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The Benefits of Financial Markets: A Case Study of European Football Clubs

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THE BENEFITS OF FINANCIAL MARKETS: A CASE STUDY OF EUROPEAN FOOTBALL CLUBS

ABSTRACT

This study analyses the performance of European football clubs which undergo an initial public offering (IPO). We use a unique panel dataset consisting of domestic and international performance data to develop an event study to investigate the effects on a football club's on-field performance before and after the IPO. The study follows from the observation that, as financial markets are expected to exhibit a positive influence on the economy as a whole, football clubs who access these markets should benefit as well. However, the conclusions of our study are similar to those in the corporate finance literature, where firms who undertake an IPO underperform similar firms in the medium term. Using our metric, football clubs have diminished domestic and international performance after the stock market listing.

JEL classification: G14, G32, L83

Keywords: football, financial markets, IPO, panel data

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I. INTRODUCTION

Financial markets benefit the economy in many ways. Their ability to facilitate investing and borrowing of funds allows individuals and firms to time consumption, and smooth the decision-making process over the medium term. Markets also facilitate the transfer of risk to parties which are best able to provide a return commensurate with the risk profile of a given investment. Markets enable the separation of ownership and management of the corporation, allowing an optimal allocation of scarce resources. The notion that the interaction between buyers and sellers each acting in self-interest will result in the most efficient allocation of resources has been enunciated for many years, since first being introduced as Adam Smith's "invisible hand" in 1776.

The sluggish rates of economic growth achieved in the command economies of Eastern Europe prior to 1990, and the subsequent pattern of growth, provides further evidence of the positive impact the existence of open and accessible (financial) markets can have on the economy.[1]

At firm level, financial markets facilitate the flow of capital to firms at the lowest possible cost, enabling investment in productive projects and subsequent growth in the economy. Firms who engage with financial markets should benefit from the advantages financial markets bring.

One specific way in which firms can make use of financial markets is to list the firm on a public exchange, allowing many types of investors the opportunity to purchase a share of the ownership of the firm, and permitting the firm to source capital at the lowest available cost for investment in productive projects. Firms undertake this change in ownership from a private, entrepreneur-driven entity to a public firm via an Initial Public Offering (IPO).

This route from private to public ownership is a common and standard path for firms as they grow in size, and the availability of capital from private sources becomes limited. In the case of football clubs, this process is much less common. The first football club to undertake an IPO was Tottenham Hotspur in 1983. In recent times, other football clubs have made the decision to undertake an IPO and list on a stock

[1] For example, see Pagano (1993) and Rajan and Zingales (1996). Rajan and Zingales ask whether industrial sectors that are relatively more in need of external finance develop disproportionately faster in countries with more developed financial markets.

market. This paper is the first study of IPOs by football clubs, and examines whether football clubs benefit from a public listing.

For most firms, there are several performance measures one can use such as earnings per share, annual earnings growth or growth in fixed investment. But the key measure is the value of the firm, that is, how did the share price move in the time following the listing. This paper uses new "on-pitch" measures of performance for football clubs and analyzes changes of performance related to an IPO of a football club.

This study contributes to the literature by analyzing a newly compiled and unique dataset consisting of football clubs' domestic and international match results. The data is used to test whether a stock market listing benefits football clubs in terms of their performance. In addition, it is analyzed whether the stock price of a listed football club reflects the past, current and future performance of the club and thereby enhances the efficient allocation of resources. The paper thus provides evidence of the benefits of a stock market listing for a specific sector, i.e. football clubs. Moreover, the use of "operating" measures of firm performance is extended to public football clubs to determine if match performance is positively related to a stock market listing of that firm.

The empirical results show that football clubs do not benefit from a stock market listing in general. Many clubs perform worse after the IPO than before. Only lower division clubs and hence smaller football clubs clearly benefit from a listing.

II. LITERATURE REVIEW

The corporate finance literature is in general agreement that new IPO share prices tend to underperform the market in the medium term.

Ritter and Welch (2002) studied US IPO data from 1980 to 2001, and found that, in the three years after listing, the average IPO underperformed the index by 23.4% and underperformed seasoned companies with same market capitalisation and book-to-market ratio by 5.1%. Ritter (1991) examined 1526 IPOs from 1975-84 in the US and finds underperformance after three years of 16.9%. Loughran and Ritter (1995) looked at 4753 IPOs in the US from 1970-1990 and found IPOs gave an average return of 8.4% in the three years after listing and 15.7% in the five years after, versus equivalent figures of 35.3% and 66.4% respectively for matching firms.

Internationally, the same long-run underperformance has been found by Alvarez & Gonzalez (2005) for Spain, Levis (1993) for the UK, Ljungqvist (1997) for Germany and Lee et al (1996) for Australia.

