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On the Release of Players to National Teams

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Abstract

The release of players from a club to the national team often leads to a conflict concerning the duration of the players' stay with the national team. Based on a theoretical bargaining model, we examine whether intervention in this conflict by a governing body is desirable. We show that bargaining between the club and the national federation yields a socially inefficient outcome if financial compensation is either prohibited or limited. If, however, the national federation is allowed to pay unlimited financial compensation to the club, it is not necessary to intervene in the negotiations because the bargaining outcome will be socially optimal.

Keywords

national team, release of players, compensation payment, bargaining, team sports

Introduction

In many team sports, players with outstanding performance play not only for their clubs but also for the national teams of their respective countries. As players are contracted by their clubs, it can be argued that the national federations borrow the clubs'

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key resource (players) to produce their own output (national team fixtures). For a long time, paying a fee for such kinds of rental has not been common in professional team sports. However, recently, the International Federation of Association Football (FIFA), the Union of European Football Associations (UEFA), and some national federations have agreed upon financial payments to the clubs and compensation for their insurance premiums for releasing a player to a national team. FIFA and UEFA provide a total amount of more than €170 million for the 2008-2014 soccer tournaments.[1] Moreover, the German Football Federation (DFB, 2011), for example, pays around €45.000 per player to the clubs that release a player to friendly matches, totaling around €600.000 per year, and covers for all matches of the national team the insurance premium for the entire period.[2]

Especially managers of large-market clubs complain about the release of players to the national teams as well as the magnitude of the corresponding compensation payments due to two reasons. First, large and financially successful clubs are "global brands," the appeal of which reaches far beyond national borders in a commercially significant way. Therefore, the national team is only of minor importance to the market in which those large clubs operate. Second, there is an increased risk of injuries due to the players being overworked.

So far, in spite of the topicality and relevance of this issue, the sports economics literature has widely neglected to analyze the conflict between clubs and national teams regarding the release of players.[3] One exception is Benz and Franck (2005), who consider a related conflict between a soccer club and a player and show that it can be solved by contractual means. However, they do not model the bargaining problem between a club and a national team.

In this article, we aim to partly fill the gap in the literature by understanding the institutional arrangements regarding the release of players to the national team. Based on a theoretical bargaining model, we examine the circumstances under which intervention in the conflict by a sports association is desirable. Our model shows that the parties will end up with a socially inefficient outcome if financial compensation is prohibited. If, however, the national federation is allowed to pay financial compensation to the clubs, then it may not be necessary to intervene in the negotiations because the parties will achieve the socially optimal outcome. Under the assumption that the national federation is financially constrained such that it is not able to pay the amount demanded by the club, the bargaining outcome will again be socially inefficient. Nevertheless, a governing body such as UEFA or FIFA always has an instrument with which to implement the socially optimal outcome by setting a lower bound to the duration of the players' stay with the national team.

The remainder of the article is structured as follows. In the second section, we introduce the analytical framework, which incorporates significant parts of the trade-off that a release of players to the national team may generate for clubs and federations. In the third section, we analyze the bargaining process between clubs and federations. In the fourth section, we summarize the main results and we provide a discussion of the article's limitations and further research directions.

Modeling the Trade-Off Within and Between Clubs and Federations

In this section, we develop a theoretical bargaining model to analyze the potential conflict between a club and a national federation regarding the release of players. Consider a representative club C and a national federation F. Denote by $d \geq 0$ the total duration of the stay of the club's players with the national team. Total duration is defined as the frequency of releasing a player, multiplied by the period of time per release. We assume that a maximum duration $d_{\max} > 0$ exists for which players are able to stay with the national team such that $d \in [0, d_{\max}] =: D$.[4] Both the club's utility and the national federations' utility depend on d and are given by $u_C(d) : D \to \mathbb{R}$ and $u_F(d) : D \to \mathbb{R}$. We assume that $u_C(d)$ and $u_F(d)$ are both C^2 functions that satisfy the following assumptions:

A1: $u'_C(d) < u'_F(d)$ for all $d \in D$,
A2: $u'_C(0) > 0,\ u'_F(d_{\max}) < 0$,
A3: $u''_C(d) < 0, u''_F(d) < 0$.

According to A1, the national federation benefits marginally more than the club team from the players staying with the national team for an additional spell. A combination of A1 and A2 implies that (interior) optimal durations for the players to stay with the national team exist for both the club team and the national federation. We denote by $d_C \equiv \arg\max_{d \in D} u_C(d)$ and $d_F \equiv \arg\max_{d \in D} u_F(d)$ the optimal durations from the perspective of the clubs and the national federation, respectively. A3 implies decreasing returns to an increase in the duration d of the players' stay at the national team for both the club and the national federation.

