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Johan Cruyff and his Contribution to Success and Stadium Attendance at Feyenoord

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Abstract

In his last season as professional football player, Johan Cruyff played at Feyenoord. This paper shows that Cruyff improved the performance of his team and provides evidence of his presence attracting more stadium attendants to the home ground. From this it is concluded that Cruyff made a superstar contribution to his club Feyenoord.

Keywords: professional football, superstar, Johan Cruyff, Feyenoord
JEL-codes: Z21, D12, C23

Conflicts of interest: the author is a supporter of Feyenoord.

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1 Introduction

Johan Cruyff (1947-2016) is a world famous Dutch football player and later football coach. As a player he was active for Ajax, Barcelona, Los Angeles Aztecs, Washington Diplomats, Levante and again Ajax. In the summer of 1983 after winning the double (Dutch Championship and Dutch Cup) with Ajax he did not come to an agreement about a new contract with that club. Cruyff was offered a salary of about 600,000 euro which he thought was not value for money (Van den Boogaard (2019)). He accepted a contract for season 1983/84 at Feyenoord. This was a peculiar move as in the Netherlands there is a big and sometimes bitter rivalry between the teams from Rotterdam and Amsterdam, Feyenoord and Ajax. The focus of this paper is on the contribution of Johan Cruyff to the performance and stadium attendances of his club Feyenoord.

In his seminal paper on the economics of superstars Rosen (1981) mentions the world of sports as an example of very large rewards at the top. Sports superstars achieve extremely high earnings by servicing a large audience at low margins, i.e. there are big scale economics in joint consumption of the service of professional athletes through for example televising of sporting events. While in the theory of Rosen (1981) talent is the main driving force, Adler (1985) suggests that popularity is the source of the superstar effects. In empirical research it is difficult to distinguish between the two explanations. However, the current paper makes an attempt to do so. The context of the paper seems very local, i.e., it is focused on one Dutch player who made a contribution to football in the Netherlands a long time ago. In the minds of many Dutch football supporters, Johan Cruyff was football superstar. Thirty-five years after his season at Feyenoord a book was published with details of this season (Van den Boogaard (2019)). In the fall of 2021, a musical on Cruyff (entitled "14 the musical") will be on stage. Nevertheless, the paper does not only add to Dutch folklore but also to the literature on sports superstars. The specific contribution of the paper is related to the peculiarity of the transition of Johan Cruyff from Ajax to Feyenoord. The two clubs have been and still are arch rivals. Because of this Cruyff was not very popular among many

Feyenoord supporters. Therefore, a positive effect of Cruyff on stadium attendance at Feyenoord is unlikely to be in line with Adler (1985).

In the past, a couple of studies on the superstar phenomenon are based on professional football focusing on either salaries or stadium attendances. Lawson et al. (2008) study the effect of football star player David Beckham on ticket sales in his first US Major League Soccer (MLS) season in 2007 playing for Los Angeles Galaxy. In the 30 game season Beckham was on the roster for 17 games while he actually played in just five games. The main finding is that Beckham on the roster doubled ticket sales. Superstars have positive externalities on the attendances at away matches. Probably because of this, the MLS paid part of the salary of Beckham. Shapiro et al. (2017) investigate the effect of Beckham on MLS games over a longer period of time, from 2007 to 2012. The value of Beckham's contract was estimated to be $ 250 million consisting of a.o. a salary and a percentage of revenues generated from all Los Angeles Galaxy jersey and ticket sales. Jewell (2017) concludes that the largest effect of Beckham on stadium attendance was in his first year. DeSchriver (2007) analyzes the effects of Freddy Adu during his first season in the MLS finding a big effect on stadium attendance. Adu did not become a superstar player in terms of performance but was a celebrity from a young age onward. So, superstar effects are not necessarily related to performance but may also be due to popularity (sometimes based on past performance). Lucifora and Simmons (2003) find that in Italian football goals and assists (final passes leading to goals scored) are extremely rewarding in salary terms. Brandes et al. (2008) conclude that in German football local heroes and national stars have a positive effect on stadium attendance. Humphreys and Johnson (2020) provide an overview of the effect of sports superstars on game attendance. Although the focus is on the US National Basketball Association (NBA) there is also a discussion of this superstar phenomenon in other sports. Their overview concludes that superstar studies are often based on data from one to three seasons. According to Humphreys and Johnson (2020) sport superstars generate externalities in terms of attendance (and other revenues) beyond their individual contributions to the success of their team.

