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national teams?**

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Abstract

Despite its long tradition the practice of releasing star players for association matches without compensating the clubs has become increasingly controversial. The clubs claim that their players play in the tournaments organized by the associations while earning club money. However, the clubs do not receive any shares of the relevant revenues. Additionally they claim that they have to bear costs that arise from fatigued or injured players. The clubs want to be compensated for these (external) costs arising from association games. The purpose of this paper is to evaluate the extent to which it is necessary to compensate clubs for the releasing of star players to the national team. Using a contract theory based model one can show that compensation may not be necessary, since clubs are able to write efficient contracts with their player. Externalities do not occur under the assumption of efficient contracting.

Key Words: Soccer, Long-Term Contracts, Reputation

JEL Classification: D83, D62, J31, J44

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1 Introduction

The practice of releasing star players to represent their country in international competition without compensation for the soccer clubs goes back to the creation of the first league, the Football League in England in 1888. As with other institutional regulations that still shape the structure of the soccer industry today, the adoption of this practice too can be better understood in the context of specific historical circumstances. Basic differences between the institutional setup of the European soccer leagues and the American major leagues stem from the fact that the latter broke away from the existing governance structures of the sport instead of working inside them¹. In England, there already existed an all-encompassing governing body, the Football Association, founded in 1863, which among other things organized international representative matches against other countries. The Football League was established “inside” the Football Association by teams that were its members. In contrast to this, the founders of the first American major league, the National League in Baseball, built an association of a closed group of team-owners in 1875². By expelling all the other teams (and also the players, which had no membership status anymore) from the organization of the new championship race, the closed group of owners decided to exit from the existing structures of the baseball sport. As a consequence of its “inside”-approach the Football League in England did not become an exclusive and hermetic organization as the National League in Baseball, but admitted all teams of the Football Association to its ranks through promotion and relegation based on sporting merit only. The Football Association continued to organize international representative matches against the national teams of other associations, and, as members of the Football Association, the teams of the Football League accepted from the very beginning to release their players to these association matches without compensation.

All European Soccer Leagues developed along the English model inside existing national association structures. The national associations cooperated and formed associations at the European level (UEFA) and at the world level (FIFA), which organize national team competitions like the European Championship and the World Cup, but also club competitions like the UEFA Champions League. Despite its long tradition the practice of releasing star players for association matches without compensating the clubs has become increasingly controversial. In 1998 fourteen leading European clubs established a loose coalition known as the G-14 after Media Partners, an Italian Media Company, promoted the idea to form an independent and hermetic European league following the

¹ See Szymanski (2003), pp. 1149-1152 for the in-depth development of this point.

² See for example Leifer (1995), p. 65.

American model. Today G-14 is organized as an association of 18 top clubs. Backed by the bargaining power that stems from the treat to form an independent league, G-14 decided in October 2003 to approach FIFA and UEFA and demand for a change of the traditional practice to release players to association games without compensation³. After FIFA president Sepp Blatter made clear in December 2003 that FIFA would not discuss the compensation issue with the clubs' lobby group⁴ the conflict escalated. In April 2004 G-14 triggered an investigation into the world governing body of soccer by Switzerland's competition commission. G-14 accused the Zurich-based FIFA of breaching Switzerland's antitrust laws. The commission is now investigating if FIFA abuses its dominant position by nominating players to compete in competitions like the World Cup without demanding permission from the clubs. In addition to this, G-14 has announced further legal moves against FIFA and UEFA, like for example the intention to file a complaint with the European Court of Justice.⁵

The legal actions that already have been or will be taken in the future are fuelled by an economic conflict. The top clubs organized in the G-14 perceive themselves as losers of the current practice of player releases. They stress the fact that they pay significant salaries to their top stars. While earning club money, these stars play in the tournaments organized by the associations. Although these tournaments generate vast revenues, the clubs do not receive any share of these revenues. Moreover, players often come back fatigued or injured or both from major international competitions, which limits their use in club competitions.

The international associations obviously prefer to retain the traditional practice of player releases. From their perspective there is a whole range of arguments that could be brought forward in support of the status quo. First, the point can be made that the national associations, to whom the bulk of the income from international tournaments is redirected, already pay the players. Besides covering all the expenses for national team matches, they pay prizes to the players for reaching certain tournament goals. Moreover, they provide players with an opportunity to reveal their talent to a large international audience, which increases their bargaining position on the transfer market. Second, the associations could argue that the clubs profit from the increased popularity of the sport when the national team does well. Third, the associations could point to the fact, that national team football grassroots football. A relevant percentage of their income is invested in the international

³ See the official homepage of G-14 <http://www.g14.com/G14presscenter/detailnews.asp?newsid=5226>

⁴ See e.g. <http://in.sports.yahoo.com/040402/137/2cco.2.html>

⁵ See <http://www.nzz.ch/2004/04/04/english/page-synd4841714.html>

development of football and in educational programmes from which the clubs benefit when hiring players for their international squads etc.

