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MAKING MONEY OUT OF FOOTBALL

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Abstract

In the US, most economists argue that professional sports teams are profit-maximising businesses, but it is a widely held view in Europe that professional football clubs are not run on a profit-maximising basis. This belief has important implications for the impact of widely-advocated policy measures, such as revenue sharing. This paper looks at the performance of 16 English football clubs that acquired a stock exchange listing in the mid-1990s. If the European story is true, we should have observed a shift toward profit-maximising behaviour at these clubs, under the assumption that investors were attracted to these football clubs to earn a positive return. This paper finds no evidence of any shift in the behaviour of these 16 clubs after flotation. This result is consistent with the view that football clubs in England have been much more oriented toward profit objectives than is normally assumed.

> Those clubs which have floated to become public companies – Manchester United, Newcastle United, Aston Villa, Chelsea, Tottenham – now have as their principal objective the making of money for their shareholders.
>
> David Conn, The Football Business, p. 154

I Introduction

In North America it is commonplace, especially among economists, to think of the owners of professional sports teams as profit maximisers (Fort and Quirk, 1995). In Europe, however, this assumption has been treated somewhat sceptically. In an influential paper, Sloane (1971) argued that a plausible characterisation of the owners of football clubs is as 'utility maximisers' subject to a budget constraint, where utility is largely associated with success on the pitch. Reasons for this view include the perceived lack of profitability of football clubs and the opinions expressed by club officials. In some countries, football clubs are organised as sporting associations which have no shareholders, but in England all professional clubs are limited companies, and most have been so for around 100 years. Empirical and theoretical research exists that

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attempts to test the competing hypotheses of profit and utility maximisation in sports, but this literature neither offers a firm conclusion nor clearly establishes evidence supporting one hypothesis over the other.

In order to add to the existing literature on objective functions in sport, this study focuses on sixteen English football clubs that came to be traded on the London Stock Exchange in the mid-1990s. For the most part, public trading of these clubs arose through share placings and offers for sale of up to 100% of the share capital. The main hypothesis is the following: If the directors of these clubs were acting as utility maximisers prior to their flotation, then flotation should have brought about a significant change in the club's objectives, assuming that investors in publicly quoted corporations are interested primarily in financial returns. To test the main hypothesis, this paper examines several different aspects of performance for these sixteen clubs before and after their flotation. The results indicate that changes in the measured performance of these clubs do not seem to be consistent with a shift toward more profit-oriented objectives. That is, flotation appears to have had little or no observable effect on the maximising behaviour of these 16 clubs that raises capital in the stock market. This paper explores possible interpretations of the empirical results.

II The Impact of Flotation

The significance of objectives for league policy

The identification of a firm's objective function is central to understanding its behaviour, and this is more than usually crucial when it comes to understanding sports clubs and leagues. Members of sports leagues typically enter into a wide range of restrictive agreements such as revenue sharing, limitations on players spending (salary caps and roster limits), and restrictions on player mobility. These restraints, or so the team owners claim, are necessary to preserve competitive balance without which the league's product will become unattractive. Antitrust authorities have in general been persuaded by this line of argument. However, critics such as Fort and Quirk (1995) and Vrooman (2000) have argued that these restraints will be tend to raise profits, that this is the true motive for their adoption by owners, and that the impact on competitive balance will be negligible or non-existent. The assumption of profit maximisation is critical to the validity of these claims with respect to competitive balance, as has been shown in work of Késenne (1996, 2000).

Consider, for example, the case of collectively sold broadcast rights. In the North American sports leagues, the income derived from collective sale is typically divided equally among the teams. What effect will collectively-sold rights have on behaviour as compared to the alternative where teams negotiate their own broadcast rights individually and retain the income for themselves? Let us suppose that if rights are sold individually then there are some large-market teams that will generate substantially more income than small-market teams. If owners are profit maximisers, there is reason to doubt whether collective selling will improve the competitive balance of the league, since owners are under no obligation to spend what they receive. Thus, a small market team may receive

more income under collective selling, but may not choose to spend more on creating a successful team. Under the profit maximisation hypothesis, owners should spend up to the point where the marginal revenue of a win equals the marginal cost, and a fixed share of broadcast income will affect neither marginal revenue nor marginal cost.[1] However, if the owners are utility maximisers whose principal interest is success on the pitch, then collective selling will improve competitive balance. By assumption teams spend what they get on the pursuit of sporting success, and collective selling means more spending power for the small-market teams and less spending for the large-market teams.

Ownership and motives in English football

In this paper, we are interested in the possible change in behaviour associated with stock market flotation for UK football clubs. The ownership structure of football clubs in the UK is significantly different from the model adopted in other countries. In most of Europe, football clubs have typically been organised as not-for-profit sporting associations. Even very large clubs, such as Barcelona and Bayern Munich, have been run as clubs in a legal sense, i.e. controlled by members who pay an annual subscription and commercially managed by a club committee. One of the most practical consequences of this arrangement is that non-UK football clubs have not been able to take advantage of limited liability and, therefore, their ability to borrow has been constrained. Football clubs in England and Scotland sought to evade this restriction as early as the 19th century. No fewer than 68 of the 92 teams in the four English professional divisions adopted limited company status prior to the First World War, the majority before 1900.[2]

The conventional view is that the ownership of a limited company resides with the shareholders and that the shareholders are motivated by profit. However, there are plausible reasons to doubt this in the case of English football clubs. Firstly, an analysis of shareholder lists suggests that the original subscribers were largely drawn from a club's locality and were frequently supporters of the club; hence, the profit motive may have been tempered by an interest in sporting success. Even shareholders with purely commercial interests (such as local brewers) may have been interested in the success of the club from the perspective of generating income for their core businesses rather than for any direct financial return.[3]

Secondly, over time most of these clubs came to be concentrated in the hands of a small number of wealthy individuals, usually because the limited

[1] Indeed, collective selling will impair competitive balance if it leads to a disproportionate fall in the marginal revenue from winning for the small-market team (Szymanski and Kesenne, 2004).

[2] For more details on the early history of English football clubs see Mason (1980), Vamplew (1988), Tischler (1981), and Inglis (1988).

[3] Morrow (1999) provides a detailed analysis of the motivation of directors with dominant shareholdings. An approach that would be complementary to ours would be to analyse the changes in ownership that occurred before and after flotation. However, this is a huge task in itself and beyond the scope of this paper.

company had fallen into financial difficulties. Often these individuals were supporters themselves, and therefore unlikely to view their ownership of the club as a purely financial proposition.[4]

This does not exclude the possibility that some owners of football clubs were motivated primarily by profit. But arguably what distinguishes a private, limited company from a public, limited company (i.e., one that is floated on the stock exchange) is that in the latter case the profit motive is likely to be stronger than in the former. It is not that the listing requirements of the stock exchange oblige companies to maximise profits, but rather that a stock exchange listing typically introduces a class of investors with little or no interest in the business other than the returns that it can generate, either through the payment of dividends or the appreciation of the share price. For instance, insurance companies and pension funds own the largest share of stock in most listed companies. The listing requirements of a stock exchange are intended to provide investors with all the information they require to make an informed decision about investment prospects. The directors of the company are thus obliged to achieve a return for their stockholders or see the company shares decline and risk a hostile takeover that may see them lose their jobs. Thus, while we cannot state with certainty that the directors of *any single* company will be more profit-oriented following a stock market flotation, we can reasonably argue that *on average* directors of companies with a listing will be more profit-oriented than directors of companies that do not have a listing.[5]

The predicted impact of a change of objectives

We now develop a model designed to illustrate the expected impacts of a change of owner's objectives from that of utility maximisation to profit maximisation. We suppose that the objective of a football club's owners is to maximise a weighted average of profit and the success of the team. That is, we begin with the assumption of utility maximisation. To simplify the analysis, consider a league consisting of two teams, where teams invest in talent t to produce wins w.[6]

[4] A third reason is that the FA disapproved of the profit motive in football and took action to try and limit commercialism by means such as imposing a limit on the maximum dividend payable by football clubs. But by the 1980s restraints such as these had lost their significance (there are other ways for clubs to reward shareholders) and the will of the FA to restrain commercialism had largely evaporated.

