Explaining the Bankruptcy ‘Crisis’ in English Football

Ownership Style and the Wage-Performance Relationship 1996-2003

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Abstract

Between 2001 and 2003, fourteen clubs in the English Football Association (FA) entered administration—the British equivalent of Chapter 11 bankruptcy. This paper explores the changing landscape in the FA before and during the reported financial ‘crisis’ at the turn of the 21st century and examines the impact of increased television revenues. Through modeling managerial and ownership behavioral styles, the roots of financial hardship in the lower divisions are investigated. Analysis is focused on the well-established relationship between wage spending and league performance, and the importance of estimation residuals as a measure of over- or under-performance is reconsidered. We find that attempts to explain acute financial crises on a league-wide level, while attractive, are often misled. In addition, the impact of administration applications on other clubs in the FA has likely been overstated. The findings in this paper are inconclusive, but help to elucidate the relative effectiveness of different techniques of inquiry, several of which are used here. Some findings imply that traditional assumptions of managerial behavior in sporting contests are inappropriate.
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Introduction

Many have pointed to the wave of bankruptcies in English football over the past five years as the result of widespread mismanagement or misplaced incentive schemes. Similar turns of events for many clubs in the Football Association have indeed been labeled calamitous, and the behavior of many clubs in reaction has the potential to exacerbate the situation. The collapse of lucrative television contracts appears to have led to a significant number of teams developing balance sheet difficulties, and many clubs have chosen or been forced to enter administration (the British equivalent of Chapter 11 bankruptcy). With so many clubs attempting to write off outstanding debts, it might be implied that managers are simply reacting in the best possible way to what would traditionally be identified as a significant negative exogenous shock to demand. While the popularity of English soccer has not identifiably waned in the past ten years, it is important to note that the degree to which many clubs have relied on television revenue has significantly increased over this period.

This paper examines some potential causes of the ‘financial crisis’ experienced in the English soccer leagues over the second half of the 1990s. Many attempts to answer the relevant questions have failed to assign blame to any particular club; most popular and periodical literature has insisted that the nature of the crisis was widespread. As such, the analysis here began by attempting to identify an overall pattern of behavior among club managers across all divisions, not a particular event or chain of events that led to widespread crisis. This analysis particularly focuses on the behavior of clubs under certain conditions. The examination of the data attempts to identify clubs who carry large debt burdens concurrent with underperformance (which has a very specific definition as per the literature review). However, a correlation between these two elements of club behavior is not directly examined; instead, these two
conditions are posited to work together, creating ideal conditions for the kind of risky behavior I suggest led some clubs into trouble in the first place.

What was most striking about the resulting downturn, then, was the apparent devastation with which some clubs were laden. The resulting upheaval among fans and club managers clamoring for “justice” in resolving contract disputes simply reflected the significant shock to demand that was effectively foisted upon most lower-level clubs. However, a deeper inquiry into the rationale for the hardship that resulted reveals more troublesome conclusions. Several times in the history of the English leagues have demand shocks harmed the image and revenue-generating ability of clubs, and many worse than the current ‘crisis’. Why did the collapse of television contracts, which are distributed among teams based in part on club success and in part equitably, result in the immediate and widespread inability of many English clubs to pay even their player wages?

The English print media jumped on the epidemic of “clubs in crisis,” and tabloid columnists all over London called for the heads of the television moguls who willfully and deceitfully put traditional treasures of the football world in jeopardy of extinction. Indeed, it was easy to identify the source of the most recent crisis in English football, as it always had been. Football hooliganism in the 1980s placed English soccer at a disadvantage for awhile (including the temporary prohibition of English clubs from participating in the UEFA Champions League), but the parties at fault were identifiable. The fans were at fault, and the solution was simple: shape up. The crisis at the turn of the century looked to be just as clear-cut: off with the heads of the TV moguls. The FA took the case to arbitration, and lost. Clubs continued to go into administration, though the money that was supposed to be available to club managers had been gone for almost a year. The continued strife experienced by clubs in the bottom three divisions
of English soccer was disconcerting, especially following the resolution of the case and the
determined result that the clubs were not going to get the television money after all.

It was this wave of clubs declaring financial ruin that proved to be the spark behind the
inquiry in this paper. As clubs began to claim hardship, the management styles that were
prevalent in the English Premier League and its lower divisions came into question. Because the
difficulties experienced by English clubs primarily came following the collapse of the deal with
ITV Digital, the satellite provider for the Football League (the three divisions below the Premier
League), many commentaries were content on blaming the television provider for the flooded
offices of administrators. However, I contend that the introduction of television revenues as part
of the objective function of the club manager created a significant incentive for some clubs to
spend well beyond their means. A dynamic analysis of the changing considerations of managers
and their incorporation of television revenues into spending habits is beyond the scope of this
paper. I instead will attempt to show that in the second half of the 1990s, many clubs began to
spend on players too liberally as a result of the influx of income. The rising turnover of clubs
following the introduction of television revenues has increased clubs’ ability to carry debt
burdens (or rather, increased clubs’ abilities to successfully request funds from creditors).

Additionally, the increased disparity of income available between the Premiership and
lower division clubs has begun to take its toll on the incentive schemes set up by the system of
promotion and relegation, to the point where the reward to gaining promotion from a lower
division has begun to significantly outweigh the consequence of spending too liberally. Indeed,
the one-time gains to “winning” a lower division anecdotally described by Noll (2002) had
become so great that many club managers could not resist the temptations created by such
income disparities. Specifically, I intend to determine whether or not clubs in the period 1996-
2001 were likely to spend beyond their revenue-generating capacity in the most unfavorable of circumstances. Clubs carrying large debt burdens and performing below their expectations, under standard conditions, would be expected to attempt to return to an equilibrium level of spending based upon their “natural” capacity for revenue generation. However, I contend that although only a fraction of clubs entered administration on the whole, the most egregious clubs had made foolhardy decisions with their dwindling cash and attempted to make up for past transgressions by “going for broke” in the labor market, hiring more talent in an attempt to achieve misguided perceptions of clubs’ equilibrium level of success. Indeed, the discovery of seemingly bizarre behavior on the part of club management would not be indicative of widespread ineptitude among managers. I would argue that the incentives created by such income disparity in and of themselves led to a wave of management attempts to “get it while they could.” This does not absolve club managers of the blame coming out of administration; however, it does make more understandable the frequency with which financial hardship occurred following this period.

**Background: ITV Television and the Football League**

With the exception of a small minority of upper-level clubs, many teams devote a significant proportion of their financial capital towards the day-to-day operations of the club. This involves purchasing playing talent, managerial talent, and other short-term forms of compensation (stadium employees, custodial staff, and other laborers). In the course of a standard season, club managers make decisions as to the hiring of playing talent; unlike most firms for which standard profit-maximizing behavior involves attempting to fashion an optimal
balance of capital and labor, the amount of short-term, productive labor (playing talent) generally determines the financial and competitive success or failure of a club.

Revenue structure is a different beast altogether, and a more detailed discussion of the ways in which clubs are compensated for success is necessary to describe the causes of financial crisis in the English leagues. For the vast majority of the English Football Association’s history, the relationship between on-pitch success and financial success has been quite direct: perform well on the playing field, rise in the league table, become more popular, sell more tickets. The BBC, as a public service broadcaster, carried games over nationalized airwaves. With the rise in availability of private, satellite-based television, technology has progressed to the point where it is feasible (though not necessarily cost-prudent) to broadcast every game played in England. Anecdotal evidence of the rise in popularity among television viewers since the advent of satellite service is enough to indicate a significant shortage in the market for televised matches.

There is also evidence for the theory that not only has the introduction of satellite service increased supply to meet the demands of the British viewer, but that the advent of such service in and of itself has been enough to spur a rise in demand for televised soccer in Britain and worldwide. Such a combination of events has shown television service to be a largely profitable pursuit in England; the FA understood this and reasonably demanded to share in the financial gains to this turn of events. The introduction of television revenue into the cost decisions of British teams may have had a larger impact than anyone would have predicted. Most notably, the revenue streams of each club now incorporated a significant amount of additional cash flow as a result of this increased profitability. Not surprisingly, the labor market in English soccer responded accordingly, resulting in a significant rise in player wages over the time period in which television revenues rose. Most notable, however, was the asymmetric way in which
player wages rose, often inflating the salaries of the highest-paid players in the league, while leaving relatively little of the spoils for the players and teams getting less attention. One possible explanation for this phenomenon is that in an untelevised sporting world, the highest-paid players are the most talented and successful on the pitch, because playing success would be the most direct way of contributing to team revenue. However, when television revenues are introduced, players are paid also according to considerations other than pure competitive contributions, which can be through increasing competitive success or raising visibility among television viewers and thus making the club more popular.

In the case of the English Premier League, a cost bubble may have emerged as a result of the highly disproportionate revenues to television contracts. The English Premier League is currently under contract to Rupert Murdoch’s BSkyB and the British Broadcasting Company (BBC) to televise a pre-defined number of matches each season. For the contract spanning seasons 2001-2004, the satellite provider and the league agreed to package a broadcast schedule of sixty-six matches each season at a three-year cost to BSkyB of over £1bn. The revenues obtained from this contract are split among the Premiership teams, and the league negotiates with BSkyB to determine which matches are televised and how many are shown. With large revenues split between Premiership teams, the significant financial boost to the top tier as a whole has proven incredibly frustrating to lower division clubs. First- and second-division clubs in the Football League find it difficult to compete with clubs who come from the Premier League in seasons following relegation. When clubs compete in the Premiership, fail, and are relegated, they often find themselves easily promoted in the following season, as a result of significant residual talent from the high-stakes finance game at the highest level in England. This is consistent with Noll’s (2002) anecdotal findings and predictions regarding the degree to which
talent and revenue streams carry over in consecutive seasons straddling a relegation year. Frustration from the lower divisions aside, the Premiership and BSkyB face a more difficult task ahead—fighting accusations of monopolistic behavior from the European Commission. The case made in Brussels holds significant weight; from a rational standpoint, the 66 games broadcast by the satellite provider is a small portion of what its subscribers, and football fans in England as a whole, demand. BSkyB has seen a significant increase in the number of subscribers it has in the UK, and the collapse of the lower-division broadcast deal with ITV Digital has made it readily apparent that the potential for widespread broadcast of English Football League games exists, if only satellite TV providers would oblige.

A December 2003 Guardian article notes the significant tensions and potential disasters that await the Premiership if the stranglehold BSkyB currently has is broken (“Threat,” 13 Dec 2003). A renegotiation of the satellite deal from 2001-2004, and an extension of these rights to 2004-2006 at a cost of £1.024B under a similar 66-game schedule has raised eyebrows in the European Commission, who cite unfair business practices and monopoly intent in their criticism and reprimand of BSkyB. The EC and its competition commissioner, Mario Monti, have demanded that BSkyB subcontract the four “live packages” it won in competitive auctions at the end of 2003. The exclusive rights granted to BSkyB significantly boost the revenues of all Premiership teams, and there is a stake among each of the clubs in the Premiership in ensuring the continued (perhaps artificial) financial well-being granted as a result of the monopolistic contract. The Guardian correctly realizes that as a result of this regulatory pressure, there exists substantial potential for BSkyB to sue the Premiership for a renegotiation of its contract as a result of such reduced exclusivity. The problem that exists is one of reliability.
Does the Premiership have the right to retain a single broadcaster on the basis of consistent fulfillment of contractual obligation and historical precedent, both positive and negative? As an illustration of the paradox the Premiership finds itself in, there have been two basic competitors to the Murdoch syndicate in each of the last two rounds of auctioning broadcast rights. The British Broadcasting Company, as previously noted, does have the rights to broadcast a small number of matches on public television over the course of the season. The second competitor is ITV Digital, the satellite provider whose contract with the Football League (that is, the lower divisions) exceeding £300m was shirked to the tune of £178.5m in unpaid obligations. The lawsuit that followed showed that the ownership of ITV was not under a contractual bind to pay the remainder of the contract, and the ensuing fallout led to the bankruptcy of many lower-division football clubs. If the European Commission’s demands for increased diversity in football broadcasting contracts were followed, the reduced exclusivity enjoyed by the dominant provider would lead to legitimate claims for renegotiation on the part of BSkyB.

