Comparing Competitive Balance in Australian Sports Leagues: Does a Salary Cap and Player Draft Measure Up?

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In the period following the introduction by the Australian Football League (AFL) of the team salary cap in 1985 and the player draft at the end of 1986, within-season competitive balance (measured by the seasonal distribution of team win percentages) has increased. This paper continues the investigation into whether the improvement in competitive balance in the AFL can be attributed to these labour market changes by examining competitive balance outcomes and labour market changes in two other Australian sports leagues, the National Basketball League (NBL) and the National Rugby League (NRL). The measurement of competitive balance in this paper is extended to include a simple measure of between-season competitive balance, namely the distribution of championships/premierships amongst teams/clubs. The evidence suggests that since 1985 within-season competitive balance, as measured by actual standard deviation/idealised standard deviation (ASD/ISD) ratios, has increased slightly in all three leagues. The NRL has been the most balanced and the NBL the least balanced, both pre- and post-1985. The distribution of championships/premierships is, in general, also more even in the post-1985 period in all three leagues. The most significant labour market change in both the NBL and the NRL post-1985 is their adoption of a team salary cap. Thus, the evidence on competitive balance is consistent with the view that the introduction of a team salary cap in all three leagues has improved competitive balance since 1985. However, since 1985 there has also been net expansion in the number of clubs/teams in all three leagues, and a considerable turnover in both the NBL and the NRL, but not the AFL. The expansion and contraction of the leagues is compared with changes in their competitive balance, leading to the conclusion that the number and, in particular, the location of teams/clubs also affects competitive balance.

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This article examines the argument that the Australian Football League’s (AFL’s) introduction of a team salary cap in 1985 and a player draft after the 1986 season fostered competitive balance. Booth (2000, 2004a, 2004b, 2005) argues the theoretical case that a player draft and team salary cap (combined with revenue sharing) in a league comprised of win-maximising clubs (such as the AFL) can increase competitive balance. Booth also traced the history of labour market devices (and revenue sharing arrangements) in the AFL and found, using some simple measures of competitive balance, that the competition was more even in the post-1985 team salary cap/player draft period than in earlier periods with different labour market devices in use. Thus, evidence of competitive balance in the AFL is consistent with Booth’s theoretical argument that the introduction of the team salary cap and player draft has improved competitive balance in the AFL.

Booth (2000, 2004a) also compared the AFL and professional American sports leagues: the National Basketball Association (NBA), the National Football League (NFL), and the two leagues of Major League Baseball (MLB – the American League [AL] and the National League [NL]). Between 1970 and 2000, MLB had a similar level of competitive balance to the AFL; the NFL had the highest level of competitive balance; the NBA had the most uneven competition. During this period, all three leagues had player drafts (with varying degrees of free agency), but only the NFL (since 1993) and the NBA (since the early 1980s) had team salary caps (although the NBA’s was a so-called “soft” cap). The NFL had the least revenue variation among teams, largely because local TV revenues were absent and a revenue sharing scheme which included national TV revenues was in place. The largest variation in team revenues occurred in MLB where local TV revenues dominated, but were not shared.

This article extends previous work by examining the effect of salary caps and player draft systems in Australia’s National Basketball League (NBL) and National Rugby League (NRL), and comparing those with effects in the AFL. The NBL is examined from the time of its formation (1979) until 2004. The NRL is examined over the twenty-five year period of 1970 through 2004.

The AFL grew out of the former Victorian Football League (VFL) formed in 1897, adopting the AFL name from 1990. Similarly, the NRL grew out of the former New South Wales Rugby League (NSWRL) formed in 1908, which was renamed the Australian Rugby League (ARL) between 1995 and 1997 (and which faced a rival league, Super League, in 1997), before the two leagues merged as the NRL from 1998.

The paper begins by summarising key features of the AFL which are thought to affect competitive balance, including the history of the league’s club composition, the member-ownership and win-maximising objectives (subject to a budget constraint) of clubs, the goals of the league, and the background to the introduction
Comparing Competitive Balance

of the team salary cap and player draft. Changes to the labour market devices (and revenue sharing arrangements) used to even up the distribution of player talent since 2001 are outlined.

The debate over how best to measure competitive balance is discussed. Measurement typically involves two aspects: within-season competitive balance (which focuses on the relative quality of teams in a season) and between-season competitive balance (which focuses on the relative quality of teams over a number of seasons). The merits of various measures are canvassed before settling on two relatively simple measures: the distribution of season win percentages as a measure of within-season competitive balance and the distribution of premierships/championships as a measure of between-season competitive balance.

Using these two measures, competitive balance in the AFL is measured and compared across two different periods: the 15-year period 1970-1984 and the 20-year period 1985-2004, the latter period coinciding with the introduction of the team salary cap (followed by the national player draft at the end of 1986). A discussion of possible explanations of competitive balance outcomes in the two different periods in the AFL then follows, including the introduction of the team salary cap and player draft, as well as the number and location of clubs. Fort (2003) and Sanderson and Siegfried (2003) have argued that these are likely to affect competitive balance in professional sports leagues.

Competitive balance in each of the two periods in the NBL are then examined and an attempt made to explain outcomes in terms of both changes in the players’ labour market and in the number and location of teams. The exercise is replicated for the NRL, which allows comparisons among outcomes in the AFL, the NBL and the NRL, thereby enabling conclusions about the effects that players’ labour market and the number and location of teams have on competitive balance. The article concludes by suggesting directions for future research into competitive balance in Australian sports leagues.