Summing up, Assumptions A1–A3 indicate that both the club team C and the national federation F benefit if players spend some time with the national team, but also that the players should not be away from their clubs for too long. The suitability of these assumptions will be discussed in the following by briefly explaining how the release of players to the national team generates positive and negative effects for both (i) clubs and (ii) federations.

(i) Clubs can benefit from releasing players to the national team, because a player's market value can increase with good performances in the national team and thus clubs can demand higher transfer fees for such players. In addition, players who play on a national team that performs well are more productive (Lucifora & Simmons, 2003). In other words, being drawn into the national team can increase the (human) capital stock of the club team (Carmichael, Forrest, & Simmons, 1999).[5] Furthermore, players who are members of the national team might become icons, especially for younger fans. As a result, clubs can benefit through the positive image effects of a successful national team (see also Tripcke, 2001) and have improved possibilities concerning the commercialization of these players (e.g., increasing the sales of merchandise).[6] Formally, the club's benefit from releasing a player to the national team

can be written as $v(d)$ with $v'(d) > 0$ and $v''(d) < 0$. Intuitively, the benefits increase with the duration of their stay with the national team, albeit with a decreasing rate.

Besides positive spillover effects, some risks and disadvantages exist for the clubs when players are released to the national team. First and foremost, there is an increased risk of injuries due to the overworking of players (Ekstrand, Waldén, & Hägglund, 2004; Hägglund, Waldén, & Ekstrand, 2009). According to Waldén, Hägglund, and Ekstrand (2007), around 11% of all 672 players of countries that qualified for the men's European Championship 2004, the women's European Championship 2005 and the men's Under-19 European Championship were injured during the competitions.[7] Hence, when players are injured while they are away with the national team, it often prevents them from playing for their clubs for significant periods afterward. Also, players returning from the national team to their clubs may be tired from the additional games they had to play. These costs can be formalized as follows. Suppose that the club suffers a cost $k > 0$ if a player gets injured during his stay with the national team. A player gets injured with probability $r(d)$, where the risk of injury increases in the duration d with an increasing rate, that is, $r'(d) > 0$ and $r''(d) > 0$. Thus, the club's (expected) utility is given by $u_C(d) = v(d) - r(d)k$. If $r'(0)$ is sufficiently low and k sufficiently high, $u_C(d)$ satisfies Assumptions A2 and A3. In addition to the costs of increased risk of injuries, Lucifora and Simmons (2003) could detect that national players on average earn 4 times as much as other football players. From an economic perspective, such salary differentials might be explained by the different degrees of human capital for national and nonnational players (Hübl & Swieter, 2002). Therefore, clubs might have to raise players' salaries after they have been capped for the national team for the first time.[8]

(ii) For the national federation, the players' stay with the national team also generates a trade-off between positive and negative effects. It is obvious that the national federation directly benefits of the players stay because having a successful national team generates cash flows for the federations. For instance, Oliver Bierhoff, manager of the German national team, mentioned that the DFB receives on average €5–6 million for an international match (Gartenschläger, 2010). At the same time, there may also be negative effects for the national federation because it also cares about the quality of domestic club football. This is intuitively plausible because some income resources of the national federations are closely related to the quality of domestic club football. Take Germany as an example, where the DFB markets the national league cup, which generates a cash flow of around €50 million per year (Schmidt, 2010).

It appears reasonable to assume that the national federation has more to gain from the release of players to the national team than does the club. In addition, it seems that the downside from such a release is more significant for the club, as the club suffers the risk of injury of the star players. We thus assume that the national federation benefits marginally more than the club from the players staying with the national team (A1), which leads to the following lemma:

Lemma 1: The club and the national federation disagree about the optimal duration for which the players should stay with the national team. In particular, the club prefers a shorter stay of the players with the national team than the federation would like to see, that is, $d_C < d_F$.

Proof. Straightforward.

Lemma 1 formally shows that there is a potential conflict between the club and the federation regarding the optimal duration of the players' stay with the national team. In what follows, we analyze the possible ways in which the duration d could be determined in practice. To be able to evaluate these solutions from a social point of view, we define the total utility as $U(d) := u_C(d) + u_F(d)$ and determine the socially optimal solution in the following proposition:

Proposition 1: A socially optimal duration d_{so} of the players' stay with the national team exists and is unique in D.

Proof. See Appendix A1.

The proposition shows that a socially optimal duration of the players' stay with the national team exists, denoted by $d_{so} \in D$, which is implicitly defined by the first-order condition:

$$U'(d_{so}) = u'_C(d_{so}) + u'_F(d_{so}) = 0.$$

It should be noted that the socially optimal duration d_{so} is an interior solution in the interval D of feasible durations because $d_F < d_{\max}$.