[5] Interestingly, most major North American sports leagues ban stock market flotation on the grounds that this will lead to excessive commercialisation. This is perhaps odd given the prevailing view that team owners in North America are dyed-in-the-wool profit maximisers. See Cheffins (1998) for a critical discussion of this issue.

[6] Szymanski and Smith (1997), Szymanski and Kuypers (1999), Hall *et al.* (2002) all provide evidence that the wage bill is the biggest single factor explaining league performance. Forrest and Simmons (2002) find that wage bills are reliable predictors for team success. They also tested the reliability of wages as predictors for success in North American sports as well as continental European football and found significant correlations. Deloitte & Touche in their Annual Review of Football Finance consistently use wages expenditure to explain on the pitch success. An alternative approach using estimated transfer values is advocated by Dawson *et al.* (2000), but they also find that wage expenditure is closely correlated with playing success.

Equation (1) is a 'contest success function' which translates total league expenditure on talent into winning percentage for team one.

$$w_1 = \frac{t_1}{t_1 + t_2} \tag{1}$$

Equation (1) is the logit function commonly used in the analysis of contests and tournaments.[7]

Further, suppose that revenue is concave, increasing with wins up to some point and then decreasing, reflecting the possibility that fans care about competitive balance. Assuming asymmetry in the income that teams can generate from wins, the profit functions for each team are:

$$\pi_1 = (\sigma - w_1)w_1 - ct_1; \tag{2}$$

and

$$\pi_2 = (1 - w_2)w_2 - ct_2, \tag{3}$$

where σ is a measure of asymmetry and c is the (constant) marginal cost of hiring talent. Without loss of generality, assume $\sigma > 1$ so that team one has greater revenue-generating potential than team two, which would be the case if team one was located in a larger market. Since the owners are assumed to value both profits and success on the pitch, we can state the objective function as a weighted average of profit and wins. Thus for team one:

$$\Omega_1 = \alpha_1\pi_1 + (1 - \alpha_1)w_1 = [\alpha_1(\sigma - w_1) + 1 - \alpha_1]w_1 - \alpha_1 ct_1, \tag{4}$$

where α_1 is a positive number less than or equal to 1. As the weight on wins increases $(1 - \alpha_1)$, profits must eventually decrease, since wins cost money (via increased talent expenditure) and eventually reduce income (as league becomes excessively unbalanced).[8]

We define Ω_2 analogously.

Given these objectives the first-order conditions for the clubs' owners are:

$$\frac{\partial\Omega_1}{\partial t_1} = [\alpha_1(\sigma - 2w_1) + 1 - \alpha_1]\frac{t_2}{(t_1 + t_2)^2} - \alpha_1 c = 0, \tag{5}$$

and

$$\frac{\partial\Omega_2}{\partial t_2} = [\alpha_2(1 - 2w_2) + 1 - \alpha_2]\frac{t_1}{(t_1 + t_2)^2} - \alpha_2 c = 0, \tag{6}$$

from which we can derive the Nash equilibrium win percentage for team one in Equation (7).

$$w_1 = \frac{\alpha_1\alpha_2(\sigma - 1) + \alpha_2}{\alpha_1\alpha_2(\sigma - 1) + \alpha_1 + \alpha_2} \tag{7}$$

[7] See Nti (1997) for an analysis of different functional forms.

[8] Sloane (1971) assumed that a zero profit constraint applied to the clubs, but this is not clear given that a 'sugar daddy' might choose to fund a club's losses in order to achieve success. Examples of this type of conduct abound, not only in football but in all major sports. Szymanski and Kuypers (1999) discuss some examples from football).

From Equation (7), it straightforward to show that the win percentage of team one will decrease when the weight on profits (α_1) increases, i.e.

$$\frac{\partial w_1}{\partial \alpha_1} = \frac{-\alpha_2}{(\alpha_1\alpha_2(\sigma-1)+\alpha_1+\alpha_2)^2}.^{9} \tag{8}$$

An owner who becomes more interested in profit will invest less in playing talent in response to the reduced optimum winning percentage. Less investment in talent will increase profits (otherwise the owners could have both increased profit and success by investing more in talent prior to change in objectives). This, then, is the predicted effect of stock market flotation on the team that floats; specifically, clubs that float on the stock market are expected to see a decrease in winning percentage and a concomitant decrease in talent investment.

We can also consider the effect of a change in one team's objective on the performance of the other team. Consider first the ratio of winning percentages, which in this model equals the ratio of playing talent. At equilibrium the expression for this is:

$$\frac{w_1}{w_2} = \frac{t_1}{t_2} = \frac{\alpha_1\alpha_2(\sigma-1)+\alpha_2}{\alpha_1}. \tag{9}$$

From this it is apparent that a fall in investment in talent for team two will lead to a fall in investment in talent at team two. Since the team 2 spends less on talent and has an increased win percentage, its profits must increase, and therefore the change in objectives of team 1 should raise the profitability of its rival clubs.

These effects follow directly from the supposed change in objectives. Indirect consequences may follow as well if the increased scrutiny imposed by the listing requirements cause directors to be more circumspect in their policies. First, this may involve the avoidance of excessive risks, thus creating a more stable earnings stream. Secondly, it may imply a shift in distribution policy toward higher and more regular dividend payments, which are sometimes considered an important indicator of company performance by market investors. Thirdly, it may be that company efficiency is improved, so that resources are more productive and opportunities are exploited more fully. In the case of football clubs, flotation may be associated with a higher degree of commercialism, such as raising ticket prices if it is profitable to do so and increasing club-branding efforts.

III Data

During the 1980s, business-minded entrepreneurs began appearing on the managing boards of football clubs (King, 1998). In 1983, one such businessman was Irving Scholar, who masterminded the first floatation of an English football club: the North London club Tottenham Hotspur. The public offering

[9] Win percentage for team two is also decreasing in the weight placed by its owners on profit. Note that when there is no asymmetry in revenue generating potential ($\sigma = 1$), the optimum win percentage depends simply on the relative weights placed on profit by the two teams ($\alpha_2/(\alpha_1 + \alpha_2)$) and winning percentage is still decreasing in α_1.

of shares in Tottenham Football Club PLC, a holding company formed to bypass English FA restrictions against paying excessive dividends, was part of a strategy by Scholar to improve the financial situation at the club. In 1989, South London-based Millwall Football Club became the second English club to list on the stock exchange. Millwall's strategy was to create a leisure group which would provide additional services (bars, restaurants and other leisure facilities) in order to buttress low turnover due to poor gate receipts. The third English football club to float on the stock exchange was Manchester United in 1991. Martin Edwards became chief executive and majority shareholder by inheriting his father Louis' shares. The younger Edwards was twice approached to sell his stake in the club. The first approach was made by Robert Maxwell in 1984, with an offer of £10 million. Then in 1989, it seemed almost certain that Michael Knighton would become the new owner, only for the deal to fall through due to his questionable funding methods. Eventually on 31 May 1991, Manchester United offered over 2.5 million shares to the public via the London Stock Exchange. A major reason for Manchester United's float in 1991 was to fund the restructuring of the Stretford End.

