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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

THE EFFECTS OF FOREIGN PLAYER REGULATIONS ON PLAYER PRODUCTIVITY IN THE TURKISH SUPER LEAGUE

TÜRKİYE SÜPER LİGİ'NDE YABANCI OYUNCU YÖNETMELİKLERİNİN OYUNCU VERİMLİLİĞİ ÜZERİNE ETKİLERİ

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Abstract

This study investigates the effects of foreign player regulations on the labor productivity in the Turkish Super League. The initial hypothesis is that the productivity of the new foreign entrants will decrease as the number of foreign players allowed increases since most clubs tend to transfer foreign players that they would not make good use of. To test this hypothesis, data was collected for all the new foreign entrants to the Turkish Super League between the seasons 1999/2000 – 2004/2005 and 2009/2010 – 2014/2015. Regression Discontinuity Design is used as a tool for testing the initial prediction to reveal whether there are sharp shifts in the player productivity. The results displayed that productivity of the new foreign entrants diminished as the number of foreign players allowed increased. The possible spillover effects of the regulation changes on the number of Turkish players transferred to overseas clubs and the productivity of the domestic youngsters playing in the league are investigated in detail. Empirical evidence was found to state that foreign player regulations are influential of domestic youngsters' overall productivity however no evidence could be found that the regulations are affecting the number of Turkish players transferred abroad.

Keywords: Labor Productivity, Spillover Effect, Regression Discontinuity Design, Labor Mobility, Turkish Super League

JEL Classification: E24, C21, Z2

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Öz

Bu çalışma, Türkiye Süper Ligi'nde uygulanan yabancı oyuncu kuralında yapılan değişikliklerin oyuncu verimliliği üzerindeki etkilerini incelemektedir. Çalışmanın temel hipotezi, takımların oynatmasına izin verilen yabancı oyuncu sayısı artmasıyla takımların daha fazla yabancı oyuncu transfer edeceği ve bunun, lige yeni transfer olan yabancı oyuncuların verimliliklerinin düşmesine sebep olacağı yönündedir. Bu hipotez, lige yeni katılan yabancı oyuncuların verileri 1999/2000 – 2004/2005 ve 2009/2010 – 2014/2015 periyotları için toplanarak, RD metodolojisi çerçevesinde test edilmiştir ve ilgili zaman periyotları için oyuncu verimliliğinde keskin farklılıkların ortaya çıktığı gözlemlenmiştir. Buna göre, oynamasına izin verilen yabancı oyuncu sayısı arttıkça, lige yeni transfer olan yabancı oyuncuların verimlilikleri düşmektedir. Bununla birlikte çalışma kapsamında, yabancı oyuncu kuralında yapılan değişikliklerin olası tali etkileri olan yerli oyuncuların yurtdışına transferi ve U21 oyuncularının verimlilikleri olguları da incelenmektedir. Elde edilen ampirik sonuçlara göre, yabancı oyuncu kuralındaki değişikliklerin genç (U21) oyuncuların verimliliği üzerinde negatif etkisi bulunmakla beraber yerli oyuncuların yurtdışına transfer olması konusunda herhangi bir etkisi bulunmamaktadır.

Anahtar Kelimeler: Emek Verimliliği, Yayılma Etkisi, Regresyon Süreksizlik Tasarımı, İşgücü Hareketliliği, Türkiye Süper Ligi

JEL Sınıflandırması: E24, C21, Z2

1. Introduction

Foreign player regulations in the Turkish Super League have been a major concern for the Turkish Football Federation (TFF) in the last two decades. The regulations have changed 7 times in the last 10 years. The lack of determination and commitment regarding the regulations adversely affect the clubs and players in the league. Most of the changes were not preplanned, instead they were announced a few months before the beginning of a season or at the mid-season brake the best. During the 07/08 season there has been a regulation change in the mid-season brake for the ongoing season. The uncertainty created by the regulatory bodies cause the clubs to be caught off guard.

Foreign player regulations have effects not just on clubs but also on players. The players in the league, both foreign and domestic, consist the labor force of the league. We believe that the regulatory changes are influential on the labor force in terms of productivity. As the maximum number of foreign players allowed increases, clubs tend to act carelessly when transferring players. Clubs start transferring players they don't need and make good use of. When clubs transfer such players, the new foreign entrants are expected to have lower productivity relatively to the ones transferred in the previous seasons. Establishing empirical grounds for this hypothesis is the main motivation of conducting this study.

The foreign player regulations are also influential on the domestic players as well which can be called as the spillover effects of the regulatory changes. The change in the productivity of the Turkish youngsters (U-21 players), where we expect an adverse effect, and the change in the number of Turkish players being transferred abroad, where we expect a positive effect, are the two spillover effects which will be investigated for revealing the spillover effects.

