



Munich Personal RePEc Archive

Where did National Hockey League Fans go During the 2004-2005 Lockout?: An Analysis of Economic Competition Between Leagues

Daniel, Rascher; Matt, Brown; Mark, Nagel and Chad, McEvoy

University of San Francisco, University of South Carolina,
University of South Carolina, Illinois State University

2009

Online at <http://mpra.ub.uni-muenchen.de/25804/>
MPRA Paper No. 25804, posted 11. October 2010 / 07:26

RUNNING HEAD: Where did NHL Fans go during the 2004-2005 Lockout?

Where did National Hockey League Fans go during the 2004-2005 Lockout?

An Analysis of Economic Competition between Leagues

ABSTRACT

Identifying and evaluating competitors is a critical aspect of operating a sport organisation. However, North American sports franchises have a limited understanding of competitors in their geographic market – particularly when calculating the degree of competition from other sport teams. Increasing the understanding of local sport competitors, whether in the same or different professional leagues, is critical not only to future franchise operations, but also for potential litigation concerning relevant product markets. This article utilises a natural experiment involving the National Hockey League's (NHL) 2004-2005 lockout to assess the competitiveness of the NHL with the National Basketball Association (NBA) and four minor hockey leagues. On average, the five potential competitor leagues attained a 2% increase in demand, all else equal, during the lockout period. For the NBA this translates into more than US\$1 million per team in increased incremental ticket revenue.

Keywords: relevant market, competition, demand, National Hockey League, regression analysis

Where did National Hockey League Fans go during the 2004-2005 Lockout?

An Analysis of Economic Competition between Leagues

1 Introduction

Competition in sports often refers to athletic competition on the field of play. In the business of sports, competition refers to enterprises that compete with each other for customers. It is often unclear, however, if teams in the same marketplace compete for the same customers. For instance, does a person living in Chicago make a choice to attend either a Major League Baseball (MLB) Chicago White Sox game or a MLB Chicago Cubs game based upon the price to attend, the quality of the team, the quality of the opponent, the stadium, or the presence of star players? Or, are the White Sox and the Cubs even competing for the same customers in their marketplace?

Understanding and comparing the customer base becomes even more difficult when examining cross-sport and cross-level competition. In Los Angeles, does a consumer make a cross-sport choice to attend either the National Hockey League's (NHL) Los Angeles Kings games or the National Basketball Association's (NBA) Los Angeles Lakers games? The potential cross-level competition affects hockey consumers in places like Philadelphia, Pennsylvania. They can choose between attending a major league NHL Philadelphia Flyers game or a minor league American Hockey League (AHL) game.

Sport organisations not only compete for consumers' ticket revenue in the marketplace but also for other revenues such as corporate sponsorship,

licensed merchandise sales, and local broadcast rights. Teams in the same marketplace offer live in-person entertainment to fans, sponsor access to a target market, and contribute content to media companies. Possibly, teams in the same marketplace may compete with one another for some combination of all these revenue sources, or the teams might not be competitors as their potential consumer bases do not overlap. Recently, the discussion of professional sport marketplace competition received attention when MLB's Montreal Expos moved to Washington D.C. Peter Angelos, owner of MLB's Baltimore Orioles (located roughly 40 miles from Washington, D.C.), demanded and received compensation from MLB to supplement the team's potential lost revenues due to the new competition in the marketplace (Nagel *et al.*, 2007). Similar concerns arose when MLB's Oakland Athletics investigated a possible move to Santa Clara County, California which is within the territorial boundaries of MLB's San Francisco Giants. Throughout league relocation cases, one of the central questions has been the degree to which teams are in competition with each other for fans, and by extension, corporate sponsors, advertising revenues, and media rights.

These disputes between teams within leagues have occasionally resulted in litigation regarding potential revenue losses due to increased competition for consumers in the marketplace. In the United States, antitrust law governs most of these disputes. In these types of sports cases, teams or leagues often have to determine the definition of the product and geographic markets as their first step in assessing market power. The scope of the product

and geographic markets relates to the degree of competition with other sports teams, leagues, or even other forms of entertainment. However, there has not been a consensus in terms of product market definition by the courts (Freitas, 2000). Three cases illustrate this point. In *International Boxing Club v. United States* (1959), the United States Supreme Court upheld a lower court determination that the promotion of championship boxing matches, in contrast to all professional boxing events, constituted a relevant product market. The U.S. Supreme Court affirmed, in *NCAA v. Board of Regents* (1984), that live college football telecasts were a distinct relevant market because the audience is unique and attractive to advertisers and competitors are not able to offer programming that can attract a similar audience. However, in *Chicago Professional Sports LTD. v. NBA* (1996), the circuit court determined that viewers of basketball games are not unique and that advertisers can market to them through other channels.

