

Impact of on-field football success on the off-field financial performance of AFL football clubs

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Abstract

In this study, we examine the factors that contribute to the financial performance of clubs in the Australian Football League over the period from 1993 to 2002. Primarily, we examine the association between the on-field football success of clubs and their level of off-field financial performance. We find that match attendance is positively related to both short-term and long-term success of football clubs and also to the uncertainty as to the match outcome (i.e. the expected closeness of the match). We also find that club membership is highly persistent and is positively related to both the past football success of the club and the marketing expense incurred. Finally, we find that there is a significant association between the level of marketing revenue and the level of on-field success in the prior 2 years.

Key words: Australian Football League; Financial performance; Football; Match attendance

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1. Introduction

In recent years economics researchers have demonstrated an increasing interest in the economic behaviour of major professional sporting clubs around the world. Much of the published literature focuses on professional soccer and rugby

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league clubs in the UK and Europe and seeks either to estimate the demand for professional team sports or to identify the objective function of the teams involved (see, for example, Burkitt and Cameron, 1992; Dawson *et al.*, 2000; Forrest and Simmons, 2002; Forrest *et al.*, 2002; Garcia and Rodriguez, 2002; Kern and Susmuth, 2003).¹ There is also some research that examines the financial performance of these clubs.² However, we are not aware of previous published research that focuses directly on the financial performance of clubs in the Australian Football League (AFL).³

This lack of previous research on the financial performance of AFL clubs is surprising because these entities are both economically and socially important. In 2003, the AFL industry is reported to have generated \$A2.7bn for the Australian economy (Street Ryan & Associates, 2003). Socially, the game of Australian Rules Football is a national sport and maintains a position as the leading spectator sport throughout Australia. Accordingly, the significance of professional team sports generally, and of AFL operations in particular, makes understanding the factors affecting the financial performance of AFL clubs important for a variety of stakeholders (see also Borland and Macdonald, 2003).

The specific focus of our study is on the factors that contribute to the financial performance of AFL clubs. Although we examine several factors, the focus is on the nature of the association that exists between the on-field football performance of clubs and their subsequent off-field financial performance. There is much anecdotal evidence that suggests that the on-field performance of clubs and their off-field financial success are closely associated.⁴ Notwithstanding this, we are unaware of published empirical research studies that examine this issue. A primary reason for this is the lack of data. The level of detailed disclosure of revenue sources in the publicly available statutory accounts provided by clubs is limited. We overcome this by obtaining directly from the AFL detailed

¹ One indication that research in relation to the demand for international team sports is reaching maturity is that in recent years several published articles have appeared that devote substantial effort to reviewing this work (see e.g. Downard and Dawson, 2000; Borland and Macdonald, 2003).

² See, for example, Szymanski and Smith (1997), Zimbalist (2000), Sheehan (1996) and Leeds and von Allmen (2005).

³ There are some studies that have focused directly on clubs in the AFL and its forerunner association, the Victorian Football League (VFL). These studies do not specifically examine the financial performance of clubs but, instead, model the demand for Australian Rules Football (Borland and Lye, 1992; Macdonald and Borland, 2004) and examine the components of the labour market for the coaches (Borland and Lye, 1996) and players (Booth, 2004a,b) of clubs.

⁴ Each year, the Australian general press routinely contains many articles, press releases and other published items that relate the off-field financial success of clubs to their on-field football performance. For recent examples, see Browne (2003) and Gough (2003a,b).

data on the breakdown of annual revenues and expenses by category for each AFL football club for each year in the period 1993–2002. Accordingly, a key contribution of our study is to measure the magnitude or the strength of the association that exists between on-field football performance of clubs and their subsequent off-field financial performance.

On-field success for an AFL club can enhance, either directly or indirectly, the five primary revenue streams of clubs. These primary revenue streams are: (i) AFL distributions; (ii) match day receipts; (iii) membership receipts; (iv) fundraising receipts; and (v) marketing receipts.⁵ With the exception of AFL distributions and fundraising receipts, we examine the relationship between on-field football performance and each of the primary revenue streams. In doing so, we identify and control for several other variables, such as stadium capacity, that might impact on particular revenue streams of clubs.

Although football performance is likely to be associated with each of the revenue streams, the nature of this association is likely to be different as a result of both horizon and loyalty effects. The horizon of the association is likely to vary across revenue streams. Match-day receipts, for example, might be a function of short-run (i.e. weekly) performance, whereas receipts from membership are likely to be a function of long-run (i.e. expected annual) performance. The influence of loyalty is also likely to vary across revenue streams. Companies providing sponsorship are not as likely to be as loyal as club members, leading to a different relationship between marketing revenue and football performance, and club membership and performance. Therefore, we estimate three separate functions to provide insight into the relationship between the individual revenue streams and football performance.

Our main results are as follows. Match attendance is positively associated with both the short-term and the long-term success of a team as well the ‘winning momentum’ of a team.⁶ Furthermore, uncertainty as to the match outcome leads to an increase in match attendance. Our results also indicate that club membership levels are highly persistent and we find that changes in membership are a positive function of past success. We also find a strong association between the level of marketing revenue and the level of on-field success in the prior 2 years.

In the next section we develop the model used in the analysis. In Section 3, we discuss the data and provide some preliminary descriptive statistics. Section 4 contains the results of the main empirical analysis. In the final section we consider some implications of our findings and we identify some ways in which this study might usefully be extended.