Trying to weigh these and all the other potential arguments that can be put forward against or in favour of the status quo in order to recommend a course of action is a rather difficult issue. However, economic analysis can help to simplify the problem by separating questions related to efficiency from questions concerning mere distribution. We start by identifying the basic decisions of the actors affected by the institutional practice in question. The actors can make welfare-enhancing or welfare-destroying decisions. An actor can be individually better off by destroying welfare if a sufficient part of the negative outcomes of his decision fall on others (external effects). If the institutional practice in question does not encourage welfare-destroying decisions in this sense, there is no need to change it from an efficiency-perspective. In the other case, the adoption of alternative institutional practices is recommendable, provided that they internalize external effects to a sufficient amount to change behaviour. From this perspective, the problem to be analyzed in our paper simplifies to the following question: Does the traditional regime of uncompensated player releases prevent the actors affected by this regime from taking welfare-enhancing decisions?

The existing literature makes no contribution to clarify the trade-offs inherent in the practice of non-compensated player releases. Most of the literature studies the transfer marked in general. Ericson (2000) and Bougheas and Downward (2003) deliver an analysis, how the transfer market regulations the competitive balance in an league influence. Feess and Muehlheusser (forthcoming) and Feess, Frick and Muehlheusser (2004) go more in detail of the different transfer market regulations, before and after the Bosman Case. They study how the club's investment decision in player's skills and the player's effort depend on the length of a contract under the different regulation regimes. Terviö (2004) analyses how transfer fees in general influence the development of talent, when young players learn on-the-job, and how playing time is divided between younger and older players. In all these models, the clubs are compensated for the costs of investments and wages by transfer fees from the new club and player's productivity from the own club games. We focus more on a situation, where the player's skills are not completely observable, before and after a possible transfer. Additionally, a club gets no direct compensation, if his player decides to join the national-team. This may lead to additional conflicts of interests. In his review Szymanski (2002, S. 75-78) identifies a rather broad research area of "club versus country" problems, into which the issues discussed in our paper would fit. The whole area of "club versus country" problems seems to be widely unstudied so far. Szymanski (supra) outlines some general research directions in this area, as e.g. the different importance of

international representative matches to the development of the popularity of the game in different sports and countries. However, we were not able to detect any contribution to the specific “club versus country” problem studied in our paper.

2 The model

2.1 Actors and decisions

The international associations are responsible for scheduling and organizing the international tournaments. The national associations nominate players for the national teams. It seems reasonable to assume that all national associations, as nonprofits, are primarily interested in the success of their national teams. This means that they strive to field the best players possible. We cannot see why this should change if they will have to compensate the clubs instead of compensating the players as they currently do. In any case, the discussed flat fee of 5000 Euro per day and player to be paid to the releasing club⁶ does not impede the incentives to pick the best talent available for national team matches. Moreover, it does not change the incentives of the UEFA and FIFA to schedule competitions so as to maximize attention for the sport. If the scheduling and nomination decisions of the associations remain unaffected by a change in the practice of player releases, the potential for welfare-creation must reside in the decisions of the clubs and players. Basically, there are three decisions to be analyzed: i) *The contracting decision*: Apart from their duty to release players to association matches, clubs are free to decide on the terms of the contracts, which they will offer to potential players. In particular they can control for the advent that players participate in national team matches. In many cases clubs already know when signing a player that he has the potential to be an international and will therefore play x weeks a year for his national team. Even if they do not know in advance, they can write down claims, which are contingent on participations in the national team. ii) *The participation decision*: In the current regime the player alone decides if he wishes to follow an invitation to play in the national team. iii) *The selling decision*: The club can decide to sell players in contract on the transfer market. However, the transfer of a player to a new club will not take place without the approval of the player. If the player refuses to accept the transfer deal, the initial contract stays in place and will be completed. The

⁶ See http://quickstart.clari.net/qs_se/webnews/wed/co/Qfbl-fifa-eur2004-clubs.Rod9_DNI

question to be decided is rather simple: Do the players and the clubs make these decisions in a way that enhances welfare?

2.2 The general setting and the notation of the contract components

From the different possible ways of analyzing welfare implications of the underlying decision structure we rely on the approach of formal contract theory and describe the prevalent decision delegation problem in a standard principal-agent setting. This role allocation allows us first to expose the *participation condition* and the *selling condition* of the relevant decision makers and second to capture the effects of the intertemporal characteristics of the decision regime on the calculus of the actors. We restrict our attention to a pool of players which have the potential to receive invitations to play in the national team. Players qualify for this pool of relevant candidates on the basis of previous performance in early stages of their professional career.

