Westfälische Wilhelms-Universität Münster

Institut für Organisationsökonomik

Diskussionspapier des
Instituts für Organisationsökonomik

7/2016

The Strongest Link in a Weak Team?

Performance of Players With and Without Outside Options in Relegated Football Clubs

Michael Müller

Discussion Paper of the
Institute for Organisational Economics

Diskussionspapier des
Instituts für Organisationsökonomik
7/2016

Juli 2016

ISSN 2191-2475

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Abstract

In this study the performance of players in relegated German football clubs is analysed, in particular the change in their contribution to team production. The players in the data sample differ regarding their outside options. Different career opportunities of players may have two effects when their current team struggles against relegation. First, players with outside options should be less motivated compared to the reference group. Second, risk attitudes of players who lack career opportunities may change. The empirical results show that players with outside options contribute less to the teams overall running distance before they are transferred to league opponents. Players who stayed after relegation with their teams played more incomplete passes, which indicates that they are more willing to take risks. Effort levels of staying players get higher, but leaving players might have superior playing talent.

JEL-Codes: Z20, Z22, J24, J63, M51, L83

Das stärkste Glied in einem schwachem Team?

Leistung von Spielern mit und ohne externe Optionen in absteigenden Fußballklubs

Zusammenfassung

In diesem Beitrag wird die Leistung von Fußballern in absteigenden Bundesligavereinen untersucht, insbesondere die Veränderung in ihrem Beitrag zur Teamproduktion. Die Spieler im Datensatz unterscheiden sich hinsichtlich ihrer externen Optionen. Unterschiedliche Karrieremöglichkeiten von Fußballern könnten zwei Effekte haben, wenn ihr gegenwärtiger Verein gegen den Abstieg kämpft. Erstens sollten Spieler mit Angeboten von anderen Vereinen weniger motiviert sein. Zweitens könnte sich die Risikoeinstellung von Spielern ohne Transferanfragen ändern. Die empirischen Ergebnisse zeigen, dass der Anteil an der insgesamt vom jeweiligen Team zurückgelegten Laufdistanz für Fußballer niedriger ist, die ihre Vereine nach einem Ligaabstieg verlassen. Die Fehlpassquote der Spieler, die bei ihren Vereinen verbleiben, ist höher, was darauf hindeutet, dass ihre Risikobereitschaft steigt. Die Anstrengung verbleibender Spieler nimmt zu, doch abgehende Fußballer könnten ein größeres Spieltalent haben.

Im Internet unter:

http://www.wiwi.uni-muenster.de/io/forschen/downloads/DP-IO_07_2016

Westfälische Wilhelms-Universität Münster
Institut für Organisationsökonomik
Scharnhorststraße 100
D-48151 Münster

Tel: +49-251/83-24303 (Sekretariat)
E-Mail: io@uni-muenster.de
Internet: www.wiwi.uni-muenster.de/io

The Weakest Link in a Strong Team?

Performance of Players With and Without Outside Options in Relegated Football Clubs*

1. Introduction

Staffing decisions regarding teams within firms are important since they sustain the competitiveness of companies (Newbert, 2007; Munyon et al., 2011). Within professional football clubs these can be influenced by different criteria such as the technical ability and the human capital of players (Bryson et al., 2013) or by their productivity level (Franck & Nüesch, 2012).[1] Frick (2011) has already shown that professional football players in German Bundesliga increase their overall performance level before they sign new contracts.[2] Players can signal through higher effort levels and therefore increased performance that they are valuable assets to invest in and that their employers should extend their contracts. Since internal labour markets in professional football are limited by the financial and playing strength of their employers, external promotions in form of transfers to more attractive clubs can also be incentives for increased effort levels. Furthermore, it has to be taken into account that cadre sizes are restricted, so especially weaker players have to take care not to be replaced on the transfer market. By analysing panel data it is possible to observe the development of the contribution to the team production of players before they switch their employer.[3]

It has been shown that professional athletes perform worse when they have lower incentives. For example, professional athletes reduce their effort levels after signing new contracts (Stiroh 2007; Frick 2011). In the mentioned studies the proportion to team production was not measured and the main explaining variable was individual performance. Since it has not yet

* I appreciate Prof. Dr. Alexander Dilger's suggestions and support for improving this paper. I also appreciate our student assistants Irina Krause and Felix Hoch for their contributions. However, I am responsible for all remaining mistakes in this paper.