⁵ Marketing receipts are received from sponsorship, corporate boxes, coteries and others. The most significant component is sponsorship.

⁶ Match attendance is used as a proxy for match receipts for reasons discussed in Section 2.

2. The models

In this section we develop our models used for analysis of the relationship between football performance and match receipts, and membership revenue and marketing revenue.

2.1. *The model for match receipts*

For the first revenue category, match receipts, we use as our primary dependent variable match attendance and not match receipts for two main reasons. First, although we have annual match receipts we do not have dollar receipts of the club from each match day. Therefore, as one of the dimensions of interest is the implications of short-term success for match receipts, we are forced to use match day attendance as a proxy for this revenue stream.⁷

Although direct match receipts contribute, on average, to only 7 per cent of total revenue, there is a second reason we focus on match attendance. The football clubs receive a large amount of revenue from AFL distributions and marketing. The amount of revenue received from these sources is likely to be some function of the popularity of the game. Match attendance represents a proxy for the popularity of the game. We provide empirical support for this by showing that marketing revenue is a function of match attendance.

The only known published study to have examined attendance at Australian sporting events is by Borland and Lye (1992), who examined attendance at Victorian Football League games over the period from 1982 to 1986. By developing a model of factors affecting match attendance our study extends the insights provided by work of Borland and Lye (1992) in two important ways. First, over the past 2 decades, the AFL competition has developed from what was previously a Victorian-based league to what is now a truly national competition. This has a number of important implications for the model of match attendance that we address. Specifically, for many teams and particularly for those based outside Victoria, the significance of home versus away games has increased dramatically. We examine the implications of this for match attendance. Second, the model used in the present study is developed in the context of linking the on-field performance of clubs with their off-field success. Accordingly, the

⁷ There is, however, a strong association between annual match receipts and annual match attendance providing validity for this proxy. Specifically, we find a significant statistical association between annual match attendance and annual match receipts. The magnitude of the estimated association implies that a 1 per cent increase in match attendance numbers will, on average, lead to a 1 per cent increase in annual revenue from match receipts. This provides some economic meaning to the revenue implications of the results for match day attendance. It is also worth noting that prior to the year 2000 the net gate was shared between home and away teams. From 2000 onward the home team has kept the gate.

model developed in the present study incorporates a number of unique features that improve our existing understanding of match day attendance.

Economic theory and prior research suggests that match attendance is a function of socioeconomic factors and football-specific factors, specifically, uncertainty of outcome, short-run success and long-run success (e.g. Burkitt and Cameron, 1992; Forrest and Simmons, 2002; Forrest *et al.*, 2002; Garcia and Rodriguez, 2002).⁸ We set out below the argument for each variable in our model of match attendance and discuss how each variable will be measured.

2.1.1. *Uncertainty of outcome*

Uncertainty as to match outcome has a positive influence on attendance (Jennett, 1984; Borland and Lye, 1992; Dobson and Goddard, 1992). There is some recognition of this association by AFL administrators, with the implementation of a number of restrictive controls (e.g. player draft/team salary cap) in recent years in an attempt to enhance the closeness of competition and, therefore, the uncertainty of match outcome.⁹ The proxy that should be used to capture this uncertainty is less well established.¹⁰ Consistent with Jennett (1984), we consider two distinct types of uncertainty: (i) the predictability of outcome for a given match, and (ii) the degree of seasonal uncertainty that arises based on whether the teams playing a particular match will win enough matches to compete in the finals series.

Attendance should be positively related to the degree of match uncertainty, as spectators generally prefer a close match to a one-sided match. Our measure of match uncertainty is the difference in ladder positions between the teams involved in any match prior to the match taking place. This was computed as the highest placed team minus the lowest placed team. We label this variable *DIFFLADD*.

The significance of any given match for supporters and, therefore, for match attendance, is also a function of the importance of the match to the team's chances of playing in the finals (e.g. Dobson and Goddard, 1992; Jennett, 1984; Kuypers, 1996). The importance of the outcome of any match is, in turn, a function of both the time remaining in the season and the relative league standing

⁸ The references cited here are not exhaustive. For a recent detailed discussion of published research that examines the factors affecting the demand for professional team sports, refer to Borland and Macdonald (2003).

⁹ For further detailed discussion of the devices used by AFL administrators to enhance the closeness of the competition, refer to Booth (2004a,b) and Macdonald and Borland (2004). Prior studies that focus on the competitive balance in professional team sports generally find that although such controls might assist in enhancing the closeness of competition, they are by no means sufficient to ensure that this closeness occurs (see also Sloane, 1976a,b).

¹⁰ For a discussion of the different approaches that have been used to measure this uncertainty, refer to Borland and Macdonald (2003).

of the teams. For example in the second round of the season all teams are in finals contention and, therefore, the games are unlikely to have significance for ‘making the finals’. As the season progresses, each game played by those with a chance of making the finals takes on even greater significance. To measure seasonal uncertainty with respect to making the finals we adapt an indicator proposed by Kuypers (1996). This is the reciprocal of the product of the number of games left before the finals and the number of points the team trail beyond the leader. This takes the value of zero when there is no possibility of the team winning the championship. We label this variable *UNCERT*. This variable enters the model assuming a linear relationship between the variable and attendance. As this functional form is unlikely to hold we also include a dummy variable (*FINALSSPOSS*), which takes the value 1 when a team has a chance of making the finals and a value of 0 when a team no longer has a chance.