2.2.1 The player's reputation and the value for the club

We assume that the different attributes of a player's quality⁷ is not fully observable. Neither the club nor the player himself has complete knowledge of this quality in advance. However, the actors build beliefs about the quality and estimate it based on these beliefs. We assume that the quality of a player can take two values, $\bar{\theta}$ or $\underline{\theta}$. The true value is unknown to the club and the player, but they have a prior belief ρ that the player's quality amounts to $\bar{\theta}$, and $(1 - \rho)$ that the quality amounts to $\underline{\theta}$. The higher the level of ρ , the better is the reputation $E(\theta)$.⁸ The reputation of the player is critical to his assignment in the club competition. He club has different position to fill with players, more important, and thus more valuable and less valuable positions. Whether the player holds a regular position in the team or not and also which position and "rank" in the team structure (from water boy to captain) will be assigned to him depends on his reputation. Different positions in the team structure entail different earning opportunities. So depending on the position,

⁷ Quality can be interpreted as the player's productivity in the club, which is a function of his general ability, specific experience, matching efficiency with the other club attributes, etc.

⁸ Reputation is defined here as the estimation of the player's quality: $E(\theta) = \rho\bar{\theta} + (1 - \rho)\underline{\theta}$

the player delivers a certain value for the club, measured in the function $S(\theta, \rho)$. But the reputation is just an estimation of the true type, the player may be in a position, where his productivity is under or over estimated. Hence, a decrease of the variance of the players estimation $V(\theta)$ increases the value of a player. We capture this in the following value function assumptions⁹:

$$\frac{\partial S(\cdot)}{\partial E(\theta)} > 0 \quad \text{and} \quad \frac{\partial S(\cdot)}{\partial V(\theta)} < 0.$$

2.2.2 The role of the international appearance

Various factors can influence the player's reputation. Because of the opportunity to perform in front of a wide and international audience, participation in national team matches is among the most prominent drivers of reputation: *"...star players are paid employees of clubs and compete for them primarily in league competition, but are also representatives on national team whose success is usually seen as even more prestigious."*¹⁰ Valuations of player services given by the international player market can be used as an additional source of information about the player's quality. We assume, that the incident of a high market offer v for the services of a player is related to his ability. A better player will receive this transfer offer from another club with a higher probability. In this sense the advent of a transfer offer is a signal for the quality of the player and the club can use this signal to update his beliefs, which has an effect on the reputation of the player. We can assume without restriction, that this additional information originating from valuations of the international player market is only produced and processed, if a player participates in a national team game. The signal can take two values, v if an offer is made and ϕ if no offer is made. The offer is submitted with the probability $\text{Pr ob}(v|\theta) = \pi(\theta)$, given the the participation decision $e = 1$ ¹¹ and the type of the player θ , with $\pi(\bar{\theta}) > \pi(\underline{\theta})$.¹² We concentrate on the case, where $\text{Pr ob}(v|\bar{\theta}) = \text{Pr ob}(\phi|\underline{\theta}) = \pi > 0,5$. We can take π as a measure

⁹ An example for such a value function is $S(\cdot) = \alpha \cdot E(\theta) - \beta \cdot [E(\theta)^2 + V(\theta)]$ $\alpha, \beta > 0$, that corresponds to a quadratic "production-function" with input θ .

¹⁰ Szymanski (2003) p. 1151

¹¹ $e \in \{0,1\}$, 0 means no participation, 1 means participation

¹² $\text{Pr ob}(\phi|\theta) = 1 - \pi(\theta)$

for the informativeness of the signal. If the player has participated in the national team game, the club updates his belief for each value of the signal according to Bayesian logic. If a transfer offer is made, the belief that the player is of type $\bar{\theta}$ changes to

$$\Pr ob(\bar{\theta}|v) = \frac{\rho\pi}{\rho\pi + (1-\rho)(1-\pi)} \quad (1),$$

and if no offer occurs to

$$\Pr ob(\bar{\theta}|\emptyset) = \frac{\rho(1-\pi)}{\rho(1-\pi) + (1-\rho)\pi} \quad (2)$$

Concerning the estimation of the player's type, his reputation becomes:

$$E(\theta|v) = \Pr ob(\bar{\theta}|v) \cdot \bar{\theta} + \Pr ob(\underline{\theta}|v) \cdot \underline{\theta} \quad (3)$$

if a transfer-offer is made, and

$$E(\theta|\emptyset) = \Pr ob(\bar{\theta}|\emptyset) \cdot \bar{\theta} + \Pr ob(\underline{\theta}|\emptyset) \cdot \underline{\theta} \quad (4)$$

if no offer is made. Obviously the estimation of the player's type depends on the signal. The player can influence his reputation with his decision to follow an invitation to join the national team. If a transfer offer is made his reputation improves, otherwise it is waning. This means that the player can enhance but also damage his initial reputation, hence $E(\theta|v) > E(\theta) > E(\theta|\emptyset)$. If the player did not joined the national team, a transfer-offer bears no additional information, and the beliefs are in the second period the same as in the first period. Additionally we assume that $v > S(\theta|v)$.