However, this underperformance of newly listed firms has been argued to be related to other factors. Eckbo and Norli (2005) argue that the observed low returns on IPOs are a factor of the risk involved and that newly listed firms only underperform the index because IPO firms are typically small growth firms, which have exhibited low returns post 1963 as per Fama and French (1992). Brav et al (2000) also found that low abnormal returns are reflective of risk and that IPO firms' returns were not lower when the sample was controlled for company size and book-to-market ratio. Schultz (2003) finds the underperformance of IPOs is actually a factor of pseudo market timing, as owners will be more likely to take a firm public when stock markets are higher, and hence IPOs are clustered around periods of low returns on stock markets. Purnanandam and Swaminathan (2004) found that the long-run underperformance of IPOs was due to the offer price being too high relative to similar firms, as judged by price multiples such as price-to-EBITDA, price-to-sales and price-to-earnings.

In addition to underperformance in the stock price of firms which went public, several studies have found firms which list tend to underperform when operating measures of performance are considered.

Jain and Kini (1994) studied 682 IPOs from 1976 to 1988 and found IPO firms exhibited a decline in post-issue operating performance, measured by both return on assets and cash flow deflated by assets, both before and after industry adjustment. However, they did find firms exhibit a higher growth in sales and capital expenditure in the post IPO period. Clementi (2002) develops a model for return on assets based on the Jain and Kini paper, which predicts operating performance will peak in advance of an IPO, and decline for several years thereafter, which is consistent with industrial organisation theory which says a firms performance declines with age and size (see, for example, Evans, 1987). Mikkelson et al (1997) find operating return on assets declines in the year following IPO, but then exhibits no further declines in a 10-year period.

Football clubs have historically tended to have been owned privately by local businesspersons and had poor records of profit-making (Russell 1997). Company

structure did not evolve as commercial enterprises, and, for example, dividend payments to directors were banned in England until the 1980s. Morrow (1999) examined English football clubs and characterised their corporate structure as small, privately-owned and under-capitalised with low financing achieved from retained earnings.

Dobson and Goddard (2006) provide a brief historical overview on football clubs that went public. The first football club to go public was Tottenham Hotspur in October 1983. The club raised £3.3m in the IPO, a sum equivalent to around £100m today if inflated by football transfer fees.[2] Other notable early IPOs were by Millwall in 1989 and Manchester United in 1991.

We are unaware of other studies that analyze IPOs and their effects for football clubs.

III. EMPIRICAL ANALYSIS

Our sample consists of the 27 publicly listed European football clubs quoted on the Dow Jones STOXX football index. For some of these clubs we have no performance data for the period before the listing, leaving us with a sample consisting of 22 clubs from 10 countries. The earliest listing in our sample is Southampton, on 1st April 1994, and the latest is Benfica, on 1st May 2007. The domestic and international performance measures (points per game and UEFA club coefficient) are collected for the period starting in 1990 until 2008 providing a panel-data set of 22 observations in the cross-section (clubs) and 19 observations through time.

Due to the small number of clubs in our sample, we concentrate our analysis on operating measures of performance as opposed to company value, in a similar fashion to the study by Jain and Kini (1994). The performance measures we develop are points per game, for domestic competition, and the UEFA performance coefficient, for international competition. Our domestic performance measure, points achieved per game, has a standardised 3 points per win and 1 point per draw. This controls for the different number of games across countries, divisions and seasons. The UEFA Performance co-efficient grades clubs for their performance in pan-European competitions. This is also standardised as a proportion of the average rating, to account for changes in calculation methods across seasons. Domestic

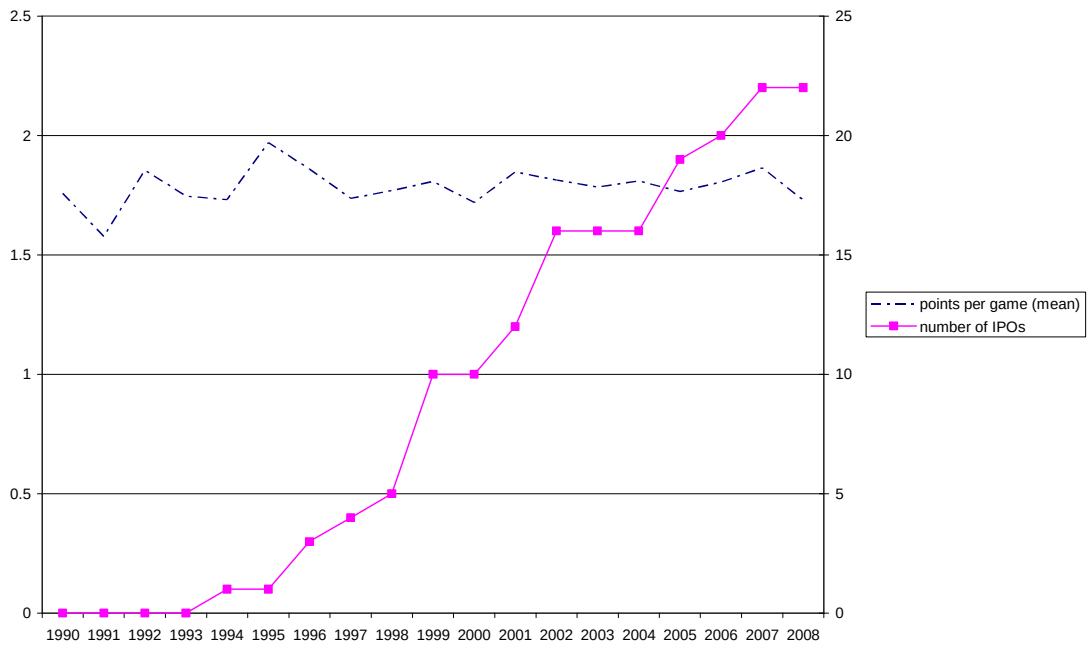
[2] The record transfer fee paid by an English club was £1.0m in 1983, it is £32.6m as of May 2009

results data was obtained from Rec.Sports.Soccer Statistics Foundation and UEFA data was obtained from the official UEFA website.[3]