2.1.2. Short-run success

Prior studies indicate the probability of a win to be an important determinant of match attendance (e.g. Jennett, 1984; Borland and Lye, 1992; Peel and Thomas, 1992, 1996). As a proxy for the *ex-ante* probability of winning we use the most recent *ex-post* performance of the team.¹¹ We predict that attendance is related to the recent short-term success of teams. We measure short-term using three variables. The first is recent wins, which is the number of wins in the last three games (*PASTWINS*). The second variable is current ladder position (*LAD-DPOS*). This variable is coded 1 if a team is at the top of the ladder prior to the match, 2 if the team is placed second and so on. Therefore, if there is a positive association between ladder position and attendance we would expect the coefficient on this variable in the estimated equation to be negative. Finally, *UD5* is a dummy variable for two teams both of which are in the top five positions on the ladder when the game is played.

2.1.3. Long-run success (ex-ante quality of the team)

Attendance might also be a positive function of the past long-term success of the team. We expect this association for two reasons. First, assuming that performance persists across seasons, a team that has been successful in the long term is likely to have short-term success, therefore also encouraging attendance. Second, a team that has been successful over several years might have a number of ‘star players’ or ‘style of play’ that has resulted in them being successful and that might also attract supporters to the game. We measure the long-term success of a team using the variable *FINALS*, which represents the number

¹¹ The use of this proxy is also supported by the findings of prior research that examines the Australian football betting market. For example, Brailsford *et al.* (1995) find that betting spreads overreact to recent short-run success of clubs.

of final series the team involved in a match has participated in over the 3 years prior to the match.

2.1.4. Socioeconomic variables

Economic theory suggests that the costs of attending the match and income might affect demand for football and, therefore, attendance. However, we do not include variables that directly represent these variables for two reasons. First, prior research has generally not found these variables to have a statistically significant effect on football attendance (e.g. Jennett, 1984). Second, we include membership level of each club at the beginning of each season as a control variable to proxy for any effect that might vary across seasons (*MSHIP*). If socioeconomic factors affect attendance they are also likely to affect membership.

2.1.5. Other variables

We include stadium capacity as a control variable. Borland and Lye (1992) argue that attendance might be stimulated when a match is played at a larger stadium because spectators might not like being crowded together and the larger stadiums often have better facilities. Therefore, the log of stadium capacity is included (*STADIA*).

We include the membership level of each club at the beginning of the season as a control variable (*MSHIP*). This variable is used to control for three possible effects. First, data on attendance include all types of ticket holders, including membership ticket holders. Membership ticket holders might attend a particular match regardless of team performance and uncertainty because their membership is effectively a sunk cost. We include this variable to control for such match attendees. This variable is also included to control for club-specific factors that might influence attendance that we have not directly controlled for, such as the wealth of the club and the history and tradition of the club. In doing so, we also control for any correlation that might exist between membership levels and match attendance as a result of such factors. Furthermore, as previously explained, membership levels are included to control for economic conditions that might vary across the seasons.

A pooled cross-section and time-series panel dataset is constructed using observations from all games played in the AFL over the period from 1989 to 2002. Based on the foregoing discussion, we posit the following functional relationship:

$$ATT = f \left[\begin{matrix} DIFFLADD, UNCERT, FINALSSPOSS, LADDPOS, \\ PASTWINS, UD5, FINALS, STADIA, MSHIP \end{matrix} \right]. \quad (1)$$

There are two teams involved in each match. Therefore, each team will have a value for the defined variables. One possible approach to estimating

the equation is to combine (i.e. either an average or total) the two values for the two teams playing to arrive at a single value for each variable for each match. However, this is not appropriate if the functional form differs between home and away teams. Therefore, we estimate the equation with separate variables for the home and away teams. The final model becomes:

$$\begin{aligned}
 ATT_i = & \alpha + \beta_1 DIFFLADD_i + \beta_2 UNCERT_i^H + \beta_3 UNCERT_i^A \\
 & + \beta_4 FINALSSPOSS_i^H + \beta_5 FINALSSPOSS_i^A + \beta_6 LADDPOS_i^H \\
 & + \beta_7 LADDPOS_i^A + \beta_8 PASTWINS_i^H + \beta_9 PASTWINS_i^A \\
 & + \beta_{10} UD5_i + \beta_{11} FINALS_i^H + \beta_{12} FINALS_i^A + \beta_{13} STADIA_i \\
 & + \beta_{14} MSHIP_i^H + \beta_{15} MSHIP_i^A + \epsilon_i,
 \end{aligned} \tag{2}$$

where ATT is the logarithm of total attendance at the i th match. Each variable above is as previously defined, with H and A designating observations for a home or away teams.

2.2. The model for membership revenue

To our knowledge, ours is the first study to examine the factors that explain the annual membership of football clubs. We model membership of football club j as a function of past membership as a result of habit, the likelihood of future success, marketing costs and socioeconomic variables. Next, we justify each variable and discuss variable measurement.