For the following principal-agent analysis we portray the principal is a risk-neutral football club, who acts as a profit maximizer and the agent is a risk-averse football player, who maximizes his utility. They decide to contract over two periods. Both parties do not discount the future. Obviously, some rather strong assumptions are being made here that demand for additional explanations. In European soccer a significant number of clubs have been reorganized as firms during the last decade so that the assumption that clubs

maximize profits is of increasing empirical relevance. Taking into account the possibilities of football firms to diversify risk by using financial markets as providers of capital on the one hand and by investing the funds in a portfolio of players on the other hand, the clubs can be portrayed as risk-neutral. Additionally, we also assume limited liability, so the player's wages do not take negative values.

The player-contract consists of two components in our analysis, a general player compensation for player services provided in the club-game(s) in every season and a compensation when the players changes the club in the beginning of the second period. All components are set by the club and can be accepted or not by the player before the first season starts. By setting wages the club can influence the incentives of the player to participate in the national team-game. Concerning the required effort formulation for the player, we apply the commonly used two-level scheme. This means that if the player decides to participate in the national team-game he will give full effort. According to this formulation, participating in the national team training-camp, but not giving enough effort to have the chance to play, is the same as not to participate at all.

2.2.3 The player's career

Our model assumes a stylized career of the player, which comprises two seasons. The player is portrayed as a young talent in the first season, who strives to reveal his ability in order to maximize the income from selling his productivity over two periods. In order to be able to analyze the specific effects of the national team-games on the welfare of the player and the club, we concentrate the reputation effects on this participation of the player in national team-games.¹³

The player can decide to follow an invitation to participate in national team-games in the first season of his career. Through this participation he has the chance to present himself to a wider and international audience and market. The problem is that he may get injured during this activity and therefore drop out in the club-games with a certain probability φ , which can be understood as an outfall-intensity. In this case, the club has to bear the outfall costs without getting the player's contribution to the club-game productivity. In particular, the club has to pay to the player the first period compensation, which is guaranteed according to the contract written down in $t = 0$. This contract is

¹³ See Szymanski (2002), pages 28, 29.

enforceable by a court. The first period wage is unconditional on the decision of the player, but depends only on the player's ex-ante reputation.

After the first season, a transfer can take place. If the player did not participate in the national team-game(s), the probability of a market-offer is 0,5. If the club will keep the player for the second period, he will play in the same position as in the first season. If the player participates in national team-game(s), the market may offer a transfer-value with probability $Pr ob(v) > 0,5$. In the transfer stage the club can decide to sell the player on the transfer market. The used timing structure is presented in Figure 1:

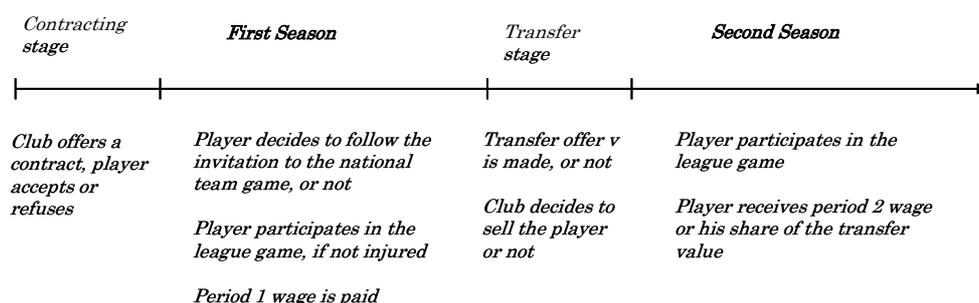


Figure 1 : Time frame of the model

Some points in this stylized career may require additional explanations. A basic simplification lies in the conceptualization of the contracts as specific two-period contracts with the effect that all transfers take place while players are still in contract. Alternatively, if players had one-period contracts they could enter the transfer market as free agents. However, in practice the bulk of the transfer activity concerns players in contract. The reason for this could lie in the fact that the residual right to field a player is allocated to the club. Players know that if they are not fielded in the club-games their chance to be invited to national team-games decreases steeply. Or to put it somewhat differently: Clubs have less motivation to invest in increased transfer values of the players unless they receive a share in it. They receive this share as long as players are still in contract when entering the transfer market. By prolongating contracts well before termination players with a potential to increase their transfer value make sure that clubs do not prevent the necessary revelation of talent. It follows that players deliberately allocate the right to sell their services on the transfer market to the club. Our stylized two-period career allows for the consideration of this fact. It is the club who decides to sell or retain the player at the beginning of the second period since the contract covers two seasons.

Another simplification lies in the assumption that the information gathering is restricted to the first season. The player does not play national team-games in the second season. The intuition behind this is that players too have lifecycles. In every career the point comes when no additional skills are acquired that need to be revealed to a bigger market. The player cannot increase his transfer value by participating in national team-matches any more. However, there is a risk to get injured in the national team-games. The model captures this intuition in a simplified manner dividing the career of the player into two seasons. The end of the second season represents the end of the player career. Since we abstract from other reasons than the reputation-effect to participate in national team-matches in our analysis, it is obvious that the player will not play these matches in the second season.