Figure 1 depicts the utilities u_C and u_F of the club and the national federation, respectively, as a function of the duration d of the players' stay with the national team. The figure reflects Assumptions A1–A3. Note that the socially optimal duration d_{so} is within the interval $[d_C, d_F]$.[9] In Figure 1, the utility of the national federation increases above that of the club. However, this is not necessarily true because A1–A3 do not impose this.

Results

To examine whether it is necessary to intervene in the negotiations between a club and a national federation regarding the release of players, our analysis is structured as follows. First, we analyze the situation in which either the club or the national federation chooses the duration d; second, we examine what happens when the club and the national federation bargain over duration d; third, we test how bargaining with upper limits to the feasible compensation might influence the situation; and fourth, we derive the possible effects of an intervention by a governing body.

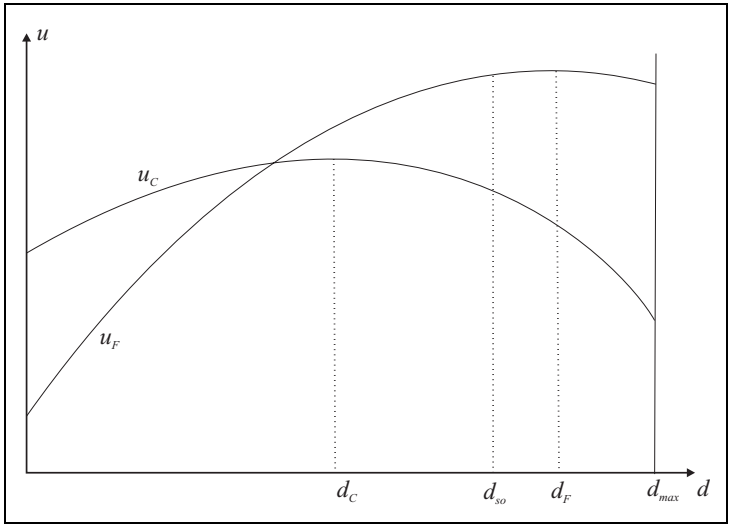

Figure 1. Utility of club and national team.

Club or Federation Chooses Duration

As a starting point, we assume that either C or F can choose d but that no financial compensation is allowed to be paid by F to C for the release of players.[10] Recall that d_C (d_F) is the duration that the club (national federation) would choose optimally. The following proposition indicates that neither d_C nor d_F is socially optimal.

Proposition 2: (i) If the club chooses the duration d, the players stay with the national team for an inefficiently short period of time, that is, $d_C < d_{so}$.
(ii) If the national federation chooses the duration d, the players stay with the national team for an inefficiently long period of time, that is, $d_F > d_{so}$.

Proof. See Appendix A2.

Compared with the socially optimal solution, C would want to reduce d, whereas F would want to increase d because $u'_C(d_{so}) < 0$ and $u'_F(d_{so}) > 0$. The intuition behind part (i) of Proposition 2, that is, the behavior of the club, is as follows. The club chooses d in order to maximize its own utility $u_C(d)$. By focusing on its own utility, however, it neglects the externality that it imposes on the national team. Because the externality is neglected and the national federation prefers a relatively higher value of d, the club decides to let its players go to the national team for an inefficiently short period of time. A similar intuition applies to part (ii) of the proposition.

Because of the inefficiency, one may look for ways to improve the situation. One obvious possibility is that the club and the national federation negotiate over d, with

the national federation potentially offering the club a compensation p if d is increased above d_C. This possibility is analyzed in the next section.

Club and Federation Bargain Over Duration

In this subsection, we assume that F can pay C financial compensation for the release of players. We consider the following simple bargaining game. With probability $q \in (0, 1)$, C makes a take-it-or-leave-it-offer to F and with probability $1 - q$, instead, F makes a take-it-or-leave-it-offer to C.[11] The offer consists of the duration d of the players' stay at the national team and financial compensation $p > 0$ paid by the national federation to the club. The probability q measures the parties' relative bargaining power: the larger (smaller) is q, the higher is the bargaining power of C (F). In professional soccer, it is often observed that national federations are rather powerful. This could be captured by assuming a small value for q.

First, we analyze the bargaining game under the assumption that C proposes the offer. In this case, C chooses the offer (d, p) that solves the following constrained maximization problem:

$$\max_{d \in D, p \in R_+} u_C(d) + p \text{ s.t. } u_F(d) - p \geq u_F(d_C).$$

C proposes an offer (d, p) to maximize the sum of its utility $u_C(d)$ of sending players for duration d to the national team and the compensation p received from F under the constraint that F accepts the offer. Hence, F's payoff from accepting d and paying compensation p must not fall short of its payoff from declining the offer. We assume that if the offer is declined, the negotiations break down and C chooses its utility-maximizing duration d_C. In the optimum, (d, p) is chosen to make the constraint binding, that is, $p = u_F(d) - u_F(d_C)$.[12] Hence, the maximization problem simplifies to $\max_{d \in D} u_C(d) + u_F(d) - u_F(d_C)$ and we derive the solution as $d^* = d_{so}$.[13] It follows that the socially optimal duration d_{so} is chosen and C receives compensation of $p_C := u_F(d_{so}) - u_F(d_C) > 0$.