2.2.1. Future success

Supporters of teams are more likely to become members of the club at the beginning of the season if they believe their club is going to be successful in the coming season. Some support for this argument can be found in the results from prior research on daily match attendance, which indicates the probability of a home win to be important in determining match attendance (e.g. see Jennett, 1984; Borland and Lye, 1992). Therefore, we predict that membership levels should be positively related to the likelihood of a successful season.

We argue that football fans use past year's performance to predict probable success in the coming season. We use two variables to measure past year's performance. $LADDPOS_{j,t-1}$ is the position club j finished at the end of the prior season (at end of finals series). $PREMIER_{j,t-1}$ is a dummy variable equal to 1 if the team was premier at the end of the prior season and zero otherwise. It is also possible that the performance in the pre-season cup affects membership numbers, but these data were not readily available. Therefore, we restrict our analysis to success in the immediate prior season.

2.2.2. *Habit*

There are likely to be supporters who remain members of the club because of habit and tradition. We use the membership level at the beginning of the prior season to capture persistence in membership levels ($MEMB_{jt-1}$).

2.2.3. *Marketing*

AFL clubs invest a significant sum of money on marketing and fundraising to attract members. As Table 1 shows over the period of the study, the average AFL club incurred total annual expenses on membership, marketing and fundraising of \$A2 646 418. This represents approximately 20 per cent of total expenses. Presumably clubs incur such expenses in the belief that they will raise funds from several sources, including increased membership. Therefore, we predict that membership levels are positively related to membership, marketing and fundraising expenses ($MMFEXP_{jt}$). This variable is the total dollar value of Membership, Marketing and Fundraising expense for club j , for the year t .

The final model becomes

$$MSHIP_{jt} = \alpha + \beta_1 LADDPOS_{jt-1} + \beta_2 PREMIER_{jt-1} + \beta_3 MEMB_{jt-1} + \beta_4 LOG(MMFEXP_{jt}) + \epsilon_{jt}. \quad (3)$$

$MSHIP_{jt}$ is measured in two different ways. First, as the logarithm of membership of club j at the beginning of season t . Second, as the logarithm of membership revenue of club j for the calendar year t . We also examine the effect of changes in the explanatory variables on changes in membership. This is modelled as follows:

$$\Delta MEMB_{jt} = \alpha + \beta_1 \Delta LADDPOS_{jt-1} + \beta_2 MEMB_{jt-1} + \beta_3 \Delta MEMB_{jt-1} + \beta_4 \Delta MMFEXP_{jt} + \epsilon_{jt}, \quad (4)$$

where:

$\Delta MEMB_{jt}$ is the change in membership between the beginning of seasons t and $t-1$;

$\Delta LADDPOS_{jt-1}$ is the change in *year-end* ladder position (after the grand final) between year's $t-1$ and $t-2$.

2.3. *The model for marketing revenue*

The most significant source of marketing revenue is club sponsorship (Table 1). We model marketing revenue of club j as a function of the likelihood of future success, popularity, marketing costs; and past sponsorship because of habit.

Table 1

Profit and loss statement (average) for AFL clubs: 1993–2002

| | \$A | % |
|---------------------------------------|------------|-------|
| Revenue | | |
| AFL sourced: football | | |
| Distributions | 2 330 958 | 17.75 |
| Prize money | 79 795 | 0.61 |
| Club sourced: football | | |
| Fundraising | 1 210 192 | 9.24 |
| Marketing | 4 241 999 | 31.25 |
| Match receipts | 1 022 738 | 7.46 |
| Membership | 2 270 096 | 16.66 |
| Merchandising | 444 421 | 3.28 |
| Other revenue | 493 996 | 3.58 |
| Club sourced: non-football | | |
| Other | 272 116 | 1.97 |
| Social club/gaming | 1 429 608 | 10.40 |
| | 13 483 961 | 100 |
| Expenses | | |
| Administration | | |
| Other | –1 755 769 | 13.07 |
| Football | | |
| Coaches | –1 090 125 | 8.35 |
| Other | –120 757 | 0.90 |
| Players | –4 267 494 | 32.80 |
| Recruitment | –153 846 | 1.18 |
| Team | –843 783 | 6.40 |
| Ground management | | |
| Ground management | –287 448 | 1.98 |
| Membership, marketing and fundraising | | |
| Fundraising | –604 877 | 4.66 |
| Marketing | –1 491 590 | 11.44 |
| Membership | –549 951 | 4.13 |
| Merchandising | –344 715 | 2.60 |
| Other | –219 620 | 1.57 |
| Remuneration | –340 206 | 2.59 |
| Non-football | | |
| Social club/gaming | –1 092 072 | 7.92 |
| Social club: other | –400 791 | 2.88 |
| Other | –222 711 | 1.69 |
| | 13 205 556 | 100 |
| Average net profit | 278 405 | |
| Median net profit | 115 360 | |

These figures were derived by firstly for each year taking the average across clubs of the individual revenue and expense items. We thus had a time-series of average annual results for each year. Table 1 represents the average across years of this time-series. AFL, Australian Football League.

It seems reasonable to assume that, on average, most companies would prefer their products to be associated with winning teams rather than losing teams. Therefore, we predict that companies are more likely to sponsor a club if they believe it is going to be successful on the field. We argue that companies use past year's performance as a guide to the likelihood of success in the coming season. We use two variables to measure past year's performance. $LADDPOS_{jt-1}$ is the position club j finished at the end of the immediate prior season. $LADDPOS_{jt-2}$ is the position the team finished at the end of the season $t-2$. We include two lags for recent performance as it is unclear at what point sponsorship contracts are generally signed or their typical duration. Finally, we include $PREMIER_{jt-1}$ as a dummy variable equal to 1 if club j was premier at the end of the prior season and zero otherwise.