The rest of this paper is set-up as follows. Section 2 provides a description of the successes of Feyenoord over the past 60 years to indicate the position of season 1983/84. Section 3 describes the three seasons 1982/83 to 1984/85 in more detail. The developments in these seasons will be analyzed to establish the contribution of Cruyff. To strengthen the identification the stability of the Feyenoord teams is discussed and the developments in performance and stadium attendance are presented. Section 4 describes the set-up of the analysis and section 5 presents the estimation results and provides an interpretation of the contribution of Cruyff to the success of Feyenoord both in terms of performance and stadium attendance. Section 6 concludes that indeed Cruyff made a superstar contribution to Feyenoord.

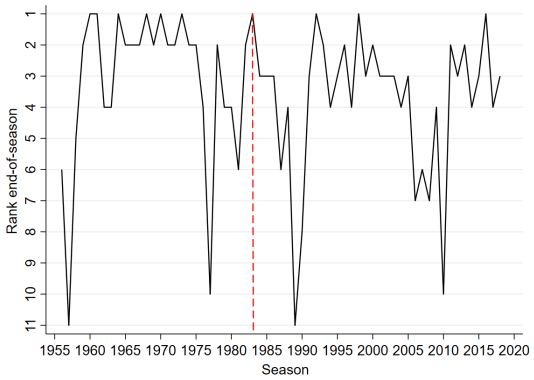
2 Long-term developments Feyenoord

Professional football in the top league in the Netherlands, the Eredivisie, has been dominated by three clubs: Feyenoord, Ajax and PSV. Since the start of professional football in the Netherlands, Feyenoord won the Dutch championship 10 times; in 1961, 1962, 1965, 1969, 1971, 1974, 1984, 1993, 1999, 2017. Over the same period Feyenoord won the Dutch Cup 11 times; in 1965, 1969, 1980, 1984, 1991, 1992, 1994, 1995, 2008, 2016, 2018. Thus, it won the so called double (Championship and Cup) three times i.e., in 1965, 1969 and 1984. Feyenoord was the first Dutch club winning a European title, in 1970 it won Europa cup I, the equivalent of the current Champions League. It was also the last Dutch club to win a European title, the UEFA cup in 2002. Furthermore, it won the World Cup in 1970 and the UEFA cup in 1974.

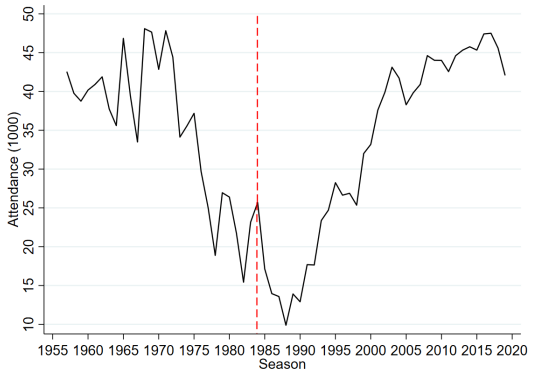
The LHS graph of Figure 1 shows that Feyenoord also had bad years in terms of performance. If not for the season 1983/84 Feyenoord would have been without a championship for almost 20 years, almost as long as the later no-championship spell of 18 years. In the history of Feyenoord 1983/84 was an important season. The RHS graph of Figure 1 shows the development of average seasonal attendance of the Feyenoord stadium from 1956/57 to 2018/19. Clearly, stadium attendance

Figure 1: Average seasonal attendance Feyenoord Stadium (De Kuip) and end-of-season rank; 1956/57-2018/19 (1000)

a. End-of-season rank



b. Average stadium attendance



Note: 1983/84 was the season when Cruyff was a Feyenoord player

has a U-shape development with Johan Cruyff joining Feyenoord when attendance was almost at its lowest. There is no clear relationship between performance and stadium attendance.[1] The focus of the analysis in the remainder of the paper is on the season 1983/84, the Cruyff season, and the seasons before and after.