As the courts have not established a consensus on marketplace competition for professional sports teams, when teams have attempted to move into another marketplace, they have often had to make economic arguments justifying their move. When the National Football League's (NFL) Oakland Raiders moved to Los Angeles, the NFL attempted to prohibit their move (*Los Angeles Memorial Coliseum Commission v. National Football League*, 1984). One issue in the suit was the definition of the relevant market. The Raiders argued that the relevant geographic market was Southern California while professional football was the relevant product market. Lehn

and Sykuta (1997, p. 549) stated that “The NFL countered that the appropriate market was all forms of entertainment throughout the United States. The court accepted the narrower definition offered by the Raiders. In doing so, it offered no indication that either interchangeability of products or cross-price elasticities were seriously considered in the deliberation.” Lehn and Sykuta further noted that this was in conflict with the court’s rationale, as it earlier stated that the appropriate tests for determining the relevant product market were both reasonable interchangeability and cross-price elasticities (see *Los Angeles Memorial Coliseum* at 1393).

The inconsistency of the court’s evaluation of sports business competition demonstrates the need to study competition in the sports business industry (Lehn and Sykuta, 1997). Leaving aside issues ranging from media rights to sponsorship, sports business competition for live in-person consumption in one geographic area can involve four different competitive environments: a) the same sport at different levels of competition (e.g. the NHL’s Chicago Blackhawks and the AHL’s Chicago Wolves), b) different sports at the same level of competition (e.g. the NHL’s Los Angeles Kings and the NBA’s Los Angeles Lakers), c) the same sport at the same level of competition (e.g. the NBA’s Los Angeles Lakers and Los Angeles Clippers), and d) different sports at different levels of competition (e.g. the NBA’s Chicago Bulls and the AHL’s Chicago Wolves). Of course, this does not include all of the possibilities for a sport competing with non-sports forms of entertainment (e.g., movies, the beach). This paper addresses competition for

live in-person attendance between the same sport at different levels of competition and different sports at the same level of competition.

Prior to the 2004-2005 season, the NHL *locked out* its players in an effort to reform its economic system. As a result of the lockout, a natural experiment was created that can be utilised to measure competition between the same sport at different levels of competition (Hypothesis 1 in Table 1) and different sports at the same level of competition (Hypothesis 2 in Table 1). Specifically, the labour stoppage afforded the authors an opportunity to determine if live in-person consumers of NHL games instead went to NBA games or minor league hockey games during the lockout.

This issue is relevant to sport managers for many reasons. Most importantly, it affects the establishment of price levels. When setting prices, an organisation must understand the competitiveness of its market. It has to recognise who it is competing against in the marketplace and incorporate that information while determining pricing. Additionally, it may impact scheduling of games and other ways to differentiate the product.

Insert Table 1 about here.

2 Review of Literature

Relevant literature concerning the competition for consumers in the marketplace by professional sports teams primarily includes research regarding sports team relocations and the impacts of the relocations on league outcomes. However, little has been written on direct measurements of competition.

Lehn and Sykuta (1997) examined the impact of the NFL Raiders relocation to Los Angeles on the league. The Raiders were originally located in Oakland, California and wished to move to Los Angeles in 1982. To move, the team had to gain approval of three-fourths of NFL franchise owners according to rule 4.3 of the NFL's Constitution. The league did not approve the Raiders request to move, so the Raiders sued the league claiming that its relocation rules were an unreasonable restraint of competition, specifically between the Raiders and the Los Angeles Rams, the NFL franchise located in Los Angeles. As noted previously, the court in *Los Angeles Memorial Coliseum Commission v. National Football League* (1984) ruled on behalf of the Raiders stating that rule 4.3 unreasonably restrained competition in the local market for local fans' dollars as well as local media and advertising revenues. The court ruled that by prohibiting the move, the NFL would restrict competition which might result in increased prices for tickets in the local marketplace.