Assuming a reduction in the value of the subsequent renegotiated contract, and a contract turnover cost of under 1:1, the revenues to Premiership clubs could experience a precipitous drop similar to the one felt in the late 1990s by lower division clubs. A cash crisis could ensue in the top levels of English football, with a myriad of consequences for the labor, capital, and management decisions of not only club managers, but more importantly, those who lend them money. Ironically, these symptoms are almost identical to the cash crunch experienced by the lower divisions. This anecdotal evidence of similar spending behavior between the Premier League clubs and the lower division teams could indicate a common style of management. Both at the highest and the lower divisions of English football, clubs assume the revenue stream from
TV contracts before the season begins, and spend on wages accordingly. Additionally, banks are willing to front the necessary cash to spend in the player market—the money available to club managers for transfers and signings is limited, but modeled against the projected seasonal revenue of the club. As previously noted, the fluidity of the labor market in the European leagues allows for relatively immediate spending on players.

Though it seems like a fairly anomalous occurrence, such a major, unexpected reduction in the revenue stream for each club in a league has happened twice to the English leagues in the last 2 years. In the case of the ITV Digital collapse in 2002, the precipitous fall of incoming cash turned many Division I clubs into swollen profligate spenders unable to pay off massive debts, both long-term and emergency in nature. Division II and III clubs were reduced to being local favorites, relying upon decreasing gate revenues to prop up contracts negotiated in a far more welcoming economic climate. For the Premiership, the consequences could be felt as acutely (depending upon the nature of the renegotiated satellite contract). Interestingly enough, the English Football Association may bear the largest burden of all. A talent flight to the other major European leagues could follow as Premiership clubs find themselves in a cash crunch familiar to their lower-division neighbors. English players could see the labor market conditions steadily worsen, and the only prospect for maintaining their (potentially) inflated wage earnings in continental Europe. A downward spiral could result as the falling earning power of English clubs further worsened their wage-spending abilities, exacerbating the talent flight. While player wages may be able to respond to a calamitous downturn in the English market on a one-time basis, the nature of the open league structure in Europe would make a talent flight at least on a short-term basis a likely occurrence. As the ability to generate revenue climbed back to equilibrium levels, teams would find hiring of talent easier, and the harmful effects of the wage
bubble would be ameliorated by the slowly increasing ability of clubs to hire talent and longer term adjustments in the wage rate.

Admittedly, this scenario is highly unlikely because of the nature of the contract with BSkyB—a contract renegotiation could lead to the spreading of the value of the contract over several partnerships, reducing the overall value of TV contracts to the Premiership in the short term. However, the increased exposure available to Premiership and Division I teams could be the impetus for a redistribution of income from exogenous sources (TV contracts, PFA wage boosts) to a more brand-controlled revenue structure, as increasing notoriety would boost gate and merchandising revenues for individual teams. Additionally, a reduced contract value but increased television coverage could prove to be a fortunate turn of events for clubs in the long-run, as a widened subscriber base may boost the potential bid amounts in subsequent TV contract negotiations. It is clear that the next five to ten years in Premiership and lower division English FL play could see a reorganization of financial and competitive trends. Major variables that could exacerbate this change in structure are television subscriber saturation in the UK, changes in behavior of club managers, and the nature of worldwide interest in English football. Save any calamitous events—a dramatic decision by the European Commission, the collapse of reliable satellite TV providers in Britain, or a substantive talent flight from the UK to other European leagues, the behavioral patterns of club managers in English football could shift to a more prudential framework.

As newspapers began to label the situation in England a ‘crisis,’ accusations flew that clubs were entering administration simply to avoid the significant financial responsibilities racked up during the mid-nineties boom in the popularity of English soccer. Leicester City FC were essentially blacklisted by some pundits, having been accused of exploiting the system of
administration to gain competitive success: the Foxes left administration, promptly won the First Division and the subsequent reward of promotion to the Premiership, and left their angered colleagues behind to deal with the ruins of a television contract.

What many failed to notice during the significant financial hardship experienced by most clubs was that the onus of blame was not entirely on ITV. Clubs were quick to point the finger outside the football world, and the public was happy to go along with it. However, few stopped to consider the real source of much financial woe: the significant reliance upon television revenues and the desire to spend heavily in the first place. Here, the blame would have to be placed on club management. The frequency with which hardship was occurring masked a potential common cause across clubs: imprudent financial management. Having racked up considerable debts, clubs were happy to continue to enjoy the fruits of an economic boom in the English leagues, often spending the revenues expected from television contracts before the cash had come in. When the full extent of the problem created by the collapse of the television contract for the lower leagues set in, club managers found themselves unable to pay player wages set up in old contracts. In contrast to the North American leagues, where contract lengths tend to be longer, most wage responsibilities of European clubs are set out for each player at the beginning of the season, when clubs make their decisions for playing talent on the basis of success expectations.

In most models of collective team and league behavior, managers of clubs are identified as standard profit-maximizing owners, hiring playing talent to the point where the marginal revenue generated by successful players is equal to the marginal cost of hiring playing talent. This relationship has been particularly salient in the European leagues due to the labor market structure discussed above. The impact of longer contracts on this analysis will be addressed
later. Historically the market for playing talent has been quite efficient, as players were directly able to affect the ability of their clubs to generate revenue through on-the-field success. Competitive success is then directly related to the revenue generating capacity of a club through merchandising, prize incentives for winning (through collective prizes and outside competitions such as the Champions League), and most importantly, gate revenues generated by the popularity of a club among its supporters. Put simply, the more a team spends on player wages, the more it succeeds; the more it succeeds, the more popular it becomes; and the more popular a team is, the more financially successful it is.

I argue that the introduction of television revenues as a significant portion of team profit functions has warped financial expectations among club managers. In the Premiership, 75% of revenues generated through television contracts are distributed evenly among clubs, with the remainder distributed according to league placement. Similar disbursement regimes with lower divisions gave clubs more money to work with, and the pace of revenue increases suggested clubs might not have been prudentially operating within reasonable expectations of success. Widening income gaps between the Premiership and the Football League also potentially created this sense of urgency among lower division managers. The examination of the wage spending behavior of clubs is thus central to the exploration of the financial hardship experienced recently in English soccer.

**Literature Review**

The primary basis for the analysis that takes place in this paper hinges on the work of Hall, Szymanski, and Zimbalist (2002). These authors examine the link between competitiveness of a team and the amount spent on that team’s players. In doing so, the authors
compare descriptive statistics on payroll and success among teams in the English Football Association (FA) and Major League Baseball (MLB). Using data for MLB from 1980-2000 and the FA from 1974-1999, Hall et al find a weak correlation between payroll and winning percentage in baseball. In soccer, however, the correlation is far stronger. The literature on player productiveness hinges on the work of Scully (1974), who used a player’s marginal revenue product to measure whether he was overpaid or underpaid. The conclusions following from Scully are unclear, and vacillate between suggesting a strong link between payroll and performance and little to no link between payroll and performance.

In their research, Hall et al examine not only one-year relationships between relative payroll and relative winning percentage, but also longer-term measures of payroll and performance. As it turns out for both soccer and baseball, a more stark correlation (on the order of $R^2 = 0.71$ for baseball and $R^2 = 0.94$ for soccer) is found when the time period of interest is extended. Because of the size of the FA (92 teams spread across four divisions) and regulations allowing the makeup of each division to change from year to year, examining “competitiveness” in the FA was a problem. To normalize this, the authors only use data from the Premier League, which is far more comparable to MLB in descriptive statistics. The high correlation between spending and success in soccer becomes more apparent when the data is narrowed. The link in baseball is more tenuous but becomes stronger from the 1990s on.

The authors suggest that the reasons increased spending does not translate to success more readily in baseball are many and varied. Hall et al note that contracts tend to be longer in baseball, and barriers to star players moving among teams are higher. In addition, there is a degree of expectation for movement among teams in the FA, and the authors cite Carmichael, Forrest, and Simmons (1999) in noting that 12.3% of players moved from one team to another in
the 1993-1994 season of the FA. The authors also point to the geographic proximity of FA clubs as ameliorating social distress caused by changing teams.

The authors use a Granger test to determine the direction of causality in the payroll-performance arena, and find different significant results for baseball and soccer when causality is examined. Causality flows from performance to wages in baseball, but not vice versa. Causality flows from wages to performance in soccer, but not vice versa. Looking more in-depth for the case of baseball (as their results violate standard “you pay for what you get” theory in sport), the authors note four examples of a substantial structural break in baseball in the latter half of the 1990s: falling television revenue, movement of teams towards parts of media conglomerates, expansion and talent dilution, and increased disparity in player development programs. Hall, Szymanski, and Zimbalist resolve that soccer tends to have a more fluid market for players, leading to increased ability of teams to aggregate talent and build star-laden teams with money.

A more direct analysis of league structure and its consequences is made by Feess and Muhlheusser (2002), who analyze the incentives created by three transfer fee regimes (real and potential) in European soccer. The current system, in place with the Bosman judgment of December 1995, places no restriction on the fee paid from a team obtaining a player to the team giving up the player. In the regime prior to the Bosman judgment, significant restrictions were placed on transfer fees, a policy that led to distortion in the way teams and players operate in the market for players. The mobility of soccer players between teams was hampered, said the judgment, and the decision was made to remove restrictions on fees. The authors cite data that points to two trends that have occurred since the judgment: contract lengths are longer, making transfer fees paid substantially higher. The European Commission has recently suggested an upper bound be placed on transfer fees paid due to their dramatic increase.
The authors examine the consequences of three regulation regimes: pre-Bosman, the current regime, and the proposed European Commission regime (referred to as the Monti regime, after the Commissioner who proposed it). The authors are substantially in opposition to the Monti plan, which they say will substantially hamper player mobility once again as a result of restricting freedom of contract. Feess and Muhlheusser claim that the EC should only become involved if suboptimal contracts are a result of the current regime. Indeed, the authors offer the following dimensions for analysis of regimes: player salaries, surplus distribution, competitive balance, investment incentives, number of educated talents, and performance level overall.

The authors develop an algebraic model for discussing the possible results of various transfer fee regimes. In a short-term analysis, Feess and Muhlheusser show that the initial effects of relaxing regulations are likely to favor players in the form of higher transfer fees. It should be noted that under the pre-Bosman regime, teams releasing a player from an expired contract still get a transfer fee, and thus teams giving up players are worse off under the Monti and Bosman regimes. Noting that players are more likely to sign longer-term contracts all else equal, the authors suggest the existence of transfer fee regulations further encourages such activity due to problems of asymmetric information between players and clubs. The authors conclude that without asymmetric information, the incentive exists for players to sign contracts that cover the entire horizon of their playing career, but this may not occur due to wealth constraints on the part of players. Taking their scope of analysis to the long term, the authors show that expectations theory will cause transfer fees to be incorporated into initial contract negotiations, negating the short-run benefits of transfer fee limitations.