The huge increase in broadcasting income associated with the advent of the Premier League and the rapid appreciation of Manchester United share created conditions in the mid-1990s such that the stock market was receptive to new issues. Between October 1995 and October 1997, a further sixteen English clubs obtained a listing. Table 1 gives details of the flotation timeline for these 16 clubs.

Table 1
Flotation Timeline

Club	Float date	Method	% offered/placed
Preston North End	October 95	Placing/offer	86
Chelsea	March 96	Introduction	0[a]
Leeds United	August 96	Takeover and placing/offer	60
Queens Park Rangers	October 96	Placing/offer	44
Sunderland	December 96	Placing/offer	26
Sheffield United	January 97	Takeover and placing/offer	42
Southampton	January 97	Reverse takeover	100
West Bromwich Albion	January 97	Placing	100
Birmingham City	March 97	Placing	30
Charlton Athletic	March 97	Placing/offer	35
Bolton Wanderers	April 97	Reverse takeover	100
Newcastle United	April 97	Offer	28
Aston Villa	May 97	Placing/offer	16
Swansea City	August 97	Takeover	0[b]
Leicester City	October 97	Introduction	0[c]
Nottingham Forest	October 97	Offer	11

[a]Chelsea FC is owned by Chelsea Village PLC in which the directors and three other interests jointly held 83.5% of the equity at the company's introduction.
[b]Swansea City FC was purchased by Silver Shield PLC, a car windscreen replacement company. Although located in Wales, Swansea plays in English Football League and hence is treated as an 'English' club.
[c]Leicester City FC was acquired by Soccer Investments PLC.

The financial data come from the FAME database of UK-company accounting information which provides online records for 2.8 million public and private UK companies for the previous 10 years. Thus, in most cases we are able to track a club's financial performance for about 5 years before and 5 years after flotation. FAME accounts data includes profit and loss accounts, balance sheet items, cash flow and ratios, as well as security and price information. These data are supplemented with data on club performance based on end-of-season rankings.

Our estimation strategy is to search for any changes in the performance of these floated companies.[10] We examine four main indicators: (i) operating profits; (ii) league ranking; (iii) relative wage expenditures; and (iv) relative revenues.[11] The first two variables shed light directly on any possible change in objectives associated with flotation. The last two measures should be causally related to changes in the first two variables. For instance, increased wage expenditures likely lead to better performance in terms of league ranking. And, increased revenues may be reflected in greater profitability.

Profits and dividends

There are significant problems associated with the use of accounting profits to measure the financial performance of sports businesses, as is well documented in the US literature on the subject.[12]

When profit and loss statements form the basis of tax assessments, firms have a significant incentive to understate profits. Particular government policies, for example those related to depreciation, may create tax loopholes which enable firms to reduce profits and legally limit their tax liability. Owners may charge expenses to the company which bear little relation to any economic services rendered, thereby legally transferring taxable income away from the company. Alternatively, companies may be able to illegally evade tax by exaggerating expenses.

Table 2 reports operating profits for the 15 of the 16 clubs listed in Table 1. Almost all clubs have experienced declining profits since floatation with no

[10] Since Tottenham, Millwall, and Manchester United were listed during this entire period their performance has not been considered.

[11] Operating profit indicates the day-to-day operations of a football club capturing how well a club performs in its ordinary business. Operating profit takes into account revenues via gate receipts, marketing and merchandising, broadcasting and other commercial activities as well as wages, salaries, cost of goods sold and various other operating costs such as amortisation of player costs. It does not include financing costs and exceptional items (Deloitte & Touche, 2003). Wage spending and revenues are expressed in terms of deviations from the divisional average for two purposes. First, given the rapid escalation of ticket prices, broadcast rights values, and player salaries, a relative measure provides a consistent basis for comparison across years. Second, in the context of a sports league an absolute indicator of financial performance such as profits is likely to depend on the use of inputs measured in relative terms rather than absolute terms.

[12] For example, see Scully (1989) and Quirk and Fort (1992). Both of these studies draw heavily on the work of Roger Noll who dissected the profits statements of Major League Baseball teams on behalf of the players' union in the 1980s and found that reported accounting profits significantly understated economic profits.

Table 2
Operating Profits (£000)

Year relative to flotation	Aston Villa	Birmingham City	Bolton Wanderers	Charlton Athletic	Chelsea	Leeds United	Leicester City	Newcastle United	Nottingham Forest	Preston North End	Queens Park Rangers	Sheffield United	Southampton	Sunderland	West Bromwich Albion
−5							−715								
−4	−323	−726	−1632			3449	−2498	−671			−323	1413	1555	−897	−3342
−3	−2367	−488	−76	1255		2908	1038	4019		201	−3234	−5253	−1130	−1499	−4141
−2	2899	245	−877	−1080	−1387	1378	−1130	−6892	96	−156	−1680	−551	955	−464	233
−1	5775	803	−69	−633	3064	−49	1529	3410	1161	−291	−1297	−1092	−1465	−2262	310
0	5363	671	−3274	−495	1107	−9763	−1055	8105	−1479	18	−7164	−950	269	2863	781
1	9825	1102	−1391	−1175	−38	3164	−5786	−10494	−6711	−715	−5402	−6409	3401	885	880
2	2408	−3780	−9324	1394	1000	5790	−7998	1372	−2783	−1569	−9524	−6446	−1133	1951	−507
3	−5197	−1081	−8640	−6610	−783	−2881	−7080	−19108	−10130	−751	−7905	−5035	−3979	−6046	892
4	−6651	−96	−12847	−85	2071	−5685		−5126	−8781	−1476	−7864	−3553	−2350	2336	−134
5	−9779	−2780	766	−12702	−6826	−28498		48	−7227	−819	−3564	−2804	−5099	−7173	−1834
6					−13508					272					
Average for years before	1496	−42	−664	−153	839	1922	−355	−34	629	−82	−1634	−1371	−21	−1281	−1735
Average for years after	−1879	−1327	−6287	−3836	−3014	−5622	−6955	−6662	−7126	−843	−6852	−4849	−1832	−1609	−141

Note: Post flotation data based on PLC accounts. Profits for Swansea City not reported.

club reporting a positive operating profit. Newcastle reported a cumulative loss of £25m over this period, while Nottingham Forest reported a cumulative loss of £36m. In general a business that runs perpetually at an economic loss will be closed by its owners if they are profit maximisers. Several of the clubs did in fact have to undergo a significant restructuring. The shares of Nottingham Forest, Queens Park Rangers (Loftus Road PLC), and Leicester City have all been suspended from the market, while the latter two clubs entered administration in 2001 and 2002 respectively. Loftus Road is no longer a listed company, while the shares of Leicester City remain suspended at the date of writing. Nottingham Forest had their shares delisted in 2002 following their failure to publish their accounts and in anticipation of a restructuring involving a cash injection of £5m from a wealthy supporter. Swansea City, which was taken over by a listed company in 1997 was sold to it Managing Director for £1 during the 2000/01 season. Thus, it may be that the losses indicated reflect a genuine failure to produce an economic return. On the other hand, Bolton has reported an operating loss in each of the last nine seasons without filing for bankruptcy, while Newcastle has paid out dividends in each of the past five seasons (totalling £14m) despite the size of its reported losses.

The ability to pay dividends is generally viewed as an indicator of financial health, although there may be many good reasons for not paying dividends. It makes little sense for a company with profitable investment opportunities to return internally generated funds to shareholders. Of the quoted football clubs only six paid dividends: Aston Villa, Bolton, Newcastle, Southampton, Sunderland, and West Bromwich Albion. The total payout across those years were available was in the region of £0.9m per club per season.