3 Seasons 1982/83 – 1984/85

3.1 Stability of Feyenoord teams

One of the important issues in the analysis is whether the main difference of the Feyenoord teams in 1983/84 compared to the earlier and the later season is the presence of Johan Cruyff. Panel a of Table 1 suggests that the Feyenoord teams were very stable over the three seasons of analysis. The table shows the minutes played by each player (conditional of having played at least 1530 minutes). In terms of playing time in 1983/84 Cruyff ranked fourth. Of the other 10 players in the top 11 in 1983/84, 9 were also present in 1982/83 while all 10 were present in

[1] Van Ours (2021) analyzes long-run determinants of seasonal fluctuations in stadium attendance in Dutch professional football for a period of more than 60 years. He finds that the U-shape development is related to developments in unemployment.

1984/85. Indeed, a remarkable stability in terms of team composition.

Table 1: Stability of Feyenoord across seasons

a. Minutes played[a)]	1982/83	1983/84	1984/85
1. Ben Wijnstekers	2700	3016	2641
2. Joop Hiele	2970	2970	2970
3. Ruud Gullit	2961	2916	1664
4. Johan Cruyff	–	2821	–
5. André Hoekstra	2159	2808	2538
6. Michel van de Korput	–	2773	2700
7. Ivan Nielsen	2739	2700	2205
8. Peter Houtman	2801	2682	2701
9. Sjaak Troost	2714	2385	2900
10. André Stafleu	2242	1817	1627
11. Henk Duut	376	1616	2191
12. Stanley Brard	327	1453	1546
13. Pierre Vermeulen	2085	1448	–
14. Andrey Jeliazkov	2637	1370	–
15. Mario Been	585	265	2650
16. Michel Valke	2854	–	–
17. Willem van Hanegem	1454	–	–
18. Simon Tahamata	–	–	1702
b. Goal scoring[b)]			
1. Peter Houtman	30	21	21
2. André Hoekstra	6	19	12
3. Ruud Gullit	8	15	7
4. Johan Cruyff	–	11	–
5. Andrey Jeliazkov	12	8	–
6. Henk Duut	–	6	6
7. Mario Been	2	2	18
8. Simon Tahamata	–	–	7
9. Pétur Pétursson	–	–	7
10. Michel Valke	5	–	–

[a)] Reported if at least 1530 minutes played within one season (equivalent to 17 full matches); ranking according to 1983/84.

[b)] Reported if at least 5 goals in one of the seasons; ranking according to the 1983/84 season.

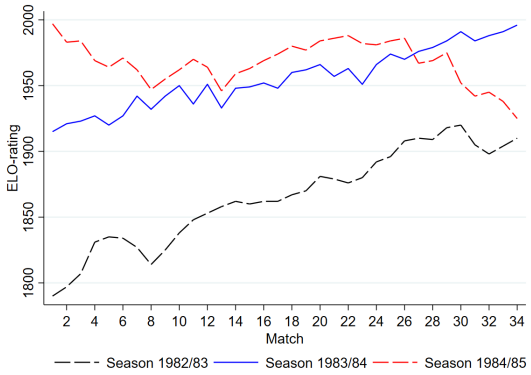
Panel b of Table 1 shows the main goal scorers in the three seasons. Also here there is stability. Cruyff scored 11 goals. Apart from Cruyff, of the six top scorers in 1983/84, five were present in 1982/83 and five were present in 1984/85. Again, a lot of stability in the team of Feyenoord across the three seasons. Except for the presence of Cruyff, the Feyenoord teams were not so different in the three seasons.

3.2 Performance and stadium attendance

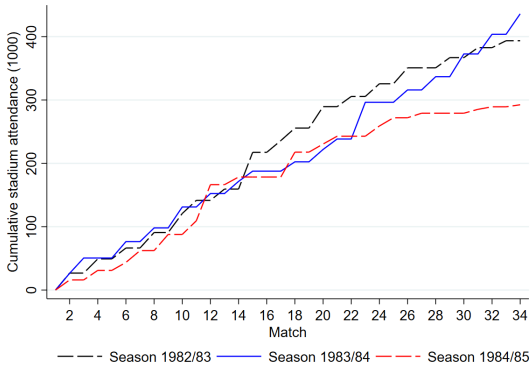
The LHS graph of Figure 2 provides information about the performance of Feyenoord in the three seasons using ELO ratings. In the first season there is a steady increase that is continued in the second season and comes to a stop in the third season at the end of which there is a steady drop. Clearly, at the end of the Cruyff season Feyenoord was at its top.