History of AFL Clubs

The Victorian Football League (VFL), known as the Australian Football League (AFL) since 1990, began in 1897 with eight former Victorian Football Association (VFA) clubs: Carlton, Collingwood, Essendon, Fitzroy, Geelong, Melbourne, St. Kilda, and South Melbourne. Seven of these clubs were based in the Melbourne metropolitan area with Geelong located about 75 kilometres southwest of Melbourne. Richmond and (Melbourne) University were admitted in 1908, but University disbanded before the start of the 1915 season. During World War I, the number of clubs fell to four in 1916, increased to six in 1917, eight in 1918, and nine in 1919. In 1925, Footscray, Hawthorn and North Melbourne joined to make a twelve-team
competition which continued until 1987 (except for Geelong’s withdrawal in 1942 and 1943). South Melbourne moved to Sydney for the 1982 season and became the Sydney (Swans) in 1983. Though strong state-based football competitions had long existed in Adelaide (the South Australian National Football League [SANFL]) and Perth, (the West Australian Football League [WAFL]), it was the VFL which expanded nationally with the inclusion of the Brisbane Bears and the Perth-based West Coast Eagles in 1987, Adelaide in 1991, and Fremantle in 1995 – making a league of 16 teams. In 1997, Port Adelaide joined the AFL, but a merger of the Brisbane Bears and Fitzroy into the Brisbane Lions kept the number of clubs at sixteen. In addition, two Victorian clubs have changed trading names in an attempt to become more attractive to (national) fans and corporate sponsors. Footscray began trading as the Western Bulldogs in 1997, and North Melbourne as the Kangaroos in 1999.

Ownership of AFL Clubs

The nature of club ownership in the AFL varies, and in general is vastly different from the privately-owned franchises/teams typical of the United States and Europe or the publicly (shareholder)-owned clubs often found in Europe. Most AFL clubs have been and are member-owned (now typically companies “limited by guarantee”) with club members typically electing the Board of Directors, who appoint professional managers to run the club. Until 1987, all Victorian-based clubs were member-owned. North Melbourne (the Kangaroos) became shareholder-owned in 1987. From the mid-1980s to the early 1990s, both Sydney and Brisbane went through a short period of private ownership. Brisbane has now reverted to a traditional member-owned club, whilst the Sydney licence is AFL-owned with its Board approved by the AFL. The two clubs in Adelaide (Adelaide and Port Adelaide) and the two clubs in Perth (West Coast and Fremantle) are owned by their respective state football Commissions which also manage football in those two states, including the SANFL and WAFL competitions, respectively (Booth, 2004a).

Objectives of AFL Clubs

The overriding goal of AFL clubs is to win. In analysing the objectives of VFL clubs in the early 1970s, Dabscheck (1975) found that club officials’ “major objective is to see their football team win as many premierships as possible” (p. 178). In the mid-1980s Stewart (1984) concurred, arguing that “profits are seen as a secondary goal: a premiership is ranked more highly than an operating surplus” (p. 7). The authors also found that clubs were prepared to go into debt to achieve on-field success.
More recently, Shilbury (1994) studied the strategic planning practices of AFL clubs, and found that financial trading performance and on-field performance are the two most important aspects for football club management. Shilbury describes this as “the utility maximising effect of voluntary administration by the president and board of directors” (p. 257).

**Objectives and Governance of the AFL**

As “manager of the national competition and keeper of the code” (Australian Football League, 2002, p. 4), the AFL sees its role as fundamental to the game’s long-term future by ensuring that the AFL retains its position as a leader in Australian sport. The AFL (Australian Football League, 2002) articulates its four objectives as:

- to effectively manage the national competition to ensure it is the most successful national elite sports competition for the benefit of our stakeholders – our AFL clubs, the players and the public;
- to promote public interest in the game by building the strongest consumer brand in Australian sport;
- to promote high levels of player participation in well-managed programs at all levels of community football to ensure Australian Football is the pre-eminent national football code;
- and to maximise the economic benefits of Australian Football to our member clubs, our players, the supporters, the football fraternity and the community at large. (pp. 6-13)

The development of the national league was made easier by significant changes to the governance of the league. Both Dabscheck (1973) and Stewart (1984) discuss the organisational structure of the VFL during the 1970s and early 1980s. At this time, the League was run by a Board of Directors, comprised of one Director from each of the 12 clubs. However, with clubs intent on pursuing policies in their own self-interest, the delegate system did not enable decisions that could solve both the competitive and financial difficulties of the 1980s.

In 1983, the VFL’s player rules were declared void as a common law restraint of trade (Dabscheck, 1984). In addition, in the eighteen years of football between 1967 and 1984, the premiership was shared amongst just five of the twelve VFL clubs. Fifteen of these eighteen premierships were shared amongst just three clubs: Carlton won six; Richmond won five; Hawthorn won 4; North Melbourne won two; Essendon won one. This is a clear indication that the VFL competition during this period was decidedly uneven. Moreover, by the middle of the 1980s, the VFL was in serious financial trouble. The competition was incurring heavy losses, and a group of the stronger VFL clubs were planning to break away and form a national competition (Australian Football League, 1994; Linnell, 1995).
In December 1985, the VFL Board of Directors resolved to appoint a Commission with specific powers to administer the competition, but with the Board (and therefore the clubs) still exercising ultimate control. In July 1993, the transformation of the AFL’s corporate governance structure was completed with the Board of Directors’ approval of the recommendations of the Crawford Report. The Crawford Report recommended that all powers to run the AFL competition be transferred to an AFL Commission comprised of up to eight commissioners, a Chairman, and a Chief Executive Officer (but with limited powers with respect to the admission, re-location, merger or expulsion of clubs). Further, it recommended that the AFL Board of Directors be abolished (Australian Football League, 2003a, p. 780).

Financial and Playing Equalisation (Post 2001) in the AFL

From the formation of the VFL in 1897 to the present day, six different periods can be identified (Booth, 1997, 2000, 2004a). These are characterized by various combinations of labour market devices and revenue sharing rules used by the league to try to improve competitive balance. The ASD/ISD (actual standard deviation/idealised standard deviation) ratios and associated league policies for each period are shown in Figure 1. To support the 16-team competition, a Special Assistance Fund to assist clubs in difficulty (subject to various terms and conditions) was announced in November 2001. The Western Bulldogs received $1m in both 2002 and 2003, and the Kangaroos received $1m in 2003.

After broadcasting football for 45 years since 1957 (except for ABC TV in 1987), the Seven network lost the rights to a new consortium of the Nine (free-to-air), Ten (free-to-air) and Foxtel (pay) networks, which secured the national TV rights for 2002-2006 for an estimated $500m (Macdonald & Borland, 2004). The major change in the players’ labour market for 2002 was the reduction of the minimum team salary to 92.5% of the total player payments cap (TPPC).