Figure 1 shows the average domestic performance of all football clubs for the sample period and the fraction of football clubs listed. The figure illustrates that the average on-pitch performance of the listed football clubs is constant for the sample period. This indicates that going public does not lead to a better performance (clubs lose less and tend to win more often) in the long run on average. The plot does not show whether there is a positive effect for football clubs with certain characteristics or for a certain period, e.g. one or two seasons. These effects will be analyzed in the econometric section below.

Figure 1: Average domestic performance and fraction of listed football clubs

This figure shows the evolution of the domestic performance per year (average points per game, dashed line) from 1990 (year 1) until 2008 (year 19) and the number of listed clubs (IPOs) in the sample for the same period. The graph illustrates that the average on-pitch performance does not increase with the number of listed clubs.

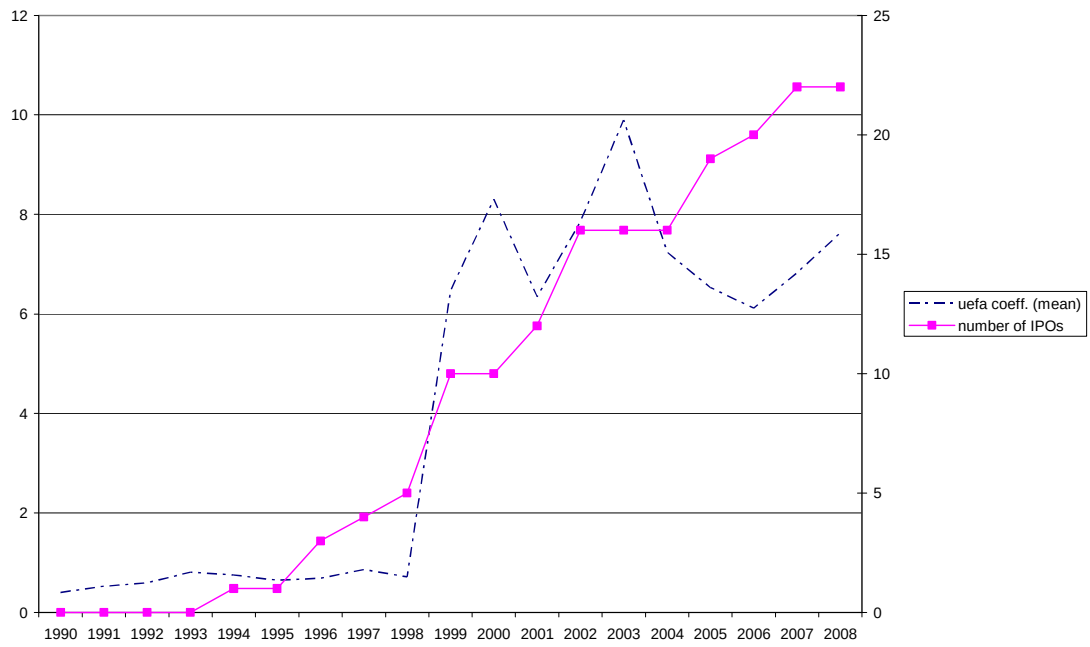


[3] www.uefa.com

Figure 2 illustrates the relationship of the average international performance of all football clubs and the number of listed clubs in the sample period. The international performance is measured with the UEFA coefficient for each club. Since the UEFA changed the computation of the measure in 1999, there is a structural break in that year. Therefore, the graph has to be interpreted for the period from 1990 until 1998 and from 1999 until 2008. The two sub-periods show that there is a weak relationship of the UEFA coefficient averaged across all clubs and the number of listed clubs. The UEFA coefficient changed from 0.40 in 1990 to 0.72 in 1998 and from 6.47 in 1999 to 7.62 in 2008.

Figure 2: Average international performance and the number of listed football clubs

This figure shows the evolution of the average international performance per year (average UEFA coefficient, dashed line) from 1990 (year 1) until 2008 (year 19) and the fraction of listed clubs in the sample for the same period. The graph illustrates that the average performance did not increase with the listing.