For investigating the effects of the regulatory changes, two periods are going to be investigated. The first period is between 99/00 and 04/05 seasons where the foreign player regulations did not change, and the second period between 09/10 and 14/15 where the regulations changed multiple times. Detailed information regarding the regulatory changes are presented in the next section. Investigating the differences, in terms of productivity, between the two periods will enable us to do a comparative analysis for both foreign players and domestic youngsters.

A similar study has been conducted by Radoman (2016) about the influence of policy changes on player productivity. Radoman has examined the effects Bosman Ruling on player productivity in the English Premier League. He investigated the pre and post Bosman periods using an RD design in order highlight the productivity differences between the two periods. Bosman Ruling was a total game changer for the European football transfer market which came into legislation after Jean-Marc Bosman's case at the European Court of Justice in 1995. With Bosman Ruling, all European players started to be treated as domestic players which enabled them to be exempted from the foreign player regulations. Also, Bosman Ruling enabled to mobilization of labor within the European leagues since players were given the right to a free transfer at the end of their contracts unlike before (EUR-Lex, 1995).

We measure productivity in terms of minutes played per game (MPG) and appearances per season (APS) as in Radoman's study. As the number of foreign players allowed increases, we expect the overall productivity of the new foreign entrants to decrease unlike Radoman's study. His study concludes that the players which are transferred in the post-Bosman period are more productive when compared to the pre-Bosman period transfers. The underlying reason behind this conclusion is the fact that Bosman Ruling "enhanced the pool of talent available to clubs to draw from" in Radoman's (2016) words. Turkish Super League is not one of the top divisions in European Football, unlike the English Premier League, although it has been developing rapidly. Players who are at their best have the opportunity to go to better leagues such as Spanish La Liga or the English Premier League. This is the main reason why being able to pick talents from a larger pool did not enhance the quality of the players which Turkish teams transferred. Although Turkish teams can not attract the best talents, they still transfer foreign players just because they can which is the assumption behind our expectation of a decrease in the productivity. Clubs transfer foreign players even though they don't make use of them therefore we expect the foreign player productivities to decrease which is our initial hypothesis.

Regression Discontinuity (RD) Design is going to be used as a tool for testing our initial hypothesis and it will reveal whether there are sharp shifts in the productivity of foreign players. The presence of sharp shifts in the productivity will provide us grounds to justify our hypothesis.

We believe there two main spillover effects of the foreign player regulations. As the first spillover effect, we expect a decrease in the productivity of domestic youngsters as the number of foreign players increase in teams' squads. We believe that transferred foreign players, their skill and ability disregarded, are tended to be preferred over the domestic youngsters because they have

been paid for. The skill and ability is hard to measure and contrast but comparing the two time periods in the Super League, with different foreign player regulations, in terms of domestic youngsters' productivity will enable us to test this hypothesis. As the second spillover effect, we expect an increase in the number of domestic players transferred abroad in the second period. As the number of foreign players in the teams increase, the domestic players' productivity will decrease and it will motivate them to go abroad and play in other leagues.

The next section provides a brief history of the foreign player regulations in the Turkish Super League in the last two decades. Understanding the changes in the regulations is crucial for being able to comprehend the effects on the foreign and domestic players. Later a section regarding data collection and the methodology is presented. After that, findings are exhibited and discussed about the results of the study and finally conclusions regarding the findings and suggestions for further studies are made.

2. A Brief History of the Foreign Player Regulations in the Super League

The debate regarding the maximum number of foreign players allowed has been going on for a few decades in Turkey. Some argue that constraints on the number of foreign players is a must for protecting domestic players such as the case of quotas and tariffs for protecting domestic industries. Whereas some point out that importing technology is a way to acquire know how and imitation is a step for development which both can be applied to the case of football. Since both sides have their rights and wrongs a settlement was hard to reach and the regulations have changed numerous times in the last two decades [1].

In the 96/97 season the number of allowed foreign players per club was four and only three of them were allowed to be on the pitch (3 + 1). In 97/98 the regulation changed so that all the foreign players could be on the pitch at the same time (4 + 0). In 98/99, it was (5 + 0) and in 99/00 it was (5 + 1). For six seasons the regulation did not change but starting with the 05/06 season a period of rapid regulatory changes begun.