In the next step, we assume that F makes a take-it-or-leave-it-offer to C. With a similar interpretation to the previous one, the optimal offer (d, p) solves

$$\max_{d \in D, p \in R_+} u_F(d) - p \text{ s.t. } u_C(d) + p \geq u_C(d_C).$$

It should be noted that, now, F maximizes the sum of its utility $u_F(d)$ minus the compensation p it has to pay to C under the constraint that C accepts the offer. Hence, C's payoff from accepting d and receiving p must not be lower than its payoff from declining the offer. Again, we assume that if the offer is declined, C chooses its utility-maximizing duration d_C.[14] In the optimum, (p, d) is chosen such that the constraint in the optimization problem is binding, that is, $p = u_C(d_C) - u_C(d)$. The maximization problem then becomes $\max_{d \in D} u_F(d) - u_C(d_C) + u_C(d)$ and the socially

optimal duration d_{so} is implemented.[15] As a result, F offers C compensation of $p_F := u_C(d_C) - u_C(d_{so}) > 0$. The next proposition summarizes the results.

Proposition 3: (i) If the club and the national federation are allowed to bargain over the duration d, then the socially optimal duration d_{so} is implemented regardless of which makes the offer.

(ii) The financial compensation paid by F to C is $p_C = u_F(d_{so}) - u_F(d_C)$ with probability q and $p_F = u_C(d_C) - u_C(d_{so})$ with probability $1 - q$. The expected compensation $E[p] = q \cdot p_C + (1 - q) \cdot p_F$ increases with C's bargaining power q because $p_C > p_F$.

(iii) The total utility of the club U_C and the national federation U_F is given by:

$$U_C = q \cdot (u_C(d_{so}) + p_C) + (1 - q) \cdot u_C(d_C),$$
$$U_F = q \cdot u_F(d_C) + (1 - q) \cdot (u_F(d_{so}) - p_F).$$

Proof. See Appendix A3.

The main implication of Proposition 3 posits that the socially optimal solution is implemented once the club and the national federation are allowed to negotiate over the duration of the players' stay with the national team. This result holds independent of whether C or F makes the offer. Even though the socially optimal duration is implemented in both scenarios, the two scenarios differ with respect to the financial compensation paid by F to C. The size of this compensation depends on who is allowed to propose an offer and is either $p_C = u_F(d_{so}) - u_F(d_C)$ or $p_F = u_C(d_C) - u_C(d_{so})$. If C makes the offer, the compensation it receives is higher than in the scenario in which F makes the offer, that is, $p_C > p_F$. Therefore, greater bargaining power of the club implies that higher compensation has to be paid by the national federation. One can assume that larger clubs or more powerful club associations such as the German Football League or the English Premier League have greater bargaining power vis-à-vis the national federation and therefore will obtain higher financial compensation for their players. Figure 2 graphically illustrates the results from Proposition 3.

Bargaining With Upper Limits to Feasible Compensation

The results derived so far indicate that C and F might be able to solve their problems on their own and that intervention by a governing body (like an international sports association, such as FIFA in football) is not necessary. In practice, however, international sports associations often intervene and set clear rules for the length of time players have to stay with their national teams. A rationale for such interventions by a governing body can be given when frictions are introduced into the bargaining process, as bargaining then no longer leads to an efficient solution. Different frictions are imaginable, such as incomplete information and financial constraints. To keep things simple, we follow the latter approach and assume the parties to be financially

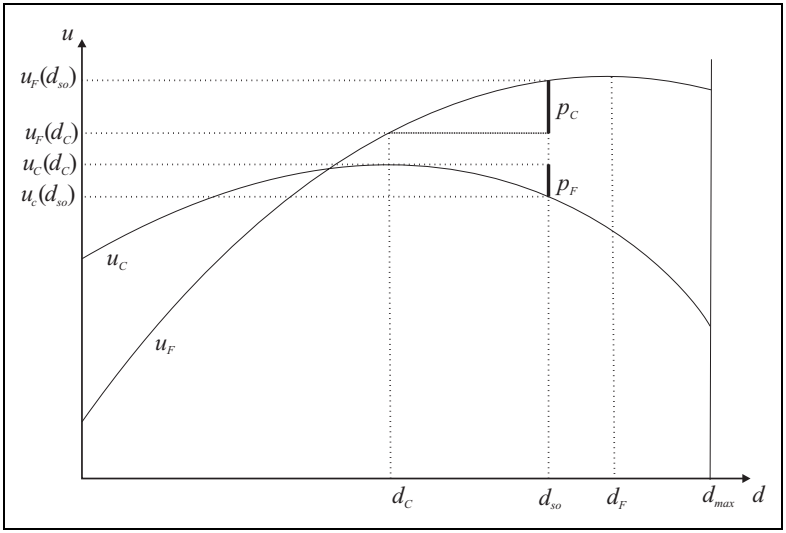

Figure 2. Socially optimal duration and financial compensation.