[1] This study focuses on the German national football league (Deutsche Fußball-Bundesliga) or more precisely on the performance of specific players in this league. The overall quality level of the league has increased over the last few years. This becomes apparent by observing the improvement in the five year assessment that is conducted by the European Football Associations (UEFA). Hence Bundesliga players nowadays face stronger internal and external competition.

[2] This study was restricted to subjective evaluations of a football magazine. The results were mainly attributed to moral hazard of the football players because they reduced their effort level after signing the contract.

[3] Classical team production theory is based on the assumption that the single contribution of a team member cannot be observed and that a team creates additional value by cooperation (Alchian & Demsetz, 1972). In professional sports the single performance of a team member can be observed although the exact contribution to the team success is difficult to measure. This is also due to the fact that teams achieve better performance through cooperation and the contribution of their members are therefore interdependent.

been examined whether the contribution to team production is also influenced by career concerns respectively specific circumstances, this study analyses whether professional football players change their performance motivation and contribute less to team production when they have less incentives than their teammates. More precisely, the performance development of players from relegated clubs will be analysed, and in particular their contribution to team production. The players in the data sample differ within their outside options. Professional athletes that are bought by or transferred to league competitors have higher career opportunities and their personal status is more secured compared to players that have to stay at their club after its relegation. From an economic perspective, it could be expected that players with more outside options have less motivation to contribute to team production because their career status is more secure and their focus is not completely on their current employer. Players without outside options are only able to keep their status through avoiding the relegation of their employer.[4] Because contribution to team production also depends on the performances of the teammates, it is also necessary to discuss motivational aspects of the teammates. If the performance development of the described player groups differ as is economically expected, this might provide hints for team managers for the selection of starting formations.

2. Literature Review and Theoretical Considerations

According to the *matching hypothesis*, highly qualified as well as highly talented workers exhibit higher job mobility and are more likely to be recruited by better firms. In professional football it can be frequently observed that the best players of financially weaker clubs are bought by stronger clubs and league competitors. This common behaviour is practiced nearly every season. It has been empirically shown for a South American football league (Gandelman, 2008). The performances of players in the study were measured by journalist ratings. The matching hypothesis was tested in leagues of other sports by estimating hazard rates. These indicated that players had to leave their employers mainly because of inferior performances. In primary studies, player performance in the North American Basketball Association (NBA) was observed. The performance was mainly assessed by measuring scoring performance and team success. It was shown that stronger performances were related significantly negatively with the hazard rates of professional basketball players (Dilger & Prinz, 2004). A study with a similar background revealed that the career duration of Bundesliga players lasts significantly longer when players score more goals and are playing for the best national

[4] Theoretically it is also possible that players stay with their relegated clubs voluntarily even though they have contract offers, but it is assumed that this is a rather exceptional case.

teams (Frick et al., 2007). Football and basketball differ in many aspects. First, the constitutions of these sports are different, for example scoring opportunities are much more frequent in basketball. Furthermore, football teams are twice as big as basketball teams, thus relatively fewer players are able to score or to provide assists. Since the team production process differs in general, other aspects have to be taken into account, e. g. successful tackles, passing abilities or running distances. This study uses broader data to analyse whether performance indicators develop differently when the sporting status is more or less secure.