Further, Lehn and Sykuta (1997) noted, with interest, how the court defined the relevant market in this case. First, the court found that the NFL was a unique product as the Raiders had sold out its stadium for the 10

previous years with ticket prices set among the NFL's highest. Adding to this, television viewership was large as indicated by high Super Bowl ratings and the US\$2 billion television contract that the league had with its broadcast partners. During the trial, fans of professional football were found to be different from fans of college football; therefore, if the NFL did not compete with other forms of football it did not compete with other forms of entertainment. Second, the court found that it was obvious that NFL teams in the same marketplace compete for fan support. In fact, as noted previously, there is economic competition for teams as well. The San Francisco 49ers and the New York Giants were paid US\$18 million by the NFL due to the potential economic harm the teams might face when the league voted to allow the Oakland Raiders and the New York Jets to join the league.

Lehn and Sykuta (1997) also examined whether the move of the Raiders' franchise into Los Angeles enhanced competition while eroding the Rams' monopoly rents. The authors stated that since no NFL team was located in the Los Angeles market after the 1995 season (the Rams moved to St. Louis, Missouri while the Raiders moved back to Oakland), the Rams must not have been earning monopoly rents before the Raiders entered their marketplace. If a team were earning monopoly rents, Los Angeles, which is the second largest metropolitan area in the United States, would have a team in its marketplace.

Carlton *et al.* (2004) support Lehn and Sykuta's (1997) scepticism, regarding the claims made by the Raiders, in their analysis of NHL relocation

rules. Carlton *et al.* noted that due to marketplace exclusivity gained by its franchise rights, NHL franchises might have short run market power in setting ticket prices (Their data set covered the 1967 to 1984 seasons. Only one marketplace had multiple teams during that timeframe, the New York/New Jersey metropolitan area with three teams). However, they stated that the market power was constrained in part by alternative entertainment opportunities, such as other sporting events or even movies. Lehn and Sykuta made similar statements in their critique of the arguments made by the Raiders.

Carlton *et al.* (2004) noted that transfer rules should be adopted to maximise league revenue. According to the authors, in the NHL, transfer rules should protect *away* attendance as home teams in the league kept 100% of ticket revenue during the study's timeframe. As ticket revenue was the largest source of income for league teams, a reduction in attendance could affect the economic condition of the franchise. For example, if the St. Louis Blues would have moved to Saskatoon, Saskatchewan, Canada, as was proposed at one time, the Blues regional rivalry with the Chicago Blackhawks likely would have been affected. Fans purchase tickets to Blackhawks games in part because of this rivalry and without it, future visits by the "Saskatoon" Blues might have resulted in a reduction in ticket sales for those games.

In this study, Carlton *et al.* (2004) examined whether a team move imposed a cost on other teams in the league. Four teams moved during the timeframe of the study. The authors discovered that a team that moves draws

fewer fans to away games, therefore imposing a cost on other league members.

However, the effect of the move disperses after the first few years.

Regarding direct measurements of competition between sports teams, Rascher (2006) attempted to determine if two teams from the same league in the same geographic marketplace compete with each other for in-person attendance.

His study investigated MLB franchises. Attendance regressions were used with ticket prices for the opposing team in a shared market to estimate cross-price elasticity. Based upon the work of Fort (2004), Rascher examined three pricing variables. The first pricing variable was the average ticket prices for teams as reported by *Team Marketing Report*. The second and third pricing variables were two common seat location prices across the various teams in the study. These common seat locations included a moderately priced reserve seat and a more expensive reserve seat. Overall, Rascher found that there was not enough evidence to support competition for live in-person audiences by MLB teams in the same marketplace.

Using MLB attendance data from 1963 through 1998, Winfree *et al.* (2004, p. 1) found “that the closer two teams are, the lower attendance is at each team relative to two teams that are farther apart. In addition, when a new team moves into the area of an existing team, there is an additional initial reduction in attendance for the incumbent team.” Their research supports the hypothesis that teams in the same geographic area playing in the same league are competitors (Hypothesis 3 in Table 1).