The more popular and widely followed a club, the more likely it is to attract sponsorship and marketing revenue. As a proxy for popularity we use aggregated match attendance per year at home games. As the timeline of the cause and effect between popularity and marketing revenue is not clear we include a variable for both current year and prior year attendance ($ATTEND_{jt}$ and $ATTEND_{jt-1}$, respectively).

AFL clubs invest significant sums of money in marketing, presumably in the belief that they will raise marketing revenue from several sources. Therefore, we predict that marketing revenue is positively related to marketing expense $LOG(MMFEXP_{jt})$. The final model for marketing revenue becomes:

$$\begin{aligned} MARKETREV_{jt} = & \alpha + \beta_1 LADDPOS_{jt-1} + \beta_2 LADDPOS_{jt-2} + \beta_3 PREMIER_{jt-1} \\ & + \beta_4 PREMIER_{jt-2} + \beta_5 ATTEND_{jt} + \beta_6 ATTEND_{jt-1} + \beta_7 MEMB_{jt-1} \\ & + \beta_8 LOG(MMFEXP_{jt}) + \beta_9 MARKETREV_{jt-1} + \epsilon_{jt}, \end{aligned} \quad (5)$$

where $MARKETREV_{jt}$ is the logarithm of marketing revenue of club j for the calendar year t .

3. Data and descriptive statistics

3.1. Data

The data for the study were obtained primarily from the AFL. This included detailed annual financial data of AFL clubs over the period from 1993 to 2002, as well as annual club membership, daily match attendance, match results and ladder positions for all games during the 1989–2002 period. Stadium capacities were obtained both from the AFL and, where necessary, from the websites for the stadiums.¹²

¹² We endeavoured to capture, where possible, changes to capacities of venues during the period under study. For instance, because of, for example, rebuilding of stands and conversion of standing room to available seating, the capacity of the Melbourne Cricket Ground has changed several times in recent years. Such changes are incorporated into our data.

Table 2
Results from estimation of match attendance regression

| Variable | Coefficient | <i>t</i> -statistic |
|---------------------------------|-------------|---------------------|
| C | 4.3605 | 27.63 |
| Uncertainty | | |
| <i>FINALSSPOSS</i> ^A | 0.0459 | 1.48 |
| <i>FINALSSPOSS</i> ^H | 0.0874 | 2.82* |
| <i>UNCERT</i> ^A | 0.1227 | 1.23 |
| <i>UNCERT</i> ^H | 0.0390 | 0.45 |
| <i>DIFFLADD</i> | −0.0157 | −6.84** |
| Short-term success | | |
| <i>LADDPOS</i> ^A | −0.0249 | −10.50** |
| <i>LADDPOS</i> ^H | −0.0222 | −9.50** |
| <i>PASTWINS</i> ^H | 0.0377 | 4.01** |
| <i>PASTWINS</i> ^A | −0.0019 | −0.20 |
| <i>UD5</i> | −0.0675 | −2.60** |
| Long-term success | | |
| <i>FINALS</i> ^H | 0.0087 | 1.32 |
| <i>FINALS</i> ^A | 0.0311 | 4.75** |
| Other variables | | |
| <i>MSHIP</i> ^H | 0.0002 | 31.53** |
| <i>MSHIP</i> ^A | −0.0000 | −0.51 |
| <i>STADIA</i> | 0.5155 | 37.3** |
| <i>N</i> | 2196 | |
| <i>R</i> ² | 0.65 | |

The table reports the estimates from the match attendance equation for attendance at Australian Football League games over the period 1989–2002. All variables are as described in the text. The *t*-statistics are calculated using Newey–West corrected standard errors. Significance levels for *t*-statistics are ** and * indicating significance at the 1 per cent level (two-tail) and 5 per cent level (two-tail), respectively.

3.2. Descriptive statistics

Table 1 contains the profit and loss statement (average) for AFL clubs and we provide this for two reasons.¹³ First, very little is known about the components and the drivers of the financial performance of AFL clubs. Second, an examination of this data provides an understanding of the contribution and economic importance of membership levels, attendance and other factors to the financial performance of AFL clubs.

Table 1 shows that the average (median) AFL club realizes a profit of \$A278 405 (\$A115 360). The lower median is a consequence of the distribution

¹³ These figures were derived by firstly taking for each year the average across clubs of the individual revenue and expense items. We thus had a time-series of average annual results for each year. Table 1 represents the average across years of this time-series.

of profits being non-normal (right skewed). This is attributable to two clubs realizing average profits above \$A1 000 000. Table 1 also shows that the most significant contributors to total revenue in order of importance are: marketing (31 per cent), distributions from AFL (18 per cent), membership (17 per cent), fundraising (9 per cent) and match receipts (7 per cent).

4. Results

Table 2 reports the results from the estimation of model of match attendance. The model has good explanatory power (adjusted R^2 of 65 per cent). The majority of the coefficients are statistically significant with the sign of the coefficient being in the direction expected.