ccording to the well-established definition of team production, the value of the common product is higher than the values of the single tasks. Furthermore, it is assumed that not every contribution is measurable (Alchian & Demsetz, 1972). Previous studies investigated whether the composition of professional football teams influences the productivity (Beck & Meyer, 2012; Franck & Nüesch, 2012). The empirical results are ambiguous. Team homogeneity does reduce conflicts within teams. Unequal talent distribution in teams may harm team success. This harm might even be stronger when the better players decide to leave a team and are therefore less motivated. In contrast, higher heterogeneity may foster mutual learning. Less talented team members can learn from more efficient teammates and thereby improve their skills (Hamilton et al., 2003). Single transfers of highly talented and expensive players do not always lead to more extensive team success because teams should be assembled by matching talents in such a way that players are able to play well together (Sloane, 1969). In teams that are highly interdependent, which holds true for football teams, the players have to work together efficiently. To fulfil the given tasks they have to learn how to use the strength of all team members and also how to work together as a unit in such a way that possible weaknesses do not impair the team's production and success (De la Torre-Ruiz & Aragón-Correa, 2012). However, this unity can be disintegrated when team members value the importance of the common success differently.

This study focuses on the development of the players' contributions to the team production. The main research question is whether players' contributions of specific team production factors decrease when they have lesser incentives. First it can be argued from an economic perspective that players behave opportunistically and raise their productivity levels only when they expect a reward in return.[5] This effect has been shown in a study analysing German Bundesliga players (Frick, 2011). The results of this study have later been relativized by the

[5] In this case it could be observed that professional football players lower their effort level after their contracts were prolonged.

finding that selection effects, which lead to longer contracts in the cases of the best players, dominate shirking behaviour of Bundesliga players (Buraimo et al., 2015). It has already been shown that turnover intentions of high performers are higher (Zimmerman & Darnold, 2009). Because of short career lengths superior professional football players might be looking even more for employment opportunities, especially when the overall team strength is mediocre and the team is in danger of being relegated (Frick et al., 2007).

Several studies have revealed that professional athletes who increased their performance and respectively their effort levels before signing a new contract could not hold on to it afterwards, which was attributed to moral hazard (Frick, 2011; Stiroh, 2007; Berri & Krautmann, 2006). By observing performance and effort indicators separately, this study is able to analyse how performance and effort levels develop before players switch their employers. Incentives for opportunistic behaviour will also be considered but apart from moral hazard assumptions other explanations for performance fluctuations are discussed, too. First in this context a regression to the mean bias could arise. After outstanding seasons the performance level can decline back to the original average performance level in the following periods (Lazear, 2004).[6] Another important influencing factor is the learning effect. By joining other teams, players have to adapt to new playing systems and to get used to new environments, which may hinder the performance especially in the beginning (Montanari et al., 2008; Berman et al., 2002). The better players are integrated the more they can contribute to team production. Empirically this effect has already been confirmed to exist in the case of professional basketball players (De La Torre-Ruiz & Aragón-Correa, 2012).

The mentioned research explains rather performance improvements than performance declines. In the labour market for professional football players the career length of players is relatively short. Due to the high factor mobility, career concerns may also influence players' performance motivation. Since starters cannot be further promoted internally they can only improve their status by transferring to better performing and economically stronger employers, which is equivalent to an external promotion. There are no incentives for increasing effort when an external promotion respectively the occupational status (and income) is secured for following periods (Iossa & Rey, 2014).[7] In this context the league position of the employer

[6] The overall performance can be influenced by several factors which cannot be measured. For example, fortunate circumstances can affect the empirical results.

[7] Players might hold their average effort level constant if their contract includes performance-related compensations such as payments for victories or goals.

influences the performance motivations of professional football players.[8] In open leagues the weakest clubs are relegated to lower divisions. Relegations are linked with a loss of reputation as well as a loss of revenues. Players of clubs threatened by relegation should be motivated to a higher extent if they do not have outside options because in order to maintain their status in the sports scene their current employers have to remain in the league. According to the matching hypothesis, more talented players of relegation-threatened clubs should rather keep their status because more league competitors will be interested in hiring them. Decreasing effort levels of players from relegated clubs who, in contrast to their weaker teammate, have signed contracts with league competitors, can be attributed to moral hazard. In this context it should also be considered that player contracts are often only valid when the club plays in the highest division. Players who want to leave their employers can act opportunistically by lowering their effort levels or by intentionally acting unproductively as soon as they receive contract offers from superior clubs.