A Competitive Balance Fund (CBF) providing up to $5m per club from 2004 through 2006 (to coincide with the end of the current national TV broadcast agreement) was agreed to in 2003. The Western Bulldogs received $1.5m and the Kangaroos $1m in 2004 from the CBF (Stevens, 2003). The eligibility requirement for listing a player under the father-son rule was increased in 2003 to 100 VFL/AFL games (with interstate equivalents) after being 50 for approximately a decade, and 20 before that (Australian Football League, 2003b). A new CBA was agreed for the period 2004-2008 which features a moderate 3% growth in the TPPC in both 2004 and 2005, no growth in 2006, and an amount to be negotiated for 2007 and 2008. Minimum senior list sizes come into effect from 2004: 37 in 2004 and 38 in 2005 and 2006. The maximum senior list (which can now include any number
of veterans, rather than the previous two) remains at 40. The total player list, including up to 6 rookies, cannot exceed 44 (Australian Football League, 2003b). During 2003, the AFL announced the future phasing out of the 15% cap loading (for higher cost of living) to Sydney and the 10% loading (to help retain players in the non-traditional Australian football state) to Brisbane (Australian Associated Press, 2003b, p. 45). These are to be replaced with more general allowances depending on a club’s number of interstate players (Australian Associated Press, 2003a). In 2004, Melbourne applied for $1.5m for the 2004 season and $5m over four years from the CBF (Sheahan, 2004).

In summary, the most recent period (1985-2004) roughly coincides with the term of the Commission, during which the AFL has pursued a policy of financial and playing equalisation to improve competitive balance. A team salary cap and national player draft have been the major devices used to influence the distribution of player talent, complemented by the continued use of various revenue sharing rules designed to make clubs’ revenues more equal.

**Competitive Balance and its Measurement**

Fort and Maxcy (2003) identify two distinct two foci of research on competitive balance. The first is the analysis of competitive balance (ACB), which “is interested in measuring the behaviour of competitive balance over time especially relative to changes in business approaches of pro sports leagues” (p. 159). The other explores the uncertainty of outcome hypothesis (UOH), and “is interested in the effect of competitive balance on fan welfare” (p. 159). The discussion in this article is concerned with the first of these two foci, as it is concerned with the effects that different business approaches have on competitive balance.

Zimbalist (2002) observes that “there are almost as many ways to measure competitive balance as there are to quantify the money supply” (p. 112). Some of the more commonly used measures are listed in Table 1 and discussed in this section. These measures of competitive balance have differing strengths and weaknesses (Eckard, 1998, 2001a, 2001b, 2003; Fort & Maxcy, 2003; Humphreys, 2002, 2003a, 2003b; Kahane, 2003; Leeds & von Allmen, 2005; Utt & Fort, 2002; Zimbalist, 2003).

**Table 1: Common Measures of Competitive Balance**

<table>
<thead>
<tr>
<th>Within-Season Competitive Balance</th>
<th>Between-Season Competitive Balance</th>
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<tbody>
<tr>
<td>Actual SD of Season Win Percentages</td>
<td>Distribution of Premierships/Championships</td>
</tr>
<tr>
<td>Range of Season Win Percentages</td>
<td>Hirschman-Herfindahl Indexes</td>
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<tr>
<td>Actual SD/Idealised SD (ASD/ISD) Ratio</td>
<td>ANOVA of Team Win Percentages</td>
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</table>
Comparing Competitive Balance

Competitive balance can be measured with reference to two aspects. One is within-season competitive balance, which focuses on the relative quality of teams in a season. The other is between-season competitive balance, which focuses on the relative quality of teams over a number of seasons.

Most measures of within-season competitive balance focus on the distribution of teams’ season winning percentages, usually the standard deviation of the distribution of win percentages, and sometimes their range. This study follows Utt and Fort (2002) by using “the tried and true standard deviation of winning percentages (and their idealized values) for within-season competitive balance of winning percentages” (p. 373). This measure, suggested by Noll (1998) and first applied by Scully (1989), has been used in several studies to compare the closeness of competitions within seasons in American leagues (e.g., Berri, 2001; Quirk & Fort, 1992; Vrooman, 1995).

The ASD/ISD (actual standard deviation/idealised standard deviation) ratio for each season compares the actual performance of the league with the performance the league would have achieved if all teams were of equal playing strength, by measuring the actual dispersion of teams’ win percentages (ASD) over a season relative to the idealised dispersion of teams’ win percentages when all teams are assumed to have equal playing strengths (ISD). In a league of teams with equal playing strength, the probability of winning any game is 0.5. Quirk and Fort (1992) point out that it follows from the properties of a binomial distribution that the value of the ISD for the season-long win percentage is equal to \( \frac{(0.5)}{\sqrt{N}} \), where \( N \) is the number of league games (rounds) in a season. For example, the ISD for the 22-round AFL season is \( \frac{(0.5)}{\sqrt{22}} \) which equals 0.1066. The lower the ASD/ISD ratio, the more within-season competitive balance there is in the league.

Since the ASD/ISD ratio is a measure of within-season competitive balance, it does not capture changes in league standings (or win percentages) of teams over time. A league could have the same ASD/ISD ratio in two different years either with or without changes in individual team win percentages (and ladder positions). Thus, measures of between-season competitive balance are needed in order to capture the degree to which team standings are stagnant across seasons (which indicates a lack of competitive balance) or change across seasons (which suggests competitive balance).

Sports economists (e.g., Eckard, 1998, 2001a, 2001b, 2003; Humphreys, 2002, 2003a, 2003b) discuss the merits of various measures designed to capture changes in relative standings of teams over time. These include the analysis of variance (ANOVA) of all annual team win percentages over time. These measures have stringent data requirements insomuch as they require “that the league should consist of the same teams throughout the period and each team should play an equal number of games against each other team” (p. 215). As we shall see, this has not been the case in the AFL, NBL or NRL during the period under examination.
Herfindahl-Hirschman Indexes can be used to measure concentrations of teams in certain positions, such as the top and bottom four, but as Eckard (2001a) notes, these indexes need to exclude new (expansion) teams.