In the five or so years prior to flotation, the listed clubs in total reported losses of £17m in aggregate, an average of £0.2m per club. In the five or so years since flotation, aggregate losses have been £284m, an average of £3.8m per club, around 15 times larger than before flotation. Surprisingly, only West Bromwich Albion reported improved profits on average post floatation. The operating profits of Leicester, Nottingham, Preston North End, Queens Park Rangers, and Sheffield Untied have decreased significantly based on standard t-tests. Using pre-tax profit as an additional measure, only Aston Villa, Chelsea Village, Sunderland and West Bromwich Albion reported positive profits on average and were also the only clubs where profitability improved.[13]

It might be argued that profitability should be compared against industry levels. There are roughly sixty-five clubs that did not change status during the sample for which we have accounting data.[14]

In the 5 years from 1992 to 1996, these clubs reported an aggregate loss of £213m, an average loss of about £0.9m per season per club. In the period

[13] That is, all other clubs experienced greater losses than before flotation. Chelsea Village also appears to have had higher profits before flotation, but the series is too short to make a reasonable comparison.

[14] We exclude Manchester United, Millwall, and Tottenham.

1997 to 2002, these clubs reported an aggregate loss of £665m, equivalent to around £2.27m per season per club. Thus, it appears that clubs that floated had much larger losses after listing, and in relative terms their losses increased after they were listed. If profit-maximising concerns had weighed significantly more heavily after flotation, it seems hard to believe that the directors of the listed clubs could not have done a lot more to bring their profitability into line with average of other clubs.[15]

The decline in profitability also seems to be reflected in the changing market valuations of the clubs. The market values of clubs analysed here declined steadily and significantly after flotation, with the exception of Charlton and Chelsea. Furthermore, this performance contrasted sharply with that of Manchester United and the market in general until the stock market started to decline in 2000. This is consistent with a rational valuation of football club shares based on expected profitability.

League performance

Team performance can be measured in several ways. Clubs compete in a number of sporting competitions: the domestic league, the FA Cup, the League Cup, and at the highest level the UEFA Cup and Champions' League. We choose to use domestic league ranking as our measure of relative performance because it is the competition within which teams play most of their matches andclub performance over time is comparable on this basis. Table 3 reports league rank for each of the 16 clubs in each season under analysis.

The most striking feature of the data in Table 3 is that in 12 out of 16 cases, average league performance was better in the 6 years following stock market flotation than in the 5 years before. Moreover, in three of the four cases where clubs dropped in performance also fell into severe financial difficulties and have lost their listing (Nottingham Forest, Queen's Park Rangers and Swansea City). It seems quite likely that it is the financial crisis at these clubs, rather than the stock market listing, that led to the deterioration in performance. Thus, all but one of the clubs that have retained their stock market listing since the mid-1990s have improved their league performance. While this suggests a quite powerful tendency towards improved performance, some caution should be exercised given the small number of observations involved. Eleven clubs changed position significantly pre- and post-flotation. Birmingham, Bolton, Charlton, Chelsea, Preston North End, Sunderland, and West Bromwich Albion significantly improved league performance, while Nottingham, QPR, Sheffield United, and Swansea performed significantly worse.[16]

[15] There is quite a lot of variability in financial performance. Manchester United, the largest and most profitable club by far is often cited as an outlier, but omitting it from the set of clubs whose status did not change does not alter the profile of profitability that much. Without Manchester United the 92–96 average is a loss of £0.2m compared to a loss of £0.7m in the 97-01 period.

[16] West Bromwich's improvement is largely associated with the last two seasons (and their subsequent promotion to the Premier League).

Table 3
League rank

Year relative to flotation	Aston Villa	Birmingham City	Bolton Wanderers	Charlton Athletic	Chelsea	Leeds United	Leicester City	New-castle United	Nottingham Forest	Preston North End	Queens Park Rangers	Sheffield United	South-ampton	Sunder-land	Swansea	West Bromwich Albion
−6	17	58	48	36	5	4	26	31	8	63	12	13	14	41	65	67
−5	7	48	59	29	11	1	28	42	8	61	11	9	16	40	51	53
−4	2	41	48	34	14	17	26	23	22	63	5	14	18	43	59	50
−3	10	44	36	33	11	5	21	3	24	67	9	20	18	34	56	43
−2	18	47	25	37	14	5	25	6	3	75	8	30	10	42	66	41
−1	4	35	20	26	11	13	9	2	9	75	19	29	17	21	73	31
0	5	30	21	35	11	11	10	2	20	69	29	25	16	18	88	36
1	7	27	18	24	6	5	10	13	21	59	41	26	12	23	75	30
2	6	24	26	18	4	4	8	13	20	59	40	28	17	21	69	32
3	6	25	26	21	3	3	13	11	34	49	30	36	15	7	67	41
4	8	25	23	9	5	4	20	11	31	45	43	30	10	7	88	26
5	8	25	16	14	6	5	22	4	36	24	52	33	11	17	89	22
6	16	13	17	12	6	15		3	26	28	48	23	8	20		18
Average for years before	10	46	39	33	11	8	23	18	12	67	11	19	16	37	62	48
Average for years after	9	23	21	16	5	6	15	9	28	44	42	29	12	16	78	28

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Wage spending

Clubs can improve their league performance by hiring or otherwise acquiring better players. Since there is a well-functioning market for player talent, any improvement in player quality can only be achieved through higher wage spending.[17] Wage spending is here defined in two ratios: relative to the average wage spending of all teams in the league and also relative to average wage spending relative to the clubs' divisions. Relativity is appropriate since it not absolute spending that produces success, but outspending your rivals. Table 4 reports wage spending relative to the league as a whole. In 50% of cases, wage spending relative to the league average increased post flotation. As with performance, spending relative to the league also fell at those quoted clubs that fell into financial difficulties (Nottingham Forest, Queens Park Rangers, and Swansea, but not Leicester City). Relative league spending also fell at Birmingham City, Preston North End, Sheffield United, Southampton, and West Bromwich Albion. However, in these cases the relative decline was quite small. Some clubs saw very large league relative increases in spending, notably Bolton, Charlton, Chelsea, Leeds, Leicester, Newcastle, and Sunderland. In the cases of Bolton, Charlton, Leicester, Newcastle and Sunderland, these were also clubs that witnessed a significant improvement in performance.

Table 5 shows wage expenditures relative to division averages. When spending is compared to divisional averages, increases occurred in seven of the floated clubs post floatation.[18] Notably, three of the clubs that increased spending on average were also promoted at some point post floatation. This is surprising since comparatively, the wages spent would be relative against a larger divisional average. If we compare clubs that did not change divisions over the time period (Aston Villa, Chelsea, Leeds United, and Southampton) only Chelsea increased its wages relative to other clubs in the same division.

Revenues

Clubs floated on the stock market may choose to exploit their commercial opportunities more effectively, e.g. through merchandising and sponsorship. This would manifest itself in the ability the extract higher revenues from a given level of performance. Since on average relative performance improved post-flotation, one might reasonably expect that revenues relative to the league average would improve at most if not all clubs. In fact, revenues improved at only six clubs out of the 16 relative to the league average and at only seven relative to the divisional averages (Table 6, Table 7).

[17] This is generally true unless the club possesses some distinctive capability that enables them to extract a better level of performance from a given player than any other club. See Szymanski and Kuypers (1999), chapter 6 for a discussion of this possibility.