FIGURE 2: PERFORMANCE (ELO-RATING) AND CUMULATIVE STADIUM ATTENDANCE BY MATCH IN THE SEASON

a. ELO-rating



b. Stadium attendance

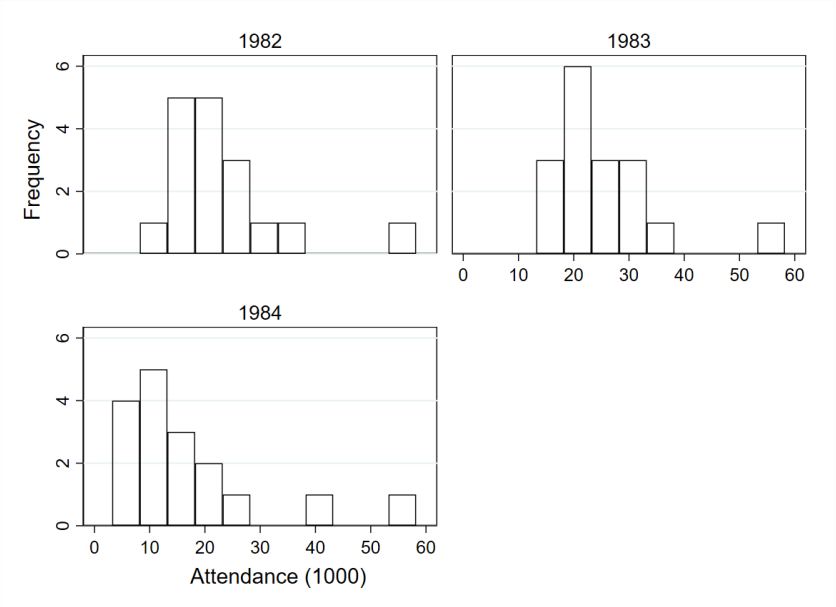


Season 1983/84 was when Cruyff was a Feyenoord player

The RHS graph of Figure 2 gives the developments of cumulative stadium attendance over the three seasons. The differences between the first halves of the season are not so big. The developments become different after the matches against Ajax when the stadium was sold-out. Apart from that, the seasons 1984/85 levels off towards the end while the other two seasons show very similar developments in the final matches of each season.

Figure 3 provides an overview of the distribution of stadium attendance for the three seasons. Clearly, in every season there is one outlier match, the match against Ajax. With the exception of a match in 1984/85 against PSV, attendances in other matches range from less than 10,000 to about 35,000.

FIGURE 3: HISTOGRAMS STADIUM ATTENDANCE; THREE SEASONS



Season 1983/84 was when Cruyff was a Feyenoord player

4 Set-up of the Analysis

There are two parts in the analysis. The first is the contribution of Cruyff to the performance of Feyenoord, the second is the effect the presence of Cruyff had on the stadium attendance of the home matches.

4.1 Performance

The Eredivisie had 18 teams in the period of analysis so every team played 17 home games and 17 away games. Schreyer and Ansari (2021) provide a recent overview of research on stadium attendance. Besters et al. (2019) present a recent analysis of the determinants of match-level stadium attendance in Dutch professional football. At the match level, important determinants are team quality and loss aversion. To investigate the contribution of Cruyff to the performance of Feyenoord, several dependent variables y from a match in season s (1-3) against opponent j (1,..,17)

in the home and the away match are used in a simple regression:

$$y_{sj} = \gamma + \alpha_h H_{sj} + \beta C_{sj} + \epsilon_{sj} \tag{1}$$

where H is a dummy variable for a home match, C a dummy variable for the presence of Cruyff in the match and γ a constant. Furthermore α_h and β are parameters and ϵ_{sj} is the error term. In the 1983/84 season Cruyff appeared in all 34 matches except for one away game. Therefore, within-season variation of his presence in home matches does not exist. The identification of his contribution relies on a dummy variable that is defined to be equal to one in the 1983/84 season (except for the one away match) and is equal to zero in the seasons 1982/83 and 1984/85.