In 05/06 (6 + 0), in 07/08 (6 + 1), in mid-season brake of 07/08 (6 + 2), in 10/11 (6 + 2 + 2) (the last +2 meaning that 10 foreign players can be transferred but only 8 of them are allowed in the match squad), in 11/12 (6 + 2 + ∞), in 13/14 (6 + 0 + 4), in 14/15 (5 + 3 + 0) and starting with the 15/16 season (11 + 0 + ∞) meaning that clubs are allowed to have 11 foreign players on the pitch or in the match squad but they have to have at least seven domestic players in the match squad and clubs can transfer unlimited number of foreign players. The regulation seems like it has been stabilized after a decade and now clubs will be able to plan the next seasons. It is important to underline that policymakers of today, agreed on this decision and when they change the regulations might be subject to change as well.

1 The information regarding the regulation changes has been gathered from numerous newspapers and TV channel websites as well as the TFF official website.

3. Data Collection and Methodology

For estimating the player productivities in the Super League, data regarding the number of appearances and minutes played is needed for each player. The required data is collected for 459 foreign and 637 Turkish youngsters for the period between 99/00 and 04/05 seasons and for 634 foreign and 777 Turkish youngsters for the period between 09/10 and 14/15 seasons. All data was gathered from the German website Transfermarkt which has been used in numerous studies and has no credibility issues.

As mentioned earlier regression discontinuity (RD) design is applied to determine whether there are discontinuous jumps in the means of player productivities between the two periods. RD design was introduced to the literature by Thistle Waite and Campbell (1960) and it did not attract much attention in the economic literature since the 1990s (Imbens&Lemieux,2008).

An RD design application is structured by a set of assumptions that are relevant in the context:

- Two groups: Entrants in the first period where there are no regulatory changes and entrants in the second period where there are regulatory changes every season represented by dummy A
- Two periods of time, stable and instable in terms of regulations, represented by a dummy variable T.
- Players cannot precisely influence the assignment variable to influence whether they are in period one or period two.
- Treatment indicator defined by the dummy $B = A \; x \; T$
- Forcing and control variables that are continuous around the beginning and end points of the periods.

The identification of the regulation impact on the overall player productivity can be estimated by the following reduced form equation:

$$Y_i = \alpha + \beta B_i + f(X) + \varepsilon_i \qquad (1)$$

where $\beta = 0$ for players entering in the first period, and $\beta = 1$ for players entering in the second period. Optimal bandwidth is obtained following Imbens and Kalyanaraman (Guido & Kalyanaraman, 2012) method that minimizes the squared bias plus variance. The treatment effect is defined as:

$$\frac{lim_{\varepsilon \downarrow 0} E[\, Y \mid B = \varepsilon^{\beta}] - lim_{\varepsilon \uparrow 0} E[\, Y \mid B = \varepsilon \,]}{lim_{\varepsilon \downarrow 0}\, p(Z) - lim_{\varepsilon \uparrow 0}\, p(Z)} \qquad (2)$$

The treatment parameter is estimated using local polynomial regressions on the end and beginning points of the periods.

$$\min_{\beta} E[\, Y_i - \alpha - \beta(Z_i)\,]^2 K\left(\frac{Z_i - Z_0}{h}\right) \qquad (3)$$

where $K\left(\frac{Z_i - Z_0}{h}\right)$ is a triangle Kernel function that increases the weight of the observations which are closer to the end points, and h is the bandwidth level.

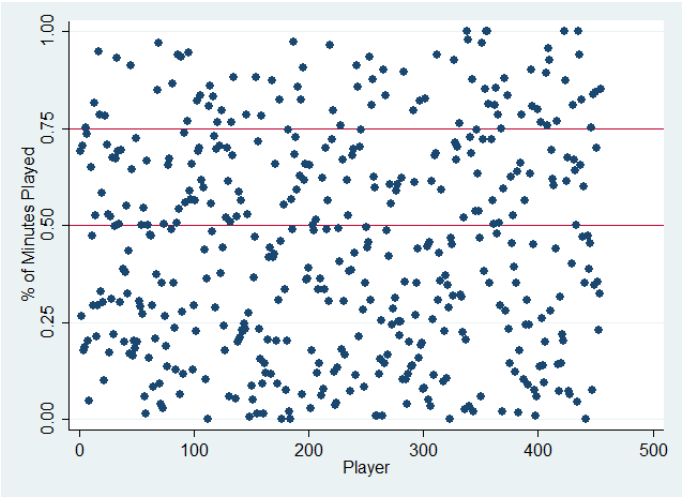
4. Findings and Discussion

The main objective of this study is to identify the effects of foreign player regulations on productivity, measured in terms of MPG and APS, of the new foreign entrants to the league. The expected influence on the productivity is an adverse effect due to the belief that Turkish clubs tend to make transfers which they don't make use of. If the empirical evidence provides grounds to confirm that the influence is negative, then it can be concluded that Turkish teams are not efficient in transferring foreign players.