The complexity involved in measuring competitive balance is perhaps best summed up by Zimbalist (2003) who observes that “in the end, it may be that the best measure of competitive balance is a multivariate index that is nonlinear or constrained, and/or that differs league by league” (p.?). In order to make some simple comparisons among leagues, the ASD/ISD ratio is used here to measure within-season competitive balance, and the distribution of premierships/championships is used to measure between-season competitive balance.

Measuring Competitive Balance in the AFL

Looking first at within-season competitive balance, Table 2 shows the ASD/ISD ratios for the AFL based on the teams’ win percentage data for the home and away seasons between 1897 and 2004. For example, the ASD/ISD ratio for the AFL in 2004 is 0.1881)/0.1066 = 1.7645. Unevenness of competition peaked in the early 1980s with 1981 and 1982 having the highest ASD/ISD ratios ever in the AFL. Given the prevalence of the payment of transfer fees and interstate recruiting at this time, the AFL was concerned not only about an uneven competition but also the financial health of some clubs. This led the Commission to re-emphasise financial and playing equalisation between the clubs and to introduce the team salary cap and then the national player draft (Booth, 2000, 2004a, 2004b).

Table 3 shows the average ASD/ISD ratios for the six different periods identified. The average ASD/ISD ratio over the whole history of the VFL/AFL (1897-2004) is 1.8282. Of the six periods, the most uneven period of competition is period 1 (1897-1914), which has the highest average ratio of 1.9520. Period 6 (1985-2004), on the other hand, with the team salary cap and player draft, is the most even period of competition, recording the lowest average ratio (1.7106) of any period. For purposes of later comparison with the NBL and the NRL, the average ASD/ISD ratio in the AFL for the period 1970-1984 is 1.886, slightly higher than for the period 1985-2004 (1.711). Moreover, in only seven of the 35 seasons between 1970 and 2004 was the ASD/ISD ratio above 2.0 in the AFL, and all but one of these (1985) was in the period 1970-1984. Four of these observations above 2.0 were in succession (1979-1982), and two others were also in succession (1979 and 1980). Thus, the evidence on average ASD/ISD ratios and the levels in individual seasons suggests that there was more within-season competitive balance in the AFL in the period 1985-2004 than in the period 1970-1984.
Table 2: Rounds per Season and ASD/ISD Ratios for the AFL

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<th>ASD/ISD</th>
<th>Year</th>
<th>Rds</th>
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<td>1958</td>
<td>18</td>
<td>1.4011</td>
<td>1994</td>
<td>22</td>
<td>1.4078</td>
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<td>16</td>
<td>1.3070</td>
<td>1959</td>
<td>18</td>
<td>1.5546</td>
<td>1995</td>
<td>22</td>
<td>1.8387</td>
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<tr>
<td>1924</td>
<td>16</td>
<td>1.3693</td>
<td>1960</td>
<td>18</td>
<td>1.6415</td>
<td>1996</td>
<td>22</td>
<td>1.8540</td>
</tr>
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<td>1925</td>
<td>17</td>
<td>1.9225</td>
<td>1961</td>
<td>18</td>
<td>1.4561</td>
<td>1997</td>
<td>22</td>
<td>1.1555</td>
</tr>
<tr>
<td>1926</td>
<td>18</td>
<td>2.2132</td>
<td>1962</td>
<td>18</td>
<td>2.0548</td>
<td>1998</td>
<td>22</td>
<td>1.3121</td>
</tr>
<tr>
<td>1927</td>
<td>18</td>
<td>2.0794</td>
<td>1963</td>
<td>18</td>
<td>1.9413</td>
<td>1999</td>
<td>22</td>
<td>1.7139</td>
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<tr>
<td>1928</td>
<td>18</td>
<td>2.0367</td>
<td>1964</td>
<td>18</td>
<td>2.1731</td>
<td>2000</td>
<td>22</td>
<td>1.7678</td>
</tr>
<tr>
<td>1929</td>
<td>18</td>
<td>2.2812</td>
<td>1965</td>
<td>18</td>
<td>1.7213</td>
<td>2001</td>
<td>22</td>
<td>1.8586</td>
</tr>
<tr>
<td>1930</td>
<td>18</td>
<td>1.8659</td>
<td>1966</td>
<td>18</td>
<td>2.2751</td>
<td>2002</td>
<td>22</td>
<td>1.6096</td>
</tr>
<tr>
<td>1931</td>
<td>18</td>
<td>2.1257</td>
<td>1967</td>
<td>18</td>
<td>1.8810</td>
<td>2003</td>
<td>22</td>
<td>1.7774</td>
</tr>
<tr>
<td>1932</td>
<td>18</td>
<td>2.1452</td>
<td>1968</td>
<td>20</td>
<td>2.0656</td>
<td>2004</td>
<td>22</td>
<td>1.7645</td>
</tr>
</tbody>
</table>
The average ASD/ISD ratios (and other competitive balance information) for all three leagues is summarised in Table 4 for the period 1970-1984 (1979-1984 for the NBL) and for the period 1985-2004 in Table 5. The tables also summarise the distribution of premierships/championships. During the period 1970-1984, the 15 AFL premierships were shared amongst just five of the twelve clubs, (the distribution being 5-4-3-2-1), and two clubs won two premierships in succession. In period 6 (1985-2004), the 20 premierships were shared amongst nine of the clubs (4-3-3-2-2-2-2-1-1). The number of clubs winning premierships increased from 12 to 14 in 1987, to 15 in 1991 and to 16 between 1995 and 2004 (for an average of 15 clubs over this period). As in the earlier period, two clubs each won back-to-back premierships, whilst Brisbane won three premierships in successive years. However, Brisbane was never minor premier (most wins at the end of the home and away season) in any of its premiership seasons. On the other hand, Port Adelaide was minor premier three years in succession, 2002 to 2004, before winning its inaugural flag in 2004. With more than half of AFL clubs (9 from an average of 15) winning premierships between 1985 and 2004 compared with fewer than half (5 clubs from an average of twelve) between 1970 and 1984, and a more even spread of premierships amongst the clubs between 1985-2004, we conclude that, on this measure, between-season competitive has been higher in the later period.