[18] Queens Park Rangers is one of these however it should be noted that since 1999, Limited accounts have not been filed and PLC accounts contain data for London Wasps Rugby Club.

Table 4
Spending relative to the League average

Year relative to flotation	Aston Villa	Birmingham City	Bolton Wanderers	Charlton Athletic	Chelsea	Leeds United	Leicester City	New-castle United	Nottingham Forest	Preston North End	Queens Park Rangers	Sheffield United	South-ampton	Sunder-land	Swansea	West Bromwich Albion
−5	1.96	0.70						1.63	1.43			1.15	1.28		0.40	0.74
−4	1.92	0.73	0.54			1.96	1.03	1.99	1.93		1.39	1.27	1.44	0.97	0.36	0.71
−3	2.23	0.95	0.66	0.65		2.24	1.12	2.35	2.84		1.59	1.13	1.41	1.05	0.33	0.69
−2	2.28	1.16	0.85	0.72	1.75	2.29	1.41	2.27	1.83	0.33	1.44	1.01	1.53	1.15	0.33	0.68
−1	2.11	1.31	0.91	0.69	1.80	2.43	1.49	2.79	2.33	0.40	1.41	1.07	1.13	1.08	0.27	0.75
0	2.17	1.05	1.32	0.64	2.39	2.76	1.92	3.50	1.73	0.38	1.37	0.94	1.03	1.22	0.24	0.67
1	1.92	0.79	1.39	0.70	3.01	2.47	1.58	3.28	1.73	0.33	1.09	1.19	0.92	1.23	0.20	0.64
2	2.14	0.80	1.25	1.06	3.61	2.36	2.03	3.06	1.52	0.35	0.96	0.92	1.23	1.26	0.23	0.59
3	2.45	0.88	1.02	1.25	3.20	2.24	2.26	3.12	1.24	0.35	0.77	0.62	1.50	1.28	0.24	0.71
4	2.32	0.86	1.03	1.59	4.62	3.00	2.05	2.41	0.99	0.29		0.57	1.44	2.50	0.22	0.53
5					4.05	3.85				0.42				2.16		
										0.41						
Average for years before	2.10	0.97	0.74	0.69	1.78	2.23	1.26	2.21	2.07	0.36	1.46	1.12	1.36	1.06	0.34	0.71
Average for years after	2.21	0.83	1.17	1.15	3.70	2.78	1.98	2.97	1.37	0.35	0.94	0.83	1.27	1.68	0.22	0.61

Note: Aston Villa, Birmingham City, Charlton, Chelsea Village, Leicester City, Nottingham Forest and West Bromwich Albion figures from PLC accounts. All other clubs based on Limited Company Accounts.

Table 5
Spending relative to the Division average

Year relative to flotation	Aston Villa	Birmingham City	Bolton Wanderers	Charlton Athletic	Chelsea	Leeds United	Leicester City	Newcastle United	Nottingham Forest	Preston North End	Queens Park Rangers[19]	Sheffield United	South-ampton	Sunder-land	Swansea	West Bromwich Albion
−6	0.781	0.903	0.692			1.233	1.018	1.627	1.105		0.737	0.590	0.704	0.532	0.857	0.778
−5	1.139	1.522	1.024			1.139	1.162	1.852	0.833	0.647	0.810	0.667	0.743	1.106	0.721	1.589
−4	1.000	0.826	1.085	0.876		1.168	1.202	2.246	1.007	0.845	0.828	0.662	0.747	1.180	0.864	1.428
−3	1.177	1.023	0.703	0.700		1.206	0.684	1.239	3.051	0.658	0.761	0.593	0.742	1.233	0.830	0.738
−2	1.105	2.896	1.000	0.854	0.924	1.173	1.657	1.100	0.884	1.333	0.681	1.188	0.740	1.273	0.723	0.806
−1	0.963	1.457	0.413	0.769	0.873	1.256	0.825	1.271	1.063	1.301	0.625	1.189	0.514	1.353	1.100	0.829
0	0.932	1.299	1.633	0.785	1.150	1.062	0.673	1.506	0.743	1.302	1.349	1.161	0.442	0.528	1.178	0.820
1	0.818	0.957	0.591	0.855	1.388	1.005	0.814	1.397	2.108	0.992	1.167	1.453	0.393	1.540	1.322	0.774
2	0.855	1.230	1.923	0.423	1.784	0.896	0.838	1.226	0.607	0.985	1.176	1.408	0.493	1.963	1.498	0.902
3	0.907	1.111	1.285	1.572	1.636	1.112	0.779	1.156	1.562	0.804	1.108	0.780	0.555	0.928	0.845	0.896
4	0.884	1.062	1.265	0.606	2.051	1.468		0.919	1.221	1.384	1.155	0.707	0.550	0.822	1.091	0.645
5	0.876	1.474	0.517	0.609	1.837	1.472		0.766	0.984	0.500	1.488	0.693	0.598	0.729		0.856
6					1.624					0.598						
Average for years before	1.027	1.438	0.819	0.800	0.898	1.196	1.091	1.556	1.324	0.957	0.740	0.815	0.699	1.113	0.896	0.998
Average for years after	0.868	1.167	1.116	0.813	1.720	1.191	0.810	1.093	1.297	0.877	1.219	1.008	0.518	1.196	1.189	0.804

Note: Aston Villa, Birmingham City, Charlton, Chelsea Village, Leicester City, Nottingham Forest and West Bromwich Albion figures from PLC accounts. All other clubs based on Limited Company Accounts.

[19] Note: it should be noted that since 1999, Limited accounts have not been filed and PLC accounts contain data for London Wasps Rugby Club and the values contain wage information for rugby players as well

Table 6
Revenue relative to the League average

Year relative to flotation	Aston Villa	Birmingham City	Bolton Wanderers	Charlton Athletic	Chelsea	Leeds United	Leicester City	Newcastle United	Nottingham Forest	Preston North End	Queens Park Rangers	Sheffield United	South-ampton	Sunder-land	Swansea	West Bromwich Albion
−5	1.80	0.51					1.53	1.28	2.73			1.03	1.33		0.32	
−4	2.24	0.69	0.31			2.06	1.10	1.92	2.60		0.97	1.33	2.09	1.33	0.30	
−3	2.44	0.70	0.92	0.55		2.93	1.17	3.18	2.93		1.41	0.00	1.36	2.09	0.28	
−2	2.05	1.10	0.95	0.43		2.60	1.53	3.90	1.62	0.30	1.16	0.68	1.59	1.36	0.19	0.72
−1	2.73	1.06	2.08	0.53	2.00	2.33	1.34	4.12	2.33	0.28	1.21	0.62	1.17	1.59	0.21	0.79
0	2.57	0.89	0.89	0.50	2.17	2.72	2.02	4.65	1.68	0.29	1.04	0.57	1.08	1.17	0.14	0.71
1	3.02	0.79	1.49	0.55	2.55	2.59	1.82	4.64	1.07	0.24	0.95	0.76	1.18	1.08	0.16	0.71
2	2.92	0.71	1.05	1.36	3.52	2.68	1.99	3.58	1.42	0.26	0.61	0.47	1.12	1.18	0.17	0.57
3	2.79	0.79	0.90	0.91	3.69	2.96	2.02	3.50	0.74	0.25	0.58	0.38	1.31	1.12	0.16	0.53
4	2.42	0.82	0.66	1.74	4.61	3.95	1.80	3.38	0.70	0.26		0.34	1.48	1.31	0.15	0.52
5					3.16	4.69				0.26				1.48		
										0.28						
Average for years before	2.25	0.81	1.07	0.50	2.00	2.48	1.33	2.88	2.44	0.29	1.19	0.73	1.51	1.59	0.32	0.76
Average for years after	2.79	0.78	1.02	1.14	3.51	3.38	1.91	3.77	0.98	0.25	0.71	0.49	1.27	1.23	0.16	0.58

Note: Aston Villa, Birmingham City, Charlton, Chelsea Village, Leicester City, Nottingham Forest and West Bromwich Albion figures from PLC accounts. All other clubs based on Limited Company Accounts.