Literature also exists that indirectly analyses the issue of the degree of competition between professional sports franchises. In these studies demand for sports (typically using attendance as a proxy for demand) is measured using the existence of other professional teams in the marketplace as a control factor. In their study examining NBA expansion and relocation, Rascher and Rascher (2004) used a location model to forecast the best cities for an NBA team if the league were to expand or if a NBA team were to relocate. They stated that location was a function of market characteristics, revenue potential, political support, and owner characteristics. Market characteristics included the competition from other professional sports teams in the local market as a control variable. Justifying the inclusion in the model, the authors stated that competitors to an NBA franchise would include any other major professional sports team in the marketplace as a sports fan might choose to attend an NHL game rather than an NBA game. They posed that fewer major professional sports teams in a marketplace will lead to a higher likelihood of financial success for an NBA team. Competition with teams in the NHL, NBA, and MLB was measured. While the model used to predict attendance, gate receipts, and total revenue was statistically significant and the number of professional sports teams in the local marketplace was found to be an important factor in predicting NBA team success, the variable was not statistically significant at less than $\alpha = .10$. Rascher *et al.* (2006) found similar results in their study on expansion and relocation of Major League Soccer (MLS) franchises.

While literature exploring direct measurements of competition in professional sports is scarce, literature regarding competition in other industries can be applied to the study of marketplace competition in sports. Song *et al.* (1997) examined the modelling of demand for food in both the United States and Netherlands. Importantly, the relevant methodological literature stems from research on cross-price elasticity analysis used in consumer product and antitrust market determinations. As noted by Lehn and Sykuta (1997), the court stated in *Los Angeles Memorial Coliseum v. National Football League*, (1984) that the appropriate tests for determining the relevant product market were both reasonable interchangeability and cross-price elasticities.

3 Theoretical Framework

The theoretical framework employed standard industrial organisation market models (Song *et al.*, 1997) which have been adapted to sports. Two hypotheses have been developed:

Hypothesis 1: Two professional teams from the same geographic market playing the same sport at different athletically competitive levels compete with each other.

Hypothesis 2: Two professional teams playing at the same athletically competitive level from the same geographic market that are in-season at the same time, but participate in different sports' leagues, compete with each other.

4 Methodology and Data

In an effort to measure demand for the NBA and four minor hockey leagues, attendance information was gathered from league web sites. The four minor hockey leagues included in this study were the AHL, the East Coast Hockey League (ECHL), Central Hockey League (CHL), and United Hockey League (UHL). Demand was analysed for each league before, during, and after the NHL lockout. The attendance data included four seasons from 2002-2003 through 2005-2006.

Hoping to improve its financial situation, on September 15, 2004, NHL owners locked out their players, placing the 2004-2005 season on hold pending a new collective bargaining agreement. On February 16, 2005, the season was officially cancelled because both sides failed to consummate a new collective bargaining agreement. The NHL and NHL Players' Association announced a tentative collective bargaining agreement July 13, 2005, the 301st day of the lockout, allowing the league to resume play. Although the lockout cancelled an entire season, it was not known that it would be a full season lockout until after the NBA and the minor hockey leagues had set ticket prices.

A time series/cross-section, or panel, data set was used to test the two hypotheses. Included in the data set was information on attendance per game, the distance to the nearest NHL arena, the population of the metropolitan area, an NHL lockout indicator variable, and team winning percentages.

Attendance per game and the ratio of team attendance to league attendance were the dependent variables used in the analyses. The expected sign on the distance to nearest NHL arena was negative, indicating that a potential

competitor that is closer to an NHL team is more likely to compete for fans than one that is further away.

The NHL lockout indicator variable was for the 2004-2005 season only. The possible endogeneity problem of competitors raising ticket prices if a firm leaves the industry was avoided as ticket prices were set by the NBA and minor hockey leagues prior to the lockout. For example, if the NBA realized that the NHL season was to be cancelled prior to setting ticket prices for the season, the league could have raised ticket prices assuming demand for NBA games would increase without competition from the NHL. However, under this scenario, the NBA may not then have realized increases in attendance as the new demand may have been absorbed by the increase in ticket prices. In this study, an analysis of attendance changes for the NBA will not be compromised by NBA teams raising ticket prices; therefore, the natural experiment can proceed.