### Table 3: Average ASD/ISD Ratios, AFL

<table>
<thead>
<tr>
<th>Periods of Labour Market Intervention and Revenue Sharing</th>
<th>ASD/ISD ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (1897-1914) Free Agency</td>
<td>1.9520</td>
</tr>
<tr>
<td>2. (1915-1929) Free Agency and Metropolitan Zoning</td>
<td>1.7749</td>
</tr>
<tr>
<td>3. (1930-1944) Free Agency, Metropolitan Zoning &amp; the Coulter Law</td>
<td>1.9083</td>
</tr>
<tr>
<td>(1897-2004) Average</td>
<td>1.8282</td>
</tr>
</tbody>
</table>
Comparing Competitive Balance


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ASD/ISD Ratio</td>
<td>1.886</td>
<td>1.981</td>
<td>1.757</td>
</tr>
<tr>
<td># Premier/Champion Teams</td>
<td>5</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Premierships Distribution</td>
<td>5-4-3-2-1</td>
<td>2-2-1-1</td>
<td>4-3-2-2-2-2-2</td>
</tr>
<tr>
<td>Average # of Teams</td>
<td>12</td>
<td>13.5</td>
<td>12.3</td>
</tr>
<tr>
<td># Expansion Teams</td>
<td>0*</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td># Expansion Team Flags</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td># Contraction Teams</td>
<td>0*</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

* Not including South Melbourne’s move to Sydney in 1982.

Table 5: Competitive Balance Comparisons: 1985-2004

<table>
<thead>
<tr>
<th></th>
<th>AFL</th>
<th>NBL</th>
<th>NRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average ASD/ISD Ratio</td>
<td>1.711</td>
<td>1.887</td>
<td>1.668</td>
</tr>
<tr>
<td># Premiers/Champions</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Premierships Distribution</td>
<td>4-3-3-2-2-2-2-1-1</td>
<td>4-4-2-2-2-2-2-2-1-1</td>
<td>4-4-3-2-2-2-1-1-1</td>
</tr>
<tr>
<td>Average # of Teams</td>
<td>15</td>
<td>12.7</td>
<td>15.4*</td>
</tr>
<tr>
<td># Expansion Teams</td>
<td>5</td>
<td>9</td>
<td>10**</td>
</tr>
<tr>
<td># Expansion Team Flags</td>
<td>8</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td># Contraction/Mergers</td>
<td>0/1***</td>
<td>11</td>
<td>5**/3</td>
</tr>
</tbody>
</table>

** Not including South Sydney’s expulsion in 2000 and readmission in 2002.
*** Fitzroy’s merger with Brisbane Bears to form the Brisbane Lions in 1997.

To summarise: On the basis of our two measures of competitive balance, the ASD/ISD ratio and the distribution of premierships, the AFL has had higher levels of competitive balance since 1985.

Explaining Competitive Balance in the AFL

If all else is equal, under free agency a league comprised of win-maximising clubs is likely to have less competitive balance than a league comprised of profit-maximising teams (Booth, 2000, 2004a, 2004b, 2005; Fort, 2004; Késenne 1996, 2000, 2001). This is due to the different incentives to acquire player talent. In the AFL (a league comprised of member-owned win-maximising clubs) the team salary cap and player
draft tend to reinforce one another, since a player cannot be drafted unless it can be demonstrated to the AFL that his anticipated salary can be fitted under the team salary cap (Booth, 2000, 2004b). Whilst cash sales of player contracts are not permitted in the AFL, the trade of players/draft selections can partially undo the effects of the player draft. However, if the player draft is combined with a “hard” and enforceable team salary cap and teams have the revenue to pay the team salary cap, there is little incentive for a win-maximising club to trade away (net) player talent. Nor are there any financial incentives for (net) player talent to change clubs.

Club revenues have typically been large enough to allow even those with the lowest revenues to pay the team salary cap. If not for 50-50 gate-revenue sharing over the years and league-revenue sharing of key income streams from national broadcast rights, corporate sponsorship and finals, the revenues of the smaller clubs might not have been sufficient to pay the team salary cap. Financially-embattled Fitzroy was an exception and was merged with Brisbane at the end of 1996. Whilst there is agreement that revenue sharing arrangements in general have no impact on competitive balance in a league of profit-maximising clubs, revenue sharing can improve competitive balance in a league of win-maximising clubs (Booth 2000, 2004b; Késenne 1996, 2000, 2001). In any case, 50-50 gate sharing was abandoned from 2000 in favour of the home team keeping net gate receipts (after deduction of match expenses). The team salary cap has been strongly enforced in recent years. Essendon and Melbourne in 1999, Fremantle in 2001, and Carlton in 2002 incurred large fines and national draft selection losses following team salary cap breaches.

In conclusion, the evidence is consistent with the view that in the AFL – a league comprised of win-maximising clubs – the player draft, team salary cap, and revenue sharing have helped to improve competitive balance (Booth, 2000, 2004b).

Perhaps the major problem with concluding that changes in the players’ labour market (and in revenue sharing) have improved competitive balance is that over the period in question there have also been changes in the location and number of teams, which may also have affected competitive balance (cf. Fort, 2003; Sanderson & Siegfried, 2003). It is also possible that competitive balance in the AFL was increased, in part, by the move of financially-embattled South Melbourne to the large but non-traditional football market of Sydney (in 1982), the introduction of a new (expansion) team into the large but non-traditional football market of Brisbane (in 1987), as well as subsequent expansion into the smaller but traditionally stronger football markets of Perth and Adelaide.