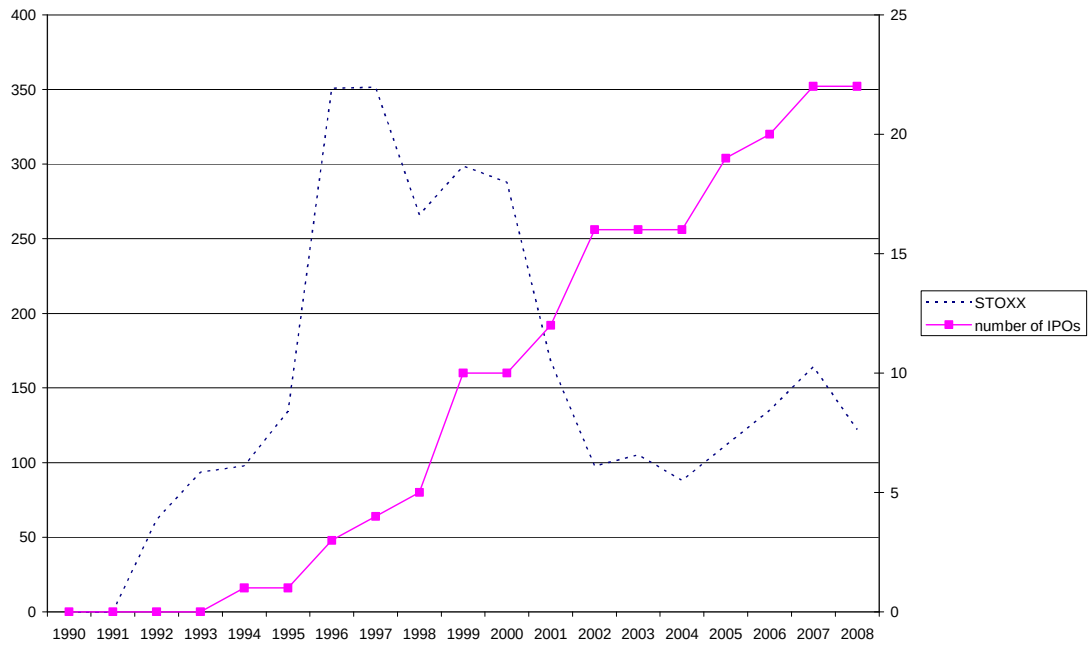


Finally, figure 3 shows the evolution of the STOXX football index and the number of listed football clubs for each year.

Figure 3: Football index (STOXX) and number of IPOs

This figure shows the evolution of the STOXX football index and the number of listed clubs (IPOs) in the sample for the period from 1990 until 2008. The graph

illustrates that the number of listed football clubs is not positively related to the average price (market-capitalization weighted) of a football stock.



The graph shows that the STOXX football index increased from a level of 61 in 1992 to levels above 350 in the years 1996 and 1997 and fell to values below 125 in 2008. The increasing number of listed football clubs contrasts the evolution of the football stock index and thus indicates that there is no positive relation of the number of football clubs listed on a stock exchange and a portfolio of football stocks. If the decision to go public led to increased profits potentially caused by a better performance of the football clubs, the stock prices would have clearly increased in that period. However, even though the index increased in the period under study, a comparison with a European stock index comprising major Eurozone firms shows that football stocks are clearly outperformed by the (broader) stock index in that period.[4]

The graphs presented above presented average values of domestic and international match performance and stock market performance. The next section uses an econometric model to obtain more detailed information.

[4] We use the EUROSTOXX50 as a benchmark index and find that the index level is around double the level of the football index in 2008 starting from the same basis in 1992. Details are not provided due to space considerations but can be obtained from the authors.

A. Econometric Framework

This section first describes the theoretical framework and then specifies the regression models accordingly.

The main hypothesis is that football clubs benefit from financial markets through a listing. While this hypothesis is too general to test, we formulate three more specific hypotheses derived from the main hypothesis.

The first hypothesis focuses on the domestic on-pitch performance of a football club before and after the listing and the second hypothesis analyses the international on-pitch performance of a football club. The third hypothesis focuses on the post-listing period and aims to assess whether the share price of a football club fully reflects and anticipates the current, past and future success of the football club, respectively.

Hypothesis 1 (domestic):
Football clubs perform better in the domestic league after the listing (IPO) than before the listing.

Hypothesis 2 (international):
Football clubs perform better in international competition after the listing (IPO) than before the listing.

Hypothesis 3:
The share prices of football clubs fully reflect the past, the current and future domestic and international performance of the club.

Given these hypotheses we specify the following (panel-data) regression models.

$$perf_{it} = a_i + b\ IPO_D_{it} + \boldsymbol{c}\ \boldsymbol{X}_{it} + e_{it} \qquad (1)$$

where *perf* is the number of average points and the subscripts denote the club (*i*) and the year (*t*), *IPO_D* is a dummy variable that is one if the club is listed (after the IPO) and zero otherwise and ***X*** is a matrix of control variables that aims to isolate the effect under study. The error term is given by *e*. The variables *a*, *b* and ***c*** are parameters to estimate where *a* is a club-specific parameter (hence the subscript *i*) and the other parameters (parameter vectors) are jointly estimated for all clubs.

The dependent variable *perf* is a domestic performance measure (average points per game, for hypothesis 1) and an international performance measure (UEFA club coefficient, for hypothesis 2).