Feess and Muhlheusser then incorporate not-yet-playing athletes into their analysis as part of a discussion on incentives for investment in player development. The authors conclude
that as caps are placed on transfer fees, the initial investment paid by the club releasing the player can not be met with the transfer fee negotiated in the market. In addition, the number of players that are invested in is reduced as well, *if contracts span the entire playing horizon of the player.*

The authors then observe in the labor market for soccer players that contracts rarely, if ever, cover the full length of a playing career. Asymmetric information is once again labeled as the culprit as to why contracts are shorter. The authors suggest that talented players attempt to signal their talent by signing shorter deals in anticipation of renegotiation. Incorporating the idea that over the length of the contract players are likely to decline in skill (but wary this may be due to moral hazard), Feess and Muhlheusser conclude that the proposed Monti regime would lower contract length but by an indeterminate amount. Competitive balance is determined to have been highest under the pre-Bosman regime, but little quantitative proof is offered to this effect. The authors finally reaffirm their fears on the effect of asymmetric information on player markets, in the form of moral hazard in long-term contracts, again noting that these problems may lead to more severe consequences in other markets, where wealth constraints tend to be stronger.

The attempt to quantify the contributions of players to their team in soccer was first made by Scully (1974) as mentioned above. Carmichael, Thomas, and Ward (2001) attempt to apply production function theory to player performance in English Association Football (FA). Through the use of the recently created Opta Index, the authors are able to concretely examine player involvement through individualized statistics. The Opta Index was created in 1997 to track contributions from player to player in the Premier League, the highest level of competition in the FA. The authors mention the belated creation of the Opta Index and the underlying difficulties of individualizing player contributions in soccer as opposed to baseball, basketball,
American football, cricket, and other sports that already have highly developed statistical indices. Difficulties with performance statistics aside, the Opta Index, however nascent, provides a measure able to more precisely pin down a player’s contribution to team success.

The authors then extend the model to examine the “efficiency” of each team in the Premier League during the season in question. The residuals from the regressions are used to describe relative technical efficiency between the teams (in “above-average/below-average” terms). For season-long success, “efficient winning” by minimizing goal differential in won matches proved to dominate maximizing total goal differential. Carmichael et al mention the teams that were above- and below-average in each category (won-loss, defense, shot-goal, and possession efficiency). The authors note anomalies in efficiency, pointing out that overall the most successful teams in the data set were also the most efficient.

Though the results from Carmichael, Thomas, and Ward’s examination of production and efficiency are interesting and most likely applicable, their study suffers from a number of limitations. The data set was relatively small compared to the large number of FA teams and its extensive history. These results may hold more weakly when extended to all FA clubs or all years of FA play. The paper was also fairly weak in its defense of the model used. As a result, the predictive power of the study is somewhat weakened, despite its significant conclusions. The next step is to aggregate the contributions of players to the success of the team and factor in the ability of the manager of a club as an input.

A line reflecting competitive balance seems to have been drawn between the European leagues and those of North America. Several papers have examined the causes and consequences of the quite different systems of league operation. Szymanski and Valletti (2003) examine the consequences of having an open league system. The open system, or one of
promotion and relegation, creates incentives that are endogenous to a hierarchical system. The authors note that the incentive system of an open league creates essentially the most economically competitive league table. They further suggest that this has driven, at least in part, the financial difficulties plaguing many of the lower-division teams in the English Football League. The system of promotion and relegation, a hallmark of European league design, puts league administrators in a bind from a North American standpoint. Concerned about the financial well-being of individual league teams, many of which have been around for over a century, league officials need to balance the desire to save teams from ruin with the immense advantages of having an open league. The traditional point made about the European style of league design is that it highlights club failure as a success of the system: by being a completely open league structure, it allows teams to fail and be replaced by more successful ones. However, financial strain has led to a more immediate failure of clubs, and failed clubs are not falling by the wayside just yet. Indeed, clubs return from financial hardship in much the same competitive position they found themselves beforehand; traditional “means of failure” (i.e. falling out of the league table) is no longer the norm, and financial hardship has far more complicated fallout than simple competitive failure.

Citing Neale (1964), Szymanski and Valletti recognize the negative externality created by league counterparts going bankrupt. The authors use a Tullock (1980) contest model, which has been used extensively in the sports economics literature to model simple league structures. The Tullock contest model uses a function that specifies the probability of success in any individual period. For their analysis, Szymanski and Valletti create a two-division league with two teams in each division; the top division gets to compete for the “league prize,” or championship, and the second division opponents vie only for promotion. This is a proxy for the open, European league
system; they use a modified version without promotion and relegation to proxy the North American closed league system, where entry is only possible via an ownership consensus. Using the Fort and Quirk (1992) measure of competitive balance for the long term, Szymanski and Valletti note the stark contrast between American and European championship winners over the past half-century. A far greater percentage of expected champions have arisen in Major League Baseball than in the top division of the English leagues. The authors suggest the revenue sharing mechanisms in place in America have significantly contributed to this realization of champions. Szymanski and Valletti manage to make several strong points with their descriptive statistics alone, noting that the losing clubs in the Premier League tend to spend a larger portion of their turnover on wages than the winning ones, whereas this anomaly does not exist in baseball. Indeed, the turnover tends to be far higher in the Premier League; the authors note that the top half of Premiership clubs account for 78% of the market capitalization of teams listed on stock exchanges.

Szymanski and Valletti go through a number of iterations and modifications of their Tullock contest function, adding a ‘losing’ function (for relegation), a proxy for the discriminatory power of the contest (how much increased effort translates into success), and revenue sharing mechanisms. The first major conclusion of the paper is to depict an unequivocally lower level of effort in the lower division of a hierarchical league. This is important in weighing the advantages of European and North American systems against one another. Total effort is discovered to be fairly identical between open and closed systems. ‘Effort’ is used interchangeably with wage spending, a conclusion that is borne out by other authors (Szymanski and Kuypers 1999).
When the discriminatory power of a contest is lowered (i.e. there is more uncertainty in outcome based on effort), the level of effort among lower division teams is significantly raised. For a closed league, the effort level falls, unsurprisingly. When revenue sharing is introduced into team valuation, the stronger teams have a more firm aversion to revenue sharing in open vs. closed leagues. This is borne out anecdotally in the structure of the leagues; stronger teams are more willing to share in the closed system of North America, whereas in Europe the strong teams unambiguously oppose revenue sharing.

Szymanski and Kuypers outlined the importance of wage spending on league performance in *Winners and Losers* (1999). The authors examine the relationship between wage expenditure and on-the-pitch success over variable time spans. When resolving the question over the short term, the authors use the 1996-7 campaign to show that indeed, Manchester United spent the most and was rewarded with a championship. However, the authors also point to notable anomalies, such as Blackburn Rovers, who spent more on wages than 75% of their Premier League competition, yet finished in the lower half of the league table. Even on a one-year scale, the sixty-nine clubs in the 1996-7 campaign saw wage expenditure (relative to the average) met with success on the pitch, with a correlation of $R^2 = 0.78$. The analysis is made more potent when each club’s twenty-year average of wage spending (relative to average annual spending of all clubs) is regressed against its’ average league position. In this regression, a correlation of $R^2 = 0.92$ is found. Szymanski and Kuypers are able to show that despite year-on-year differences in wage spending and league finish, the team that spends the most is (usually) rewarded. The authors claim that this result indicates a well-functioning labor market in the English Football League (though not quite efficient). It is important to understand that the fluid market for playing talent in England (and in Europe generally) has not always existed as such;
until the maximum wage in football was eliminated in 1961, players were restricted in their ability to move freely from team to team, and significant differences existed in players’ contributions to team success and suitable compensation. As such, a team’s wage spending was a far poorer predictor of competitiveness. The authors bolster their assertion of wage spending breeding superiority by examining other potential contributors to team success. Transfer spending, number of players used, home-grown talent, squad size, the number of internationally competitive (in this case, team England) players on the squad, managerial tenure, race, and club history (i.e. previous league finishes). When controlling for wage expenditure, none of these additional factors were found to strongly correlate with league position. After controlling for wage spending, the number of black players on a squad was found to have a small positive correlation with league position. This is an interesting finding, and indicative of possible discrimination, but not central to the analysis in this paper. Szymanski and Kuypers also found a strong positive correlation between team revenue (through gate revenues, sponsorship, broadcast rights, and merchandising) and performance. A strong correlation is found between the two, especially of recent years. However, the authors are quick to remind us that, “All this suggests that support, at least measured by income generated, is about as fickle as the average player: both are driven by success. Successful players move to the clubs who pay the most, and fans shift towards supporting successful clubs” (190). The correlation of $R^2 = 0.89$ indicates a strong relationship indeed. Szymanski and Kuypers, as well as this paper, look to take the strong relationships between spending, revenue, and success and find relevant patterns of managerial behavior—who underperforms, who “beats the market,” why, and what does this necessarily mean?
Noll (2002) takes a theoretical approach to understanding the fundamental differences between the system of promotion and relegation and the closed league system of North America. Noll, simply looking at league tables and the annual finance review published by Deloitte and Touche, is able to garner a number of non-empirical conclusions regarding the incentives created by a system of promotion and relegation. The author notes the obvious reward schemes created by promotion and relegation: both good and bad teams potentially benefit from the reward of higher-level competition for the promoted and the sustained interest of a fan base in the face of relegation. Noll posits that the open system is suboptimal financially because the only team to gain revenue through the system is the promoted one. Assuming a promoted team will be on average weaker than most of the teams in its new, higher-quality division, the incumbent teams will suffer a loss of gate revenue resulting from a drop in the league quality. This is a tenuous conclusion, as it assumes a team relegated from an upper division is of higher quality than the team set to replace it.

Outside of the higher revenue streams unequivocally received by teams in better divisions, a demoted team will suffer gate losses, as its competitors are a full division lower in quality the season following relegation. Noll concludes that the externality created in both the promoting and relegating divisions harms competitive balance and as a result creates reduced revenues for a league running promotion and relegation. Using the El-Hodiri and Quirk (1974) model for individual team financial decision-making, Noll makes the realization that on average, teams will be of higher average quality under promotion and relegation because of the (however small) increased profits from possible promotion. It is theoretically, anecdotally, and empirically true that higher divisions provide increased revenue for teams in a system of promotion and relegation. Additionally, Noll claims there will be lower disparity between top and bottom teams
in the highest division of an open system because promotion is not a possibility for top division teams; the bottom teams will ‘try harder’ to avoid relegation, which is not a worry for the best teams, and as such the league will be more ‘compact’ along the axis of spending. The El-Hodiri and Quirk model does not incorporate a league prize into the analysis of the top division, and assumes the only rewards for success among the best teams in the best division will be increased revenues. This is a shaky assumption but it can be argued that the increased length of schedule for postseason tournament-savvy teams is endogenous to the increased revenues – play more games, earn more gate revenue. Noll also posits that player wages will be higher as the valuation of players will be tied into costs associated with preventing relegation or ensuring stability following promotion.

Noll argues further that following the Bosman decision, the international market for players has been made nearly perfectly elastic, reducing the benefits of a promotion/relegation system for the players’ benefit. The author argues that the fact that an open league system creates stronger teams in general, combined with the high profitability of postseason international matches, creates a lock-in effect of the promotion and relegation system by removing the financial incentive to have a closed league system.

Looking at the history of the English Football League teams, Noll comes to the conclusion that using an open system has created two categories of teams: the elite Premiership teams and the middle-level teams which are churned throughout the bottom three divisions. Noll notes that some demoted teams do not always experience fallen revenues, but that most often attendance and revenue fall for demoted teams. Noll also points out that the so-called ‘yo-yo teams’ which are promoted and soon relegated see some residual benefit from their previous promotion. Noll concludes that implementing a system of promotion and relegation has little
chance in North America because of the costs of reorganizing the system and the collective action problems posed by the current league structures.