In the AFL, the member-owned nature of clubs could inhibit mergers and/or relocations of clubs to more viable markets, which would otherwise enhance competitive balance. On the other hand, member ownership may have advantages when building brand loyalty. The league might therefore be more willing to give financial support to a member-owned club than to a privately-owned team.
Both the Sydney and Brisbane clubs went through short periods of unprofitable private ownership (Booth, 2004a). Neither team had immediate playing success. South Melbourne moved to Sydney in 1982, but it was not until 1986-89 that the Swans won 50% or more of their games. This was followed by another lean spell between 1990 and 1995 until Sydney procured a Grand Final spot in 1996. After their appearance in the Grand Final, the Swans won more than 50% of their games every year except in 2000 and 2002. Although it was not until 1995 that Brisbane first won more than half of its games, the subsequent merger with Fitzroy in 1997 had two effects. First, it removed a relatively-uncompetitive team. (Fitzroy won more than half its games only once in the 7 seasons from 1990 through 1996.) Second, it provided the impetus for the Brisbane Lions to achieve win percentages above 50% consistently from 1999 through 2004, culminating in three premierships in a row (from 2001-2003) and a Grand Final spot in 2004. The introduction of two new teams in both Perth (West Coast in 1987 and Fremantle in 1995) and Adelaide (Adelaide in 1991 and Port Adelaide in 1997), cities which were strong supporters of Australian football, increased competition for the traditional Victoria-based clubs. These four clubs have large membership bases and revenue streams, and three of the four clubs have achieved playing success relatively quickly. West Coast won premierships in 1992 and 1994, Adelaide in 1997 and 1998, and Port Adelaide in 2004. Only Fremantle has yet to win a premiership. Including Brisbane’s three flags, expansion teams have won eight of the 13 premierships between 1992 and 2004.

Measuring Competitive Balance in the NBL

The NBL is a relatively new competition, having begun in 1979. Consequently, we are unable to compare the NBL’s performance with the AFL and NRL prior to that date. However, Figure 2 reveals that in seven of the nine years between 1982 and 1990 (including four years in succession, 1982-1985), ASD/ISD ratios are above 2.0, and the ratios are higher than in both the AFL and the NRL in every year between 1983 and 1990. From these high ratios in the 1980s, there has been a long downward trend (apart from spikes in 1994, 2000 and 2001). As shown in Tables 4 and 5, the average ASD/ISD ratio is lower for the 20-year period 1985-2004 (1.887) than for the earlier 6-year period 1979-1984 (1.981). In both periods, the NBL ratios are higher than those of the AFL.

Tables 4 and 5 also summarise championships for the NBL and NRL for the two periods. For the period 1985-2004, the 4-4-2-2-2-2-1-1-1 distribution of NBL championships, compares favourably with the earlier (admittedly short) 6-year period distribution (2-2-1-1). The NBL’s 1985-2004 distribution is not dissimilar to that in the AFL. Between 1985 and 2004, three teams won championships in succession in the NBL.

In summary, looking at the ASD/ISD ratios and the distribution of
Figure 2: ASD/ISD Ratios: AFL, NBL & NRL

ASD/ISD Ratios: AFL (Booth, 2004b), NBL & NRL (Macdonald & Borland, 2005).
championships, competitive balance has improved in the NBL in the latter period, as it did in the AFL, and is similar to levels of competitive balance in the AFL since 1985. It is worth noting that in the early years, NBL clubs were non-profit organisations; now the majority are privately-owned. National television broadcasting rights and sponsorship revenue is distributed equally, but gate revenues and local broadcasting revenues are not shared in the NBL.

**Explaining Competitive Balance in the NBL**

One possible explanation for an improvement in competitive balance in the NBL is the introduction of a team salary cap and a limit on imported players. A team salary cap was first introduced in the NBL in 1989, but was not structured in a manner that could foster competitive balance. MacDonald and Borland (2004) note that the NBL lacked the resources to effectively police the cap, and many clubs did not have the financial resources to meet the rising value of the team salary cap.

Another feature of the NBL’s player labour market which might have affected competitive balance is the “two-import rule”. Since 1990, this rule has limited a club to two players who are ineligible to represent the Australian national team. Thus, teams face a common limit on their capacity to import talent from overseas.

The difficulty in determining what may have improved competitive balance in the NBL is exacerbated by changes in the number and location of teams in the league. Unlike the AFL, the NBL has included expansion teams, but has also excluded many teams. The exclusion of teams in small revenue markets could improve competitive balance, especially if they had problems generating the revenue to pay the team salary cap. Likewise, the inclusion of more teams in large revenue markets could also improve competitive balance by increasing the number of well-performing teams.

Using data compiled from Macdonald and Borland (2005), ten expansion teams and six contraction teams can be identified in the period 1979-1984 in the NBL (Table 5). The league began with ten teams in 1979 and started the 1985 season with fourteen teams. Launceston Casino City, Coburg/North Melbourne Giants and West Torrens/Forrestville Eagles were added in 1980; Geelong Supercats, Perth Wildcats and Adelaide City Eagles/Adelaide 36ers in 1982; Devonport Warriors, Frankston Bears and Hobart Tassie Devils in 1983; and Melbourne Tigers in 1984. Teams lost to league contraction were the Glenelg Tigers (after 1979), West Torrens/Forrestville Eagles (after 1981), Launceston Casino City (after 1982), and Devonport Warriors, Frankston Bears and West Adelaide Bearcats (after 1984).

In the period 1985-2004, there were nine expansion teams and eleven teams lost to contraction in the NBL (Table 5). Fourteen teams started the season from 1985, with only twelve teams in 2004. The nine expansion teams were the Sydney Kings (1988), Gold Coast Cougars/Rollers (1990), South East Melbourne Magic...

To illustrate the effect these changes might have had on competitive balance, consider the inclusion of Launceston Casino City, Coburg/North Melbourne Giants and West Torrens/Forrestville Eagles (in 1980). This coincided with the ASD/ISD ratio dropping from 1.931 in 1979 to 1.414 by 1981, and Launceston Casino City winning the championship in 1981. On the other hand, the league's net addition of two further teams (when three were added and one was dropped) in 1982 was associated with a jump in the ASD/ISD ratio to 2.273. Moreover, further (net) expansion of two more teams in 1983 and another in 1984 failed to bring the ratio below 2.0.

