linear Regression

The single variable linear regression doesn't account for various variables. For this reason, we move to a multivariable linear regression. This multivariable fixed regression also incorporated for fixed effects. That is, unaccounted effects unique to a team or year are accounted for. This is done by creating dummy variables for each team and for each year. The variables used are discussed in the methodology section above. The following are the results.

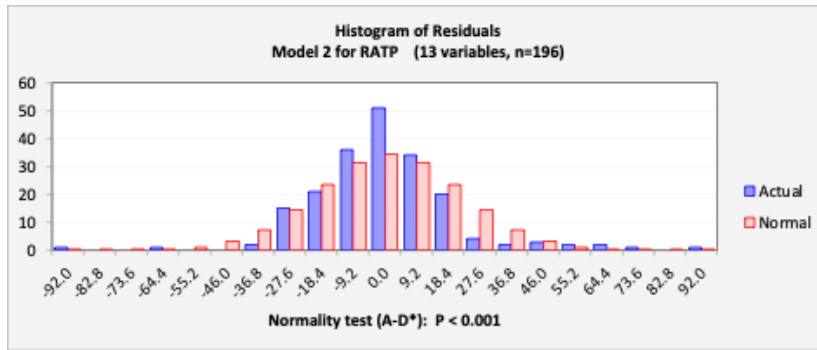


Figure 4. Histogram of Residuals. Model 2 for RATP.

The histogram of residuals follows a symmetric bell shape evenly distributed around 0. This shows that the variance is normally distributed, and the normality assumption holds true. The model's underlying assumptions thus hold valid.

Equation 1:

$$avgprice_{it} = \beta_0 + \beta_1 LC_{it} + \beta_2 RBR_{it} + \beta_3 NOI_{it} + \beta_4 (LC_{it} \cdot PreReform_t) + \beta_5 (RBR_{it} \cdot PreReform_t) + \beta_6 (NOI_{it} \cdot PreReform_t) + \varepsilon_{it}$$

With RATP as the response variable and LC, RBR, NOI, (LC * PreReform), (RBR * PreReform), (NOI * PreReform), ARS, CHE, EVE, LIV, MCI, MUN, and YEAR as the explanatory variables, a multivariable regression is constructed by Microsoft Excel, which is the final model predicting the relative average transfer fee. The model is written below.

Equation 2:

$$\begin{aligned} RATP = & -6.605 - 5.082 * LC + 0.980 * RBR + 0.003995 * NOI + 5.386 \\ & * (LC * Prereform) - 3.651 * (RBR * PreReform) - 0.126 \\ & * (NOI * PreReform) + 6.145 * ARS + 17.302 * CHE - 7.324 \\ & * EVE + 8.475 * LIV + 8.311 * MCI + 31.651 * MUN + 3.330 \\ & * YEAR \end{aligned}$$

Model Analysis

The summary of the regression analysis for the model is given below.

Summary of Regression Model Results

Linear Model For RATP		Final Model
Run Time		07.14.2022 18:45
# Fitted		196
Mean		32.114
Standard Deviation		36.002
Number Of Variables		13
Standard Error of Regression		21.528
R-squared		0.666
Adjusted R-squared		0.642
Mean Absolute Error		14.099
Mean Absolute Percentage Error		919.8%
Maximum VIF		33.375
Normality Test		***
Coefficients:		Model 2
Constant		-6.605 (0.000)
LC		-5.082 (0.005)
LCxPreReform		5.386 (0.033)
NOIxPreReform		-0.126 (0.108)
Pre_reform		
RBR		0.980 (0.002)
RBRxPreReform		-3.651 (0.346)
Year		3.330 (0.000)
ARS		6.145 (0.287)
CHE		17.302 (0.003)
EVE		-7.324 (0.205)
LIV		8.475 (0.142)
MCI		8.311 (0.150)
MUN		31.651 (0.000)
NOI__in_thousands		0.003995 (0.928)

Figure 4: Summary of Regression Model Analysis.