Attendance regressions were run for each of the potential competitors without regard for price to see if the NHL lockout caused any changes in attendance. If the NBA, for instance, competes with the NHL for consumers, attendance for NBA games should have risen, all else equal, during the lockout. Similarly, NHL fans may have attended minor league hockey games during the lockout. Fans who may have attended NBA or minor league hockey games during the lockout may or may not have returned to NHL games after the lockout's conclusion for a variety of reasons (e.g., disgust with lockout, attachment to aspects of a different product). The regressions tested whether

the removal of an alternative, not just an increase in prices, caused a change in demand for NHL competitors.

Separate regressions were analysed for the five different leagues (NBA and four minor hockey leagues) using attendance per game. An additional regression that included all four of the hockey leagues (with attendance data converted to a ratio of the team's attendance divided by its league average for a given year to account for leagues with different average demand) was run. A final regression included all five leagues together (with similar attendance adjustments).

5 Analysis and Results

The impact of the NHL lockout on the demand for potential competitors, the NBA, AHL, ECHL, CHL, and UHL was assessed utilising individual regressions by league and separately utilising all four hockey leagues and then all five leagues in single regressions with an adjusted attendance measure (to account for differences in average attendance across the leagues).

Table 2 shows the results of the individual league regressions. As expected, lagged attendance per game was a powerful predictor of current attendance per game. It incorporates many team-specific factors including local hockey fanaticism, population, league quality, etc. Team winning percentage was important in all of the analyses except for the CHL (where the p-value was 15%). If a team can increase its winning percentage from 0.500 to 0.600, it can increase its attendance by about 3.0% on average (across all

five models). Population was significant only in the NBA model. Perhaps minor league sports can prosper, often more so, in smaller population centres because there is less competition for the smaller fan base.

Insert Table 2 about here.

The variable of interest, NHL lockout indicator variable, did show statistically significant impacts for all of the league models except the UHL. The NBA saw an increase of about 3.2% in attendance, above average, during the lockout time period. The AHL and ECHL (the two highest levels of hockey played in North America next to the NHL) saw increases of 5.7% and 3.6% above average, respectively. These were not only statistically significant, but may also be economically significant changes in attendance. The CHL saw a *decrease* in attendance during the time period of less than 6.0%. The CHL was the furthest, on average, geographically from NHL team locations, and was also one of the smallest leagues measured by attendance. However, the distance-to-NHL-arena variable was not significant. It is unclear as to why the CHL had a negative impact from the lockout. A time trend was included, but not found to be significant. Lagged winning percentage was also found to be insignificant.

The original analysis suffered from heteroscedasticity ($\chi_2 = 5.15$, $p > 0.023$), indicating that the variance of the error term did not remain constant

between observations, so robust standard errors were used, and the regression results with the corrected standard errors are those reported in Table 2. Tests for omitted variables ($F=0.75$, $p > 0.61$), serial correlation ($dw=1.97$), and multicollinearity (mean variance-inflation factor = 1.07) were all negative indicating robust regression results.

The results of the combined models utilising the ratio of team attendance to league average per year are shown in Table 3. The four minor hockey leagues saw an increase of about 2.3% in attendance during the lockout. With the addition of the NBA to the model, the increase in attendance during the lockout was just less than 2%. The attendance ratio was within season so it accounted for the differences in number of games played across seasons and across leagues. Thus, utilising attendance per game was mathematically redundant for this regression. These findings were statistically significant at the 10% level.

Insert Table 3 about here.

6 Discussion, Implications, Future Research

The current study presents evidence that teams in different sports, e.g., the NBA and NHL, and teams playing the same sport, but at different levels, e.g., the NHL and AHL, do compete with each other for in-person attendance. Therefore, both hypotheses cannot be rejected.

The economic impact of the NHL lockout on its competitors was not only statistically significant, but also economically significant. Attendance per game for an NBA franchise rose by 546 customers during the lockout. With NBA ticket prices averaging roughly US\$44.68 (Boeck, 2004) during the 2004-05 season, an NBA team gained just over US\$1 million in additional ticket revenue during its forty-one home game regular season. Furthermore, concessions and merchandise sales can average about US\$13 per customer for NBA games (Perna, 2003), providing nearly US\$300,000 in revenues for an NBA franchise. The economic impact the NHL lockout had upon some of the minor league hockey teams might even be more economically significant as those franchises tend to operate with fewer revenue sources and have a greater reliance upon live in-person attendance for their financial survival or potential success.