John Vrooman (2001) offers the proposition that many commonly accepted consequences of sound economics are less applicable to the world of sport. Vrooman examines the legitimacy of two widely used sports economics propositions: the invariance principle and the irrelevance principle. Vrooman’s attempt to rationalize the decision-making of baseball owners leads to the characterization of ownership along a spectrum. On one end, there exists the purely profit-maximizing owner, who is in the business of optimizing his inputs (wages) and outputs (competitive success, which leads directly or indirectly to increased revenues). Vrooman also characterizes the “sportsman owner,” who is primarily concerned with the playing success of his or her club. Into the mix comes the leveraged corporate conglomerate owner. It is through these characterizations that Vrooman attempts to discourage use of the Modigliani-Miller irrelevance proposition (1958) in sporting models, which states that the real and economic decisions of a firm are wholly separate from one another. The historical trend witnessed by Vrooman suggests otherwise.

Successfully modeling the syndicated ownership movement in baseball, Vrooman notes that increased debt spending creates ripple effects throughout the league, leading to a “threshold” whereupon pure sportsmen owners are driven from the league in favor of the “leveraged syndicate.” A leveraged syndicate is a debt-dependent ownership group with usually little ownership stake by the principal decision-makers. Highly leveraged syndicates inflate the costs of both players and clubs through their profligacy. Vrooman’s complex models have applications to the workings of open leagues but are difficult to adapt to the European system in the scope of this paper.
However, the nature and mechanisms of Vrooman’s ‘threshold’ theory may hold an impact for the English Football League. If the nature of a sporting league is dependent upon the spending habits of the managers of each club, it should follow that the same kind of debt-spending behavior can create a bubble in the labor market. If the market for clubs themselves is considered the market for football ‘capital,’ then the potential for rational cost evaluation of some inputs to football clubs is weakened. Indeed, when combined with Noll’s characterization of two groups (the elite and the midlevel clubs) within the league, Vrooman’s conclusions indicate the potential for a widening gap between the Premiership and lower divisions.

While the relationship between wage spending and performance has been established in the empirical literature, the motivation for such a relationship has not been adequately described. In addition, the secondary concerns of club managers beyond profit and win maximization have not been incorporated into the models as of yet. As such, an attempt will be made here to describe the relationships relevant to the regressions that will follow below in this analysis.

In developing a satisfactory economic model for estimation at this level, one must rely significantly on models presented in previous literature. The primary source for the first model of wage and performance considerations is the one proposed in Szymanski and Smith (1997), and used again in Szymanski and Hall (2003). In the analysis of Szymanski and Hall, the rationale for the wage-performance relationship is tied to the nature of the labor markets in English soccer. Performance at the league level, as measured by finish in the divisional rankings, is primarily determined by the superiority of players to be hired (purchased) in a market for talent. One major assumption of this model is that the market for talent used by club managers for hiring decisions is competitive: that is, playing talent is valued correctly according to the marginal revenue product it is able to generate. Most of the relevant assumptions of a
competitive labor market do appear to hold in the case of English leagues (complete information, fluid and consistently accurate valuation of talent). It is clear that such assumptions would not fit in an analysis of North American leagues, where playing talent is valued according to far different considerations and a consistent opportunity to hire more talent, given the available resources, is not always apparent.

The model in Szymanski and Hall posits that an increase in player wage spending will serve to increase playing success as measured by league rank. More importantly, the authors offer a secondary link between the considerations of playing talent and the “completion” of the wage-performance loop. The authors identify this relatively simply secondary relationship as such: playing success, as measured by league rank, has a direct linear relationship to the amount of revenue generated by a team. The better a team performs, the more its revenue stream is bolstered by the increases in gate revenues (ticket sales), team sponsorship, and other forms of performance-dependent income.

Finally, the model in Szymanski and Hall incorporates the analysis from Vrooman (1997), which suggests a degree of variability in profit objectives among club managers. This is to say that some owners prefer profit-maximizing objectives, while other seek to maximize win potential; most owners, however, fall somewhere in the middle. It is the degree to which profit considerations play into the operations of the club that the manager is identified as a “profit-maximizing” manager or a “sportsman owner.”

Szymanski and Hall also use a panel data set, such that the translation of the model from that analysis to the current one is less problematic (since it is also a dynamic estimation of the spending considerations of ownership). Teams choose a degree of on-the-pitch talent as measured by the level of investment in players. This represents a cost to the team, and figures
into the revenue considerations of the club as measured by the links between performance and success. As such, the selection of the level of playing talent (i.e. the amount of wage spending in a given year) is the one independent choice variable that is available for clubs in any given season; the effects surrounding the links between wage spending and success are less changeable on a season-by-season basis. Szymanski and Hall model the wage-performance-profit relationship as a system of equations:

\[ P_{it} = a_i + bw_{it} \]

\[ R_{it} = c_i + dP_{it} \]

P is identified as league rank, w is a measure of relative wage spending, and R is the revenue generated by a club relative to the league average. The terms ‘a’ and ‘c’ are representative of differences inherent to each club in their relative abilities to generate playing success from a given level of talent investment, and to generate revenue from a given level of playing success.

Szymanski and Hall enrich the model further by their identification of differences in goal-directed behavior on the part of club managers. That is to say, the spectrum along which club managers differ is identified by the degree to which profit objectives are preferred over desire for playing success. The strength of these preferences is modeled in Szymanski and Hall by the term \( \lambda \) in a club objective function \( \Omega_{it} \) as in the following:

\[ \Omega_{it} = \lambda \pi_{it} + (1 - \lambda)P_{it} \]

The objective function is an identification of differing goal-directed behavior in sporting contests to show in a general manner how each competitor views the contest. The objective function has been used to model the ways in which contestants prefer one outcome over another in a dynamic setting (as the specific goal of organized sporting contests is not always victory in the contest at hand). \( \lambda \) thus refers to a specific preference on the part of a club manager for or against club
profit motives. A \( \lambda \) equal to 1 would indicate sole consideration of profit objectives (the profit-maximizing owner) whereas \( \lambda = 0 \) would model an owner solely interested in playing success.

When the objective function is incorporated into the decision-making process of the owner or club manager, the assumption in modeling this behavior is that the function captures the full spectrum of managerial behavior. However, the existence of residuals in the estimation of a wage-performance relationship helps to indicate where differences lie in terms of ability to translate salary into success.

Of course, each club’s objective function is subject to a budget constraint, and Szymanski and Hall incorporate non-wage expenditures and transfer costs as a whole into the wage estimate. The authors claim that this method “empirically…works quite well” (141). Indeed, this is also useful in a pragmatic way, as most financial data released on English clubs tends to lump such expenditures together anyway. When the model is fleshed out, the relationship between spending and profits is determined to be a linear one, in which clubs face the same slope (i.e. the same opportunity to purchase playing talent) but differ in the intercept of this relationship, which is a catch-all measure of initial endowment. The modeling of Szymanski and Hall is enriched beyond the scope of this analysis following the discussion of the objective function. However, it would be prudent to summarize some of their major conclusions:

- Wage spending and league performance are strongly, if not inexorably, linked.
- Club managers and owners strike a balance between considerations of profit and playing success.
- The weight each manager places on team success or profits determines the revenue, cost, profit, and performance structure of the team in a given year.
• The true relationship between profit, performance, and revenue structure is dependent upon individual differences between clubs, expressed by the authors as “endowment,” but incorporating skills differences of managers.

• The general relationship each team faces is a true ‘trade-off’ between profit and performance, expressed by a negative slope. Club indifference curves defined by endowments determine equilibrium profit-performance points.

• The lack of a “market in corporate control” (149) increases the system-wide inefficiencies, as routinely unprofitable owners fail to exit the league (this is a consequence of the specification of the objective function).

Modeling the behavioral patterns of football clubs with a variety of goal-directed behaviors is not easy, though it may be helpful to identify the consequences of favoring one goal over another. Szymanski and Hall (2003) apply their version of the Vrooman model graphically, indicating the variable effects of differing ownership styles. Though simplistic, these graphical representations of ownership indifference curves help to illustrate the relationship between ownership style, revenue generating capacity, and optimal tradeoff between spending and success. Including the Szymanski-Hall graphical model of owner profit and performance objectives in this analysis may help to make more explicit this differential in ownership styles. Also, the claims that the analysis in this paper makes are more easily differentiated from traditional assumptions using a graphical frame of reference. The model begins by laying down the simple profit-performance tradeoff from Szymanski and Smith (1997):
As discussed earlier, the relationship between playing success, represented on the horizontal axis, and player wage spending is positive and linear. Playing success, to a point, is thus a proxy for wage spending. As player spending increases, profits increase as a result of increased playing success. At a certain point for each club, the maximum amount of profit has been raised. Profits then decrease with increased wage spending as the team’s wage bill exceeds constraints on revenue generation (more or less unique to each club), though playing success continues to rise. The positive intercept of the profit-success curve is the maximum level of success a team can have; in nearly all literature that touches on this subject, this point has been defined by winning the Premier League championship. The profit-performance tradeoff is one faced by all managers in the league, who vary according to their objectives, expressed by the indifference curves in figure 2:
Thus, each ‘type’ of owner attempts to maximize his or her own utility by reaching the highest indifference curve possible. Clearly, profit-maximization behavior is precisely that—regardless of initial team endowments, the club manager finds the profit-performance function point where the team makes the most profit possible. This point will differ between clubs, and the extent to which each manager is aware of his or her own club’s production function is unclear and probably low at the outset, especially because of changing revenue incentive schemes. However, there are identifiable equilibrium points feasibly reached by club owners, which vary by ownership style:

**Figure 2: Indifference curves for profit maximizing and utility maximizing owners**
Figure 3: Equilibrium for profit maximizing and utility maximizing owners

Unsurprisingly, profit-maximizing owners make more money than utility-maximizing owners, ceteris paribus. Utility-maximizing owners see a higher overall level of playing success. Note that a utility-maximizing owner choosing the same combination of profits and success as the profit-maximizing owner is bound to be on a lower indifference curve than is optimal given his preferences. Attempts to increase playing success by sacrificing profits would increase utility for such an owner, theoretically reaching the point defined by S(U)*, the optimal level of success for a utility-maximizing owner based on the given profit-success tradeoff function. It is also noteworthy to point out that the absolute scale of the vertical axis is somewhat indeterminate; it is never clear what the true maximum profit-generating capacity of a club is at any given time. Regardless, it is likely that some clubs form poor estimates of their profit-performance function, and spend with the idea that increased success will increase revenue generation capacity. If
anything, the best candidate for a poorly specified element in this model would be the height of
the profit-success curve.

An enriched version of the Szymanski-Hall model appears in Szymanski (2003). Incorporating
differential endowments for success (expressed by $\mu$, the degree to which one team
is inherently ‘more successful’ than another) and a fixed contributory prize fund (expressed by
$V$), filled by all competitors. While at the outset this is a solid modeling of how TV and
performance revenues are disbursed in the English leagues, in reality the outcomes of such a
system are less idealistic than predicted by the model. The Szymanski model of differential team
success is expressed as such:

$$\pi_1 = p_1(e_1)[\mu + V] - V/2 - ce_1,$$
$$\pi_2 = p_2(e_2)[1 + V] - V/2 - ce_2,$$

The production function $p_i(e_i)$ is a function of effort, which is proxied by relative wage spending
in the analysis in this paper. The Szymanski model uses a two-team contest to simplify the
methodology in reaching a theoretical competitive equilibrium. The author then takes the first-
order conditions:

$$\frac{\partial p_1}{\partial e_1} = \frac{1 + V}{\mu + V},$$
$$\frac{\partial p_2}{\partial e_2} = \frac{1 + V}{\mu + V}$$

Szymanski notes that as the prize fund $V$ increases, the ratio of efforts between the teams
will converge to 1, indicating increased competitive balance as incentives to success are raised.
Indeed, by most potential measures, the potential ‘prize fund’ for all English teams increased
considerably in the period 1996-2001. This was a result of increased opportunities for
international competition, precipitous increases in television revenues, and a general widening of
the income generation gap between divisions. All of these factors would serve to promote
increased effort levels on the part of less prestigious clubs. What an analysis of this scale fails to capture, however, is the immense disparities between clubs when this bilateral analysis is applied to real results. While it is anecdotally evident that the ‘effort levels’ of English clubs increased over this period as indicated by rising player salaries and an increased turnover of clubs, it is also apparent that this increase in effort led to substantive financial woes in the wake of a reduction in the “prize fund.”