Another simplification lies in the assumption that transfer values are independent from the advent of a player injury. In practice injuries occur quite often. However, players convalesce in the great majority of cases. Therefore talent is not a form of capital that uses up quickly. Clubs have good reasons to assume that a player will live up to his original talent again after an injury. Transfer values are based on the long-term valuation of the productivity of a player. A single interruption of production caused by an injury will not depreciate the value of the player significantly as long as his talent remains undoubted. Taken all this, the assumption of injury-independent transfer values in our model seems acceptable.

In the next step we explain some details about the conceptualization of the transfer market. Although there are different factors that influence the level of the transfer value-offer for an individual player, we don't model each of them explicitly in order to keep the analysis tractable. Instead, we sum up all possible influences in a stochastic outcome and allow for all positive values in general. If a player has the opportunity to play in a very good national team, the chance to get a transfer-offer is greater than if he played in a poor national team. So the quality of the national-team influences the quality of the signal. On the one hand this has to do with the greater probability of success and also with the larger audiences a better team is able to reach. On the other hand there is also a greater probability of learning from other good players and of gaining high-level match-experience in a better team.

In the case of selling the player before the second season starts, the club and the player receive their share of the pie v and the player will join the new club-team for the

second and last season of his career¹⁴. Otherwise the original club keeps the player in his team, but uses and pays the player according to the current reputation.

2.2.4 The pay-offs

We assume that the clubs compete for the players with the highest reputation. So the players have at the beginning an alternative ex-ante offer u . Hence the clubs offer a contract which satisfies the player's incentive- and participation constraints. We also don't allow for negative wages. In the transfer-stage, there are two possible states, $\sigma \in \{v, \phi\}$ with $v > 0$ and $\phi = 0$. A transfer-offer v is made with probability p and no offer ϕ occurs with probability $1 - p$ ¹⁵. So the wage-structure describes the payments in every state, for the first $\{w_1\}$ season and the second season, depending on the decision if the player is sold $\{\bar{w}_t, \underline{w}_t\}$ or not $\{\bar{w}, \underline{w}\}$. Upper bar is for state v , lower bar is for state ϕ . Second period profits and utility are $b_2(\sigma)$ and $u_2(\sigma)$. ψ measures the additional effort cost for the player, if he plays national-team games.

$$B_e = \underbrace{S(\cdot) - w_1 - \phi \cdot S(\cdot)}_{\text{Period 1 profits}} + \underbrace{E[b_2(\sigma)]}_{\text{Period 2 profits}} \quad (5)$$

$$U_e = \underbrace{u(w_1) - \psi}_{\text{Period 1 utility}} + \underbrace{E[u_2(\sigma)]}_{\text{Period 2 utility}} \quad (6)$$

Next, we look at the pay-off functions in the case that the player does not participate in the national team game. In this situation, no injury can happen, no updating of beliefs is taking place and but a transfer can also happen, so the profits and the utility are

$$B_0 = \underbrace{S(\cdot) - w_1}_{\text{Period 1 profits}} + \underbrace{E[v_2(\sigma)]}_{\text{Period 2 profits}} \quad (7)$$

$$U_0 = \underbrace{u(w_1)}_{\text{Period 1 utility}} + \underbrace{E[u_2(\sigma)]}_{\text{Period 2 utility}} \quad (8)$$

¹⁴ Assumption: $v > S(\theta|v)$.

¹⁵ $\text{Pr ob}(v) = p = \rho\pi + (1 - \rho)(1 - \pi)$, $\text{Pr ob}(\phi) = 1 - p = \rho(1 - \pi) + (1 - \rho)\pi$

2.3 Determinants of the participation and trade decision chain

To determine the optimal contract, we have to solve the game by backwards induction. We determine the optimal contract under efficient national-team participation. So we first have to maximize the second period profits given the realization of the signal and under the club's selling-decision constraint and the player's participation constraint. The club's selling-decision constraint, given that a transfer-offer is made, is

$$v - \bar{w}_v \geq S(\theta|v) - \bar{w} \quad (9).$$

Obviously the club sells its player when the second period profit (transfer value the player's share of the transfer value) from selling exceeds the internal value (player's value minus wage costs), that arises when the player stays within the club in the second period. And the player will accept the selling decision, if utility arising from a transfer exceeds the utility that arises from staying:

$$u(\bar{w}_v) \geq u(\bar{w}) \quad (10).$$

We assume that the player will be sold if the constraint is fulfilled with equality.¹⁶ From an aggregated view transfer is efficient when $v > S(\theta|v)$. Hence the second period profits and utility in case of an offer is made are defined as follows: $b_2(v) = v - \bar{w}_v$ and $u_2(v) = u(\bar{w}_v)$. If no offer is made, the second period profits and utility are defined as $b_2(\phi) = S(\theta|\phi) - \bar{w}$ and $u_2(\phi) = u(\bar{w})$. Now we can insert these second period pay-offs into the intertemporal pay-off functions (5) and (6):

$$B_e = \underbrace{S(\cdot) - w_1 - \varphi \cdot S(\cdot)}_{\text{Period 1 profits}} + \underbrace{p \cdot (v - \bar{w}_v) + (1 - p) \cdot (S(\theta|\phi) - \bar{w})}_{\text{Period 2 profits}} \quad (11)$$