It is important to mention once more that the effects of the regulations are not just on the foreign players but also on the Turkish players which we have called as the "spill-over effects" of the regulatory changes. We have identified the spill-over effects as the changes in the overall productivity of the Turkish youngsters (U-21 players) and in the number of Turkish players which were transferred to overseas clubs. First, the findings regarding the overall new foreign entrant productivity is presented and discussed by comparing the differences between the two periods in order to test our initial hypothesis. Later the spill-over effects of the regulation changes regarding the Turkish U-21 players are presented and interpreted along with their causalities and results using the FIFA national team rankings as an indicator. Finally, the number of Turkish players transferred abroad are contrasted for the two periods of time.

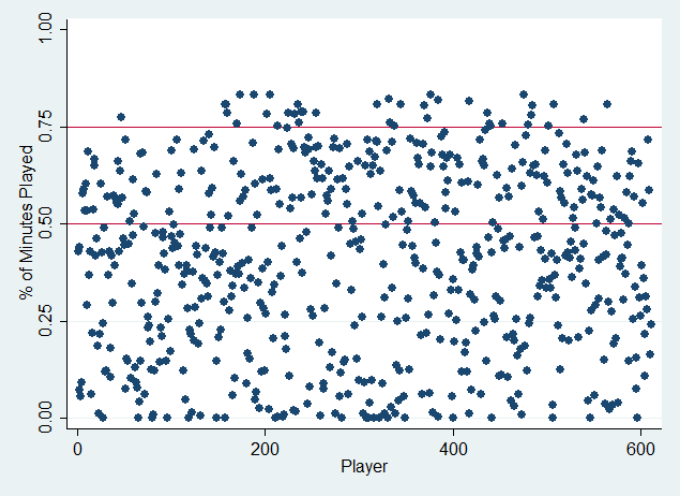
The overall productivity of the new foreign entrants is measured in terms of appearances made per season (APS) and minutes played per season (MPS). There are 18 teams competing in the Super League meaning that there are 34 games per season which a player can participate in and the total number of minutes available for a player is 3060. Also it is important to mention that in the first period where the maximum number of foreign players allowed on the pitch is five meaning that there are 450 available minutes for the foreign players to play however in the second period the maximum number of foreign players allowed on the pitch is six so a total of 540 minutes are available for the foreign players each game. In order to neutralize the effect of this difference we have normalized the second period MPSs.

Figure 1: Percentage of Minutes Played (1999-2005)



Figures 1 and 2 provide scatter plots of the percentage of minutes played for foreign players who have been transferred to the Super League in periods 1 and 2.

Figure 2: Percentage of Minutes Played (2009-2015)



We have defined foreign players who managed to play at least half of the available minutes per season as "successful transfers". The horizontal lines in the figures set the threshold for 0,5 meaning that players above the line are successful transfers. There are 201 successful transfers out of 458 (43,87%) in the first period and there are 234 successful transfers out of 611 (38,29%) in

the second. As the figures illustrate, the number of successful transfers decreased from period 1 to 2. As the number of foreign players allowed increased, teams transferred foreign players which they don't make good use of.

The second horizontal lines on the figures mark the 0,75 threshold for the percentage of minutes played. The players above the line have played more than 75% of the available minutes in the season they have been transferred. In other words, these players have played at least 2295 minutes for their team. In this sense period 2 is more successful when compared to period 1. 24% of the transferred foreign players have played at least 2295 minutes in period 2 whereas in period 1 its 21%. These numbers highlight an important point: in period 2 some players have played a lot where as some played very little. This point helps us to support our initial argument, teams indeed transferred players which they didn't need as the number of allowed foreign players increased.

Even though Figures 1. and 2. support our initial hypothesis through the decrease in the percentage of successful transfers it is not enough to conclude. Figure 3 and Figure 4 will help us fortify our argument by highlighting the shift in the new foreign entrant productivity, measured in MPS and APS, from period 1 to period 2.