As predicted, the variables that proxy for short-term success, being $LADDPOS_i^H$, $LADDPOS_i^A$ and $PASTWINS_i^H$, are strongly statistically significant. The result for $LADDPOS_i^H$ implies a one position improvement in ladder position will lead, on average, to a 2.2 per cent increase in match attendance.¹⁴ The result for the variable $PASTWINS_i^H$ implies that for home teams, team momentum or the probability of a win plays an important role in the decision of supporters to attend, with an additional recent game won resulting in an additional 3.7 per cent of supporters attending the home team's game. The coefficient on away team past wins is not statistically significant. A possible explanation for this result is that the properties of the home team explain the majority of variation in attendance and this explanation seems particularly plausible where teams travel to another state to play. The result for UD5 is negative and statistically significant. This is inconsistent with a prediction of a positive coefficient. One possible explanation for this result is that multicollinearity results in any of the possible influence of this variable being captured by $LADDPOS_i$ and $DIFFLADD_i$. Therefore, the variable proxies for any remaining systematic effect. Over the relatively short period of study the variable could simply, because of chance, be proxying for unpopular clubs.¹⁵

The variable that proxies for long-term success, prior year finals ($FINALS_i$), is positive and statistically significant for the away team but not the home team. Although the result for the away team is consistent with our prediction it is not clear why the home-team coefficient is not statistically significant.

The result for the variable $DIFFLADD_i$ supports our hypothesis that the greater the match uncertainty the greater the match attendance. The result for

¹⁴ Although the reported coefficient on $LADDPOS$ in Table 2 is negative this represents a positive association between $LADDPOS$ and attendance. The variable $LADDPOS$ is coded 1 if a team is at the top of the ladder prior to the match, 2 if the team is second and so on. Therefore, if there is a positive association between ladder position and attendance we would expect the coefficient on this variable in the estimated equation to be negative.

¹⁵ Over the period of the study 2 of the most successful clubs on the field were North Melbourne and Adelaide. All North Melbourne games are poorly attended and Adelaide away games are poorly attended.

Table 3

Results from estimation of membership level equation

| | Membership level | | Membership revenue | |
|--------------------------------------|------------------|---------------------|--------------------|---------------------|
| | Coefficient | <i>t</i> -statistic | Coefficient | <i>t</i> -statistic |
| <i>LADDPOS</i> _{<i>t</i>-1} | -0.0130 | -1.94 | -0.0041 | 1.41 |
| <i>PREMIER</i> _{<i>t</i>-1} | -0.0259 | -0.40 | 0.0590 | 1.42 |
| <i>MEMB</i> _{<i>t</i>-1} | 0.6986 | 13.25** | 0.4543 | 10.08** |
| <i>LOGMMFEXP</i> _{<i>t</i>} | 0.1100 | 2.91** | 0.5453 | 10.57** |

The table reports the estimates from the membership equation (levels and revenue) with fixed effects for AFL clubs over the period 1993–2002. All variables are as described in the text. The *t*-statistics are calculated using Newey–West corrected standard errors. ** and * indicate significance at the 1 per cent level (two-tail) and the 5 per cent level (two-tail), respectively.

the other match uncertainty variable, *UNCERT*_{*t*}, is not statistically significantly different from zero at conventional levels.

The control variables are statistically significant in the direction predicted. The coefficient on the variable *STADIA*_{*t*} capacity is positive and statistically significant. Not surprisingly, the greater the club membership the greater the match attendance.

4.1. Difference between Victorian-based and non-Victorian-based matches

For a number of reasons it is possible that the strength of the relationship between the explanatory variables and attendance might be different for matches played in the state of Victoria relative to matches played in non-Victorian states. To examine this we classify all matches played into two groups: Victorian games and non-Victorian games, based on the state where the match was played. We then estimate equation (2) separately for each group of matches. The results, not tabulated, show several differences between Victorian and non-Victorian games in the directions expected. For games played outside Victoria, the position on the ladder of the away teams has a significantly lower effect on attendance (1.2 per cent) compared to games played within Victoria (3.3 per cent). This is consistent with supporters of away teams not attending the game because of the distance required to be traveled. There is also weak evidence to indicate that the magnitude of the coefficient on the variable *PASTWINS*_{*t*}^H is greater for games played outside Victoria than for games played within Victoria. One possible explanation for this finding is that supporters of non-Victorian-based clubs might be more parochial relative to the supporters of Victorian-based clubs.¹⁶ Finally, the difference in ladder position between the two teams playing

¹⁶ This is perhaps not surprising given that at the time of writing, 10 teams were based within Victoria, whereas a maximum of 2 teams only are based in any state outside Victoria.

has a significantly greater influence on games played in Victoria. Taken together, the results suggest that football supporters of clubs based outside Victoria attach relatively less importance to the uncertainty of any given match, but are strongly influenced by the performance of the home team.

4.2. Membership

Table 3 reports the results from the estimation of our membership model. To capture club-specific omitted variables, equation (3) is estimated as fixed effects. We report results in Table 3 for both membership numbers and also for membership revenue. As the results for both variables are qualitatively similar we focus our discussion on membership numbers. The coefficient on $MEMB_{jt-1}$ implies the majority of membership of club j in any year will persist to the following year. Total marketing expense is also positive and statistically significant. However, this result should be treated with some caution as it could simply reflect the effects of club wealth as a potential correlated omitted variable. The coefficient on $LADDPOS_{jt-1}$ is statistically significant at the 10 per cent level providing weak evidence of association between the level of membership and the level of on-field success of club j achieved in the prior year. Finally, the coefficient on the $PREMIER_{jt-1}$ is not statistically different from zero, implying that winning the premiership has no incremental effect over and above ladder position on membership numbers.