Additionally, it is important to point out that a large percentage of the increased prize fund in this period was not universally attainable by clubs; thus, the initial model could be enriched by a specification of explicit rewards unique to each division. As incentives to succeed in the Premiership in order to compete in Europe have risen, the behavior of the top clubs in England has shifted to a more comprehensive profit-performance consideration. While this seems reasonable, it runs contrary to historical characterizations of the behavior in the Premiership and the lower divisions. The existence of an open league competing for talent has been characterized as motivating sustained effort among all teams to avoid relegation and achieve promotion. Until opportunities for substantial revenue generation appeared outside of the league structure, this paradigm seemed to hold true for the English leagues.

Yet, evidence to the contrary is readily apparent in the current season. Manchester United, long the near-hegemonic power in the top tier of English soccer, and easily the team with the largest revenue-generating capacity, was favored to win the Premiership this season. Arsenal, their rival, saw initial success sustained, and developed a healthy lead at the top of the Premier League table. As Manchester United conceded that the goal of winning the Premiership was slipping away in the long-term, they diverted resources; having already qualified for European competition, they began starting reserve players in their domestic matches, essentially
forfeiting a sustained degree of effort within the Premier League. This transfer of resources and effort by Manchester United is an elucidating instance highlighting the divergent incentives between the top half-dozen teams in the Premiership (an incentive shared with perhaps another dozen teams worldwide) and the remainder of the Football League. Thus, we see a divergence of performance from predictions as a result of isolation of reward schemes. Alternatively, the models that have appeared in the literature to date have failed to incorporate these divergent incentives. Attempting to isolate incentives for teams above a certain revenue generation threshold in a model is difficult, and identifying such a threshold is even trickier. However, it is important to note that while the appearance of raised incentives on a league level is fundamentally true—all teams are legally eligible to receive these bonuses—in reality the vast majority of teams have no hope of collecting such revenue. Lacking an adequate model for divergent incentive schemes, the analyst is forced to rely upon anecdotal or year-on-year evidence from individual clubs. When this data is inspected carefully, trends become apparent. Indeed, identifying ‘league-wide incentives’ is somewhat of a red herring in the modern era of English soccer. For a number of different clubs, increased and sustained effort can be pinned down—as can a precipitous decline into administration. This will be discussed more fully below.

**Regression Analysis**

The variables in the relevant data set for the analysis in this paper are few; despite the desire to incorporate a wealth of variables into the wage-performance equation, Szymanski’s analysis shows that the amount spent on player wages does generally determine the outcome on the pitch. Financial variables are also not numerous, but do contain the data that is pertinent to
the considerations of the paper. The data set used in this paper consists of financial and competitive variables potentially relevant to the hypotheses, including but not limited to divisional, competitive, transfer, income, taxation, and debt payment information for all four divisions of English football in the years 1996-2001. The data set then begins to take shape: a panel of 87 clubs with tangible on-the-pitch and in-the-boardroom performance metrics over six years. The nature of the panel allows for multi-year analysis of dynamic behavior on the part of each club, and creates an ability on the part of the analyzer to separate various confounding effects in the analysis.

At the core of the considerations for the debt-performance relationship are five variables. I will refer to each of the variables by their names in the MS Excel/TSP data set for familiarity with regressions, but explain the significance of each before moving on. As noted earlier, the wage-performance equation from Szymanski is the hallmark regression that lies at the center of all extended analysis in this paper.

As per the custom in Szymanski (2002), each of the variables in this simple model has been scaled and made relative to the rest of the league so as to account for the large differences among divisions in the English FL. The dependent variable in the wage-performance equation is LNPLACE, the natural logarithm of a club’s league finish relative to the rest of the league. For example, Arsenal, which has been coded as club #1, finished third in the Premier League, or top division championship for the season 1996-97. Its value for LNPLACE is –ln(3/(93-3)), or 3.4. Note that the relative finish of Arsenal is out of the 92 teams that compete in each of the four divisions in English football (the 93 in the denominator of the equation is to ensure against a zero denominator for the worst-performing team in any given season). As a contrast, Cambridge United (coded as club #15) spent the 1996-97 season in Division 4, where the club finished 16th,
giving it an overall finish of 84th in the overall structure of the leagues. Its value for LNPLACE is –2.23, indicating a finish well below the “average” of the four-division structure of English football. Because finishing at the bottom of the league table (and competing in lower divisions) can be a substantive “penalty” levied on a club, both financially and in terms of popularity, it is important to develop a metric that smoothly and readily indicates the quality of a club’s finish from year to year. This logarithmic method helps to bring out the key differences in clubs’ performances relative to one another, and provide a readily available, comparable metric for defining league finish without having to indicate league division or other aggregate measures of “overall” league position.

The next relevant variable for developing the wage-performance model is LNWAGE. Problems with using aggregate measures of remuneration as a proxy for wage spending, as referred to in Szymanski and Hall, would apply to the data in this analysis as well. It would be somewhat farfetched, however, to believe that the real reason higher wage spending leads to higher performance levels was a high return to administrative costs. LNWAGE follows the same modification as LNPLACE, so as to make sure that the relative level of spending is captured. Otherwise, the relationship captured by the regression would be the effects of scale between league divisions, and not the true wage-performance regression. This is to say, “bigger clubs” spend more money because they’re more successful, not that spending more money leads to real on-the-pitch success. The LNWAGE variable comes from the REMUN variable in the data set. REMUN captures the aggregate remunerations a club pays out in any given year; LNWAGE captures this as a relationship to the average. The average remuneration for the data set used in my regressions was £7,964,107, indicating that the annual wage spending of clubs from 1996-
2001 was fairly lofty. From here, the variable RELWAGE was developed. RELWAGE is the fraction of the average wage spending each club paid out in a given year.

We return to Arsenal 1996-97 as an example. Club employees were paid a total of £15,279,000 (this is the REMUN variable) in this season, indicating a value for RELWAGE of 1.92. Having spent nearly twice the league average on wages, the club did experience quite a bit of success (recall they finished 3rd in the Premiership). However, using RELWAGE instead of LNWAGE in regressions proved to be more difficult and contained less explanatory power. LNWAGE is simply the natural logarithm of the RELWAGE value – thus, the value for Arsenal’s LNWAGE is 0.65, indicating a substantive amount of spending above the league average for the five year period in question. To again refer to Cambridge United’s season that year, only £806,784 was spent on wages, resulting in a value of –2.29 for LNWAGE.

With LNPLACE and LNWAGE defined and exemplified, the analysis can now turn towards the Szymanski wage-performance relationship. The natural progression beyond a simple success and spending relationship moves towards other financial variables in the data set, but it is important to show that the Szymanski model holds up for the data set used in this analysis. The next variable to be defined from the LNPLACE and LNWAGE requires this regression. Using an ordinary least squares model, the natural logarithm of club finish is regressed on a constant and the natural logarithm of club wage spending for the same year. What results is a standard wage-performance relationship as predicted by Szymanski (2002) and other authors. The first model to be defined here is as such:

\[
\text{LNPLACE}_i = 1.259 + 1.305(\text{LNWAGE}_i) + u_i
\]

Note the positive coefficients on the constant (that is, the intercept of the wage-performance equation) and the independent variable LNWAGE. This can be interpreted and used in a number
of ways; primarily, this indicates that an average level of wage spending (LNWAGE = 0) results in an above-average league finish (that is, LNPLACE = 1.259). T-statistics of 26.8 on the constant and 33.26 on LNWAGE indicated these coefficients were fairly significant and the effects of wage spending on league finish are real and identifiable in the data set.

Examining an anecdotal data point close to this relationship establishes our next conclusion as well as bolsters some of the conclusions made by Noll (2002). Charlton Athletic (club number 18) finished first in the first division (that is, the highest division in FA, below the Premier League) in the 1999-2000 season. Charlton spent £10,994,000 on wages in 1999-2000, the year after being relegated from the Premier League. This gave them an LNWAGE value of 0.322. Using additional information from the Leach data set, such a value of LNWAGE corresponded (when compared against its revenues as a Division I club) to a profit margin of –23.08%! When examined in isolation, one would speculate that a club could only survive extreme negative profits as long as it returned to Premiership status. Sure enough, Charlton Athletic realized the Division I championship that year and returned to the Premier League in 2001, when it finished ninth.

To illustrate the relationship between finances and divisional placement, it is important to evaluate the performance of Charlton both one year prior and one year after. In 1999, as previously noted, the club finished 18th in the Premier League, having spent £8.23m on wages. While this is not a considerable amount of wage spending, especially in the Premiership (Charlton’s 1998 value for LNWAGE is 0.032), by simply being in the Premiership the club “over-performed” because it spent so little on wages. Despite its relegation, Charlton experienced a profit margin of 7.5% in 1999. In its 2000 campaign in Division I, the club spent more on wages than it had in the Premiership, perhaps indicating an attempt at returning to top-
tier English football. With reduced revenues in Division I, the club spent a considerably larger amount on wages than it could afford; Charlton’s balance sheets show a loss of nearly £3m on the books for 2000. In its 2001 stint in the Premiership, it appeared as though Charlton had learned its lesson; the club increased wage spending further from its Division I profligacy, and finished ninth while still making a small profit of about £300,000.

As Noll (2002) predicts, the residual spending from their Premier League status resulted in Charlton’s identification as a “yo-yo” club, a team that has difficulty staying in higher divisions but which dominates lower divisions with residual talent. This is a characteristic that is quite common to the league structure in England and Europe as a whole. While it may be easy to describe the simple causal effect of increased wage spending on performance in a given year, it is clear that the modeling of managerial behavior in England, both financial and competitive, is a dynamic problem one must consider on a multi-year basis. As such, it is prudent to indicate the other relevant variables in our analysis.

The next substantive defined variable is endogenous to the wage-performance relationship, because it is the residual from the equation. The residual from the first regression has been identified by other authors as indicative of over- or under-performance by a club in any given year; a positive residual indicates the team played better than wage spending would predict, and a negative residual would indicate a sub-par performance based on wages. However, it is important to note that some anomalous teams, like Charlton Athletic described above, may experience residuals that belie their true behavior. It is fairly apparent that the low level of spending by Charlton in 1999 could have resulted in a much poorer finish than actually occurred; either the team substantially over-performed, or the fact that they were in the Premier League bounded their success (and their LNPLACE value) at a certain level. This is to say that a
team playing in the Premiership, by definition, can finish no lower than 20 out of 92 total clubs\(^1\). Even so, the residual from the wage performance equation, defined as \text{WAGERESID}, is perhaps the most key variable in the analysis at the second stage. \text{WAGERESID} apparently defines not only the degree to which a team may have succeeded or failed, but also incorporates the financial end of the analysis. This variable appears to capture an individual season’s performance relative to rational expectations.

\text{WAGERESID} is used in concert with a different variable to define the interaction effect in the regression analysis. The variable \text{RELINT} is a proxy for the debt burden of an individual club. Defined as the amount of interest paid by a club in a given year to creditors, \text{RELINT} helps to isolate the year-on-year effects of a club spending more than its turnover on expenses. It is important to remember that with the exception of player wages, the vast majority of club expenses are fixed costs. With such a large degree of overhead and reasonably fixed yearly expectations of turnover, the variable \text{RELINT} serves as a suitable proxy for the amount a club “overspends” on wages in a given year, and helps also to capture residual effects of previous excessive wage spending. With this in mind, it is important to understand that most football clubs do have some level of interest payments to make.