Model: Final Model

Dependent Variable: RATP

	R-Squared	Adj. R-Sqr.	Std.Err.Reg.	Std.Dep.Var.	# Fitted	# Missing	Critical t	Confidence
	0.666	0.642	21.528	36.002	196	0	1.973	95.0%
Variable	Coefficient	Std. Error	t-Statistic	P-value	Lower95%	Upper95%	VIF	Std. Coefficient
Constant	-6.605	1.457	-4.533	0.000	-9.480	-3.730	0.000	0.000
ARS	6.145	5.754	1.068	0.287	-5.208	17.497	1.714	0.060
CHE	17.302	5.754	3.007	0.003	5.950	28.655	1.714	0.169
EVE	-7.324	5.754	-1.273	0.205	-18.676	4.029	1.714	-0.071
LC	-5.082	1.784	-2.848	0.005	-8.603	-1.562	11.545	-0.414
LCxPreReform	5.386	2.510	2.146	0.033	0.434	10.339	25.926	0.468
LIV	8.475	5.754	1.473	0.142	-2.878	19.827	1.714	0.083
MCI	8.311	5.754	1.444	0.150	-3.042	19.663	1.714	0.081
MUN	31.651	5.754	5.501	0.000	20.298	43.003	1.714	0.308
NOI_in_thousands	0.003995	0.044	0.091	0.928	-0.083	0.091	13.231	0.014
NOIxPreReform	-0.126	0.078	-1.616	0.108	-0.280	0.028	33.375	-0.400
RBR	0.980	0.318	3.084	0.002	0.353	1.607	4.665	0.285
RBRxPreReform	-3.651	3.862	-0.945	0.346	-11.271	3.970	3.220	-0.073
Year	3.330	0.737	4.520	0.000	1.877	4.784	14.979	0.749
	Mean Error	RMSE	MAE	Minimum	Maximum	MAPE	A-D*	
Fitted (n=196)	0.000	20.745	14.099	-91.281	90.781	919.8%	4.02 (P=0.000)	

Figure 5. Final Model.

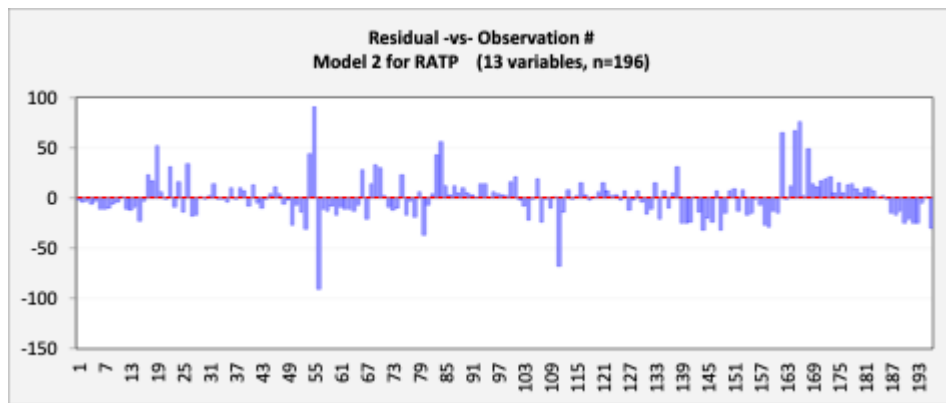


Figure 6. Residual vs Observation for RATP

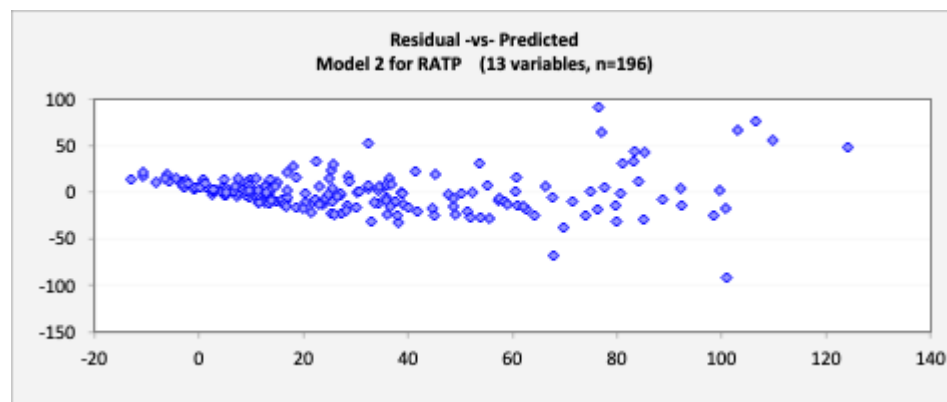


Figure 7. Residual vs predicted for RATP.

As seen in the residual vs predicted plot, the residuals are randomly dispersed and evenly distributed across the x-axis. Therefore, the regression model fits the data well, and there is unlikely to be any other kind of regression that is clearly better fitted for the data.