As a more powerful examination of the factors that explain club membership we estimate model 3, which examines the change in membership.¹⁷ The coefficient on $\Delta LADPOS_{jt-1}$ is statistically significant and implies that past years' performance is positively associated with changes in this year's membership. The coefficient on the change in prior year membership is not statistically different from zero. This implies that membership changes follow a random walk and a shock can be treated as being permanent. Finally, the coefficient on the change in marketing expense is significant at the 10 per cent level, providing weak evidence of an association between expenditure changes and membership changes.

We also examine if the marginal effect of a change in ladder position, change in prior membership and change in expenses is constant across the levels of the explanatory variables.¹⁸ It is possible that an improvement in ladder position has a different effect on membership levels relative to a deterioration in ladder position. In results, not tabulated, we find that a one position improvement in ladder position results in a 3.07 per cent increase in membership. However, a deterioration in performance of the same magnitude has a 0.75 per cent impact on membership, which

¹⁷ The results are not reported but are available from the authors upon request.

¹⁸ The complete results from all specifications tests performed are available from the authors upon request.

Table 4

Results from estimates of marketing revenue equation

| | Coefficient | <i>t</i> -statistic |
|--|-------------|---------------------|
| <i>MARKETREV</i> _{<i>t</i>-1} | 0.3686 | 6.57** |
| <i>LADDPOS</i> _{<i>t</i>-1} | -0.0036 | -1.63 |
| <i>LADDPOS</i> _{<i>t</i>-2} | -0.0030 | -1.69 |
| <i>MEMB</i> _{<i>t</i>-1} | -0.0587 | -1.38 |
| <i>PREMIER</i> _{<i>t</i>-1} | 0.0384 | 1.63 |
| <i>PREMIER</i> _{<i>t</i>-2} | 0.0121 | 0.68 |
| <i>LOGMMFEXP</i> _{<i>t</i>} | 0.4728 | 11.92** |
| <i>ATTEND</i> _{<i>t</i>} | 0.1832 | 2.42** |
| <i>ATTEND</i> _{<i>t</i>-1} | -0.1168 | -1.57 |

The table reports the estimates from the membership change equation (levels and revenue) with fixed effects for AFL clubs over the period 1993–2002. All variables are as described in the text. The *t*-statistics are calculated using Newey–West corrected standard errors. **and * indicate significance at the 1 per cent level (two-tail) and the 5 per cent level (two-tail), respectively.

is not significantly different from zero.¹⁹ We also examine the difference in membership changes for teams whose performance increases or decreases by more than six positions. We find a 24 per cent difference in membership changes between these two groups of teams.²⁰ This suggests that supporters reward winners by joining the club; however, they do not penalize losers by not renewing their membership.

4.3. Marketing

Table 4 reports the results from the estimation of our model for marketing revenue. To capture club-specific omitted variables, equation (5) is estimated as fixed effects. The coefficient on *MARKETREV*_{*jt*-1} implies some level of persistence in marketing revenue from year to year. Total marketing expense is also positive and statistically significant. There is significant association between the level of marketing revenue and the level of on-field success of teams in the prior 2 years. Likewise, our results indicate that a premiership win is, on average, associated with a 3.8 per cent increase in marketing revenue the following year. The two variables *LADDPOS*_{*jt*-1} and *PREMIER*_{*jt*-1} are correlated, which might affect the estimation of the incremental importance of *PREMIER*_{*jt*-1}. Therefore, we estimated

¹⁹ Two variables that are correlated that could affect the inferences with respect to the magnitude of the impact of change in ladder position are *PREMIER*_{*jt*-1} and Δ *MEMB*_{*jt*-1}. However, the omission of these variables from the model has no significant impact on the magnitude of the results.

²⁰ We do not, however, find any significant difference between team whose performance increases by between 1 and 6 positions and those teams whose performance deteriorates by more than 6 positions.

equation (5) without $LADDPOS_{jt-1}$. The coefficient on $PREMIER_{jt-1}$ now implies that a team that was premier in the prior year results in a 7.1 per cent increase in marketing revenue in the subsequent year. Finally, the coefficient on annual match attendance ($ATTEND_t$) is positive and statistically significant, consistent with greater attendance giving rise to greater marketing revenue.

5. Conclusions

This paper examines the association between on-field football performance and subsequent off-field financial performance of AFL clubs. A key contribution of the study is to measure the magnitude or the strength of the association between on-field football performance of clubs and their off-field financial performance. By measuring the marginal contribution to financial revenue of an additional game won we provide insight into the football-related costs that should be invested in winning a game.

Our results indicate that attendance at AFL matches is a function of the recent short-term and long-term success of the teams involved as well as the uncertainty of the outcome of each match. More importantly, the results show the strength of relationship between match attendance and football success. We also find that membership levels of the clubs are highly persistent. Furthermore, we find that changes in membership are a positive function of past success. The magnitude of this membership increase suggests that some investment by clubs in the improvement of their football performance is justified. We also find that membership levels are positively associated with marketing-related expenditures made by the clubs.