The control variables specified in ***X*** include small and large leagues in order to account for the level of competition and the size of the market.[5] The division a club is playing in is also included in the control variable matrix. Moreover, lagged values of the dependent variable (performance) are included, in order to control for persistence in the success of a football club. Club-specific characteristics such as the size of a club are not included explicitly but accounted for implicitly through the use of a panel model which controls for unobserved (club-specific) heterogeneity.

The division a club is playing in deserves further attention. It is possible that a team which gets relegated will increase its win-ratio in the following season without improving its performance compared to the previous season. Thus the results could be biased if a team is relegated immediately following an IPO. However, table 1 shows that there is no case in which an IPO immediately precedes a relegation of a football club. Indeed, this may reflect rational behaviour on behalf of the owners of football clubs. Owners will wish to maximise returns when they sell (all or part of) their stake in the club, and are therefore unlikely to undertake an IPO at a time when the clubs on-pitch prospects are poor.

Table 1: List of football clubs and their IPO dates

Club	***Country***	***Seasons in Lower Division (season ending in given year)***	***IPO Date***
AALBORG BOLDSPILKLUB	Denmark	Never	14 September 1998
AFC AJAX	Netherlands	Never	11 May 1998
AIK FOOTBALL	Sweden	2005	1 July 2006
ARHUS ELITE	Denmark	2007	1 December 2004
AS ROMA	Italy	Never	22 May 2000
BESIKTAS	Turkey	Never	19 February 2002
BIRMINGHAM CITY	England	1996-2002 & 2007	1 April 1997
BORUSSIA DORTMUND	Germany	Never	30 October 2000
CELTIC	Scotland	Never	1 September 1995
FC COPENHAGEN	Denmark	Never	1 December 1997
FENERBAHCE SPORTIF HIZMET	Turkey	Never	17 September 2004
FUTEBOL CLUBE DO PORTO	Portugal	Never	1 June 1998

[5] England, France, Germany and Italy are defined as large leagues, as defined by the success of clubs from these leagues in international competition. See Table 2. Football clubs that do not play in these leagues are assumed to belong to a smaller league and market. Note, Spain is also considered a large league, but no Spanish clubs are present in our sample.

GALATASARAY	Turkey	Never	19 February 2002
JUVENTUS	Italy	2007	19 December 2001
LAZIO	Italy	Never	6 July 1998
OLYMPIQUE LYONNAIS	France	Never	1 February 2007
PRESTON NORTH END	England	1990-2008	1 September 1995
SOUTHAMPTON	England	2006-2008	1 April 1994
SPORT LISBOA E BENFICA	Portugal	Never	1 May 2007
SPORTING	Portugal	Never	2 June 1998
TRABZONSPOR SPORTIF YATIR	Turkey	Never	15 April 2005
WATFORD	England	1996-1999, 2001-2006 & 2008	1 August 2001

Table 2: List of countries and their average UEFA co-efficients 1995-2008

Country	***Average UEFA Co-efficient***	***League***
Spain	99.50	Large
Italy	87.21	Large
England	83.00	Large
Germany	70.54	Large
France	67.46	Large
Netherlands	42.39	Small
Portugal	35.64	Small
Turkey	25.96	Small
Scotland	22.93	Small
Denmark	16.71	Small
Sweden	14.79	Small

Given that the dependent variable in equation 1 is an implicit measure of relative performance, that is, the measure itself controls for the presence of non-public football clubs, we have not included private football clubs as a control sample in our analysis. There is the additional difficulty of trying to get an appropriate control club for each public club in our sample. For example, our sample contains four Turkish clubs; Besiktas, Fenerbahce, Galatasaray and Trabzonspor. In the 18 seasons from 1990-91 to 2007-08, these four clubs made up the top four on nine occasions, and three of the top four on eight other occasions. Finding adequate comparable clubs will be difficult in this case, and in many others.

The regression model for a test of the hypothesis that the stock price adequately reflects past, current and future performance is specified as follows:

$$R_{it} = a_i + bRM_t + \mathbf{c}\ \Delta \mathbf{perf}_{it} + \mathbf{d}\ \mathbf{X}_{it} + e_{it} \qquad (2)$$

where *R* is the return of a club's stock price for a given year. The subscripts *i* and *t* denote the club and the year, respectively. *RM* is the market return given by the equally-weighted average of all clubs for each year in order to control for common football-related stock price movements, ***perf*** is a (3x1) matrix comprising a contemporaneous, lagged and future domestic or international performance measure computed from *t-1* to *t*.. The matrix ***X*** includes the same control variables as for the model specified in equation 1 and described above. The model tests the hypothesis that past, current and future performance affects the current stock price. The null hypothesis is that there is no effect which implies that H_0: ***c=0***. This hypothesis test is an integral part in the assessment of the benefits of financial markets. If financial markets enhance the allocation of resources through price signals, the current and future performance should affect a football clubs stock price while past performance should not have an influence.

B. Empirical Results

This section presents and illustrates the estimation results of the three models (hypotheses) specified above.

Table 3 shows the coefficient estimates, standard errors in parenthesis and t-statistics for the relationship of the domestic performance pre and post the IPO.