The adjusted R Squared of the regression is 0.642, which means that 64.2% of variation in the relative average transfer prices can be explained by variation in one of the explanatory variables.

Results

In multivariable linear regression, the size of the regression coefficient of each explanatory variable represents the size of the effect that the explanatory variable has on the response variable. Furthermore, the sign of the regression represents the direction. Based on the regression coefficients of different variables, among the three non-indicator variables, (excluding the ten variables accounting for fixed effects), Relative Broadcast Revenue has the highest coefficient, with a coefficient of 0.980. This is in concordance with the general economic theory, wherein an increase in demand leads to an increase in prices. Relative Broadcast Revenue represents the aggregate demand from the viewers perspective for the football market, while the aggregate supply of players is held constant. (The 20 teams are fixed.) Therefore, it represents an outward shift of the demand curve as shown below.

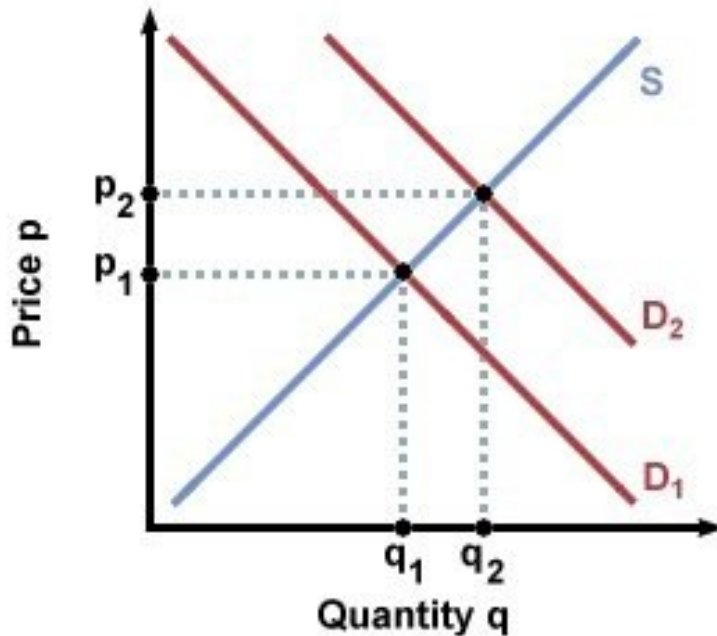


Figure 8. Demand Curve. Represents an outward shift.

However, it is important to note once again that this increase in demand is due to an increase in immigration as mentioned earlier in the paper.

Number of Immigrants has a coefficient of 0.003995 in the regression, indicating that it does have an impact on average transfer prices, but this effect is minimal. Applying economic theory to this, an increase in immigrants can be taken to represent an increase in labor supply.

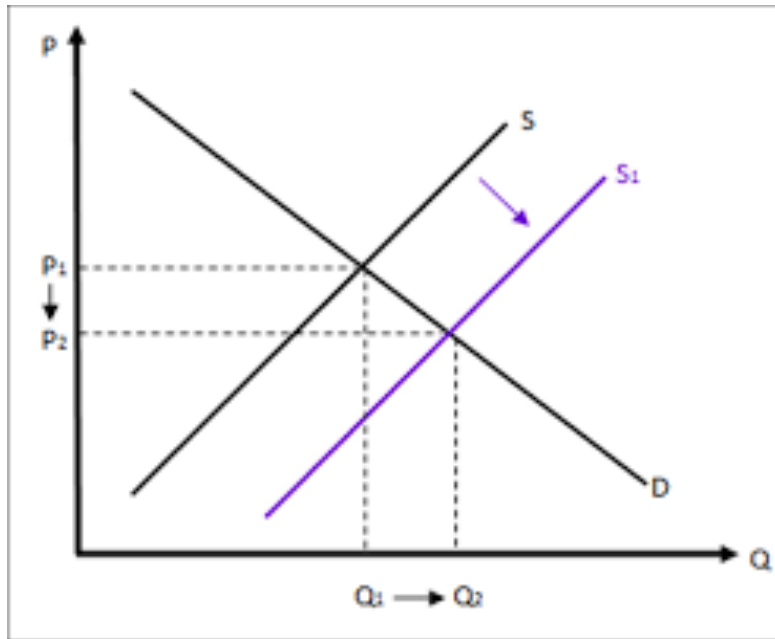


Figure 9. Supply curve. The curve shows the outward shift of the supply curve by traditional economic theory.