¹⁶ For a transfer-offer $v > S(\theta|v)$ both ad-interim selling conditions are not binding. With that is $\bar{w}_v > \bar{w}$, the player is sold and \bar{w} is never paid in the optimal contract. With other words: if the transfer value exceeds the internal value, the player will always be sold, since both the player and the club can improve their situation. As a result we can ignore the situation where the player stays in the club with wage \bar{w} .

$$U_e = \underbrace{u(w_1)}_{\text{Period 1 utility}} + \underbrace{p \cdot u(\bar{w}_v) + (1-p) \cdot u(\underline{w})}_{\text{Period 2 utility}} \quad (12)$$

Next we derive the second period pay-offs in the case of the player does not join the national team. The realisation of an offer bears no additional information about the player's type, so the reputation does not change. In such situation the transfer is made with probability $p - \Delta = 0,5$ and no transfer is made with probability $1 - p + \Delta = 0,5$. The relevant pay-off functions can therefore be defined as follows:

$$B_0 = \underbrace{S(\cdot) - w_1}_{\text{Period 1 profits}} + \underbrace{(p - \Delta) \cdot (v - \bar{w}_v) + (1 - p + \Delta) \cdot (E(\theta) - \underline{w})}_{\text{Period 2 profits}} \quad (13)$$

$$U_0 = \underbrace{u(w_1)}_{\text{Period 1 utility}} + \underbrace{(p - \Delta) \cdot u(\bar{w}_v) + (1 - p + \Delta) \cdot u(\underline{w})}_{\text{Period 2 utility}} \quad (14)$$

Now, we derived all possible pay-offs when assuming that the player participates in the nation-team game or not. This allows the club to compare these possible states and to decides whether the player should be incentivized to join the nation-team game or not. Sorting for earnings and costs one can rewrite (11) and (13) as follows:

$$B_e = \underbrace{(1 - \phi) \cdot S(\cdot) + p \cdot v + (1 - p) \cdot E(\theta|\phi)}_{\Omega_e} - \underbrace{(w_1 + p \cdot \bar{w}_v + (1 - p) \cdot \underline{w})}_{C_e} \quad (15)$$

$$B_0 = \underbrace{S(\theta) + (p - \Delta) \cdot v + (1 - p + \Delta) \cdot E(\theta)}_{\Omega_0} - \underbrace{(w_1 + (p - \Delta) \cdot \bar{w}_v + (1 - p + \Delta) \cdot \underline{w})}_{C_0} \quad (16)$$

Comparing the right hand sides of the equations (15) and (16) one can show that the club want the player to join, if $\Omega_e - C_e > \Omega_0 - C_0$ or $\Omega_e - \Omega_0 > C_e - C_0$. Since the club can not actively influence the level of the earnings,¹⁷ its sole objective is the cost minimization.

¹⁷ Both, the player's value and the relevant transfer offer are exogenously given.

2.4 Optimal Contract Components

In this section we derive the optimal contracts under the assumption that the club wants to incentivize its player to participate in the national team play. For this reason we analyse the club's profit maximisation function. However, as stated above, the club only focus its own costs. Given $e = 1$ the club's objective is to minimize the cost function subject to the player's incentive (IC) and participation (PC) constraints:

$$\min_{\{w_1, \bar{w}_v, \underline{w}\}} w_1 + p \cdot \bar{w}_v + (1-p) \cdot \underline{w} \quad (17)$$

$$\text{s.t.} \quad \Delta \cdot [u(\bar{w}_v) - u(\underline{w})] \geq \psi \quad (\text{IC Player})$$

$$u(w_1) + p \cdot u(\bar{w}_v) + (1-p) \cdot u(\underline{w}) - \psi \geq u \quad (\text{PC Player})$$

One can easily show that it is a concave problem that contains an explicit solution. So, the first-order Kuhn-Tucker conditions are necessary and sufficient. The multipliers for the *IC Player* and *PC Player* are λ and η . The first order conditions for the wage-components are:

$$-p + \lambda \cdot \Delta \cdot u'(\bar{w}_v) + \eta \cdot p \cdot u'(\bar{w}_v) = 0 \quad (18)$$

$$-1 + \eta \cdot u'(w_1) = 0 \quad (19)$$

$$-(1-p) - \lambda \cdot \Delta \cdot u'(\underline{w}) + \eta \cdot (1-p) \cdot u'(\underline{w}) = 0 \quad (20)$$