Similar to other labour markets, players can harm team success with unproductive or inefficient actions. It has not yet been examined whether unproductive actions of professional players can be attributed to moral hazard. It is hard to identify whether an increase in such actions is caused by a lack of playing skills or by declining motivation. If player contracts are only valid for the highest division, this can be an incentive for unproductive behaviour. When the current club is in danger of being relegated, players who intent to leave their employers could act opportunistically by playing worse. In this context the team cohesion plays an important role. When reciprocity norms are predominant within a team, its members tend to act rather altruistically than opportunistically (Carpenter et al., 2009). Two arguments against withholding effort and against being unproductive on purpose are ambitions in sports and the loss of reputation.

When observing performance behaviour of players through analysing their contribution to team production, it is also necessary to consider the motivational aspects of their teammates. Only players whose clubs have been relegated are included in the empirical analysis. The sample contains players who were able to hold their career status by signing contracts with league competitors. Compared to their teammates that stayed with their employers, they should possess superior playing skills. Contribution to team production within different per-

[8] Since it cannot be sufficiently examined whether players lower their effort level after they transfer to a new club, the observation is restricted to a player's tenure at one single club (before they are transferred to another employer). Since too many important factors that determine the performance are influenced by a player being transferred to another club, the contribution to team production cannot be compared with his earlier performance.

formance categories will be used as the dependent variable. As the proportion to team production also depends on the performance of teammates, it is reasonable to evaluate motivational aspects of players with less or even without outside options. Compared to the described reference group, players who lack career opportunities should be higher motivated. Moreover, risk attitudes of this group may change by amendments of general conditions. It has been empirically shown that risk preference structures shift to less risk aversion when expectations of losses rise (Baucells & Villasis 2010; Zeisberger et al. 2012). In the examined scenario it is also possible that players without outside options get less risk averse because their only possibility to keep their sportive status is to avoid relegation. For example, they could therefore play more risky passes and – as a consequence – less completed passes.

3. Data and Method

This study uses a database of player information of the German Bundesliga in the seasons from 2011/2012 to 2015/2016. In order to generate panel data, players' performance measures were recorded for at least three consecutive periods. The data were collected from three different sources. The player and the team performance measures were taken from the webpage of the German Football League (DFL). The site publishes individual performance data of players since the season 2011/2012, hence prior seasons cannot be observed. The individual player information and their market values were collected from the website Transfermarkt.de.[9] Lastly, the overall performance evaluations were taken from the well-respected German football magazine Kicker.[10]

Players that were employed for less than two seasons at the same club were excluded. Goalkeepers were also excluded from the dataset because their running, passing and tackling performance is not comparable to that of outfield players. To measure the contribution to team production as accurately as possible the different performance indicators of players were related to the overall team performance per game. In order to observe whether players behave opportunistically before they change their employers, fixed effects regressions were estimated. In this analysis, only players from relegated clubs were observed. Relegated clubs are ex-

[9] This site estimates the market values of players. These values slightly differ from the effectively paid transfer fees but they coincide approximately. On this community-based platform the market values are discussed and finally set by the head of the forum. The market values will be used as independent variables to control for the players' statuses. Players with higher market values have already achieved advancements in their careers and should feel less threatened by demotion.

[10] The magazine evaluates the overall performance of players on every match day and publishes the results in form of German school grades.

cluded when their relegation was already certain with more than three match days left. This exclusion takes care of the circumstance that many of the examined effects rely on the thread of relegation instead of the relegation itself.[11] Moreover, in the period of the relegation only the last seven performances of the players were collected. In the time during the 28th and 34th match day professional football players usually know whether league competitors are interested in hiring them or not.[12] First, due to short career length players should be aware to hold their status and be more open to negotiations with other employers. Second, player consultants built up a strong network and have close contact to many professional football clubs. So their clients are well informed whether they have outside options or not.