Figure 3: Minutes Per Game for Foreign Players

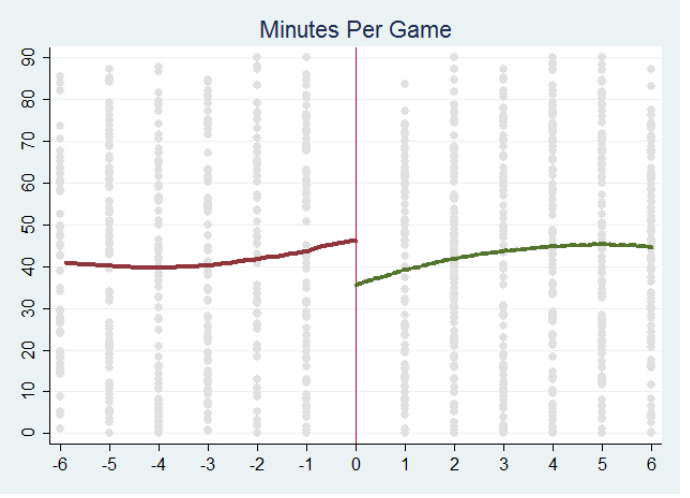
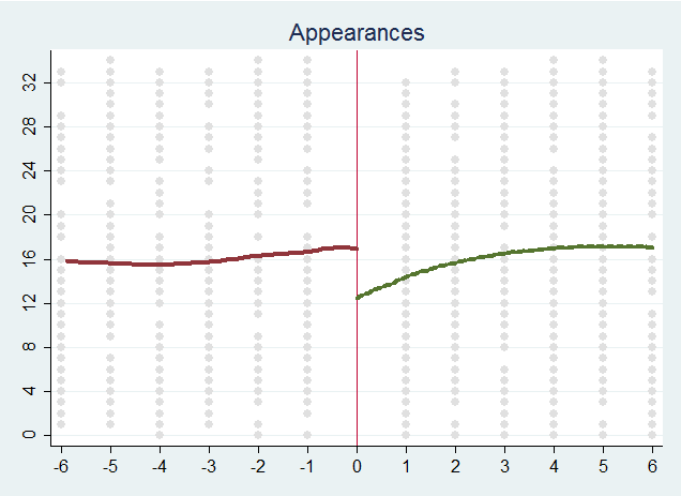


Figure 3 presents the shift in the overall productivity level in terms of MPG from period 1 to period 2 which is the output generated from the RD design. As our initial hypothesis predicted; new foreign entrant productivities fell as the number of foreign players allowed increased however it is important to mention that there is an upward trend in the second period. From 09/10 to 14/15 productivities of new foreign transfers, measured in MPG, increased 12.8% even though it is still lower than the end of 04/05. Turkish teams are adapting to the new regulations and making better use of their new foreign transfers in the recent years.

Figure 4: Appearances for Foreign Players



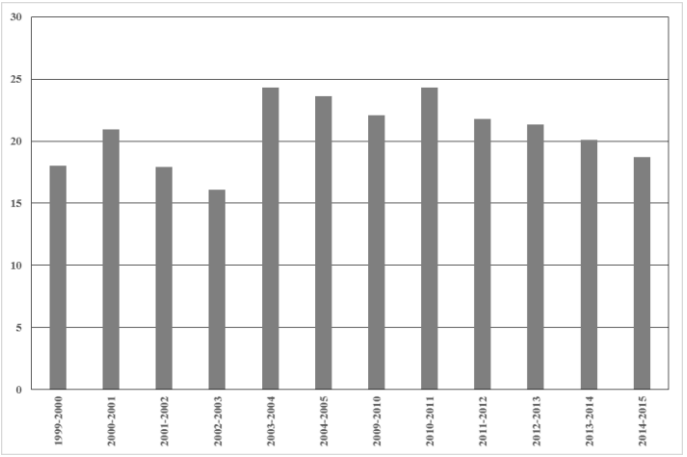
The change in the appearances per season (APS) of the new foreign entrants is presented in Figure 4. APS has also decreased from period 1 to period 2 and an upward trend similar to the one in Figure 3 can be observed. Both Figures 3 and 4 support our hypothesis as well as providing additional information regarding the transfer efficiency in the Turkish Super League. As the number of foreign players allowed increased, the productivity of new foreign transfers decreased from period 1 to period 2. Turkish teams did not make good use of the foreign players they have transferred however they are getting better at it as the figures suggest.

The decreasing productivity of the new foreigners in period 2 made us question the difference between the foreign players in terms of quality. We have attempted to compare the players in terms of quality even though quality is hard to measure. Figure 5 provides a histogram for the career national team appearances averages of all the foreign player transfers for every season who have played in the Super League for periods 1 and 2.

National team appearances are used as a proxy for player quality. Players for the national team are chosen from a talent pool of thousands and being chosen to participate in the national team displays a player's quality among his fellow countrymen. The Football Association (FA) which is the organization responsible from the English Premier League, which is perhaps the most desired football league in the world, has some work-permit regulations regarding the non-EEA (European Economic Area) players. The non-EEA players needed to have played in at least 30-75%[2] of the national team's matches in the last two years otherwise they can't get a work permit from the FA (The Football Association, 2015).

2 The minimum percentage of games required to be played differ according to the nation's FIFA ranking. The higher the ranking is the less is the minimum percentage required to be played.