Table 3: Domestic performance pre and post IPO
This table shows the effect of a football club's stock market listing on its performance in the home league. The regression model is estimated with the fixed-effects estimator.

Model: $perf_{it} = a_i + b\ IPO_D_{it} + \mathbf{c}\ \mathbf{X}_{it} + e_{it}$

	Spec. 1	***Spec. 2***	***Spec. 3***	***Spec. 4***	***Spec. 5***	***Spec. 6***
IPO_D	.0324 (.0369) 0.88	.2260*** .08298 2.72	.2612 (.1880) 1.39	-.0686 (.0518) -1.32	.0415 (.0390) 1.06	.3661* (.1930) 1.90
IPO top division		-.2206*** .0849 -2.60	-.2560 (.1893) -1.35			-.3573* (.1936) -1.85
IPO 2nd division			-.0364 (.1742) -0.21			-.0686 (.1740) -0.39
IPO large league				.2007*** (.0730) 2.75		dropped#
perf (t-1)					.0872 .0571 1.53	.1012* (.0564) 1.79

***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively.

dropped due to multi-collinearity

Specification 1 provides information about the change of the domestic performance before and after the IPO. The coefficient estimate of the IPO dummy is 0.0324. This means that the average points are higher after the IPO than before. However, the number is neither significant in statistical terms nor in football terms, that is, the performance of a football club does not increase significantly. The constant is estimated with 1.778 points per game on average (not reported). Hence, clubs that listed increased their points per game from 1.778 to 1.810 points. In a season of 30 games this implies one additional draw per football club compared to a loss in previous seasons.

Specification 2 augments the basic model with an additional dummy for the football clubs that play in the first division of the national league (e.g. Premier League in England or 1.Bundesliga in Germany). The effect on first division teams is given by the sum of both coefficient estimates and indicates that top division clubs do not perform better after an IPO than before. The fact that the coefficient estimate for the IPO dummy is highly significant and estimated at 0.2260 implies that lower division teams clearly benefit from the IPO. Specification 3 confirms this finding. Specification 4 includes a large league IPO dummy in order to account for differences across leagues. The underlying hypothesis is that larger leagues (England, France, Germany and Italy) imply a higher degree of competition domestically, and a larger potential fan base, both domestically and internationally. The results show that there is a positive effect of the IPO in larger leagues. Combined with the results obtained in specification 1 through 3, this implies that lower division clubs of larger leagues benefit the most followed by top division clubs in larger leagues. Clubs in smaller leagues such as Denmark, Portugal or Turkey do not benefit from a listing.

Finally, specification 5 and 6 show that there is persistence in the performance of a football club and that the coefficient estimates change quantitatively but not qualitatively with the inclusion of the lagged domestic performance.

An alternative regression model including not only the contemporaneous IPO dummy but also a lagged dummy and a lead dummy in order to assess the impact of an IPO through time shows that there is a negative effect of the lagged variable and a positive effect of the contemporaneous and the lead (forward-looking) IPO. The results are not reported explicitly due to the statistical insignificance of all three coefficient estimates.

Table 4 shows the coefficient estimates, standard errors in parenthesis and t-statistics for the relationship of the *international* performance pre and post the IPO. We use a football club's UEFA coefficient as a measure of the international performance or success. Since the UEFA changed the computation of the coefficient in 1999 there is a structural break in that year. In order to account for this break we divide the sample in a pre-1998 and post-1998 period (see also figure 2).

Table 4: International performance pre and post IPO
This table shows the effect of a football club's stock market listing on its international performance. The performance is measured by the UEFA club coefficient. The model is estimated with the fixed-effects estimator for two sub-samples due to a change by the UEFA in the computation of the coefficient in 1999.

Model: $perf_{it}\ (uefa) = a_i + b\ IPO_D_{it} + \boldsymbol{c}\ \boldsymbol{X}_{it} + e_{it}$

Panel A (sample period pre-1999)

	Spec. 1	***Spec. 2***	***Spec. 3***	***Spec. 4***	***Spec. 5***	**Spec. 6**
IPO_D	0.2188** (0.0953) 2.30	-0.0015 (0.1711) -0.01	-0.0572 (0.2325) -0.25	0.1630 (0.5751) 0.28	0.0284 (0.0451) 0.63	0.0367 (0.2878) 0.13
IPO top division		0.3176 (0.2055) 1.55	0.3733 (0.2590) 1.44			-0.0087 (0.1218) -0.07
IPO 2nd divison			0.1228 (0.3452) 0.36			0.1100 (0.1580) 0.70
IPO large league				0.0574 (0.5833) 0.10		-0.0201 (0.2673) -0.08
perf (t-1)					0.6779*** (0.0459) 14.76	0.6831*** (0.0473) 14.43

Panel B (sample period post-1998)