Table 7
Revenue relative to the Division average

Year relative to flotation	Aston Villa	Birmingham City	Bolton Wanderers	Charlton Athletic	Chelsea	Leeds United	Leicester City	Newcastle United	Nottingham Forest	Preston North End	Queens Park Rangers	Sheffield United	South-ampton	Sunder-land	Swansea	West Bromwich Albion
−6	1.024	1.350	1.453			1.048	2.299	1.615	0.796		0.408	0.501	0.811	0.592	1.097	0.812
−5	0.913	1.710	1.539	0.545		1.048	1.461	1.922	1.385	0.854	0.494	0.522	0.677	2.595	0.831	1.699
−4	0.998	0.911	0.863	0.560		1.307	1.387	2.552	1.158	1.168	0.631	0.594	0.931	1.321	0.928	1.909
−3	1.087	0.837	1.094	0.649	0.774	1.158	0.631	1.421	3.484	0.835	0.517	0.454	0.605	1.091	0.637	0.835
−2	0.846	3.750	1.504	0.681	0.854	0.960	2.108	1.609	0.670	1.347	0.498	1.082	0.654	1.378	0.833	1.149
−1	1.072	1.668	0.816	0.839	0.827	1.066	0.747	1.615	0.914	1.520	0.408	0.980	0.460	1.629	1.029	1.234
0	0.953	1.365	1.370	0.775	0.906	0.960	0.627	1.721	0.623	1.492	1.467	0.873	0.399	0.579	1.435	1.087
1	1.036	1.136	0.497	0.786	1.036	0.930	0.682	1.604	1.530	0.950	0.872	1.095	0.482	2.566	1.371	1.017
2	0.999	1.245	1.846	0.466	2.871	1.014	0.654	1.223	0.487	0.978	1.015	0.830	0.382	3.555	1.267	0.998
3	0.901	1.346	1.536	1.561	2.622	1.276	0.615	1.131	1.260	0.908	0.772	0.642	0.425	0.937	0.765	0.908
4	0.827	1.558	1.251	0.594	2.683	1.599		1.152	1.337	1.068	1.041	0.645	0.505	0.965	1.006	0.999
5	0.817	1.215	0.544	0.536	1.964	1.122		1.239	0.874	0.537	1.292	0.701	0.592	0.766		1.142
6																
Average for years before	0.990	1.704	1.212	0.655	0.818	1.098	1.439	1.789	1.401	1.145	0.493	0.689	0.690	1.434	0.893	1.273
Average for years after	0.916	1.300	1.135	0.789	2.199	1.188	0.651	1.270	1.098	0.845	0.998	0.783	0.477	1.758	1.102	1.013

Note: Aston Villa, Birmingham City, Charlton, Chelsea Village, Leicester City, Nottingham Forest and West Bromwich Albion figures from PLC accounts. All other clubs based on Limited Company Accounts.

IV Econometric Analysis

The analysis thus far has been discussed in terms of simple averages. These shed light on the proposition that flotation shifted football club owners away from utility maximisation toward profit maximisation given that such a change in objectives is likely to lead to an increase in profits and a relative decline in performance on the field. However, another approach is to look at the underlying causal relationships. The first causal mechanism that underlies the analysis in this paper is that league performance is determined by the quality of players hired in a competitive market so that in general higher player expenditure leads to better league performance. The second link is that better performance will generate increased revenue as teams attract fans, sponsorship and other income as a result of increased success. This is essentially the model proposed and estimated in Szymanski and Smith (1997). Each team chooses a level of investment in playing talent to meet its target level of performance and profit given their underlying objectives and capabilities. We can write:

$$P_{it} = a_i b w_{it}; \tag{10}$$

and

$$R_{it} = c_i + dP_{it}. \tag{11}$$

P is league rank, w is wage expenditure relative to the average and R is revenue relative to the average. The a and c parameters represent intrinsic differences in terms of productivity (the efficiency of turning player spending into performance) and revenue generating capacity (from a given level of support). Each team then has an objective function that is a weighted average of profits and performance:

$$\Omega_{it} = \lambda \pi_{it} + (1 - \lambda) P_{it}, \tag{12}$$

so that if, for example, $\lambda = 1$, the club cares only about profit. Here we ask whether flotation might change the underlying causal relationship as well as the weighting on profit. In effect, we test to see whether a and c are affected by flotation. This might be because a stock market listing is a more effective discipline on company managers and hence they become more productive, either in their ability to generate playing performance from a given investment (a) or to generate income from success (c). Note that flotation, since it raises income from the flotation proceeds, should at least increase c in the short run.

Dynamic Modelling and the Error Correction Mechanism

The data available here is an unbalanced panel, which is characterised by a relatively small time dimension (T ranges from 4 to 10, with average $T = 8.8$) but a large number of clubs ($N = 86$). In economics there are many relationships that are dynamic in nature and a major advantage of panel data is that we are better equipped to examine the dynamics of a relationship. Hence, the question we are interested in is essentially a dynamic one of the adjustment, which takes place in a club over time to flotation. However, due to small T

and large N, we therefore have a very well known problem in panel data estimation, which was first outlined by Nickell (1981) that under these circumstances OLS dynamic panel data estimation is subject to considerable bias. We therefore employ the GMM estimation technique proposed by Arellano and Bond (1991) and Arellano and Bover (1995) to estimate dynamic panel data models. Essentially these techniques build up a recursive varying set of instruments which provide good small sample performance even in the face of relatively short time periods (T), a good survey of these techniques may be found in Baltagi (1995).

Given that actual outcomes in football will often deviate substantially from planned results, the most natural approach to estimating these relationships is using an error correction model. The parameters from the error correction specification allow us to make inferences about the long-term equilibrium and short run adjustments towards this equilibrium. The long run structure is indicated by the coefficients on the level terms whereas the short term adjustments are captures in the differenced terms of the error correction model. We also allow for the fact that our explanatory variables are predetermined variables; hence we use the lagged variables as valid instruments suggested by the Arellano and Bond study, differenced at period $t-1$. Our two estimating equations are:

$$\begin{aligned}\Delta R_{it} = {} & \gamma_i + \beta_1 R_{it-1} + \beta_2 \Delta R_{it-1} + \beta_3 P_{it-1} + \beta_4 \Delta P_{it-1} + \beta_5 Q_{it-1} \\ & + \beta_6 \Delta Q_{it-1} + \beta_7 D_{it-1} + \beta_8 \Delta D_{it-1} + \beta_9 PR_{it-1} + \beta_{10} \Delta PR_{it-1} \\ & + \beta_{11} REL_{it-1} + \beta_{12} \Delta REL_{it-1} + \varepsilon_t \end{aligned} \tag{13}$$

$$\begin{aligned}\Delta P_{it} = {} & \alpha_i + \delta_1 P_{it-1} + \delta_2 \Delta P_{it-1} + \delta_3 w_{it-1} + \delta_4 \Delta w_{it-1} + \delta_5 Q_{it-1} \\ & + \delta_6 \Delta Q_{it-1} + \delta_7 D_{it-1} + \delta_8 \Delta D_{it-1} + \delta_9 PR_{it-1} + \delta_{10} \Delta PR_{it-1} \\ & + \delta_{11} REL_{it-1} + \delta_{12} \Delta REL_{it-1} + \eta_t \end{aligned}$$

where revenues (R), wage expenditure (w) (both in orthogonal deviations) and league performance (P) are expressed in logs, Q is a dummy variable that indicates periods when clubs are listed on the stock market, D indicates the league division in which the team plays, PR is a dummy indicating winning promotion in the current season and REL is a dummy indicating being relegated in the current season. The division variable will account for the level of competition in the league on performance and also the market size of the club with respect to revenue generation. Promotion and relegation dummies will also account for the movement between the divisions with respect to performance and also the generation (or loss) of income when a team is promoted (or relegated). The Q dummy will take a value of 1 the season *after* a club has floated on the stock market. For example, Birmingham City floated in March 1997; hence Q would have a 0 for the 1996/97 season and a 1 for the subsequent seasons. Parameter estimates are reported in Table 8. The first three columns report estimates for the revenue equation, the last three columns reports estimates for the performance equation.