Figure 5: National Team Appearances Averages



Source: Transfermarkt

The FA uses the national team appearances as a criterion to evaluate the non-EEA players quality. The FA wants only the best players to be a part of league and perhaps this is the reason why the Premier League is considered the most competitive league in the world. Even a team like Leicester City, with no previous success other than the 2nd place in the 1928/1929 season, can win the league. TFF has no such criteria regarding the work-permit however it does not stop us from the national team appearances as an indicator of quality. Comparing the career national team appearances of the foreign players who have been transferred to Turkey in the two periods enables us to determine which period was more successful in transferring players with higher quality.

As can been seen in Figure 5 the career national team appearances vary over the seasons in both periods. Seasons 03/04 and 10/11 are the most successful ones in terms of transferring players with higher national team appearance averages. The average for period 1 is 20,02 and the average for period 2 is 21,5 so in this sense period 2 is more successful when compared to period 1. We used the national team appearance as an indicator of quality for players and in the period with higher productivity we expected the average national appearances for the foreign players to be higher however our data set failed to show any evidence to support this expectation.

5. Spill-Over Effects

We have investigated the productivity of new foreign entrants in terms of MPG and APS and congregated results. The empirical evidence we have gathered suggests that the initial hypothesis was indeed correct. The productivities of the transferred foreign players have decreased from period 1 to period 2. Since the hypothesis is verified, now the spill-over effects can be discussed.

The first spill-over effect we anticipated was that as the number foreign players allowed increases the productivity of domestic youngsters (U-21 players) will decrease. Figure 6 illustrates the shift in the overall productivity from period 1 to period 2 in terms of MPG and Figure 7 in terms of APS as the results of RD design processes.

Figure 6: Minutes Per Game for Youngsters

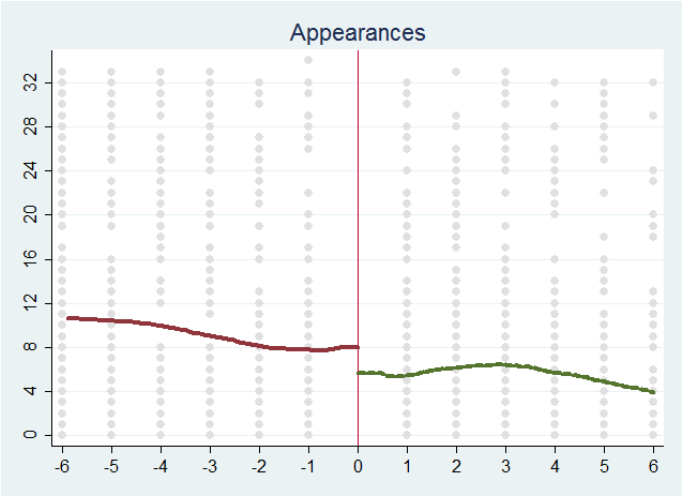
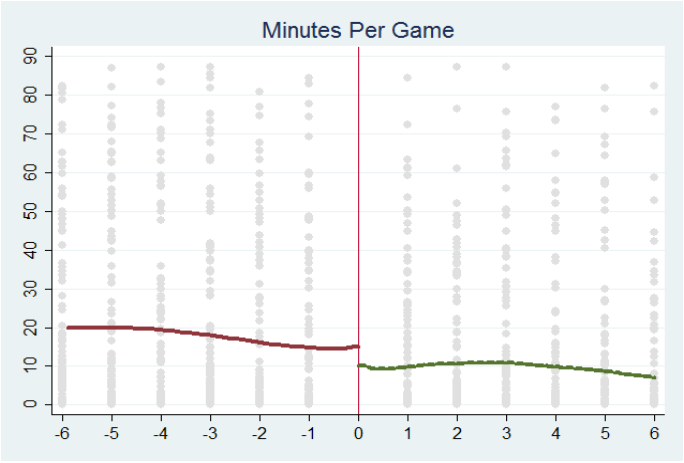