By comparing players that were relegated to players that hold their status through transfers, it is possible to detect moral hazard. Players that remain in the highest division should perform better and contribute more to team production than their counterparts. Nevertheless, the described incentives could lead to opportunistic behaviour. The observations were placed at the end of the season because both motivational effects and opportunistic behaviour should be stronger then. Impacts on the motivation of staying players are more distinct when the thread of relegation becomes more concrete. Moral hazard of transferred players is to be expected to occur just at the end of a season when contracts with new clubs are already signed or at least in negotiation. The sample size of the fixed effects models is restricted to 92 players (282 observations).

As methodology for analysing whether specific incentives lead to declining player performance, fixed effects regressions are used. Therefore, the performance development of players threatened by relegation that have outside options will be compared with similar players that are in less demand. It is assumed that players threatened by relegation are less motivated if they have outside options. Different performance indicators are observed. Running distance depends less on talent and can be used as a signal for players' effort levels (Wicker et al., 2013). Significant group differences could simply be related to opportunistic behaviour. Tackles and misplaced passes in contrast depend more on talent. According to the matching hypothesis, relegated players should contribute less to team production compared to their trans-

[11] For example the club Greuther Fürth was relegated in the season 2012/2013 and excluded of the analysis. The relegation was certain after match day 30. Compared to clubs in the data sample that were relegated but had a chance to remain in the league until the last match day, the certain relegation could harm the motivation of the players without outside options.

[12] For the previous periods between 7 and 17 player performances were collected. Due to the use of mean values it is unproblematic that more performance data than in the last period were collected. Furthermore variables that might be influenced by more observations, like substitutions, were weighted by playing minutes.

ferred counterparts. A decrease in the contribution to team production of transferred players in periods before they leave their employers can be attributed to moral hazard because they should be able to perform better than the reference group. Using panel data allows to determine from regression models whether specific incidences that occur in certain periods influence the dependent variables (Giesselmann & Windzio, 2012). For identifying the most suitable regression model in each case, Hausman (1978) tests were conducted. The tests were all significant ($p<0.1$), such that fixed effects regression models are applied.

Table 1 shows the used variables and their descriptive statistics. Market values are stated in million euros. The field position of players may change during the observed period but usually it remains unchanged.[13] For analysing performance and effort data it is necessary to relate the individual performances with team performances in order to measure the individual contribution to team production. The individual contribution to team production results from the proportion of single players to the overall team performance. The stated values are calculated from the average contribution to team production factors per game.[14]

A typical problem that has to be considered when applying this specific methodology is the regression-to-the-mean effect. This occurs when a player's performance deviates from his average or more specific from his mean performance and he is promoted or not relegated just because of this higher performance. It is probable that this player's performance returns to his mean performance over the following periods (Lazear, 2004). This means that performance declines are related to higher occupational status. Typically in this kind of studies, performance increases lead to rewards and after professional athletes achieved their goals their performance level will decline (Frick et al., 2011; Krautmann & Solow, 2009; Müller, 2015). However, the performance of players in relation to team performance is observed in the empirical models here. In this case a performance increase of a player has a smaller effect when other team members also improve at the same time. Taking team effects into account can help to reduce regression-to-the-mean-effects (Beck & Meyer, 2012). The comparison with overall team performance indicators may help to extenuate possible biases by considering team improvements and deteriorations. Deviations from the usual level of contribution to team production therefore indicate more clearly whether the importance of players for clubs increases

[13] This variable was created as followed: Central defenders got the value 1, central midfielders the value 2 and strikers the value 3. As wingers have to run more than central positions, 0.5 was added to every player on this position.