constrained, so that there is an upper limit $\hat{p}$ to the feasible compensation paid by F to C.[16] Of course, this upper limit affects the behavior only if $\hat{p} < p_C$, so we suppose that this is the case. As just indicated, bargaining does not always lead to the socially optimal solution in this case.

Proposition 4: If there is an upper bound $\hat{p} < p_C$ to the feasible compensation paid by F to C, then the two parties are not always able to achieve the socially optimal duration d_{so} via bargaining.

Proof. See Appendix A4.

Proposition 4 shows that the socially optimal duration will no longer be achieved if restrictions are introduced regarding the feasible compensation. The intuition is as follows. When making an offer, a party wants to achieve two aims. It wants to increase the size of the "surplus" that can be distributed among the parties and it wants to secure a large share of this surplus. When there are no bounds to the feasible compensation, each party has two independent instruments available to achieve these two aims. A party chooses d so as to maximize the size of the surplus (which leads to the socially optimal duration d_{so}) and p to increase its share in the surplus. When there is an upper bound to p, however, p is only of limited use for distributing the surplus. Then d is not only used to determine the size of the surplus but also to distribute it among the parties. This dual role induces d to move away from the socially optimal duration d_{so}.

Intervention of a Governing Body

In this subsection, we show that a governing body, like an international sports association has an instrument with which it can install the socially optimal duration.[17] Such an intervention of a governing body makes sense if bargaining between the club and the national federation is no longer expected to produce a socially optimal outcome. In the current model, there is an easy way for a sports association to reinstall the socially optimal duration. It can simply impose a lower bound $\hat{d}$ on the amount of time a player must spend with the national team. If this lower bound is set equal to d_{so}, the club and the national federation will agree on this level as demonstrated in the following proposition.

Proposition 5: If a sports association imposes a lower bound $\hat{d} = d_{so}$ on the duration of the players' stay with the national team and club and national federation have to obey this rule, then the outcome of the bargaining between C and F is the socially optimal duration d_{so}.

Proof. See Appendix A4.

A caveat is in order. Implicitly, we have assumed that the sports association wants to maximize total welfare and is therefore willing to set $\hat{d} = d_{so}$. In practice, however, the sports association may pursue a different objective. For instance, the association may want to maximize the own profit. If a substantial part of this profit is earned by organizing competitions between national teams, the sports association may bias the duration of players' stay with the national team in favor of the national team. In other words, it may then prefer to set $\hat{d}$ above d_{so}, so that the social optimum is no longer attainable.

Conclusion

First, we summarize our major findings and discuss the robustness of our model to alternative specifications as well as the transferability of our results to different sports. Second, we point out the limitations of our approach and possible further research directions.

Summary and Discussion

This article develops a theoretical bargaining model to examine the potential conflict between a club and a national federation regarding the release of players to the national team. We analyze whether interventions in this conflict by a governing body are necessary and socially desirable. In our model, we consider a representative club and a national federation. Both agree that it is good for players to spend some time with the national team but disagree about the optimal duration of the players' stay with the national team. We show that a socially optimal duration of the players' stay

exists. However, if no financial compensation is allowed to be paid by the national federation to the club, both parties will end up with a socially inefficient solution. In the case that the club chooses the duration, the players stay with the national team for an inefficiently short period of time, while the opposite is true if the national federation chooses the duration. If, instead, the club and the national federation are allowed to bargain over the duration and financial compensation paid by the national federation to the clubs is possible, then the socially optimal duration is implemented regardless of which makes the offer. The size of this compensation depends on who is allowed to propose an offer and the expected compensation increases with the club's bargaining power. Under the assumption that the national federation is financially constrained and is not able to pay the compensation demanded by the club, we find that the two parties are not able to achieve the socially optimal outcome through bargaining. Nevertheless, if a governing body imposes and enforces a lower bound on the duration of the players' stay, then the bargaining between the club and the national federation will yield the socially optimal outcome.