4.2 Stadium Attendance

Home stadium attendance A in season s against opponent j is related to a dummy variable C_{sj} for the presence of Cruyff and potential other determinants represented by x_{sj}:

$$A_{sj} = \alpha + \beta_C C_{sj} + \gamma_A x_{sj} + \varepsilon_{sj} \tag{2}$$

where α is a constant, β_C is the parameter of main interest, γ_A is a vector of other parameters and ε_{sj} is the error term. Because the matches against Ajax were sold-out they are excluded from the analysis. The vector of potential determinants x consists of surprise points, expected number of points at the start of the match and championship significance. The surprise points are an indicator of how well the team does in the current season compared to the previous season in terms of cumulative number of points achieved at the start of the match. The expected number of points is an indicator of the strength of the opponent. The higher this number the weaker the opponent and the less exciting the match is expected to be. Championship significance is an indicator that increases over the course of the season to a maximum of 1 but turns zero as soon as it was impossible for Feyenoord to win the championship. Furthermore, two dummy variables are included; one for

Sparta Rotterdam to account for the effect of a derby and one for PSV Eindhoven, a club from the traditional top three in the Netherlands. Finally, there is a dummy variable indicating whether or not a match took place during a weekday. Weekday matches are played in the evening and therefore perhaps less attractive to visit.

5 Estimation Results

5.1 Performance

Equation (1) is estimated using OLS.[2] Panel a of Table 2 presents the parameter estimates for the performance measures. The first column shows that the number of points is 0.38 higher in home matches while in matches with Cruyff 0.18 additional expected points were obtained (at the borderline of significance). Columns (2) to (4) of Table 2 show significant home match effect on goal difference, win probability and loss probability. Finally, column (5) shows that in the matches in which Cruyff played the ELO-rating at the start of the match was significantly higher than in other matches. The presence of Cruyff had no significant effects on probability to win. Panel b shows the parameter estimates if the ELO-rating of the opponent is replaced by opponent fixed effects. The effect of playing at home is not very much affected but the effects of Cruyff increase somewhat both in terms of point estimate as well as in terms of significance. Taking these estimates at face value, without Cruyff Feyenoord would have achieved 6 to 8 points less than it did and ceteris paribus it would not have won the league.

5.2 Stadium attendance

Panel c of Table 2 shows the OLS parameter estimates for stadium attendance. From column (1) it appears surprise points, expected points and the dummy variables for Sparta Rotterdam and PSV Eindhoven are all significantly different from

[2]Some of the dependent variables have a discrete nature. However, estimating an ordered probit model for points or probit models for win probability and loss probabilities does not change the main findings.

Table 2: Parameter estimates performance and stadium attendance

	(1)		(2)		(3)		(4)		(5)	
a. Performance I	Points		Goal difference		Win probability		Loss probability		ELO-rating	
Cruyff	0.18	(1.6)	0.80	(2.0)**	0.09	(1.0)	-0.09	(1.9)*	0.38	(4.6)***
Home match	0.38	(3.2)***	0.95	(2.8)***	0.20	(2.3)**	-0.18	(3.1)***		
ELO-rating opponent/100	-0.20	(4.1)***	-0.67	(3.7)***	-0.14	(4.1)***	0.07	(2.3)**		
R-squared	0.239		0.285		0.187		0.181		0.112	
b. Performance II	Points		Goal difference		Win probability		Loss probability		ELO-rating	
Cruyff	0.24	(2.1)**	1.03	(2.4)**	0.11	(1.2)	-0.12	(2.6)**	0.37	(5.1)***
Home match	0.37	(3.0)***	0.92	(3.1)***	0.19	(2.2)**	-0.17	(3.2)***		
Opponent fixed effects	Yes		Yes		Yes		Yes		Yes	
R-squared	0.404		0.394		0.367		0.347		0.106	
c. Stadium attendance I	(1)		(2)		(3)		(4)		(5)	
Cruyff	6.30	(3.3)***	6.90	(4.4)***	6.93	(4.2)***	6.07	(3.7)***	5.78	(2.7)***
Surprise points	0.37	(1.7)*	0.43	(2.1)**			0.49	(2.5)**		
Expected points	-0.12	(2.5)**	-0.10	(2.2)**	-0.13	(3.0)***				
Sparta Rotterdam	9.56	(6.6)***	10.60	(5.7)***	9.15	(4.6)***	12.46	(9.9)***		
PSV Eindhoven	12.43	(2.9)***	13.08	(3.0)***	11.62	(2.9)***	17.47	(4.7)***		
Championship significance	0.23	(1.6)								
Weekday	-0.19	(0.1)								
R-squared	0.644		0.620		0.552		0.591		0.118	
d. Stadium attendance II	(1)		(2)		(3)		(4)		(5)	
Cruyff	7.61	(3.5)***	7.84	(4.4)***	8.02	(4.1)***	6.68	(4.5)***	6.33	(4.0)***
Surprise points	0.25	(1.0)	0.28	(1.4)			0.41	(2.1)**		
Expected points	-0.18	(2.1)**	-0.16	(2.0)*	-0.21	(3.1)***				
Championship surprise	0.09	(0.6)								
Weekday	-0.38	(0.1)								
Opponent fixed effects	Yes		Yes		Yes		Yes		Yes	
R-squared (within)	0.526		0.519		0.467		0.444		0.310	