[14] As example for the running distance this means: Average contribution running distance = average player running distance per game / average team running distance per game.

or decreases before they change their employers. This analysis cannot clearly identify whether there are exceptions to the matching hypothesis because the contribution to team production of transferred players might have been higher than the contribution of the remaining players in previous seasons. However, by considering the slopes and decreases the method can analyse whether the better players behave opportunistically when lowering their contribution to team production.

Variable	Mean	Std. Dev.	No. of Cases
Contract Length	2.292	1.161	288
Tenure	3.193	3.014	288
Age	26.010	3.622	288
Replacements	2.620	3.614	288
Exchange	1.920	2.841	288
Market Values (in Millions €)	4.537	5.360	288
Average Contribution Running Distance p. g.	0.104	0.096	288
Average Contribution Tackles p. g.	0.119	0.096	288
Average Contribution Misplaced Passes p. g.	0.102	0.109	288
Transfer After Relegation	0.181	1.791	288

Table 1: Descriptive Statistics

4. Empirical Results and Discussion

It will be observed whether players who switch their employers at the end of a period and whose current clubs were threatened by relegation reduce their contribution to team production compared to teammates. Players that are able to find new employers after their clubs were relegated should have superior talent in contrast to the leftover relegated players. Therefore, reduced performance indicators could be attributed more to shirking than to lack of playing talent. Because the proportion to team production is used as independent variable, the development is also dependent on the performance motivation of teammates. Teammates who have no outside option could be more motivated and try more risky behaviour.

Table 2 contains the results of the estimated fixed effects models. In model 1 it can be detected that players who maintain their career status through transfers to league rivals significantly lower their contribution to teams running distance. From a behavioural point of view, this can be explained by two dependent effects. Players with more outside options have a lower motivation and therefore lower their performance levels because they can be sure that they will maintain their career status independent of the outcome of the season. Contract negotiations might deviate from focusing on the current league situation. The second effect is the expected raise in performance motivation of players without outside options. The only way to remain in

the highest division is to qualify for it through sporting achievements. As discussed running distance is rather an indicator for motivation than for quality. Players with lower playing quality try to compensate their lack of abilities through more effort. A second interesting result of the estimation is that older players significantly raise their contribution to teams running distance. This correlates with the tenure variable. Players who have been at one club for a longer time run more when their employer is threatened by relegation. The career demotion risk of older players might be generally higher. This could also lead to less outside options, especially because of the higher reservation wages of older players (Jane, 2012). Lastly, the amount of substitutions also influences the running distance. Players who enter a game late can use all their energy for the remaining minutes while starters have to be more cautious and distribute their capacity over 90 minutes.

	Fixed Effects Model 1 (Dependent Variable: Average Contribution Running Distance)		Fixed Effects Model 2 (Dependent Variable: Average Contribution Misplaced Passes)	
Variable	Coeff.	T	Coeff.	t
Transfer After Relegation	**-0.039****	**2.01**	**-0,015***	**1,68**
Contract Length	0.061	0.66	0,007	0,21
Tenure	0.012	1.19	-0,028	-0,73
Age	0.023**	2.05	0,058	1,59
Replacements	-0.022	-1.08	-0,069	-1,29
Exchanges	0.015*	1.68	-0,0064	-1,08
Market Values (in mil. €)	-0.003	-0.16	0,019	0,22
Field Position	1.303	0.37	-0,019*	-1,74
F-Value	6.68		2.31	
Hausman	17.72***		14.67**	
R^2	0.0646		0.0758	
N	92		92	
Observations	282		282	