The qualitative findings from the model are robust to several model generalizations. For example, we could extend the model to account explicitly for player quality. A higher player quality probably has an effect on the utilities of both the clubs and the national federations, thereby changing the exact values of the optimal durations of the players' stay with the national team and the financial compensation. The general finding that a governing body should intervene when the bargaining between the club and the national federation is not without friction, however, continues to hold. The same is true when there is more than one club, as long as the clubs are homogeneous. When heterogeneity is introduced (e.g., players of differing quality or clubs with different utility functions), the intervention of a governing body sometimes improves social welfare. The efficient solution, however, may not be achievable anymore. To understand this, suppose that players are of differing quality. Then, the socially optimal duration of a player's stay with the national team depends on the player's quality. A single lower bound to this duration, which is equal for all kinds of players independent of their ability, no longer ensures the choice of the optimal duration for players of all quality levels.

It is important to mention that the predictions of our model are transferable to other sports because the general conflict between clubs and federations regarding the release of players occurs in many team sports. For example, the International Basketball Federation (FIBA) states:

> It is within the spirit of all FIBA Regulations that players make themselves available for competitions of both their club and their national team. The national member federations are encouraged to enact regulations securing the participation of all players under their jurisdiction in their respective national teams. (Internal Regulations 2010, Art. H.1.9)

Concerning the release of players to national teams, this statement is not very restrictive and suggests that FIBA has less enforcement power in this area than

FIFA. Furthermore, with an average of 82 matches played in a regular North America Basketball Association (NBA) season (and 16–28 additional games in the play-offs) as well as highly paid superstars, the cost of the secondment of talent time is higher for (NBA) basketball clubs than it is for football clubs. Altogether, these might be possible reasons why superstars like Dirk Nowitzki (Germany), Kobe Bryant (United States), Pau Gasol (Spain), and Tony Parker (France) did not appear in the World Cup in 2010 in Turkey. While these arguments imply that there are certain sports in which the national team activities are of minor importance to the respective club markets,[18] other sports exist, like rugby, in which national teams such as the All Blacks (New Zealand) and the Springboks (South Africa) have a huge impact on the club markets. It is probable that the willingness to release players to the national team is therefore higher in these sports.

Limitations and Further Research Directions

While this is the first article analyzing the potential conflict between clubs and federations arising from to the mandatory release of players to national teams, some shortcomings exist which need to be addressed in future research.[19]

First, further conflicts between clubs and federations arise if clubs' and national teams' fixtures are scheduled at the same time. For instance, the matches of the youth teams (e.g., the FIFA Under-20 World Cup 2009 in Egypt, the Olympic competitions in which national teams with players under 21 are participating) are scheduled independently from the matches of the seniors (Tripcke, 2001). Moreover, this conflict might also occur for senior players.[20] As a result, the club officials need to decide on whether or not to let the players play for their country for specific tournaments.

Second, our model is based on a "representative" club that has to release players to a national team. However, some teams do not have players who are drawn into the national team. These teams may favor matches by the national teams as these may increase interest in soccer while potentially weakening those opponents with national players in their squad. It is thus conceivable that the teams without any national player enter a coalition with the national federation and that the federation incorporates these teams' preferences when negotiating with the other teams. At least for the top five European Leagues (England, France, Germany, Italy, and Spain), it can be argued that the number of clubs that do not have any national player in their squad remains rather small: Nearly each club has national players (though probably not for the countries of the respective leagues). However, in smaller leagues, the number of teams with no national players might be considerably higher. Therefore, the definition in this article of a "representative" club only holds for top leagues. The externality arising in small leagues needs to be addressed in future research.

Third, by focusing on a single club, we implicitly assumed that the club bargains individually with the federation. In a situation with multiple clubs, it might be beneficial from the perspective of the clubs to bargain jointly rather than individually.

Otherwise, different levels of compensation for different players may result and also different durations of stay for players from different clubs, both of which might affect national team selection. This could be detrimental to the performance of the national team and damaging to the interests of individual clubs, if club and international performances are complementary. In a joint bargaining process, clubs had to be represented by a club association. This may lead to agency problems if the interests of the clubs and the club association are not fully aligned. The club association is likely to consist of members of some of the clubs. If clubs are heterogeneous (e.g., for reasons similar to those discussed in the preceding paragraph), the members of the association may try to push through rules that are beneficial for their own clubs, but hurtful to others. These agency problems would have to be traded off against the benefits that joint bargaining entails.

Finally, we have argued that the risk of injury of a player is the main downside to releasing players to the national teams for the clubs. Risk-sharing arrangements may counter this problem and may thus affect the conflict between clubs and national federations. As an example, the national federation may pay a fee to the club which is more generous if a player was injured during his stay with the national team.

Appendix

A1. Proof of Proposition 1

Because D is a compact interval and $U(d) = u_C(d) + u_F(d)$ is a continuous function on D, according to the Weierstrass theorem, a maximum d_{so} of total utility $U(d)$ exists. Uniqueness of the solution is guaranteed because $U(d)$ is a strictly concave function and D is a convex set, where $d_{so} \equiv \arg\max_{d \in D} U(d)$.