From equation (19) we see, that *PC Player* is binding since $\eta = 1/u'(w_1) > 0$. Inserting (19) into (18), we can write

$$\lambda = \frac{p}{\Delta} \cdot \frac{1}{u'(\bar{w}_v)} \cdot \left(\frac{u'(w_1) - u'(\bar{w}_v)}{u'(w_1)} \right) \quad (21)$$

λ can also be computed from (19) and (20):

$$\lambda = \frac{1-p}{\Delta} \cdot \frac{1}{u'(\underline{w})} \cdot \left(\frac{u'(\underline{w}) - u'(w_1)}{u'(w_1)} \right) \quad (22)$$

From equations (21) and (22) one might follow that λ can be positive or equal to zero. Suppose it is equal to zero. This requires that in equation (21) $\bar{w}_v = w_1$ and in equation (22) $w_1 = \underline{w}$. However, IC Player requires $\bar{w}_v > \underline{w}$. One can follow that λ must be positive. Through the combination of (21) and (22) we get:

$$\frac{1-p}{p} = \frac{u'(\underline{w})}{u'(\bar{w}_v)} \left(\frac{u'(w_1) - u'(\bar{w}_v)}{u'(\underline{w}) - u'(w_1)} \right) \quad (23)$$

Using (23) we can follow: $\bar{w}_v > w_1 > \underline{w}$. With the first-order conditions for the two multipliers we have five unknowns and five equations, and the wages can be determined. However, one can not solve the problem explicitly for the general utility function. In the following section we apply a logarithmic utility function in order to determine the wages.

2.4 Specific Case with Logarithmic Utility

The logarithmic utility function exhibits constant relative risk aversion, the marginal utility converges to ∞ as the wage goes to 0. So we have in every state positive wages¹⁸. From the *IC Player* we can compute $\bar{w}_v = \underline{w} \cdot \exp(\psi/\Delta)$ and from the *PC Player* we get $w_1 = \underline{w}^{-1} \cdot \exp(u + \psi - \frac{p\psi}{\Delta})$. Using (23) and $u'(x) = 1/x$ we can compute the wage in period 1:

$$w_1 = p \cdot \bar{w}_v + (1-p) \cdot \underline{w} \quad (24)$$

¹⁸ $u(x) = \ln(x)$, $u'(x) = 1/x$

Combining these equations allows us to determine the optimal wage structure:

$$\bar{w}_v^* = \exp\left(\frac{1}{2}(u + \psi)\right) \cdot M^{-\frac{1}{2}} \cdot \exp\left(\frac{\psi}{\Delta}\right) \quad (25)$$

$$w_1^* = \exp\left(\frac{1}{2}(u + \psi)\right) \cdot M^{\frac{1}{2}} \cdot \exp\left(-\frac{p\psi}{\Delta}\right) \quad (26)$$

$$\underline{w}^* = \exp\left(\frac{1}{2}(u + \psi)\right) \cdot M^{-\frac{1}{2}} \quad (27)$$

With $M \equiv p \cdot \exp\left(\frac{(1-p)\psi}{\Delta}\right) + (1-p) \cdot \exp\left(\frac{p\psi}{\Delta}\right)$. The wages are concave functions of the alternative ex-ante offer u . Inserting the optimal wages in the club's cost-function leads to $C_e^* = w_1^* + p \cdot \bar{w}_v^* + (1-p) \cdot \underline{w}^*$. From (24) we know, that the first period wage is equal to the expected second-period wage; $w_1^* = p \cdot \bar{w}_v^* + (1-p) \cdot \underline{w}^*$. We can insert this in (17) and we get for the costs

$$C_e^* = 2 \cdot \exp\left(\frac{1}{2}(u + \psi)\right) \cdot M^{\frac{1}{2}} \cdot \exp\left(-\frac{p\psi}{\Delta}\right) \quad (27).$$

However, the club might have incentives *not to send* its player to the national-team games – for instance because the potential loss due to an injury would be too extensive. So if the club does not want the player to play the national-team games, the wage structure has to fail the incentive constraint but to fulfill the following participation constraint:

$$u(w_1) + p \cdot u(\bar{w}_v) + (1-p) \cdot u(\underline{w}) \geq u \quad (28).$$

Obviously equation (28) does not count for the player's effort costs ψ , since we focus a situation where the player does not play in the national team. Cost minimization leads to equal wages in every state, so with logarithmic utility the wages are $w_1 = \bar{w}_v = \underline{w} \equiv w^0 = \exp\left(\frac{1}{2}u\right)$, and the cost-function is $C_0^* = 2 \cdot \exp\left(\frac{1}{2}u\right)$. Now we can compare the club's equilibrium costs in both regimes, where the player is incentivized or not:

$$C_e^* - C_0^* = 2 \cdot \exp\left(\frac{1}{2}(u + \psi)\right) \cdot M^{\frac{1}{2}} \cdot \exp\left(-\frac{p\psi}{\Delta}\right) - 2 \cdot \exp\left(\frac{1}{2}u\right) \quad (29)$$