* p<0.1; ** p<0.05; *** p<0.01; ***

Table 2: Models of Football Players' Performance Before Relegation

Surprisingly, in model 2 players who hold their career status through transfers to league rivals played less misplaced passes before they switch the employer. On the first look incentives to play more completed passes are lower for them than for players without outside options. Actually it could be argued that they have even stronger incentives to play more misplaced passes in order to get easier out of their contracts. To explain this result better, it is helpful to focus on motivational aspects of relegated teammates, who are also involved in the team production, and to reflect modern football games further. Players without outside options might be more willing to take risks if their athletic status is threatened by possible relegation. As

consequence more risky passes are played, which leads to more incomplete passes. Risk attitudes of players with outside options should be more stable, therefore their contribution to misplaced passes tends to stay constant or even to get lower.[15] It is an established presumption that teams which struggle against relegation have to focus more on avoiding to concede goals than on scoring goals. Elaborate play gets less frequent and their opponents put them more under pressure because their opponents' playing skills should be superior. Additionally, relegation threatened teams are more insecure and lack self-confidence. This could also be a reason why they play overall more incomplete passes. Players with outside options should have less doubt about their quality and therefore more self-confidence.[16]

5. Conclusion

In this study it was shown that players' performance differs with the security of their career status. For example, players with more outside options contribute less to teams overall running distance before they were transferred to league opponents. All clubs of the players in the data sample were threatened by relegation until the last match day and could not avoid relegation in the last recorded season. The proportion of the performance indicators were measured as dependent variable. For the running distance it could be assumed that the significant results arise from shirking of the players. The performance motivation of players without outside options is also more incentivised. Thus it was observed that the leftovers raise their running contribution. The analysis of the development of the mean values showed that both effects occur. The mean of misplaced passes developed similarly. The proportion of incomplete passes rises significantly in the fixed effects model for players without outside options. The better players possess the ball more often and their coaches might expect them to play more risky passes. From this assumption follows that these players' pass balls more often incompletely. The result is therefore counterintuitive on the first sight. In this case the risk attitude of players has also to be considered because motivational aspects could affect player behaviour differently. Shifting to more risky actions is highly possible by players without outside options. Players with less playing skills might change their playing behaviour and play more risky

[15] Beside misplaced passes there are not many other performance factors that indicate risky behaviour. Red cards and yellow cards could be promising but they are also influenced by tactical aspects. Nevertheless a t-test was conducted to analyse whether the two groups differ in the period of relegation threat. The results showed that players without outside options received more red cards as well as yellow cards. However, only the test for the red cards was significant ($F=11{,}237$; $p<0.1$). These findings indicate also that the transferred players took less risk.

[16] Estimations in which the average contribution to tackles and the overall performance evaluations were used as independent variable were insignificant.

passes than their team manager expects them to do. Players who intent to leave the club expend less effort on the playing field. The results show that team managers have to concern the career situation of their players. Motivation could be higher for staying players but leaving players might have superior playing talent. This trade-off is not easy to decide.

Beside the restrictions of the used statistical methods, limitations exist in the used data set. Performance data is only available since the season 2011/2012. To estimate panel data models, data has to be collected for more than two time periods. Therefore the sample size for the fixed effects models is comparatively small. Aggravating for the data collection is the reintroduction of the relegation matches between the sixteenth placed club from the first division and the third placed team of the second division. This leads to less first division teams that are relegated. Future research may check the robustness of the estimated results with larger data samples. This is one of the first studies that analysed whether specific factors of team production are connected with players' careers. Performance development of professional football players in similar incentive situations had been examined before but also not in the context of team production. Considering teammates behaviour complicates the analysis further. On the one hand this proceeding enables better explanations for the overall situation by considering additional factors, on the other hand it increases the amount of aspects that cannot be taken into account. For example the relationship between teammates cannot be collected. Another limitation lays in the informative value of the used variables. An example is the proportion of misplaced passes. Incomplete passes do not have to be a signal for inferior player quality. Actually better players could play even more incomplete passes. Separating misplaced risky passes and unforced misplaced passes would facilitate future studies in this field of research.

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Herausgeber:
Prof. Dr. Alexander Dilger
Westfälische Wilhelms-Universität Münster
Institut für Organisationsökonomik
Scharnhorststr. 100
D-48151 Münster

Tel: +49-251/83-24303
Fax: +49-251/83-28429

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