A2. Proof of Proposition 2

Part (i). The club chooses d in order to maximize $u_C(d)$. Again, a solution to the maximization problem exists, is unique, and is characterized by the first-order condition $u'_C(d_C) = 0$. If $u'_C(d_C) = 0$, A1 implies that $u'_F(d_C) > 0$. Accordingly, we have $u'_C(d_C) + u'_F(d_C) > 0$. Since $u_C(d) + u_F(d)$ is strictly concave, we immediately obtain $d_C < d_{so}$.

Part (ii). This part can be shown analogously to Part (i).

A3. Proof of Proposition 3

Parts (i) and (iii). These parts follow directly from the above calculations.

Part (ii). We derive:

$$\frac{\partial E[p]}{\partial q} = p_C - p_F = u_F(d_{so}) + u_C(d_{so}) - (u_F(d_C) + u_C(d_C)) > 0,$$

because d_{so} is the unique maximizer of $u_F(d) + u_C(d)$.

A4. Proof of Proposition 4

Suppose C is allowed to make a take-it-or-leave-it-offer to F. The maximization problem is given by:

$$\max_{d\in D,\, p\in[0,\hat{p}]} u_C(d)+p \text{ s.t. } u_F(d)-p \geq u_F(d_C).$$

By way of contradiction suppose that C proposes d_{so}. Since $\hat{p} < p_C = u_F(d_{so}) - u_F(d_C)$, C cannot choose p so high that $u_F(d_{so}) - p \geq u_F(d_C)$ binds. Instead, C chooses $p = \hat{p}$ and receives $u_C(d_{so}) + \hat{p}$. Since the constraint $u_F(d) - p \geq u_F(d_C)$ is slack at the solution $d = d_{so}$ and $p = \hat{p}$, C could marginally decrease d below d_{so} without violating any of the constraints. This would increase C's payoff, contradicting the optimality of d_{so}.

A5. Proof of Proposition 5

We continue to assume that if the offer is declined, negotiations break down and C chooses its utility-maximizing duration. If the sports association imposes a lower bound $\hat{d} = d_{so}$, however, C can no longer choose d_C, but must choose d_{so} instead.

First, we analyze the bargaining game under the assumption that C proposes the offer. In this case, C must solve the following constrained maximization problem:

$$\max_{d\in[d_{so},d_{\max}],p\in[0,\hat{p}]} u_C(d)+p \text{ s.t. } u_F(d)-p \geq u_F(d_{so}).$$

Denote the level of d solving the optimization problem by d^*. If the constraint were slack at $d = d^*$ and $p = \hat{p}$ (i.e., if $u_F(d^*) - \hat{p} > u_F(d_{so})$), the club chooses d^* so as to maximize $u_C(d) + \hat{p}\ s.t.\ d \in [d_{so}, d_{\max}]$, which obviously leads to $d^* = d_{so}$. This, however, contradicts $u_F(d^*) - \hat{p} > u_F(d_{so})$, so that the constraint binds in the optimum, we thus observe $p = u_F(d) - u_F(d_{so})$. Then the maximization problem simplifies to $\max_{d\in[d_{so},d_{\max}]} u_C(d) + u_F(d) - u_F(d_{so})$ and we derive the solution as $d^* = d_{so}$. Note that p is then equal to zero, so that $p \in [0, \hat{p}]$ is fulfilled for any $\hat{p} \geq 0$.

Second, we assume that F makes a take-it-or-leave-it-offer to C. F solves

$$\max_{d\in[d_{so},d_{\max}],p\in[0,\hat{p}]} u_F(d)-p \text{ s.t. } u_C(d)+p \geq u_C(d_{so}).$$

Again denote the level of d solving the optimization problem by d^*. If the constraint were slack at $d = d^*$ and $p = 0$ (i.e., if $u_C(d^*) > u_C(d_{so})$), F would choose d^* so as to maximize $u_F(d)\ s.t.\ d \in [d_{so}, d_{\max}]$, which obviously leads to $d^* = d_F$. Then, however, the constraint $u_C(d^*) > u_C(d_{so})$ would be violated. It follows that the constraint is binding in the optimum, we thus have $p = u_C(d_{so}) - u_C(d)$. Then the maximization problem simplifies to $\max_{d\in[d_{so},d_{\max}]} u_F(d) + u_C(d) - u_C(d_{so})$ and we derive the solution as $d^* = d_{so}$. Note that p is then equal to zero so that $p \in [0, \hat{p}]$ is fulfilled for any $\hat{p} \geq 0$.