Certainly, the results of this study should encourage sport franchises to investigate the presence and actions of other teams that compete in their geographic area. The Mighty Ducks of Anaheim (NHL) recently stated that it is against an NFL team moving to Anaheim, California for fear of competition for ticket buyers, and that it would hurt the chances of Anaheim landing an NBA franchise because both organisations would be competing for luxury suite buyers and corporate sponsors (Tully, 2006). However, the San Jose Sharks (NHL) have been interested in attracting a NBA franchise to San Jose, even though there is already a NBA franchise (Golden State Warriors) within their marketplace (Witt, 2006). Although the Sharks control the revenue

sources at their arena, they should insure that a financial analysis is completed to determine how much of an impact the presence of an NBA team may have upon their ticket sales since the results of this study indicate that the Sharks would compete with an NBA team for fans. Overall, professional hockey administrators must remember that they compete for fans with other leagues (NBA and NHL) and within the sport (NHL and the minor leagues included in this study). Management must respond to this knowledge and design programs to remain competitive and improve competitiveness in the marketplace.

The findings in this study also support the argument that the relevant product market for sports teams is broader than just other teams within the same league, as found in *Los Angeles Memorial Coliseum Commission v. National Football League* (1984). Specifically, NHL teams appear to compete with NBA teams and with minor hockey teams. The test used here is whether or not the competitor's product is available to the customer or has been removed from the market place, not the traditional "small but significant and non-transitory increase in price" (SSNIP) test from the antitrust literature. In other words, a stronger test is whether a 10% SSNIP by the NHL would have caused an increase in attendance at NBA and minor hockey league games, not what essentially amounts to an infinite price increase in NHL games making them unattainable for purchase by anyone (i.e., removal from the marketplace).

The results of this study only provide data regarding the “typical” NBA franchise or team in one of the four minor hockey leagues. For some teams, the impact of the lockout might have been limited or potentially much higher than the average. One factor that might have affected demand at the minor league hockey level was the presence of locked out NHL players playing for minor league teams. Due to difficulties assessing NHL player movement to the minor leagues and determining the number of games these players participated in during the lockout, this control variable was omitted from the study. However, future research should investigate the various factors that contribute to the level of competition in particular markets and for particular teams and leagues.

Professional sports franchises at all levels must interact with local, regional and national politicians to successfully operate their franchises. The results of this study should encourage owners of any professional sports team to actively work with political power brokers to insure that, when possible, other sports franchises are not permitted to enter the marketplace or established ones are encouraged to vacate – possibly creating artificial monopoly rents (Harford, 2006). Professional sports franchises at the major league level have already noted the value of having few or no other major professional sports teams in the area (Spoelstra, 2001). This study shows that owners at all levels should potentially work within the system to limit competition from other professional leagues.

Further research regarding competition should include more cross-price elasticity studies building on Winfree *et al.* (2004) and Rascher (2006), and investigation into other natural experiments like franchise relocations or expansions (or league mergers in minor league hockey) should also be conducted. In addition to understanding the relevant product market, researchers should determine the size of a franchise's geographic market and its determinants. Winfree *et al.* (2004) measured the loss in attendance for a MLB team based on the distance to the nearest MLB team. While it is economically significant, the loss is outweighed by the overall gain in attendance to the league by adding another team. The authors concluded that competition policy focused on consumer welfare would add more teams to the large population centres (not contract teams out of the league as proposed by MLB a few years ago).

Certainly, in-person attendance is only one factor contributing to a professional sport franchise's financial success, but other revenue sources, such as those derived from sponsorships and media contracts, would likely also be influenced by the presence and the activities of competitors in a team's geographic market. Future research in these areas is needed as for some professional sports leagues, the revenues derived from in-person game attendance is or will soon be lower than other revenue sources that may be influenced by sport team competitors in the local geographic market.