	Spec. 1	***Spec. 2***	***Spec. 3***	***Spec. 4***	***Spec. 5***	**Spec. 6**
IPO_D	0.0927** (0.0362) 2.56	0.1415** (0.0619) 2.29	-0.3540** (0.1413) -2.51	0.0362 (0.0459) 0.79	0.0191 (0.0216) 0.89	-0.0941 (0.0903) -1.04
IPO top divison		-0.0562 (0.0577) -0.97	0.4393*** (0.1396) 3.15			0.1010 (0.0871) 1.16
IPO 2nd division			0.4955*** (0.1280) 3.87			0.1153 (0.0804) 1.43
IPO large league				0.1463** (0.0739) 1.98		0.0319 (0.0446) 0.71

perf (t-1)					0.7859***	0.7654***
					(0.0404)	(0.0423)
					19.46	18.10

***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively.

The table is structured in the same way as table 3. There are six different model specifications for each sub-sample presented in Panel A and B, respectively. Specification 1 in Panel A shows the change in the international performance. The coefficient estimate indicates that there is a positive and significant effect after the IPO. Specifications 2 and 3 control for first and second division teams and show that the effect is positive for both leagues but negative for third division teams. Specification 4 shows that football clubs playing in relatively large leagues benefit from a listing. Specifications 5 and 6 control for a potential persistence in the international performance of a football club and show that the persistence is higher internationally than nationally. Since all coefficients in specifications 2-6 are insignificant except for the lagged performance variable the findings are rather weak and must be interpreted with caution.

The coefficient estimates tabulated in Panel B differ markedly compared to the results based on the first sub-sample presented in Panel A. The coefficient estimates exhibit the same sign as for the pre-1998 period but are larger and statistically significant in most cases. The results are qualitatively similar compared to the results for the domestic performance with the exception that both first and second division teams benefit from a listing, i.e. fist division clubs increase their performance by 0.09 points per game and second division clubs increase it by around 0.14 points per game.

Table 5 shows the coefficient estimates, standard errors in parenthesis and t-statistics for the model which tests whether the stock market price (return) of a football club is influenced by the domestic and/ or international performance of a club contemporaneously and dynamically (lead and lag relationship). Since we use data with an annual frequency, ‘contemporaneous’ means a relationship for a given season.

Table 5: Stock returns and performance change
This table shows the effect of a change in a football club’s domestic and international performance on the stock price. The model is estimated with the fixed-effects estimator.

Model: $R_{it} = a_i + bRM_t + \boldsymbol{c\ \Delta perf}_{it} + \boldsymbol{d\ X}_{it} + e_{it}$

	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5	Spec. 6
RM	.3896*** (.0494) 7.89	.3422*** (.0640) 5.35	.3684*** (.0492) 7.48	.3652*** (.0733) 4.98	.3547*** (.0517) 6.86	.3343*** (.0744) 4.49
domestic performance Δperf (t-1)				-.1153 (.0801) -1.44		-.1962** (.0816) -2.40
Δperf (t)		.1326** (.0567) 2.34		.1179 (.0882) 1.34		.0423 (.0898) 0.47
Δperf (t+1)				.0736 (.0758) 0.97		.0446 (.0760) 0.59
international performance Δperf (t-1)					.0036 (.0041) 0.88	.0038 (.0048) 0.78
Δperf (t)			.01004** (.0032) 3.10		.0124** (.0040) 3.13	.0148** (.0047) 3.15
Δperf (t+1)					.0022 (.0037) 0.60	.0010 (.0044) 0.21

***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively.

Specification 1 presents the coefficient estimate for the benchmark return RM which is the return of the STOXX football index. The coefficient is positive and highly significant (beta is 0.3896 with a t-statistic of 7.89). Specifications 2 and 3 augment this model with the contemporaneous domestic performance and the contemporaneous international performance, respectively. The results indicate that there is a positive and significant effect which implies that the stock price of a football club depends on the contemporaneous performance.

Specifications 4 and 5 assess the relationship dynamically by including the lagged, the contemporaneous and the future domestic performance (specification 4) and international performance (specification 5). There is a negative lagged domestic performance effect and a positive contemporaneous and future domestic performance effect. However, all coefficients are insignificant. For the international performance, all coefficients are positive and the contemporaneous effect is statistically significant with a coefficient estimate of 0.0124 and a t-statistic of 3.13.

Specification 6 includes both the domestic and the international performance measures in one model and finds that the lagged domestic performance exhibits a

negative and significant effect on the current stock return and that the contemporaneous international performance exhibits a positive and significant effect on the current stock price of the football club. All other variables (except the benchmark index) are statistically insignificant. This immediate reaction to international performance, but lagged reaction to domestic performance may reflect the fact that only sustained domestic success permits entry to international competition. Therefore, markets perhaps view domestic success as a core indicator of performance, and any success on the international stage is seen as a bonus. Since there is a structural break in the international performance measure (UEFA coefficient), we estimate the model for two sub-samples similar to table 2. The results for the first sub-sample (pre 1999) are very different compared to the full sample estimates and statistically insignificant. The results for the second sub-sample (post 1998) are qualitatively and quantitatively similar to the full sample estimates with the exception of a higher coefficient estimate for the STOXX index (*b* is estimated around 0.5 for the sub-sample compared to 0.35 for the full sample).