Our findings have implications for the body of existing empirical literature in respect of professional sporting clubs, as well as implications for the AFL administrators and for the AFL clubs themselves. For example, our findings indicate that attendance at any given match is positively associated with the uncertainty of outcome of that match. This finding provides tacit reinforcement for the rationale behind the restrictive controls and other devices imposed by AFL administrators, which seek to enhance the closeness of the competition and, therefore, the uncertainty of outcome. Finally, the findings also provide unique insight for the clubs themselves as the results show the magnitude of the relationship between on-field football performance and off-field financial success of clubs. In turn, this provides insight into the magnitude of the investment that should be made into improving on-field football performance.

References

- Australian Football League, 2003, *107th Annual report* (AFL, Melbourne, Vic.).
- Booth, R., 2004a, Labour market intervention, revenue sharing and competitive balance in the Australian Football League, 1897–2002, in: R. Fort and J. Fizel, eds, *International Sports Economics Comparisons* (Praeger, Westport, CT) 295–317.

- Booth, 2004b, The economics of achieving competitive balance in the Australian Football League, 1897–2004, *Economic Papers* 23, 325–344.
- Borland, J., and J. Lye, 1992, Attendance at Australian Rules football: a panel study, *Applied Economics* 24, 1053–1058.
- Borland, J., and J. Lye, 1996, Matching and mobility in the market for Australian Rules football coaches, *Industrial and Labour Relations Review* 50, 143–158.
- Borland, J., and R. Macdonald, 2003, Demand for sport, *Oxford Review of Economic Policy* 19, 478–502.
- Brailsford, T. J., S. A. Easton, P. K. Gray, and S. F. Gray, 1995, The efficiency of Australian football betting markets, *Australian Journal of Management* 20, 167–195.
- Browne, A., 2003, Lions set for a football-generated profit, Australian Football League, Melbourne [online]. Available: <http://www.AFL.com.au>
- Burkitt, B., and S. Cameron, 1992, Impact of league restructuring on team sport attendances: the case of rugby league, *Applied Economics* 24, 265–271.
- Dawson, P., S. Dobson, and B. Gerrard, 2000, Estimating coaching efficiency in professional team sports: evidence from English association football, *Scottish Journal of Political Economy* 47, 399–421.
- Dobson, S. M., and J. A. Goddard, 1992, The demand for standing and seated viewing accommodation in the English Football League, *Applied Economics* 24, 1155–1163.
- Downard, P., and A. Dawson, 2000, *The Economics of Professional Team Sports* (Routledge, London).
- Forrest, D., and R. Simmons, 2002, Outcome uncertainty and attendance demand in sport: the case of English soccer, *The Statistician* 61, 229–241.
- Forrest, D., R. Simmons, and P. Feehan, 2002, A spatial cross-sectional analysis of the elasticity of the demand for soccer, *Journal of Political Economy* 49, 336–355.
- Garcia, J., and P. Rodriguez, 2002, The determinants of football match attendance revisited: empirical evidence from the Spanish football league working paper (Universitat Pompeu Fabra, Barcelona, Spain).
- Gough, P., 2003a, West Coast's monster profit, Australian Football League, Melbourne [online]. Available: <http://www.AFL.com.au>
- Gough, P., 2003b, Another profit for Hawthorn, Australian Football League, Melbourne [online]. Available: <http://www.AFL.com.au>
- Jennett, N., 1984, Attendances, uncertainty of outcome and policy in Scottish League Football, *Scottish Journal of Political Economy* 31, 176–198.
- Kern, M., and B. Sussmuth, 2003, Managerial efficiency in German top league soccer, working paper (University of Munich, Munich, Germany).
- Kuypers, T., 1996, The beautiful game? An econometric study of why people watch English football, Discussion Paper in Economics 1996-01 (University College, London).
- Leeds, M., and P. von Allmen, 2005, *The Economics of Sport* (Addison Wesley, Boston, MA).
- Macdonald, R. D., and J. Borland, 2004, Professional sports competitions in Australia, in: R. Fort and J. Fizel, eds, *International Sports Economics Comparisons* (Praeger, Westport, CT) 295–317.
- Peel, D., and D. Thomas, 1992, The demand for football: some evidence on outcome uncertainty, *Empirical Economics* 17, 323–331.
- Peel, D., and D. Thomas, 1996, Attendance demand: an investigation of repeat fixtures, *Applied Economics Letters* 3, 391–394.
- Sheehan, R. G., 1996, *The Economics of Big-Time Sports* (Diamond Collections, South Bank, IN).
- Sloane, P. J., 1976a, Sporting equality: labour market versus product market control – a comment, *Journal of Industrial Relations* 18, 79–84.
- Sloane, P. J., 1976b, Restriction of competition in professional team sports, *Bulletin of Economic Research* 28, 3–22.

- Street Ryan and Associates, 2003, *Economic Impact 2003 of Australian Football* (Street Ryan and Associates, Gisborne, Vic.).
- Szymanski, S., and R. Smith, 1997, The English football industry: profit, performance and industrial structure, *International Review of Applied Economics* 11, 135–153.
- Zimbalist, A., 2000, *May the Best Team Win* (Brookings Institution, Washington, DC).