Table 8
Regression results

Regression Number	(1)		(2)		(3)		(4)		(5)		(6)	
Dependent variable[a]:	$\Delta R_{i,t}$	*t*-statistic	$\Delta R_{i,t}$	*t*-statistic	$\Delta R_{i,t}$	*t*-statistic	$\Delta P_{i,t}$	*t*-statistic	$\Delta P_{i,t}$	*t*-statistic	$\Delta P_{i,t}$	*t*-statistic
Variables[a] in differences												
$\Delta R_{i,t-1}$	−0.145	−3.62	−0.149	−3.58	−0.009	−0.207						
	(0.040)		(0.041)		(0.046)							
$\Delta w_{i,t-1}$							0.032	0.346	0.019	0.219	0.117	1.30
							(0.091)		(0.090)		(0.090)	
$\Delta P_{i,t-1}$	0.174	0.822	0.173	0.817	0.006	0.319	−0.068	−1.260	−0.066	−1.23	0.110	2.63
	(0.021)		(0.021)		(0.020)		(0.054)		(0.085)		(0.042)	
$\Delta Q_{i,t-1}$	0.053	0.843	0.064	0.972	0.012	0.192	0.019	0.167	0.037	0.300	−0.067	−0.627
	(0.063)		(0.066)		(0.062)		(0.116)		(0.123)		(0.107)	
$\Delta D_{i,t-1}$	−0.051	−0.949	−0.052	−0.982	0.060	1.31	−0.144	−1.49	−0.158	−1.62	0.153	1.91
	(0.054)		(0.053)		(0.046)		(0.097)		(0.098)		(0.080)	
$\Delta PR_{i,t-1}$	0.044	0.753	0.043	0.805	−0.069	−1.37	0.099	1.06	0.112	1.17	−0.103	−1.23
	(0.058)		(0.054)		(0.050)		(0.093)		(0.096)		(0.083)	
$\Delta REL_{i,t-1}$	−0.010	−0.165	−0.011	−0.181	0.005	0.098	0.066	0.700	0.052	0.558	0.163	2.05
	(0.058)		(0.059)		(0.053)		(0.094)		(0.094)		(0.079)	
Variables[a] in levels												
Constant	−0.021	−0.452	0.023	0.403	0.686	6.93	0.758	4.34	0.773	4.11	2.983	9.84
	(0.048)		(0.057)		(0.099)		(0.175)		(0.188)		(0.303)	
$R_{i,t-1}$	−0.113	−4.29	−0.123	−4.51	−0.527	−12.6						
	(0.026)		(0.027)		(0.042)							
$w_{i,t-1}$							0.322	6.85	0.331	6.35	0.099	0.831
							(0.047)		(0.052)		(0.119)	
$P_{i,t-1}$	0.039	1.62	0.044	1.83	0.049	1.88	−0.461	−5.48	−0.463	−5.44	−0.906	−11.3
	(0.024)		(0.024)		(0.026)		(0.841)		(0.085)		(0.080)	

Table 8 (*Continued*)

Regression Number	(1)		(2)		(3)		(4)		(5)		(6)	
Dependent variable[a]:	$\Delta R_{i,t}$	*t*-statistic	$\Delta R_{i,t}$	*t*-statistic	$\Delta R_{i,t}$	*t*-statistic	$\Delta P_{i,t}$	*t*-statistic	$\Delta P_{i,t}$	*t*-statistic	$\Delta P_{i,t}$	*t*-statistic
$Q_{i,t-1}$	0.025	0.886	0.046	1.34	0.076	1.21	0.099	1.24	0.081	0.826	0.097	0.755
	(0.029)		(0.034)		(0.063)		(0.080)		(0.098)		(0.129)	
$D_{i,t-1}$	−0.074	−2.48	−0.074	−2.40	−0.194	−4.42	−0.345	−2.95	−0.343	−2.94	−0.822	−6.84
	(0.030)		(0.031)		(0.044)		(0.117)		(0.117)		(0.120)	
$PR_{i,t-1}$	0.279	3.53	0.282	3.68	0.420	5.72	0.741	6.10	0.725	5.98	1.019	9.26
	(0.079)		(0.077)		(0.073)		(0.121)		(0.121)		(0.110)	
$REL_{i,t-1}$	−0.303	−4.58	−0.299	−4.47	−0.270	−4.10	−0.997	−7.80	−0.984	−7.83	−1.104	−9.52
	(0.066)		(0.067)		(0.066)		(0.128)		(0.126)		(0.116)	
Observations[c]	759		759		759		734		734		734	
R^2	0.25		0.26		0.45		0.41		0.41		0.56	
σ	0.27		0.27		0.25		0.52		0.52		0.48	
WALD (joint)	144.3		150.4		384.7		477.7		502.7		738.8	
AR (1)	(−0.18)		(0.35)		(−1.52)		(−0.20)		(−0.13)		(−1.09)	
AR (2)	(−1.01)		(−0.78)		(−1.54)		(−0.09)		(−0.08)		(−1.11)	

Note: [a]Variables are defined as follows: $W_{i,t} = \log\left(\frac{w_{i,t}}{\bar{w}_t}\right); R_{i,t} = \log\left(\frac{r_{i,t}}{\bar{r}_t}\right); P_{i,t} = -\log\left(\frac{p_{i,t}}{93-p_{i,t}}\right)$ w_{it} is total company wage expenditure of club *i* in year *t*, r_{it} is company turnover, and p_{it} is league rank on measured from 1 to 92, treating first place in Division One of the Football League as rank 21, first place in Division Two as 45, and so on. AR(1) and AR(2) are tests of first and second order serial correlation in the errors, distributed as standard normal. Figures in parenthesis are robust standard errors.

[b]Regressions are as follows:

(1) Revenue on Performance with no time dummies or fixed effects.
(2) Revenue on Performance with time dummies but without fixed effects.
(3) Revenue on Performance with time dummies and fixed effects.
(4) Wage on Performance with no time dummies or fixed effects.
(5) Wage on Performance with time dummies but without fixed effects
(6) Wage on Performance with time dummies and fixed effects.

[c]Observations are smaller for the Performance on Wage Equation due to some Clubs filing abbreviated accounts where they are classified as 'small companies' and do not have to disclose as much information such as remuneration.