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Notes

1. In detail, Union of European Football Associations (UEFA) paid €4.200 per player and day for the clubs releasing a player to the European Championship in Austria and Switzerland 2008, amounting up to €43.3 million. These compensation payments were increased to €5.000 per player and day in 2012 when the European Championship took place in Poland and Ukraine, summing up to around €55 million. In addition, International Federation of Association Football (FIFA) paid €1.000 per player and day for the clubs releasing a player to the World Cup in South Africa 2010, adding up to €27.5 million. These compensation payments will be increased to €1.700 per player and day in 2014 when the World Cup is going to take place in Brazil, totaling around €48 million (see Sport.t-online, 2008; UEFA, 2008).
2. Note, however, that the situation on the level of the national federations in Europe is still heterogeneous. To the best of our knowledge, for example, the Spanish Football Federation also covers the insurance premiums, while the English Football Federation does not cover any costs at the moment.
3. Previous research into the application of economic concepts to sporting activities focuses primarily on the analysis of whether it is necessary for sports governing bodies to intervene in the labor market and/or provide cross subsidies between clubs regarding the distribution of revenues. Competitive imbalance, resulting in uninteresting games and skyrocketing player salaries, plays a dominant role in the list of dangers cited in all the attempts to regulate the labor markets of professional team sports (for studies about competitive balance in sports leagues, see, e.g., Gürtler, 2007; Humphreys, 2002, 2003; Lenten, 2008; Pawlowski & Anders, 2012; Pawlowski, Breuer, & Hovemann, 2010). Throughout their history, professional team sports have employed a wide array of regulations to safeguard against these dangers. Reserve clauses limiting the free agency of players, the reverse-order rookie draft, and revenue-sharing arrangements are well-known examples in this context (for contributions that analyze the effect of revenue-

sharing arrangements, see, e.g., Dietl, Lang, & Rathke, 2011; Kräkel, 2007; Peeters, 2012; Szymanski & Késenne, 2004). Salary caps represent another prominent policy tool used in the struggle for cost control and the promotion of competitive balance (see, e.g., Dietl, Franck, Lang, & Rathke, 2012; Késenne, 2000, 2003, 2007).

4. This is just a technical assumption to ensure that D is a compact set. It is obviously fulfilled in real-world settings because players cannot stay with the national team forever.
5. We are grateful to an anonymous referee, who pointed this out.
6. While this impact is expected to be comparatively small in professional soccer as many clubs themselves are powerful "global brands" (e.g., FC Barcelona, Manchester United), it might be of importance in other sports; for example, in rugby with the All Blacks (New Zealand) or the Springboks (South Africa).
7. In detail, these injuries resulted in a total of 224 days of absence during the tournament and another 828 days spent on rehabilitation after the championships. This means an absence from football of 13 days on average and 46 days per severe injury, that is, an injury causing more than 28 days' absence from training and match play (20% of the total injuries).
8. Recent data provide anecdotal evidence for this claim. While official data on players' salaries are hard to find in Europe, the Major League Soccer Players Union publishes the salaries of players in Major League Soccer from 2007 to 2010. Comparing the development of salaries, it appears that salaries increase by around 45% on average the year after the player has been nominated for his national team for the first time.
9. See also Proposition 2.
10. Note that it is more realistic to assume that C is allowed to choose d. After all, it is the club that employs (and pays) the players. Hence, the club should be able to order the players to stay with the national team or to come back to practice with and play for the club's team.
11. Note that this kind of bargaining game is well accepted in the literature (see Gürtler, 2012; Hart, 1995; Schmitz, 2006).
12. From the binding version of the constraint, it can be seen that the compensation that the club receives depends on how long players stay with the national team. Intuitively, the longer players stay with the national team, the more the national federation is willing to compensate the club.
13. Since $u_F(d_C)$ is a constant, it follows immediately that C chooses $d^* = d_{so}$ to maximize $u_C(d) + u_F(d)$.
14. Note that this assumption guarantees nonnegative compensation that is paid by F to C. Even if this assumption is relaxed, that is, in the case that F chooses its utility-maximizing duration d_F after the breakdown of the negotiations, the socially optimal duration would still be implemented.
15. Note that $u_C(d_C)$ is a constant and therefore $u_C(d) + u_F(d)$ is maximized by choosing d_{so}.
16. This assumption appears reasonable for national sports federations in poor countries which might not be able to pay the amount of money requested by some clubs.
17. For example, in the case of soccer, FIFA sets rules concerning the minimal duration a player has to be released to the national team and is able to enforce this rule.
18. Recent events from the National Hockey League (NHL) underscore this statement. While most of the players from the NHL want to take part in the Olympic Winter

Games in 2014, the club owners currently do not intend to release their players (Klein, 2009).

19. For a large part, this section has been motivated by the referees' comments.
20. For instance, in June 2007, Robinho (Brazil) was expected to play with the Selecao at the Copa América, whereas Diarra should play with Mali at the qualification for the Africa Cup. Since Real Madrid had to play the final league match against Mallorca during the same period, FIFA President Blatter decided that (exceptionally) the club's games took precedence over the international matches.

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