Figure 7: Appearances for Youngsters



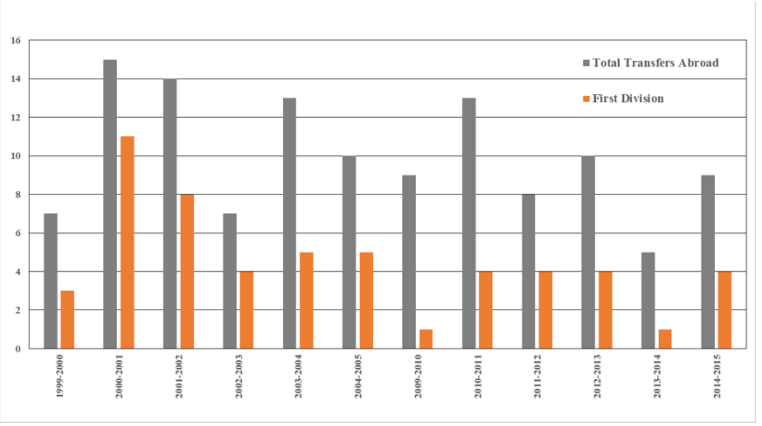
As in the case of foreign players', domestic youngsters' productivity has declined from period 1 to period 2 both in MPG and in APS as well. The sharp shifts in overall productivity levels are clearly observable on Figures 6 and 7. The shifts in the figures indicate that domestic youngsters

started playing less as the number allowed foreign players increased. Unlike the new foreign entrants' productivities there is a downward trend for the domestic youngsters. They are getting less and less MPG and APS every year through both periods.

Regarding the case of domestic youngsters there is an important point to mention about Turkish football. In the end of 99/00 season, (which is the first season in period 1) Galatasaray has won the UEFA Cup (Europa League) and the Super Cup. These two trophies are the first European championships a Turkish team has ever won and they are still the only ones. Beginning with this, Turkish football has entered its golden era. The national team became the 3rd in both the 2002 World Cup and 2003 Confederations Cup. Turkish players were highly appreciated which had positive influences on the APS and MPG of the domestic youngsters during these years. In the beginning of the first period, Turkish national team was 29th in FIFA rankings and in the end of the period it was ranked 11th. During the second period Turkish national team ranking fluctuated around the 40th position until the end of 14/15 season where the national team had a good spell and miraculously managed to qualify for the EURO 2016 championship. The Turkish national team was ranked 21st in the end of the second period and began the period with the 10th position after success in the EURO 2008 championship.

Domestic youngsters are key for achieving success at the national level. Young players develop faster and acquire experience if they play in competitive matches. Trainings, practice games and youth team matches fail to develop young players after a certain point. With the help of the empirical evidence the first spillover effect can be verified and it can be concluded that the foreign player regulations have also effects on the overall productivity level of the domestic youngsters.
The second expected spill-over effect was an increase in the number of Turkish players being transferred abroad. As the number of foreign players allowed increase domestic players would be able to play less. Their MPSs and APSs would decrease which would motivate them to go abroad and play in other countries however the expectation was not satisfied. Figure 8 provides a detailed distribution of Turkish players who were transferred abroad for every season in both periods.

Figure 8: Total Transfers Abroad



Source: Transfermarkt

The black bar presents all the players who have been transferred abroad and the orange bar presents the number of players who have been transferred to first division overseas clubs. In the first period 66 players were transferred abroad from the Turkish Super League and 54% of these players were transferred to first division clubs. In the second period 54 players were transferred abroad and only 33% of them were transferred to first division teams. Both the number of players who were transferred abroad and the percentage of first division transfers decreased. The empirical evidence suggests that as the number of foreign players allowed increased, the number of Turkish players being transferred to overseas clubs declined. It can be concluded that the mobility of labor for the Turkish players did not increase as we expected on the contrary it declined. A possible explanation for the unexpected result is the good spell Turkish clubs and national team had in the beginning of the 2000s. Galatasaray's and national team's achievements have created an interest for the Turkish players therefore there was an increase in the number of Turkish players going overseas.

In the beginning, we had an initial hypothesis and two expected spillover effects. The hypothesis was that the productivity of new foreign entrants, measured in terms of MPG (minutes per game) and APS (appearances per season), would decrease as the number of foreign players allowed increase. The initial hypothesis was empirically verified through the sharp shifts in the productivity levels which were revealed by the regression discontinuity (RD) design method. From period 1 to period 2 the productivity of new foreign players decreased.

After verifying the hypothesis, we have investigated the probable spill-over effects. The first one we took into consideration is the influence of regulation changes on the domestic youngsters' (U-21 players) productivities measured in terms of MPG and APS. The empirical results were in favor of our expectation and we concluded that as the number of foreign players allowed the productivities of domestic youngsters declined.

The second expected spill-over effect was that the number of Turkish players transferred to abroad would increase as the number of foreign players allowed increased however the empirical evidence suggested otherwise. Even though the allowed number of foreign players increased from period 1 to period 2 the number of Turkish players who were transferred to overseas clubs decreased.

Next section is going to conclude the study as well as giving suggestions for further studies.

6. Conclusion

TFF has decided to allow the Turkish clubs to transfer as many foreign players as they want starting with the 15/16 season. Even though the debate regarding the foreign player regulations seems like it has been settled the outcomes are still be seen. The effects of the "liberalization" and the removal of "quotas" in Turkish football would be observable in several years. The

competitiveness of the Turkish football clubs in international competitions might increase if the funds are managed wisely however the influence on the Turkish national team is an unknown.