We are interested primarily in the sign and significance of the quoted variables. In an error correction model the terms specified in differences specify the way in which a given variable influences the adjustment toward equilibrium and the levels terms define the underlying long term equilibrium relationship. The most important result therefore is that the variable defining stock market flotation is insignificantly different from zero in each of the regressions reported – suggesting that stock market flotation has no long-term impact on the performance of the club. In other words, quoted teams are not expected to generate more revenue in the long term from a given league position or to generate a better league position from a given wage expenditure relative to the average. However, given that the clubs that floated are mostly in the Premiership and First Division, we also ran identical error correction models adjusting for divisional averages. These results were almost identical to those reported in Table 8 with indicating that even comparing the listed clubs with their closest industry peers, being listed did not impact long term or short term revenue generation. The first of these is perhaps most surprising, since many would have expected quoted clubs to exploit commercial opportunities of success more efficiently. One interpretation of this result is that all teams exploit commercial opportunities fully, regardless of ownership. Another qualification we might add is that the adjustment period is longer than our panel allows. The estimates of the dynamic terms tell a slightly differently story. In the wage-performance and performance-revenue equations, the dynamic terms are insignificant, suggesting that there was not even a short-term adjustment brought about by flotation. We also tested for slope effects concerning the quotation dummy and found them to be insignificant indicating that floatation does not have an interactive effect on performance or revenues.

V Discussion and Conclusions

Interpreting the findings of this paper requires some caution. On the face of it there appears to have been a decline in profitability accompanied by increase in relative spending and league performance among clubs that floated some shares on the market in the mid-1990s. One might question whether these results, given the size of the sample, are statistically significant, but the main fact is that the expectation, based on economic theory, that profits should increase and league performance decline following flotation, does not seem to be supported by the data.

First we must address the potential for sample selection bias. Did the clubs that floated, already hold a disposition towards profit maximisation? According to King (2003) the massive increase in turnover during the 1990s necessitated the creation of new business structures. Due to increased trans-national competition, commercialisation it is imperative for clubs to remain competitive in the transfer market. Directors may also have been inclined to list shares in order to sustain a club's financial position and maintain value and competitiveness (King, 2003). It can be argued that many of the shareholders and directors of clubs (listed or not) invested in football clubs as a means to

increase their public profile and status, one example being Alan Sugar who owned Tottenham between 1991 and 2001 (King, 1998). In such cases floatation might bring about even more recognition (or infamy) along with funds to increase club status. However it could also be argued that non-floating clubs are run and invested in by a class of investors that do not want to share decision-making with other potential investors who may not view playing success as paramount. But even those clubs that have not floated, according to King (2003), have 'restructured their management practices and structures in line with public limited companies.' Individual motivations behind institutional investors and directors may be better addressed by a sociological study than by our economic analysis. Regardless of historical ownership, once a club floats, it is inconceivable that it will not experience some change in behaviour.

Also, one could argue the potential for selection bias in the size of clubs that chose to float. All the sample clubs except Preston North End and Swansea were First Division or Premiership clubs, so measuring relative profitability between these 'larger' clubs that did float and the 'smaller' clubs that didn't could be a source of bias. However if we make comparisons with clubs that did not float and which belonged to either Division 1 or the Premiership (a sample of 26 clubs), then pre-1997 profits for these non-floating clubs were actually lower, averaging −£1.5m. Post-1997, these clubs had comparable losses of −£3.7m on average per season.

But there is more than one interpretation of these findings. We can identify the main contending explanations.

(i) *All* football clubs were profit maximisers before flotation – so that entry onto the stock market did not lead to any appreciable change in behaviour.
(ii) *The clubs that floated* were profit maximisers before flotation – so that entry onto the stock market did not lead to any appreciable change in behaviour relative to the average .
(iii) Accounting profits give a poor indication of economic profits, so that the figures cannot truly indicate any change in economic performance.
(iv) Post flotation accounts of PLC's include data related to group business activities that extend beyond the football club and are therefore not comparable to the pre-flotation data.
(v) These clubs did not become profit maximisers after flotation because:
    a Professional investors were unable to exercise control (only small amounts of shares were offered to the market); and/or
    b Professional investors were not interested – only fans bought shares.
(vi) The directors mistakenly believed that the appropriate way to operate as a profit maximiser was to invest heavily in playing talent in the anticipation of future success generating larger profits.

All of the arguments apart from (i) imply that the data need not be inconsistent with the conventional view of club objectives. The second explanation does not seem all that plausible, given the fact these clubs had lower profitability

than their peers prior to flotation. Moreover, this does not explain why they would have improved their league performance by spending more on players while presiding over declining profits. The third explanation appears weak since whatever problems there may be in inferring the *level* of economic profits from accounting profits, it is reasonable to believe that *changes* in accounting profits are a good indicator in changes in economic profits over a reasonable period of time for a large enough sample of businesses, absent significant changes in the accounting rules. One problem with this argument relates to the fourth explanation – if the group business has more opportunities to shelter profits earned elsewhere after flotation then it may well be the case that listed companies have an incentive to report larger losses. However, in most cases football was the primary business activity of the listed entity, and there are no cases of clubs becoming part of much larger commercial empires as in the US.[20]

The fifth explanation has some merits. As Table 1 shows, several clubs floated a relatively small percentage of the stock, limiting the scope for the market in general to put pressure on the performance of the directors (although this story carries with it the implication that the directors were failing in their fiduciary duties, a serious allegation). Where small amounts of stock were on offer, it may well have been the fans who were most likely to buy. However, there is plenty of evidence that institutional shareholders were significant buyers at flotation of many of these clubs, and indeed it was the perception that this was the case that gave rise to many complaints from fans about the commercialisation of football (see e.g. Conn (1997)). Morrow (1999) reports that 'at its 1997 accounting year end 124 institutional shareholders owned almost 60% of the ordinary shares in Manchester United'. However, it may be that the institutions quickly deserted the newly floated clubs once they realised that they were unlikely to see a reasonable return on their investment. Few clubs ever saw their market value rise above the level posted in the first month of trading and most saw quite rapid declines in value in the early months after flotation. If this reflects institutions selling off their shareholdings, it is unclear why they should have given up on the idea quite so quickly. A better picture of what happened could be constructed from an analysis of shareholder lists.

The sixth explanation is one that also might be consistent with the market valuation data. Directors may have gambled on improving performance with a view to exploiting the very rapid growth in media income during the period. The escalation of player salaries in general during this period was a reflection of this growth, and it may have appeared to be an individually rational strategy to invest relatively heavily in the late 90s with a view to obtaining a larger share of a larger pot in the new millennium. An example of this approach appears to be the performance of Leeds United, which invested heavily and gambled on achieving success not only in the Premier League but also in the UEFA Champions League. They did in fact succeed in reaching the semi-final

[20] In 1999, the UK competition authority blocked the takeover of Manchester United by the Sky broadcasting organisation, effectively prohibiting media ownership.

of the latter competition in 2001, only to fail to qualify for the following season and found themselves unable to fund their collection of star players. They then became forced sellers of large amounts of player talent.

It seems unlikely that any one explanation will furnish a conclusive explanation of the relative performance of the football clubs that floated in the mid-1990s. However, the data does at least provide a serious challenge to the received view that football clubs in England were utility maximisers rather than profit maximisers. If a utility-maximising club floats stock on the market the most natural implication is a shift upward in profit and downward in on the pitch performance, almost exactly the opposite of what seems to have occurred. Not only did profits fall and performance improve on the pitch, but the econometric evidence suggests that the reason for this change was that the floating clubs simply spent the flotation proceeds on players. While it is not impossible to construct alternative stories to explain the data while maintaining the conventional view that football clubs are utility maximiser, at the very least the explanations seem somewhat strained. The alternative view – that football clubs have always been profit maximisers, in England at least, deserves some consideration.

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