Seasons 1982/83 – 1984/85; panel a (b) based on 102 (48) observations; constants not reported

Absolute t statistics based on robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.01

zero. Championship significance and the dummy variable for weekday matches are not significantly different from zero. If the last two variables are removed the parameter estimates of the other variables do not change much (column (2)). The positive effect of surprise point show that a better performance than in the previous year has a positive effect on stadium attendance. Expected points have a significant negative effect, i.e. stronger opponents attract a bigger audience. The presence of Cruyff has significant positive effects on stadium attendance. Columns (3) to (4) show that the Cruyff effect remains positive and significant if some of

the other explanatory variables are removed from the analysis. In column (5) the Cruyff dummy is the only explanatory variable which is then still significantly different from zero. Panel d shows the parameter estimates if the dummy variables for Sparta Rotterdam and PSV Eindhoven are replaced by opponent fixed effects. Some of the parameter estimates changes slightly but in all estimates the effect of Cruyff is positive and significantly different from zero. Apparently, conditional on performance the presence of Cruyff attracted 6,000 to 7,000 additional stadium attendants.

As a final sensitivity analysis to establish the contribution of Cruyff to stadium attendance at Feyenoord, equation (2) was re-estimated on the two seasons with Cruyff, i.e., 1982/83 and 1984/85. Then, the parameter estimates were used to predict the average stadium attendance for all three seasons. The predictions and actual stadium attendance are compared in Table 3.

Table 3: Comparing actual and predicted stadium attendance

	Whole season			Excluding last 4 matches		
	1982/83	1983/84	1984/85	1982/83	1983/84	1984/85
Actual	21.0	23.6	14.7	22.1	22.5	17.1
Predicted	20.9	18.0	14.8	21.3	17.7	15.7
Difference	+0.1	+5.6	-0.1	+0.8	+4.8	+1.4

Note: The predictions are based on estimates of equation (2) and seasons 1982/83 and 1984/85 (not including matches against Ajax)

Whereas the predictions for seasons 1982/83 and 1984/85 are quite accurate, the average stadium attendance in 1983/84 is underestimated with 5,600. This is again indicating that the contribution of Cruyff was very important and substantial. To make sure that this is not just the end-of-champion-season effect the RHS of the table shows that also if the last four matches are ignored season 1983/84 is substantially more underestimated than the other seasons.

5.3 Johan Cruyff at Feyenoord

In the period of analysis 1982/83 to 1984/85 the same three clubs finished top of the league. Panel a of Table 4 shows end-of-season ranking. Ajax won the title twice, Feyenoord once and PSV did not win a title but finished second place twice. The top scorer of the Eredivisie in 1982/83 was Feyenoord player Peter Houtman who scored 30 goals. In the other two seasons Ajax player Marco van Basten was the top scorer with 28 and 22 goals.