Capturing a club’s debt burden has proven to be the hardest element of forming a thorough story for club behavior both on and off the pitch. Some clubs have a considerable level of debt; others, none at all. Some have a mixture of short-term loans from banks and other financial institutions, while others (Manchester United having led the charge in the late 20\(^{th}\) century) list equity ownership of the club on major European stock exchanges. Some clubs simply treat bank overdrafting as an element of club spending behavior, and large overdraws on

\(^1\) Note that the data set for this analysis comes from 1996-2001, the era in which there has been a separation of top-tier and lower divisions in English Football. Prior seasons in the Leach data set include 22 teams for the top competitive division (which was then called the First Division).
club coffers as a business expense. Such a mixture of loan durations makes it hard to capture two things in any given year: first, the true burden of a club’s overall level of debt; and second, the degree to which this debt burden affects the day-to-day financial behavior of the club.

The RELINT variable is used in concert with the residual from the wage-performance equation to create an interaction term aimed at capturing strenuous conditions for a club. The product of RELINT and WAGERESID was defined as INTERACT and used to describe the interaction effects of interest payments and the wage residual. Because there is significant importance on the sign of the WAGERESID variable (and because all values for RELINT are nonnegative), the sign of the INTERACT variable becomes important as well. The healthiest clubs would thus have moderate, positive values for INTERACT. The most worrisome clubs (and the clubs whose recent troubles have created the impetus for this analysis) have large, negative values for INTERACT. These are the true “clubs in crisis” – the ones with large debts and significant underperformance. While few clubs jump up as significant trouble clubs from the analysis, Sheffield Wednesday’s 2000-2001 season can be used as an example of a “club in crisis.” The club’s RELINT value was 2.2, and its WAGERESID was –1.52, giving it an INTERACT value of less than –3. This is a veritable trouble team. Having finished 17th in the First Division that year, the club was on its way down from a peak of 3rd place in the top division (1991-2), and had finished 7th in the Premiership as recently as 1997. A series of poor seasons later, and the club saw its position slip dramatically (the club had not made even a pre-tax profit since 1994-5). Sheffield Wednesday is thus a prime candidate for a club outside its “comfort zone,” making it the type of team that seems to spend beyond its means to raise revenue through on-the-pitch success.
In attempting to fashion a variable that would capture both the size of the debt burden a club bears and the degree to which it has an effect on club behavior, it was important to use a variable that captured relative, not absolute debt burden. To use an absolute measure would create results suggesting that clubs with large debt burdens perform well because larger, more successful clubs can afford to borrow more money at a time. From 1996-2001, the average annual interest payment across all four divisions of football in England was just under £550,000. The reader should not be fooled by the nature of the RELINT variable; the most successful clubs can still have large debt burdens. In 1997-1998, Arsenal won the Premiership championship, having spent £7,895,000 on debt payments: large debt burdens do not necessarily hamper a club’s ability to succeed on the pitch. It is the ability of a club to pay off its obligations with a combination of financial and competitive success that is the true metric of a club’s stability and overall well-being.

Anecdotal evidence of teams like Sheffield Wednesday provided a significant impetus for the investigation inherent to this paper. Many clubs exhibited the kind of spending and management behavior that could prove dangerous; a nascent instability in the revenue streams of many clubs became apparent as soon as troubles with satellite carriers reached the public. Again, the most significant and startling result of the ITV Digital collapse was a complete lack of reaction by the clubs until the financial strain hit each team directly. Up to that point, many of the clubs relied upon the Football Association (the central governing body of the English leagues). This may require some explanation—because the structure of European leagues is so decentralized, the nature of the governing body is quite different; the FA exists to provide a rules structure, whereas in North America, owners and club managers might rely on the central organization to insulate clubs from financial trouble. A similar reliance by English clubs on their
central authority could be viewed as foolhardy, naïve, or even reckless. The only association the FA had with the ITV Digital collapse was as an advocate of its clubs, many of which shared the same potential financial ruin if the deal fell through. Unfortunately, this common reliance is akin to that shared by independent firms in related product markets; the strength of the bond between FA clubs is only marginally stronger, and thus so was the ability of the FA to successfully soften the blow to its member clubs.

While summary statistics across the four divisions can prove helpful, they can also be misleading to the untrained eye. In analyzing the effect of debt spending on later wage spending, it is important to remember that the central tenet of the whole analysis is the wage-performance equation. One important piece of information that goes hand-in-hand with the wage-performance equation, as previously established, is some measure of the shortsightedness of club managerial behavior. It is important to remember that this analysis lacks the proper sophistication to model any sort of atypical business behavior. Panel data results provide the most available tool for examining just how myopic spending behavior tended to be in the lower divisions of the Football Association. Results violating standard expectations would not confirm atypical behavior; instead, they would call for a more sophisticated modeling.

Thus, we are left at the mercy of standard econometric analysis to determine the nature of wage spending behavior. Beyond these formal tools, this paper is left to speculation and analysis of the results of estimation. In addition, because the nature of the financial crisis in European soccer tends to be fairly recent—the first “roundtable discussion” on these problems is to be held in Italy in the summer of 2004.

The second-tier regression analysis that takes place in this paper is a panel estimation of the effects of previously defined key variables. These variables are RELINT, WAGERESID,
and INTERACT. The variable LNWAGE was lagged one time period (one season) and regressed on these measures of club debt burden, under- or over-performance, and interaction effects of both of these variables. While the wage-performance equation tends to capture the central effects of most club financial and competitive behavior, the secondary panel regression begins to more directly address the problems faced by clubs in the past 10 years of Association football. Because panel estimation techniques involve standard ordinary least squares, fixed effects, and random/variable effects analyses, it is important to understand what each of these analysis tools means in terms of assumptions about club spending and competitive behavior.

In using an ordinary least squares regression on the panel data set in this analysis, it is assumed that there is no individual effect of a club’s position on the behavior it exhibits in the player market. There are a number of reasons why this assumption may or may not be helpful in answering the question central to the paper. This assumption would indicate no particular bias in one direction or the other for each club; it would assume that attempting to individually identify clubs may not be easy, and that any sort of correlation of clubs or time with the explanatory effects is negligible. In studying clubs over a five-year period, the legitimacy of this assumption may come into question—is five years a long enough time period to eschew any fixed effects of club behavior? Again, we are required to return to the nature of the clubs in Europe as opposed to North America. Whereas North American clubs tend to keep the same (front-office) management over longer periods of time, the expectation in English football and continental sports as a whole is that club management has a higher rate of turnover than other areas because of the fluidity of the market. Assuming that managerial transitions are random enough and any correlation with the variables in this model is weighted towards a desire to perform better on the
pitch would allow us to use an ordinary least squares regression based on the data. What are the results of such an attempt?

Following the wage-performance equation’s establishment in the analysis, ordinary least-squares analysis was performed on the data in the panel. Recall that the dependent variable LNWAGE was lagged one time period, because we are trying to determine the effect of underperformance and debt on the following season’s spending behavior. The following results were obtained:

\[
\text{LNWAGE}_{it+1} = -0.543 + 0.133(\text{RELINT}_{it}) + 0.161(\text{WAGERESID}_{it}) - 0.562(\text{INTERACT}_{it}) + u_i
\]

P-values of under 0.05 were found for all coefficients in the ordinary least squares analysis of this data, with the largest P-value (indicative of most uncertainty) on the coefficient for WAGERESID, which had a standard error of 0.775 and a P-value of 0.038. Note that all coefficients in this regression were significant and large enough to indicate a real effect on future wage spending. A more sophisticated analysis of the OLS results follows.

Beginning with the significant negative coefficient on the constant, we can see that the ordinary least squares estimation would indicate that a team is likely to decrease spending in the following campaign, given no debt burden and no underperformance. While a direct correlation between a debt burden and further decreased spending would be consistent with standard business practice, the positive coefficient on RELINT might simply indicate more debt spending among the top talent purchasers.

Beyond the interesting results obtained from OLS estimation on baseline (zero debt burden, zero deviation from performance estimates) conditions, the most interesting results come from the coefficients on WAGERESID and INTERACT. With WAGERESID, a positive and significant coefficient is found. When debt burden is partialed out with the inclusion of RELINT
in the analysis, we see in fact that overperformance is positively related to wage spending in following seasons. A club that experienced a season below expectations of success would be inclined to reduce spending. Over the long-term, of course, wage spending will be far more closely related to performance expectations due to sample size. Thus, the inclusion of WAGERESID in the analysis seems to be only relevant for the short-term. One relieving interpretation of this result would be that teams who underperform are likely to return to more reasonable expectations in the player market. Note the negative coefficient on the variable INTERACT. It is important to recall in interpreting these results that the variables INTERACT and WAGERESID are significant in two ways; the sign of the variable indicates the presence of a given year’s over- or under-performance, and the magnitude of such a variable indicates the degree of variation from predicted performance. The negative coefficient on INTERACT indicates that despite the isolated change in spending as a result of the WAGERESID coefficient, a debt burden (remember that RELINT values are all positive) combined with underperformance (resulting in a negative value for INTERACT) would lead to increased wage spending in the following season. These results are consistent with the hypotheses laid out in the opening of the paper; however, as qualified earlier, plain OLS estimation of the model may be neglectful of individual fixed or random effects created by differing styles in team management (see the analysis to Vrooman in the literature review for more information).

When the panel data estimation is enriched with individual fixed and random effects, conclusions reached are quite different. Over the relevant time period, the second-level regression tells a modified version of the first story. In a fixed effects model, the only significant coefficient obtained is on the variable WAGERESID. The other correlates of LNWAGE show
P-values well beyond a significant level. The fixed effects model regression estimates the equation as follows:

\[ \text{LNWAGE}_{i,t+1} = 0.0049(\text{RELINT}_{i,t}) - 0.264(\text{WAGERESID}_{i,t}) + 0.0031(\text{INTERACT}_{i,t}) + A_{i} + u_{i} \]

It is clear that the estimated values of the coefficients on RELINT and INTERACT are not economically significant from the very beginning; such small effects are bound not to influence the dependent variable LNWAGE as much as the effect of WAGERESID, whose effect is opposite to that obtained in standard OLS estimation, and on the order of 100 times more influential in determining the following season’s value of LNWAGE. The T-statistics for the estimated coefficients on RELINT and INTERACT are well below levels of significance (.457 and .350 respectively), as the individual fixed effects seem to capture the initial expected influence of RELINT and INTERACT. Since the latter of these variables is a product of the former and WAGERESID, it is unsurprising that an insignificant coefficient on RELINT would be concomitant with a similar finding for INTERACT. What is most interesting from these results is the negative sign on the coefficient for WAGERESID, which now attempts to capture most variation in the following season’s LNWAGE, along with the individual fixed effect. The negative coefficient on WAGERESID can be interpreted in the following manner. When observations in the data set are given the distinctive property of having individual fixed effects, clubs are assumed to operate with some degree of autonomy, which varies across clubs as well. This perhaps is the closest fit for modeling the general consensus on the nature of club behavioral patterns.

Clubs do vary quite a bit in terms of management style; this is not a unique characteristic of the English leagues, either. Decisions and particularly decision-making patterns are bound to be somewhat peculiar to individual clubs, and one can see wide variations in not only spending
behavior among club managers. However, the intent of the regression analysis is not to identify these variations, but instead to pick out the commonalities that appear (or fail to appear) in estimation that attempts to model as correctly as possible the current organizational situation in the Football League. As such, the fixed effects model seems to adequately capture the variations of clubs within and across divisions, while identifying the trouble behaviors that seem to have led to the current ‘crisis’ situation.