We can rewrite this equation:

$$C_e^* - C_0^* = 2 \cdot \exp\left(\frac{1}{2}u\right) \cdot \left[\exp\left(\frac{1}{2}\psi\right) \cdot M^{1/2} \cdot \exp\left(-\frac{p \cdot \psi}{\Delta}\right) - 1 \right] > 0 \quad (30)$$

Since the latter term must exceed 0, we can follow that $C_e^* - C_0^* > 0$. Obviously it is costly to incentivize the player to participate in the national team game. We can follow that it is more costly *to send* the player. With other words: Player's that play in the national team are obviously actively incentivized by their clubs – since they profit from participation. We can follow that it is in the hands of the club, if it want to send its player to the national team game. The relevant instrument for such incentivization is the determination of the wage structure. So, there is no need to compensate clubs, when they send their players.

The analysis above allows us to determine the player's efficient effort under different ex ante alternative offers u . Figure 2 shows that at higher levels of u it tends not to be beneficial for the club to incentivize its players. At higher levels of u the club's profit decreases since in equilibrium the wage must be higher – the higher u is obviously an indicator for the player's value. However, at higher levels of u there is not much “upside potential” when sending the player to the national team game, since its market value is already determined at a high level.

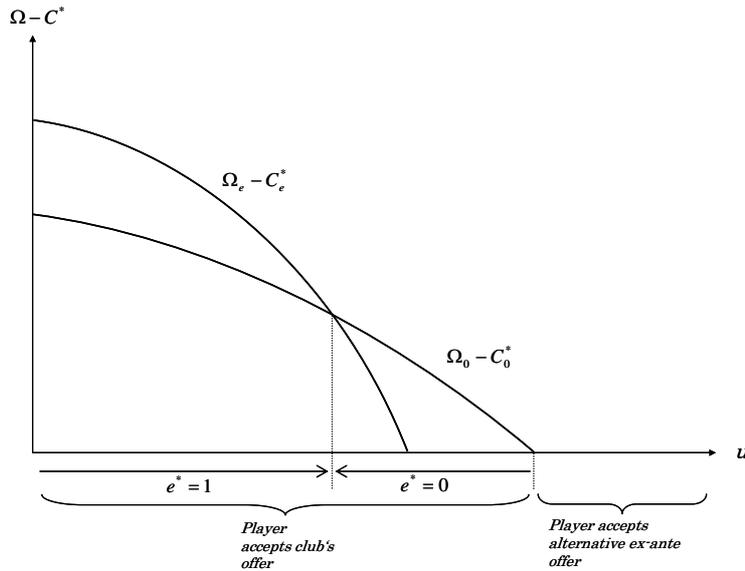


Figure 2 : Efficient effort

4 Conclusions

This paper analyses the contractual relationship between a soccer club and a player under the assumption that the player has the opportunity to play in the national team. As presented in the introduction the clubs claim that their players play in the tournaments organized by the associations while earning club money. However, the clubs do not receive any shares of the revenues. Additionally they claim that they have to bear costs that arise from fatigued or injured players and that they want to be compensated for these costs. However, the model presented in this paper shows that there is not necessarily a need for such compensation.

Analysing the club's profit it is obvious that there may be potential benefits from releasing the player to the national team. Sending the player to the national team may increase its market value – from which both player and club benefit. However, the club can not force a player to play in a national team and it can not force the player not to play. With other words: The club can not explicitly set wages contingent on the player's appearance in international contests. But the club can set the wages contingent on the incidence of transfer-offers made by other clubs. The probability of a transfer-offer obviously increases with international appearance. A transfer-offer can also be used to update the beliefs about the player's true productivity within the own club. If no offer occurs, one could interpret this as a signal that the player's talent is overestimated. Additionally the club can lower the variance of the estimated reputation of the player and hence use him in a more appropriate position – at a lower wage. The club can compare these gains from incentivizing the player to play the national team game with the relevant costs arising from potential productivity losses. However, it is expensive for the clubs to incentivize the player to play the national-team games. In this case, the club has to compensate the player for the additional effort-costs and spreads the wages to meet the player's incentive constraint. But with that, the player has to bear some risk of not getting a transfer-offer, and being punished for that with a lower wage in the following period. The higher the alternative ex-ante offer, the more the club has to pay.

One can summarize that it is not necessary to compensate clubs when their players join the national team. In our model we showed, that clubs are able to write contracts that meet their own interests: if it is in the interest of the club that a player joins the national team, the club can incentivize the player to play; if it is not beneficial, the club can incentivize the player *not* to join. We can follow that it is in the hands of the club, if it want

to send its player to the national team game. The relevant instrument for such a incentive is the determination of the wage structure.

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