Table 4: Final ranking Eredivisie and Cup final by season

a. Ranking Eredivisie	1982/83	1983/84	1984/85
1.	Ajax (58)	Feyenoord (57)	Ajax (54)
2.	Feyenoord (54)	PSV (52)	PSV (48)
3.	PSV (51)	Ajax (51)	Feyenoord (48)
b. Cup final			
1.	Ajax	Feyenoord	FC Utrecht
2.	NEC	Fortuna Sittard	Helmond Sport

Panel b of Table 4 shows the Cup final in the three seasons of interest with Ajax winning in 1982/83, Feyenoord winning in 1983/84 and FC Utrecht winning in 1984/85. Clearly, in the three seasons of analysis Feyenoord and Ajax were dominating the league matches and the cup matches.

As indicated in the introduction according to Van den Boogaard (2019), Cruyff was offered a salary of about 600,000 euro which he thought was not value for money. The contract that Cruyff signed with Feyenoord was partly piece-rate based among others on the number of attendants at home matches (Van den Boogaard (2019)). Cruyff received a base salary of about 70,000 euro and per league match and cup match about 2 euro per ticket sold in excess of 20,000 attendants. In addition to this, he received 25% of the net revenues from Europe cup matches and a friendly tournament (the AD tournament) which in 1983 had a net revenue of about 270,000 euro.

Cruyff was paid for match attendances in excess of 20,000. For the season 1983/84 this added up to about 110,000 attendants. Part of this looks like windfall gains as for example matches against Ajax were usually sold-out. However,

Cruyff attracted on average about 6,500 additional attendants per match which over the season adds up to about 110,000. In hindsight, Feyenoord paid Cruyff for the additional attendants he attracted. No more, no less. Not all the details of the contracts that Cruyff were offered by Ajax (and declined) and Feyenoord (and signed) are known. Nevertheless, in hindsight it seems that Cruyff would have earned more money by staying at Ajax. Feyenoord benefited from the disagreement between Cruyff and Ajax. Not only did Feyenoord attract more stadium attendants at low marginal costs, it also won the double, i.e. both the league and the Dutch cup.

6 Conclusions

The main findings of the current paper on Johan Cruyff and Feyenoord are twofold. First, the presence of Cruyff improved performance of Feyenoord. Second, conditional on the improved performance the presence of Cruyff had a positive effect on attendance at home matches. Before Feyenoord, Cruyff played at Ajax where he also started his career. Since Feyenoord (Rotterdam) and Ajax (Amsterdam) are arch rivals increased stadium attendance is unlikely to be related to popularity (Adler (1985)) but rather to exhibition of talent (Rosen (1981)). In football the devil is in the details and it was Cruyff who provided those details. Because of this, Feyenoord won the league in 1984, 10 years after winning the previous title and 9 years before it would do so again. Clearly, Johan Cruyff made a superstar contribution to Feyenoord.

References

Adler, M. (1985). Stardom and talent. *American Economic Review 75*(1), 208–212.

Besters, L., J. C. van Ours, and M. A. van Tuijl (2019). How outcome uncertainty, loss aversion and team quality affect stadium attendance in Dutch professional football. *Journal of Economic Psychology 72*, 117–127.

Brandes, L., E. Franck, and S. Nüesch (2008). Local heroes and superstars; an empirical analysis of star attraction in German soccer. *Journal of Sports Economics 9*(3), 266–286.

DeSchriver, T. D. (2007). Much adieu about Freddy: Freddy Adu and attendance in Major League Soccer. *Journal of Sport Management 21*(3), 438–451.

Humphreys, B. R. and C. Johnson (2020). The effect of superstars on game attendance: Evidence from the NBA. *Journal of Sports Economics 21*(2), 152–175.

Jennett, N. (1984). Attendances, uncertainty of outcome and policy in Scottish league football. *Scottish Journal of Political Economy 31*(1), 176–198.

Jewell, R. T. (2017). The effect of marquee players on sports demand: The case of US Major League Soccer. *Journal of Sports Economics 18*, 239–252.

Lawson, R. A., K. Sheehan, and E. F. Stephenson (2008). Vend it like Beckham: David Beckham's effect on MLS ticket sales. *International Journal of Sport Finance 3*, 189–195.