Following the relatively stable thirteen or fourteen team single-division competition effective between 1985 and 1996, another major change occurred in 1997. Three relatively small-revenue market teams (in Hobart, Geelong and the Gold Coast) were excluded, with the ASD/ISD ratio dropping from 1.815 in 1996 to 1.401 in 1997, 1.670 in 1998, and 1.282 in 1999.

In general, expansion teams have not been as successful in winning championships in the NBL as expansion teams have been in winning premierships in the AFL. Between 1985 and 2004, there were nine expansion teams in the NBL. Of the twenty championships contested over this period, only four were won by expansion teams – South East Melbourne Magic twice (1992, 1996) and Sydney Kings twice in succession (2002-2003, 2003-2004). This compares with five expansion teams winning eight of the twenty AFL premierships in the same period. Thus, expansion seems not to have had as strong or consistent effect on competitive balance in the NBL as it has had on the AFL.

Measuring Competitive Balance in the NRL

Figure 2 shows that between 1970 and 1984, the NRL recorded an ASD/ISD ratio above 2.0 only once (2.216 in 1977), but the ratio was only below 1.5 once (1.340 in 1981). In the post-1985 period, the NRL recorded a ratio of 2.0 or above just twice (in 1993 and 1995), and a ratio below 1.5 five times (in 1986, 1987, 1992, 2000 and 2004). But, as shown in Tables 4 and 5, the average ASD/ISD ratio in the NRL
Comparing Competitive Balance

was only slightly higher in the pre-1985 period (1.757) than it was in the post-1985 period (1.668). It was slightly lower than either of the corresponding AFL ratios of 1.886 and 1.711 for the pre- and post-1985 periods, respectively. On the ASD/ISD ratio evidence, the NRL has become slightly more competitive post-1985 and, on average, has been slightly more competitive than the AFL in both periods since 1970.

The NRL was a stable 12-team league until 1981, moving to fourteen teams in 1982 and 1983, and thirteen teams in 1984. Between 1970 and 1984 only six of the 12.3 (average) teams won a premiership. This distribution of premierships (4-3-2-2-2) amongst six of an average of 12.3 teams in the NRL is slightly more even than the distribution of AFL premierships (5-4-3-2-1) over the same 15-year period (see Table 4). However, there were four occasions in the NRL when clubs won premierships in succession, including Parramatta’s run of three. Over the same period, just two clubs won successive premierships in the AFL.

In the twenty-year period 1985-2004, the average number of teams in the NRL increased to 15.4 (excluding the 10-team Super League competition in 1997); nine of these teams won premierships (see Table 5). This distribution of premierships amongst nine of the average 15.4 teams on a 4-4-3-2-2-1-1-1-1 basis suggests a higher level of between-season competitive balance in the NRL in the post-1985 period. This distribution is similar to that in the AFL over the same period, where nine of an average of fifteen teams also shared the premierships, but on a 4-3-3-2-2-2-2-2-2-1-1 basis.

In summary, the ASD/ISD ratios and the distribution of premierships in the NRL suggest that competitive balance has increased slightly in the period since 1985, and is not significantly different from the competitive balance levels of the AFL.

Explaining Competitive Balance in the NRL

The ownership structure of NRL clubs has also changed over time. In addition to the traditional member-owned clubs, there are also some privately-owned teams. The corporate governance structure of the NRL, which impinges on revenue sharing arrangements, is complex (Macdonald & Borland, 2004). Currently, revenue from media, sponsorship and merchandising contracts is either (1) retained by the NRL owners (a 50-50 partnership between Australian Rugby Football League Ltd [ARFL Ltd.] and News Limited subsidiary National Rugby League Investments Pty. Ltd.) or (2) distributed to NRL clubs and National Rugby League Ltd. (NRL Ltd.), which was established to run the NRL competition. Clubs receive all regular home game and season ticket revenues and NRL Ltd. receives all finals revenue. During and
since the Super League war in 1997, there has also been substantial funding of clubs by media organisations.

In seeking to understand the influences on competitive balance in the NRL, it is useful to note changes in labour market devices used in the NRL. Macdonald and Borland (2004) describe the labour market in the decade before 1971 as essentially a retain-and-transfer system similar to that formerly employed in the AFL and English soccer. Following the 1971 *Buckley v. Totty* decision in the High Court, out-of-contract players became free agents. This was accompanied in the 1970s first by a series of wage maxima (most of which were thought to have been disregarded), then by limits on the number of players imported from outside clubs’ residential zones. The team salary cap was introduced in 1990, along with an internal draft modelled on the AFL pre-season draft that was designed to allocate out-of-contract players to clubs. The internal draft was ruled an unreasonable restraint of trade in September 1991. Since then, the labour market can be characterised as one of free agency supplemented by a team salary cap.

The potential also exists for competitive balance in the NRL to have changed as a result of significant changes in the number and location of teams since 1982. Macdonald and Borland (2004, 2005) outline the major changes to the makeup of the NRL competition. In the period 1970-1984, there were two expansion teams and one contraction team in the NRL (see Table 4). The league had twelve teams for the 1970 season, and finished with thirteen teams for the 1984 season. The two expansion teams were the Canberra Raiders and Illawarra Steelers (1982), while Newtown was lost to league contraction after the 1982 season.

In the period 1985-2004, not including the expulsion (after 1999) and readmission (2002) of South Sydney, there were ten expansion teams and five teams lost to contraction (plus 3 mergers) in the NRL (see Table 5). The league was comprised of thirteen teams in 1985 and finished with fifteen teams in 2004. The expansion teams were the Brisbane Broncos, Gold Coast Seagulls/Chargers and Newcastle Knights (1988), Auckland/New Zealand Warriors, North Queensland Cowboys, South Queensland Crushers and Western/Perth Reds (1995), Adelaide Rams and Hunter Mariners (in Super League, 1997), and Melbourne Storm (1998). The teams lost to contraction were the Hunter Mariners (Super League), Western/Perth Reds and South Queensland Crushers (after 1997), and Adelaide Rams and Gold Coast Seagulls/Chargers (after 1998). The three mergers were between St George and Illawarra Steelers (St George-Illawarra, after 1998), and after 1999 Balmain and Western Suburbs (Wests Tigers) and Manly (-Warringah) and North Sydney (Northern Eagles). However, the Northern Eagles merger failed, leaving the Manly Sea Eagles to stand alone from 2003.