The empirical results show that football clubs do generally not benefit from a stock market listing. An IPO (stock market listing) only has a positive impact on performance in the home league for football clubs playing in lower divisions. This finding deserves some further study, and may be a reflection of the greater marginal impact extra finances can have in less competitive environments. The effect is different for performance in the international competition (UEFA Cup or UEFA Champions League), where all clubs benefit and clubs in large leagues benefit more than clubs in smaller leagues. This finding could be a manifestation of the shift in power in European football from clubs in smaller league to clubs in larger league as places in trans-European competitions are awarded disproportionately to clubs from larger leagues.

Finally, an analysis of the dependence of a football club's stock price on the domestic and international performance (success) shows, that the stock price is positively related to the contemporaneous international performance of the football club and negatively related to the previous season's domestic performance of the football club. Moreover, the current stock price is not related to future performance, either domestically or internationally. This implies that the current stock price does not anticipate the future performance of the club.

IV. CONCLUSIONS

This paper analyzed the effect of an IPO on the performance of football clubs. We find that the majority of football clubs do not perform better in the home league (championship) after the IPO than before. Only football clubs in lower divisions in large football leagues benefit from a listing in the home league. In addition, the majority of football clubs perform better in the international championship after the IPO than before. Finally, the stock price of a football club depends on the previous season's domestic results and the current season's international performance.

Berrett, Slack & Whitson (1993) suggest that market pricing is an inappropriate allocation mechanism for pricing sports clubs, as football clubs generate positive externalities. Given investors do not need to buy shares in a football club to achieve some return, the allocation role of financial markets may be compromised.
Indeed, given the evidence that football clubs generally do not benefit from a stock market listing and that the stock price does not fully reflect or predict future performance, we conclude that the benefits of a stock market listing are limited.

Future research could focus on the externalities generated by football clubs per se and externalities generated by a stock market listing. Moreover, the decision to go public could be related to the ownership structure of a football club and the number of fans.

REFERENCES

Alvarez, S. & V. Gonzalez (2005), "Signalling and the Long-run Performance of Spanish Initial Public Offerings (IPOs)", *Journal of Business Finance & Accounting*, 32, 325-350

Berrett, T., T. Slack and D. Whitson (1993), "Economics and the Pricing of Sport and Leisure", *Journal of Sport Management*, Vol. 7 No. 3, 199-215

Clementi, G. (2002), "IPOs and The Growth of Firms" NYU Stern 2004 Working Paper No. 04-23

Dobson, S. and J. Goddard (2005), *The Economics of Football*, Cambridge University Press

Eckbo, B. and O. Norli (2005), "Liquidity risk, leverage and long-run IPO returns", *Journal of Corporate Finance*, 11, 1-35

Evans, D. (1987), "The relationship between firm growth, size and age: Estimates for 100 manufacturing firms", *Journal of Industrial Economics*, Vol. 35, 567-581

Fama, E. and K. French (1992), "The Cross-Section of Expected Stock Returns", *Journal of Finance*, Vol. 47 No. 2, 427-465

Jain, B. and O. Kini (1994), "The Post-Issue Operating Performance of IPO Firms", *Journal of Finance*, Vol. 49 No. 5, 1699-1726

Lee, P., S. Taylor and T. Walter (1996), "Australian IPO Pricing in the Short and Long Run", *Journal of Banking and Finance*, Vol. 20, 1189-1210

Levis, M. (1993), "The Long-Run Performance of Initial Public Offerings: The UK Experience 1980-1988", *Journal of Financial Management*, Vol. 22, 28-41

Ljungqvist, A. (1997), "Pricing Initial Public Offerings: Further Evidence from Germany", *European Economic Review*, Vol. 41 No. 7, 1309-1320

Loughran, T. and J. Ritter (1995), “The New Issues Puzzle”, *Journal of Finance*, Vol. 50 No. 1, 23-51

Mikkelson, W., M. Partch and K. Shah (1997), “Ownership and operating performance of companies that go public”, *Journal of Financial Economics*, Vol. 44, 281-307

Morrow, S. (1999), *The New Business of Football: Accountability and Finance in Football*, London: Macmillan

Pagano, M. (1993), “Financial markets and growth: An overview”, *European Economic Review*, Vol 37, Issues 2-3, 613-622

Purnanandam, A. and B. Swaminathan (2004), “Are IPOs Really Underpriced?”, *Review of Financial Studies*, Vol. 17 No. 3, 811-848

Rajan, R. G. and L. Zingales (1996), “Financial Dependence and Growth”, *NBER Working Paper* No. W5758

Ritter, J. (1991), “The Long-Run Performance of Initial Public Offerings”, *Journal of Finance*, Vol. 46 No. 1, 3-27

Ritter, J. & I. Welch (2002), “A Review of IPO Activity, Pricing and Allocations”, NBER Working Paper Series, No 8805, February

Russell, D. (1997), *Football and the English: A Social History of Association Football in England, 1863-1995*, Preston: Carnegie

Schultz, P. (2003), “Pseudo Market Timing and the Long-Run Underperformance of IPOs”, *Journal of Finance*, Vol. 58 No. 2, 483-517