Lucifora, C. and R. Simmons (2003). Superstar effects in sport; evidence from Italian soccer. *Journal of Sports Economics 4*(1), 35–55.

Rosen, S. (1981). The economics of superstars. *American Economic Review 71*(5), 845–858.

Schreyer, D. and P. Ansari (2021). Stadium attendance demand research: A scoping review. *Journal of Sports Economics*, forthcoming.

Shapiro, S. L., T. D. DeSchriver, and D. A. Rascher (2017). The Beckham effect: Examining the longitudinal impact of a start performer on league marketing, novelty, and scarcity. *European Sport Management Quarterly 17*(5), 610–634.

Van den Boogaard, A. (2019). *Het laatste seizoen; het andere gezicht van Johan Cruijff ("The last season; the other face of Johan Cruyff").* Amsterdam: Thomas Rap.

Van Ours, J. C. (2021). Common international trends in football stadium attendance. *PLoS ONE 16*(3), e0247761.

Appendix A: Details on the data

In the analysis the following variables are used:

- JC-dummy: Dummy with a value of 1 if Johan Cruyff played during the match and 0 otherwise
- Actual points: Two points for winning a match, one point for a draw, zero points for a loss.
- ELO-rating: Performance indicator based on past match results.
- Expected points: Based on ELO-ratings the probability to win (pw), the probability to draw (pd) and the probability to lose (pl) are available (pw+pd+pl=1). The expected points is equal to 2*pw+pd.
- Goal difference: Number of goals scored - number of goals conceded.
- Win probability: Dummy variable with a value of 1 if a match is won.
- Loss probability: Dummy variable with a value of 1 if a match is lost.
- Stadium attendance: Number of attendants during a home match.
- Surprise points: Difference between the cumulative points achieved during the season prior to the start of match minus the cumulative points achieved during the previous season prior to the start of the equivalent match of the previous season.
- Championship significance: For this the Jennett (1984) measure is used which is based on the (mathematical) possibility to win the championship. The measure is defined at the seasonal level for match number n as $1/(35-n)$. The assumption is that the final rank is known in advance. As soon as the championship is achieved – by the club itself or a competitor – or in case it is mathematically impossible to obtain the championship the measure is equal to zero. If the championship is decided in the last (34^{th}) match the measure is equal to 1.

- Sparta Rotterdam (PSV Eindhoven): Dummy variable if the opponent was Sparta Rotterdam (PSV Eindhoven).
- Weekday: Dummy variable if the match was not played on Saturday or Sunday.

Data sources: Expected points: elofootball.com; Match outcomes and stadium attendance: voetbal.com; Seasonal uncertainty: authors' calculation.

Table 5 shows descriptive statistics. Panel a provides information about all 102 matches used in the analysis of performance. Panel b gives information about the home matches used in the analysis of stadium attendance.

Table 5: Means of variables; home match averages by season

	1982/83	1983/84	1984/85
a. Performance – all matches (102)			
Johan Cruyff dummy	0.00	0.97	0.00
Home match	0.50	0.50	0.50
ELO-rating/100	17.19	17.00	17.20
Points	1.59	1.68	1.41
Goal difference	0.97	1.91	1.05
Win probability	0.65	0.74	0.62
Loss probability	0.06	0.06	0.21
b. Stadium attendance – home matches (48)			
Johan Cruyff dummy	0.00	1.00	0.00
Attendance (1000)	20.97	23.63	14.72
Expected points	1.46	1.62	1.61
Surprise points	6.75	0.88	-3.81
Championship significance (%)	5.55	8.11	4.83
Sparta Rotterdam	0.06	0.06	0.06
PSV Eindhoven	0.06	0.06	0.06
Weekday	0.06	0.06	0.41

Note: For the match attendance analysis, the home matches against Ajax are excluded because these matches were sold-out.

From the table it is clear that in the season 1983/84 Feyenoord had the largest number of expected points, actual points, goal difference and the probability to win. In the season 1983/84 the loss probability was low especially compared to 1984/85. The surprise points in 1983/84 were on average still positive despite the very good season 1982/83. In season 1984/85 the average number of surprise

points was negative. The championship significance in 1983/84 was highest which is no surprise as Feyenoord won the championship in that season.