While the INTERACT variable, originally central to the analysis in this paper, is shown to have little or no effect on the wage spending behavior of clubs, we can see that the WAGERESID variable shows a significant and negative coefficient. The interpretation therein is similar to the interpretation of the negative coefficient on INTERACT in the plain ordinary least squares estimation. Since WAGERESID is a variable for which a negative sign indicates underperformance (the quality we are looking for in promoting risky behavior), it is apparent that a negative value for WAGERESID will predict an increase in LN WAGE for the following season; this result is again somewhat contrary to expectations of prudential business behavior. As clubs underperform, an expectation of rising wage spending exists—why is this so? One possible explanation is that clubs who underperform have a particular expectation of high levels of performance; a lack of success compared to wage spending predictions can create unease in the front office as competitive goals fail to be met.

The interesting conclusion that could be made here is that clubs not getting “bang for their buck” are likely to want more, and are willing to spend for it. One could see a shift in expectations as the leagues recover from the crisis; it would not be surprising at all to see the estimation of this equation show an opposite sign on WAGERESID in the future. Reinterpreting these results through the framework of Vrooman (1997, see above) could indicate that the degree
of “sportsmen owners” in the English football league is somewhat higher than previously expected. In modeling business behavior of sports clubs, the difficulty always arises as to the motives of the economic actors. Since simple assumptions of profit maximization are not necessarily true, and in some cases are patently untrue, the economic investigation does become somewhat more sophisticated and complex. Not only does the economic analyst have to incorporate some approximation of the degree of balance between win maximization and profit maximization, so too does the manager himself; indeed, different managerial styles show quite different proclivities to win and profit maximization as separate but related concepts. Even so, it is apparent that the desire to pursue win maximization through increased spending in the face of underperformance is the kind of brinksmanship that is bound to lead to financial difficulty. The “Steinbrenner effect” as described by Vrooman (in the context of managerial styles) only works when the syndicated leadership of the club has the necessary financial capital outside of the profits created by the club to absorb losses that come as a result of spending beyond means of revenue generation.

To clarify, it is readily apparent that some clubs are able to absorb debt spending and negative profits in a given season or series of seasons. However, the fixed effects model estimation above captures significant coefficients indicating attempts to increase win totals in the face of a disappointing year. Additionally, it could be entirely possible that while club managers understand the restrictions placed on them through spending constraints and profit considerations, there could be a systematic poor estimation of club revenue-generating potential, or even a widespread inability to recognize the wage-performance relationship in action. In this explanation, club managers systematically fail to see the true relationship between wage spending and performance; financial behavior is interpreted as being reasonable compared with
expectations, and that “underperformance” is interpreted as a failure to spend optimally. This chain of reasoning on the part of club managers could indeed lead to the results obtained in the fixed effects model estimation, which shows that increased levels of spending in one season seem to follow performance below expectations in the previous campaign.

The inconsistent coefficients on WAGERESID led the analysis to reconsider the prudence of using LNWAGE_{t+1} as the dependent variable in regression analysis, and a similar set of regressions was run using a dependent variable called WAGEDIF, a differenced measure of wage spending$^2$. WAGEDIF was simply defined as LNWAGE_{t+1} – LNWAGE_{t}. While overall fit of the regression worsened considerably ($R^2 = 0.28$ for the fixed effects model, as opposed to $R^2 = 0.93$ for the initial fixed effects model), a more comprehensible story can be formed from the results. However, it is important to consider the prudence of attempting to use league-wide causality to explain a small subset of bankruptcies. In the fixed effects model of the second-tier estimation, coefficients were found to be as such:

$$WAGEDIF_i = 0.4798(WAGERESID_{it}) - 0.444(RELINT_{it}) + 0.0339(INTERACT_{it}) + A_i + u_i$$

At this point in the analysis, it became prudent to be wary of overusing regression results. However, we can glean some important possible trends from this second fixed effects analysis. Additionally, it is important to note that all estimated coefficients in this second-tier regression were found to be significant at the 5% level. The positive (and largest estimated effect in all regressions) coefficient on WAGERESID, if correct, is indicative of increased spending following a campaign with a positive wage residual. The negative coefficient on RELINT indicates more prudent behavior, whereby teams will reduce spending in the face of a larger debt burden. Finally, the small positive coefficient on INTERACT indicates a marginal effect on

$^2$ Summary results of all regressions, as well as summary statistics for all variables central to the analysis, can be found in the appendix.
wage differentials, but generally in line with predicted behavior. Surprisingly, the effect of the wage residual appears to dominate the effect of debt burdens. Again, this could be a problem with the choice of a relative measure of debt burden. Worse, the modeling of team performance in the wake of over- or under-performance may be mistaken to begin with. The following section considers the possibility that analysis of financial strain has focused too much on identifying *league* problems, and not enough on common problems across *some* clubs.

**Administration, and the Wage Residual Revisited**

Examining the behavioral trends of club managers at the league-wide level may not be as fruitful as previously expected. There were fourteen clubs who had entered administration in the most recent wave of financial difficulties. There were also seventy-eight clubs who did not—and while many experienced hardship, few experienced complete insolvency. It is important to examine the data at a closer level to achieve a fuller understanding of the crisis. Additionally, the variables central to this and other analyses may require reexamination, as traditional predictors of financial failure may prove inconclusive in their causal abilities as well.

Clubs going into administration all have something in common; a building inability or unsustainable desires on the part of club owners to subsidize what are generally losing business ventures. Much of the literature cited in this analysis has identified the objectives of club managers as rationally as possible—clubs strike a balance between profit maximizing objectives and a combination of profits and playing success. However, more skeptical (or realistic) critics have labeled club managers as constantly walking a fine line between pleasing fans and bankruptcy. Specifically, some have identified goals of clubs to maximize playing success with the sole budget constraint being a lack of insolvency. Clearly, a number of clubs in the Football
League failed in this objective. What differs between the European sporting league system and traditional business climates, however, is that insolvent teams declare bankruptcy and *reenter* the market with relative buying power, having freed themselves of burdensome debt.

In order to figure out what the true nature of the balance sheet problems in English soccer was, I tried to examine trends among teams with consistently positive or consistently negative wage-performance residuals. Traditionally, and throughout the majority of this paper, substantive wage residuals were identified with over- or under-performance on the part of a club. However, the wage-performance equation could potentially be capturing a number of problems with the data not easily ameliorated by econometric modeling tools. Since regulations and decisions have made it easier for players to receive closer to market wages in the past 30 years, many have been led to believe that the open league system provides a completely fluid labor market. On the whole and over the long term, it would be reasonable to insist that players are being paid their marginal revenue products. However, contractually based salaries paid to young players in particular may not reflect the market wage a player could be earning, especially if he begins to perform beyond expectations. As the player’s contract matures, so do playing skills, and in the early terms of contracts, it is quite common for players to improve on the job. As expectations change with respect to players’ earning power, the team gets ‘free’ bang for the buck. Such a result would be exhibited as ‘over-performance’ and not indicative of any particular expertise on the part of club managers, perhaps save for the ability to find players with poor contract negotiating skills.

For all the 87 teams with complete data in the data set, I examined the residuals from the wage-performance equation and attempted to find two types of clubs: those ‘model’ clubs whose consistent over-performance made them unique; and potential ‘problem’ clubs who saw repeated
negative wage residuals. There were 11 clubs who experienced these sustained negative wage residuals. Among these 11 clubs, two defaulted on their loans in the 2001-2003 time frame. These were Carlisle United and Lincoln City, both bottom-division clubs who had experienced trouble and unprofitable periods in different ways. Carlisle United are a club who perennially have resided in the bottommost of the bottom clubs in the Football League; they routinely run the risk of being relegated to Conference play. In 1999-2001, Carlisle saw repeated negative residuals in the wage-performance relationship. A large acute loss in 2000 severely hampered the club, who turned a profit the following year that failed to cover even 15% of the loss the year before. In June of 2002 the club entered administration after being placed under a transfer ban by the PFA, whose loan to the club failed to solidify debt problems caused by one of the largest payrolls in Division Three (or even Division Two) football. The £1m wage bill for Carlisle United could be identified as a major reason for their turmoil. The club restructured debt, raised £400k from supporters groups, and exited administration in August of the same year. The reason for the under-performance residual is clear: £1m will buy a club a considerable number of Division Three-quality players, perhaps to the point where not everyone can contribute their full value.

I identified 15 teams who had exhibited strong and repeated positive residuals for several years over the period 1996-2001 as well. Interestingly enough, five of these fifteen teams ended up defaulting on loans after this period was over. Chesterfield, Huddersfield Town, Ipswich Town, Port Vale, and Wimbledon FC were all ‘strong performers’ for some time during 1996-01, yet all ended up in administration between 2001 and 2003. Many teams seemed to be playing beyond their means: indeed, Huddersfield Town, which was promoted to Division One in 1995, performed admirably, finishing 8th in the top FL division in 1996 and 2000.
Interestingly enough, neither of these finishes registered as “over-performance,” as the club only saw positive residuals in 1997-1999. Indeed, Huddersfield actually underperformed in 2000 and 2001, indicating that the team could have been spending well beyond their means based on previous successes. The team was relegated in 2001. Statistical indicators lead one to the conclusion that Huddersfield Town was having difficulty staying successful and afloat in the First Division—two seasons with drastically different finishes yet similarly poor wage residuals. Note that as Huddersfield Town is a below-average club, its measures of relative place and wage are negative. As LNWAGE is similar between 2000 and 2001 (and far greater than previous Huddersfield seasons), performance does not raise nearly as much revenue as is needed to cover the club’s mounting debt:

<table>
<thead>
<tr>
<th>Clubnum</th>
<th>Year</th>
<th>Absplace</th>
<th>LNPLACE</th>
<th>LNWAGE</th>
<th>WAGERESID</th>
<th>Current liabilities</th>
<th>Current assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>1996</td>
<td>28</td>
<td>0.8421828</td>
<td>-1.448795213</td>
<td>1.474333298</td>
<td>-791340</td>
<td>684766</td>
</tr>
<tr>
<td>34</td>
<td>1997</td>
<td>40</td>
<td>0.2814125</td>
<td>-1.263400157</td>
<td>0.671543372</td>
<td>-1472099</td>
<td>1524536</td>
</tr>
<tr>
<td>34</td>
<td>1998</td>
<td>36</td>
<td>0.4595323</td>
<td>-1.023382592</td>
<td>0.536337942</td>
<td>-1423636</td>
<td>1214687</td>
</tr>
<tr>
<td>34</td>
<td>1999</td>
<td>30</td>
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<td>0.659289037</td>
<td>-3402363</td>
<td>1033914</td>
</tr>
<tr>
<td>34</td>
<td>2000</td>
<td>28</td>
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<td>-0.17015436</td>
<td>-0.194838407</td>
<td>-5827000</td>
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</tr>
<tr>
<td>34</td>
<td>2001</td>
<td>42</td>
<td>0.194156</td>
<td>-0.16318259</td>
<td>-0.851966286</td>
<td>-5251000</td>
<td>427000</td>
</tr>
</tbody>
</table>

*Figure 4: Huddersfield Town selected statistics 1996-2001*

Again, note the increased wage spending (as LNWAGE approaches 0) and the high wage residuals. Having finished 10th in the First Division, the team increased its wage spending substantively from 1998-2000, and achieved only a modicum of increased success. Indeed, a significant amount of the wage payments were borrowed, as evidenced by ever-increasing liabilities.