However, this increase in labor supply does not drive transfer prices down as seen in traditional economic theory. This is because the market itself is expanding over time, leading to an increase in demand. The interesting factor is that it is thus very rise in immigration that leads to expansion of the market.

Finally, it is seen that the League Coefficient has negative correlation on transfer fees. That is to say, the strength of the league need not impact the price of players the league buys. Rather, it is determined by the purchasing power of the league. A possible explanation for this is the fact that the money you get from winning is less than the broadcast money. For example, winning the Champions League in 2022 pocketed Real Madrid 22 million Dollars. The Broadcast revenue for a 20th place club in the Premier League is higher than this. Winning, however, does lead to an increase in the popularity of the club and thus an increase in broadcast revenue.

Discussion

An important inference that we can take from the data is the impact of the Bosman Ruling in 1996. Labelled in our data as Reform, the three main variables are interacted pre and post reform. This gives us an indication of the change caused directly by the reform.

LC*PreReform has a coefficient of 5.386. This indicates that the impact of LC on RATP decreased by 5.386 after the reform. This also implies that pre reform, LC and RATP had a positive correlation. This makes complete sense from a football sense, especially when you put the other variables' coefficients into perspective.

RBR*PreReform has a coefficient of -3.651 indicating that the impact of RBR increased by 3.651 after the reform.

NOI*PreReform has a coefficient of -0.126 indicating that the impact of NOI increased by 0.126 after the reform.

This shows us that the Bosman Ruling clearly had a major impact on the factors that affect the average transfer fee. Before the ruling, the best leagues signed the most expensive players. With revenues majorly coming from prize money and ticketing sales (which are directly proportional to how well the team plays), the most competitive leagues always had the highest purchasing power. Further, players had no financial incentive to go to a weaker league over the best league. This is clearly seen by the positive coefficient between LC and RATP.

Post the Bosman Ruling however, this was no longer the case. The liberalization of the football trade market led to an increase of immigrants in the market. Players representing diverse countries now played for the same club.

Viewership in the immigrants' home countries rose dramatically. For example, Premier League viewership rose consistently through the 2000's in Ivory Coast as they wanted to watch their star player Didier Drogba play for Chelsea. An increased viewership directly coincides with an increase in broadcast revenue. Clubs' main source of revenue was no longer tickets or trophies. It was broadcast revenue. Player's transfer fees were no longer decided by the strength of the leagues they play in; rather it was now decided by the broadcast revenue that team/league brought in. This is seen by the impact of RBR rising by 3.651, more than any other variable.

NOI also undergoes an increase in share of impact after the reform. This is because more immigrants can now play in the league. As a result, there are more opportunities for incoming immigrants to play in this league. As a result, NOI also undergoes an increase in its coefficient of 0.126

An important inference we can draw from this data is that it is the purchasing power of the club that mainly determines average transfer fees. The determinants of this purchasing power, however, change over time.

Conclusion

Spending on transfer fees has risen exponentially over the past decade. There has been a dramatic rise in wages and transfer prices (the price for which a player is bought from his former team) in the soccer labor market over the last decade. This paper finds the major factors affecting transfer prices over the last 29 years. Further, analyses how immigration policies are specifically changed for this market and the impacts of such policy. The football transfer market is a volatile market with pronounced effects by small changes. To account for these small changes, we use a fixed effects regression in this paper. The following is the equation of the model.

Equation 2:

$$\begin{aligned} RATP = & -6.605 - 5.082 * LC + 0.980 * RBR + 0.003995 * NOI + 5.386 \\ & * (LC * PreReform) - 3.651 * (RBR * PreReform) - 0.126 \\ & * (NOI * PreReform) + 6.145 * ARS + 17.302 * CHE - 7.324 * EVE + 8.475 \\ & * LIV + 8.311 * MCI + 31.651 * MUN + 3.330 * YEAR \end{aligned}$$

In a football transfer market understanding the factors affecting transfer prices can be hard to determine, this empirical model can prove to be a powerful tool for other economists and statisticians to study the market. Clubs can also use this model to try to analyze future trends in prices.

Limitations

This paper has limitations in its scope. It is restricted to six premier league teams. While these teams prove to be a great indicator for the Premier League (as they have never been relegated from the league), this data cannot be used to derive conclusions for the rest of Europe. Continuing this paper's sole focus on England, it considers only the Bosman Ruling. Similar rulings were enforced across Europe at different times. To build upon this paper would be to expand its scope to the rest of Europe.

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