Unlike the NBL, there is no systematic change in the ASD/ISD ratios associated with NRL expansion or contraction. For example, during the period of team stability between 1970 and 1981, the ratio ranged from a high of 2.216 in 1977
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to a low of 1.340 in 1981. However, between 1982 and 2004 when the NRL varied in size from as many as twenty teams in 1995, 1996 and 1998 to as few as twelve in 1997 (i.e., excluding the 10-team Super League in 1997), the ratio ranged from a high of 2.193 in 1995 with twenty teams to a low of 1.225 in 1986 with thirteen teams. Unlike the AFL or the NBL, there appear to be no obvious examples of the expansion or contraction of the league having an identifiable impact on the NRL’s ASD/ISD ratio.

Expansion in the NRL in the period 1970-2004 began in 1982 with the inclusion of the Canberra Raiders and Illawarra Steelers, but since 1985 ten more expansion teams have been admitted. Table 5 shows that ten of the twenty premierships contested since 1985 have been won by these expansion teams: Brisbane has won four (1992, 1993, 1998 and 2000), Canberra three (1989, 1990 and 1994), Newcastle two (1997, 2001) and Melbourne one (1999). This proportion (50%) is higher than in the AFL where expansion teams have won eight of twenty premierships since 1985 (40%), although fewer expansion teams (5) have been introduced in the AFL since 1985. Note that Brisbane won Super League in 1997, but since expansion team Newcastle won the ARL premiership in 1997, to include Brisbane’s 1997 Super League premiership would amount to double counting.

Conclusion

Two simple measures of competitive balance, the ASD/ISD ratio (to measure within-season competitive balance) and the distribution of premierships/championships (to measure between-season competitive balance), have been used to assess recent levels of competitive balance in the AFL, NBL and NRL.

Over the period 1970-2004 (1979-2004 in the NBL), average ASD/ISD ratios were lowest in the NRL (1.706), next lowest in the AFL (1.786), and highest in the NBL (1.917). This is also true for both sub-periods: firstly 1970-1984 with the NRL (1.757), the AFL (1.886) and (for 1979-1984) the NBL (1.981), and secondly 1985-2004 with the NRL (1.668), the AFL (1.711) and the NBL (1.887). ASD/ISD ratios support the contention that within-season competitive balance has increased in all three leagues in the period 1985-2004 compared with the pre-1985 period, and has been consistently highest (but only slightly) in both periods in the NRL, followed by the AFL, and lowest of all (but only slightly) in the NBL.

Furthermore, the distribution of premierships suggests that between-season competitive balance has been similar in the NRL and the AFL, and has increased in both leagues. The distribution of NBL championships in the period 1985-2004 is similar to both the NRL and the AFL, and possibly an improvement over the (admittedly short) six year period leading up to 1985. Thus, there is very little difference in between-season competitive balance amongst the three leagues, and
between-season competitive balance, like within-season competitive balance, has increased in all leagues since 1985.

In the fifteen year period 1970-1984, three NRL clubs won premierships in succession, and one club won three in a row, as opposed to just two clubs winning successive premierships in the AFL. In the twenty year period 1985-2004, two clubs won successive premierships in the NRL and in the AFL two clubs won premierships in succession and one club won three in a row. In the NBL, two teams won championships in succession between 1979 and 1984, compared with three teams between 1985 and 2004. In summary, the number of times a club/team wins successive premierships/championships, another aspect of between-season competitive balance, shows little difference amongst the three leagues. Thus, the evidence indicated by ASD/ISD ratios, and the distribution and number of successive premierships/championships leads to the general conclusion that both within-season and between-season competitive balance has increased in all three leagues in the period 1985-2004. However, whilst within-season competitive balance has been consistently higher (but only slightly) in the NRL followed by the AFL and then the NBL, there is very little (if any) difference in between-season competitive balance amongst the three leagues.

It has been argued elsewhere (Booth, 2000, 2004b) that the introduction of a team salary cap and national player draft is one possible reason for the increase in competitive balance in the AFL in the period 1985-2004. The introduction of a team salary cap in the NRL, and the introduction of both a team salary cap and the two import rule in the NBL are possible explanations for the increase in competitive balance in these two leagues. It is argued here that competitive balance is also likely to have been affected simultaneously in all three leagues by changes in the number and location of teams – particularly, the introduction of expansion teams into large-revenue markets (and the removal of relatively uncompetitive teams from small-revenue markets). Indeed, the number and location of clubs/teams might help to explain the slight relative differences in levels of within-season competitive balance between the leagues. In both the AFL and the NBL, there are examples of correlation between changes in ASD/ISD ratios and expansion (and also contraction in the case of the NBL) of the leagues, though there does not appear to be any systematic or identifiable change in ISD/ASD ratios associated with expansion/contraction of the NRL. Moreover, expansion teams have been quite successful in winning premierships, especially in the NRL and AFL.

Whilst team player drafts, team salary caps and club locations have been shown to influence competitive balance, there is room for further exploration. For example, an examination of competitive balance, labour market devices and revenue sharing rules used in the NRL since its formation in 1908 might provide more insights. For all leagues, more detailed analysis of teams’ revenues, including the influence of revenue-sharing arrangements in addressing revenue imbalances
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between teams, could help to identify whether revenue market size influences on-field success. Finally, differences and/or changes in ownership of clubs/teams which affect levels of player talent and, hence, competitive balance warrants study.

Competitive balance is core to professional sport leagues throughout the world. This paper identifies three factors that affect both in-season and between-season competitive balance: player drafts, team salary caps, and club locations. At the same time, it suggests the need to explore the effects of other key factors on competitive balance. Understanding is the first step to the successful application of labour market devices to maintain competitive balance in professional sport leagues. Manipulation and evaluation of those applications in different sport contexts will give sport managers the confidence to apply labour market devices appropriately and effectively.

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