This study has empirically proved that as the number of allowed foreign player increased the productivities of the foreign players decreased unlike the case of the English Premier League after the Bosman Ruling (Radoman, 2016). The sharp shifts in MPG and APS levels acquired by the result of an RD design process provide empirical grounds for this claim. Clubs have transferred players either which they did not need or with low quality. It should be noted that there is an upward trend in the productivity level in the second period showing that Turkish clubs have started doing better at transferring foreign players which they can make use of.

Along with diminishing foreign player productivity we have defined two probable spill-over effects regarding the Super League and tried to establish empirical grounds for them. The motivation behind searching for spill-over effects was the belief we had in the probable "side-effects" of the increasing presence of foreign players in the Turkish Super League.

The first identified spill over effect was the decrease in domestic youngsters' productivities (U-21 players) as the number of allowed foreign players increased. Practicing the same method, used for the new foreign entrants, we have estimated the productivities for U-21 players in terms of MPG and APS. The results were as expected; the productivity of the domestic youngsters declined from period 1 to period 2 and furthermore the decline is continuing in the second period which should be taken into consideration for the sake of Turkish football. The correlation between the changes in the Turkish national team FIFA rankings and the changes in U-21 productivity level is intriguing. The brief examination about the relation between the nation-wise success and the emphasis put on youngsters gave out promising results. This is a part of this study which can be extended for being able to reach substantial results and contribution to the literature.

The second spill-over effect we expected was an increase in the number of Turkish players who were transferred to overseas clubs however the empirical results have shown otherwise. From period 1 to period 2, as the number of allowed foreign players increased, the number of Turkish players who were transferred abroad did not increase on the contrary it decreased.

One probable cause of this decrease is perhaps the high transfer fees Turkish clubs demand for Turkish players. Due to the foreign player regulations the demand within the league for Turkish players skyrocketed so the clubs preferred domestic buyers rather than buyers from abroad. Especially the giants of Turkish football (Beşiktaş, Fenerbahçe and Galatasaray) were in a fierce competition to transfer players from the other teams in the league which caused the salaries paid to players to escalate. As a conclusion it can be said that the high prices and salaries caused by the excessive domestic demand might have influenced the number of Turkish players which were transferred abroad.

This is an area which needs detailed investigation especially since the foreign player regulations are abolished starting with the 15/16 season. Now clubs are allowed to transfer as much as foreign

players they desire which will, sooner or later, have an influence on the transfer fees and salaries of the Turkish players. The price changes in the domestic player market in the following years should be analysed in order to reveal if this overpricing was influential on the number of Turkish players being transferred abroad.

The Turkish Super League do not have the Bosman Ruling in practice in terms of the players from the EEA to be treated as domestic players. Starting from the 15/16 season a similar change in productivity might be observed as in the case of the English Premier League. It should be kept in mind that these conclusions are the results based on a data set composed of only new entrants into the league. Player productivity in football is a subject which has been deficient until recent years however there is still room for improvement. We believe that this study will contribute to the literature as well as unveiling new areas of study for future researchers.

References

EUR-Lex. (1995, December 15). Acess to European Union Law. Retrieved May 3, 2016, from Judgement of the Court of 15 December 2015 – ASBL v Jean-Marc Bosman: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:61993CJ0415&from=EN

Imbens, Guido and Karthik Kalyanaraman (2012). Optimal Bandwidth Choice for the Regression Discontinuity Estimator. The Review of Economic Studies, 79(3), pp. 933-959.

Imbens, Guido and Thomas Lemieux (2008). The regression discontinuity design: Theory and applications. Journal of Econometrics, 142(2), pp. 611-614.

Radoman, Mihailo. (2016). Bosman Ruling Implications on Player Productivity in the English Premier League. William H. Greene, Lynda Khalaf, Robin C. Sickles, Michael Veall and Marcel-Cristian Voia (Ed.), Productivity and Efficiency Analysis, Springer, Zurich, pp. 295-307.

The Football Association. (2015, March 23). "Work permit changes will benefit English Football". Retrieved April 29, 2016, from The Football Association: Work permit changes will benefit English football Read more at http://www.thefa.com/news/thefa/2015/mar/england-commission-update-work-permits-fa-chairman-greg-dyke#ASWPLhIwlCGBbObj.99

Thislethwaite, Donald L. and D. T. Campbell (1960). Regression-discontinuity analysis: An alternative to the ex post facto experiment. Journal of Educational Psychology, 51(6), pp. 309-317.