Interestingly enough, increased success on the part of clubs as measured by wage residuals from 1996-99 was often followed by negative wage residuals in 2000 and 2001.
Among the fifteen “over-performers” in 1996-1999, only four teams sustained the positive wage residuals through the 2000 and 2001 campaigns: these were Crewe (a Second Division team promoted to the First over this span), Stockport County (promoted to the First Division also), Tranmere Rovers (relegated in 2001 with a near-zero wage residual), and Manchester United (five championships in the years 1996-2001, along with the largest positive wage residuals of any team). In fact, more teams were likely to achieve a negative wage residual following four years of positive wage residuals: six out of the fifteen late-nineties ‘over-performers’ got less success than they paid for in 2000 and 2001: Chelsea, Derby, Oxford, West Ham United, and Wimbledon all saw substantive negative wage residuals following several years of ‘over-performance.’

Indeed, it is important to examine the nature of the wage residual, especially in light of anecdotal evidence to indicate over-performance is not the be-all, end-all for clubs to stay solvent. Perhaps a positive wage residual is a benchmark measure better suited for examining a composite of the market stance or capitalization of a club. Specifically, positive wage residuals could instead be thought of as a club or manager’s ‘pull’ in the labor market. Despite having one of the largest rosters (and thus wage bills) in England or Europe, Manchester United maintains a healthy positive profit margin—and wage residual. Surely Manchester United does not require as much talent as it has hired in order to be successful—but were Sir Alex Ferguson to drop talent, would we see the wage residual of Manchester United rise? Perhaps, and perhaps not; Manchester United’s positive wage residual may be capturing the kind of labor market power one can’t help but attribute to Man. U, however intangible it may be. These harder to measure effects of market power in hiring playing talent could be captured by a positive wage-performance residual.
Additionally, it may be prudent to undertake a more year-controlled study of club residual and debt behavior. While nearly all the data sets and annual statements of clubs include wage and debt spending financial behavior, the precision with which these data sets parse player and manager wages (as discussed earlier) is poor. Debtors also go unnamed, and out-of-pocket payments by owners made to keep clubs afloat are poorly recorded. Determining the true ‘losers’ of the revenue bubble bursting and wave of administration applications thus becomes a far more arduous task. Individual club websites frame their stories of administration in lofty terms, highlighting the importance of increased season-ticket applications and fan consortiums in saving the club from ruin. In truth, these elements of the administration period exert influence on the club that is dwarfed by the actual restructuring of debt. Since a high frequency of club overdrafts are associated with owner subsidy, owners absolving clubs of personal debt can contribute greatly to the frequency and speed with which clubs return to financial solvency.

There is also no requirement that private clubs release the results of administration-period debt restructuring. As a result, it is quite difficult to pin down who has benefited and who has not following a return to financial solvency. In addition, liabilities may be transferred to more reasonable ownership structures; occasionally, a leveraged syndicate will step in to control a club previously under more individual control—this can contribute to misconceptions as to the financial standing of the club before and after administration. In the case of Port Vale, the club’s main creditor was its longtime chairman, Bill Bell. The club had been losing nearly half a million pounds a year, and had racked up a total debt of just under £2.5m. Facing pressure from club supporters groups, Bell approved the sale of the club to an ownership consortium led by another wealthy businessman, Charles Machin. Machin had substantive grassroots support, and managed to purchase the club along with its restructured debts for £800k. Former chairman Bell
claimed to have lost over £500k on the deal, and as a substantive creditor to the club, one might be inclined to believe him. However, restructuring of the debt burdens to Port Vale required more than £500k of forgiveness to remain solvent, and even if the club were worth nothing, Bell’s claims and the debt burden going into administration leave a significant amount of debt unexplained. What the case of Port Vale indicates, from a research standpoint, is that the indeterminate nature of debt burden sharing makes it quite difficult to differentiate those who win from those who lose. In Port Vale’s instance, it is fairly clear that Bell stood to lose quite a bit from the financial insolvency of his club; however, trusting his own public statements made after the sale of the club is not the most reliable method for fact-gathering either. Unfortunately for the researcher, Port Vale’s administration woes tend to be one of the more transparent stories of ‘clubs in crisis.’ Compounding the issue is the fact that 1996-2001 was also a tumultuous one for the English leagues in general financially. Average turnover among clubs overall rose substantially during this period, but Premiership revenues rose most precipitously:

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<td><strong>Overall</strong></td>
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<td>1,267,754</td>
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*Figure 5: Average club turnover by division, select years*

The Premiership contribution to the rise in the composite average is biased upwards due to a lack of data among lower-division clubs, especially in the earlier years of the data set. However, one can see the unequal distribution of income readily in the above table. The allocation of satellite television revenues led to a magnification rather than an obscuring of differing revenue generation capacities among clubs.
Conclusions

The multi-level analysis of financial behavior in the Football Association has revealed more questions than it has answered. Following a thorough examination of existing models, with particular reference to the Szymanski wage-performance relationship and the Szymanski-Hall ownership model, the well-established correlation between wages and competitive results has been confirmed in this analysis. The data from 1996-2001 across all four divisions of the professional ranks in England, while comprehensive, helped to support existing conclusions in the literature while elucidating further territory for exploration.

Indeed, the 382-observation panel proved a representative sample capable of bearing out the long-term established relationships in European-style leagues—a panel from a matched period in a North American league would likely have borne similar results to previous studies for closed leagues. The strong correlation between wages and performance in my data set ($R^2 = 0.74$) was not as hard as the results from the original Szymanski ($R^2 = 0.94$), perhaps suffering from a limited sample size. Speculatively, the reduced correlation between wages and performance in my data set could have been due to a number of factors. In line with the reduced sample size, the period 1996-2001 may not have been as representative of longer-term trends in English football borne out by the Szymanski analysis, whose panel spanned much longer time periods. In fact, Szymanski and Kuypers (1999) note that as the time span of analysis gets longer, the strength of the wage-performance relationship increases. Thus, a reduced correlation between wage spending and performance in this analysis is not unexpected.

The crux of the initial examination in this paper began as the wage-performance relationship in and of itself; the focus then shifted to residuals from the estimation of the wage-
performance relationship. Again, the analysis perhaps suffered from a heavy reliance upon previously published results, from which assumptions were drawn that may not have been applicable to the time period spanned in the data set. Precisely because of the lower correlation between wages and performance in my data set, the results of second-stage panel regressions may have been jeopardized. With a reduced correlation, more potential exists for clubs to exhibit substantive and sustained wage-performance residuals. Creating a framework for analyzing financial behavior of football clubs can bear results over a longer time period, as Szymanski and Kuypers have shown. Additionally, anecdotal examinations of possible trends based on available evidence and theoretical consequences of league structure have proved fruitful, as Noll (2002) shows. The analysis in this paper attempted both techniques as a means to sort out the high frequency of default that was exhibited in the Football Association following the turn of the millennium. Fourteen clubs entered administration between 2001 and 2003, and a significant amount of evidence points to 2001 as a turning point for many of these clubs financially.

Following the establishment of a wage-performance relationship in the 1996-2001 data set, the analysis turned to the effects of the regression residual. Fixed-effects panel estimation dependent on relative wage spending in the following season showed a significant and negative coefficient on the wage residual. This was the first substantive result obtained from the second-tier regressions. However, increased uncertainty about the significance of the results led me to reconsider the dependent variable, LNWAGE$_{t+1}$. The same regressions were run over again with a different dependent variable: a differenced measure of relative wage spending designed to capture trends in spending behavior. Upon differencing the relative wage variable, significant coefficients were found on the WAGERESID, RELINT, and INTERACT variables. However,
different methods of econometric inquiry produced quite different estimation results. Indeed, the standard set of panel regressions run on the LNWAGE variable failed to produce even a consistent sign on the WAGERESID variable. As discussed earlier, the importance of the WAGERESID variable to studying the effects of over- and under-performance has been suitably stressed. The failure to obtain a consistent estimation of the effects of WAGERESID proved difficult in identifying a league-wide trend. Fixed-effects modeling on differenced provided the most promising descriptive results of all regressions. However, the failure to replicate significant results provides an unsatisfactory basis for telling a comprehensive story on the league-wide level. At any rate, it is clear that the nature of financial difficulties, which may have affected all clubs in some degree after 2001, only proved a problem for a few teams. Indeed, it is important to indicate that even among clubs that entered administration, none have been entirely dissolved, and disruption to competitive concerns in the league was minimal.

This is not to say that clubs entering administration place no strain on the league structure or on other teams in the league. Indeed, entering administration creates disruptiveness in the player market itself—clubs in administration are unable to sign talent or transfer players (except under circumstances mandated by administrators), and the aftermath of administration usually leaves a few players without a contract at all. Additionally, entering administration is indicative of a total inability to repay creditors, and thus the party hurt most often by administration proceedings is that which loaned the club money. As mentioned earlier, club owners are often the ones who provide a stopgap between spending and turnover. The anecdotal analysis of Port Vale’s administration story (one of the most transparent in the literature) plausibly shows that while one can identify the main winners and losers from the standpoint of administration, it is difficult and nearly impossible to track the cash flow of a club predictably before and during
administration. In an industry where the vast majority of firms are privately owned and operated, football clubs still compete with one another in a highly controlled manner: under the identifiable rules of competition that help to give the impression that sport is easily studied economically. Some traditional assumptions of managerial behavior from previous studies, such as perfect information in the labor market and identical costs of per-unit talent across teams, are challenged by the results of this paper.

Attempting to circumvent the problems of a multi-season, league-wide regression analysis, this paper changed scope and examined individual, year-on-year club data. Like the initial econometric estimation, anecdotal club information helped to round out information gaps and provide a plausible story for individual experiences with administration. However, a scope of analysis this narrow falls short when attempting to explain a wave of behavior resulting in fourteen bankruptcies. This is to say that identifying the particular string of annual financial behavior that led a given team to administration may appear relatively easy on a balance sheet. Furthermore, anecdotal inquiries into such a specific topic are inevitably self-selecting. Indeed, precisely because clubs are operable firms like those in other industries, bankrupt clubs are still able to provide a product. However, the subsidies that owners are prone to provide to their clubs make the industry unique. Anecdotal evidence of clubs dramatically increasing wage spending through borrowing and subsequently entering administration fails to account for clubs who follow the same pattern yet never end up in trouble. Perhaps the prime reason why clubs enter administration is exactly that—ownership finally refuses to foot the bill after unsustainable losses. In this scenario, the greatest predictor of a club’s likelihood of default is not the club’s balance sheet at all—it is the balance sheet and spending behavior of its owner. At the time of this writing, no deep inquiry into the impact of a sports franchise owner’s finances on the
likelihood of his or her team’s bankruptcy had been attempted. Clearly, more research is necessary on this front to identify a convincing behavioral pattern.

Overall, this analysis examined the causality and implications of English football clubs entering administration between 2001 and 2003, and attempted to explain the ‘crisis’ that ensued. The only thing that the analysis and its results can conclusively contend is that the nature of the crisis was blown well out of proportion. In terms of speculation, an examination of residuals from the Szymanski wage-performance equation turned up little in the way of a convincing trend towards overspending. However, indications of less-than-optimal spending were apparent throughout each stage of examination. These findings are consistent with traditional characterizations of behavior among professional sports teams, and help to bolster the theory that a club’s ‘objective function’ is little more than a maximization of success subject to financial solvency. When revenue streams are volatile such as in the period 1996-2001, firm managers can be misled as to the permanence or pervasiveness of a boost in turnover. This holds true for managers in sports and other businesses as well. One of two things is likely true for the period studied here: firms either emphasize profit maximization to a lesser degree than previously thought, or a number football managers were incredibly poor at maximizing profits.
## Appendix

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Figure A1: Regression Summary Statistics
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*Figure A2: Variable Summary Statistics*
**Reference List**


Szymanski, Stefan and Tommaso M. Valetti. “Promotion and Relegation in Sporting Contests” (June 2003) Imperial College Management School discussion paper.