References

- Boeck, G. (2004) 'Teams woo fans with cheaper seats', *USA Today*, August 30, retrieved December 26, 2006 from http://www.usatoday.com/sports/2004-08-30-top-ten-number-8_x.htm
- Carlton, D.W., Frankel, A.S., and Landes, E.M. (2004) 'The control of externalities in sports leagues: an analysis of restrictions in the National Hockey League', *Journal of Political Economy*, Vol. 112, pp. 268-288.
- Chicago Professional Sports Ltd. V. NBA* [7th Cir. 1996] 95 F.3d 593.
- Fort, R.D. (2004) 'Inelastic sports pricing', *Managerial and Decision Economics*, Vol. 25, pp. 87-94.
- Freitas, R.E. (2000) 'Overview: looking ahead at sports and antitrust law', *Antitrust*, Vol. 14, pp. 15-20.
- Harford, T. (2006) *The Undercover Economist*, New York: Oxford.
- International Boxing Club of New York Inc. v. United States* [1959] 358 U.S. 242.
- Los Angeles Memorial Coliseum Commission v. National Football League* [1984] 726 F.2d 1381.
- Lehn, K. and Sykuta, M. (1997) 'Antitrust and franchise relocation in professional sports: an economic analysis of the *Raiders* case', *Antitrust Bulletin*, Vol. 42, pp. 541-563.
- Nagel, M.S., Brown, M.T., Rascher, D.A. and McEvoy, C.D. (2007) 'Major League Baseball anti-trust immunity: examining the legal and financial

implications of relocation rules', *Entertainment and Sports Law*

Journal, Vol. 4. Available from

<http://www2.warwick.ac.uk/fac/soc/law/elj/eslj/issues/volume4/number3/nagel/>

NCAA v. Board of Regents of the University of Oklahoma, [1984] 468 U.S. 85.

Perna, L. (2003) *Phase II analysis of a Sacramento sports & entertainment district*, Turnkey Sports, LLC et al.

Rascher, D. (2006) 'The degree of economic competition between teams: do the White Sox compete with the Cubs for fans?' *North American Society for Sport Management Conference Abstract Book*, Vol. 21, pp. 228-229.

Rascher, D.A., Baehr, M.J., Wolfe, J., and Frohwerk, S. (2006) 'An analysis of expansion and relocation sides for Major League Soccer', *International Journal of Sport Management*, Vol. 7, pp. 1-12.

Rascher, D. and Rascher, H. (2004) 'NBA expansion and relocation: a viability study of various cities', *Journal of Sport Management*, Vol. 18, pp. 274-295.

Song, H., Liu, X., and Romilly, P. (1997) 'A comparative study of modeling the demand for food in the United States and the Netherlands', *Journal of Applied Econometrics*, Vol. 12, pp. 593-613.

Spoelstra, J. (2001) *Marketing Outrageously*, Austin, TX: Bard Press.

Tully, S. (2006) 'Ducks oppose NFL team: the team and Arrowhead Pond management say it would hurt their chances to lure an NBA team', *Orange County Register*, June 13, p. A1.

Winfrey, J.A., McCluskey, J.A., Mittelhammer, R.C., and Fort, R. (2004) 'Location and Attendance in Major League Baseball', *Applied Economics*, Vol. 36, pp. 2117-2124.

Witt, B. (2006) 'Sharks want NBA team in San Jose', *Contra Costa Times*, June 28, retrieved December 27, 2006 from <http://www.contracostatimes.com/mld/cctimes/14919430.htm>

Table 1

		Same League	Same Location	Same Sport	Same Level
Hypothesis 1	Chi. Blackhawks vs. Chi. Wolves		√	√	
Hypothesis 2	LA Kings vs. LA Lakers		√		√
Hypothesis 3	LA Lakers vs. LA Clippers	√	√	√	√
Hypothesis 4	Chi. Bulls vs. Chi. Wolves		√		

Table 2

League Attendance per Game Models

Model:					
	NBA	AHL	CHL	ECHL	UHL
F-statistic	30.29****	362.3****	140.8****	147.9****	84.2****
R-squared	0.66	0.90	0.90	0.83	0.92
Number of Observations	112	103	60	96	44
Dependent Variable	Attendance per Game	Attendance per Game	Attendance per Game	Attendance per Game	Attendance per Game
Average for Dependent Variable	17,172	5,724	4,628	3,995	3,440
Independent Variables:					
Team Attendance Lagged One Year	0.615****	0.917****	0.928****	0.925****	0.910****
Team Winning Percentage	3,588.4****	1,850.2****	756.5	1,503.0****	1,558.1***
<i>2004 NHL Lockout Indicator Variable</i>	545.9**	327.5***	-268.8**	142.6*	100.80
Population	0.0000394*	--	--	--	--
Constant Term	4,534.3****	-697.1**	-19.3	-711.1**	-638.3*

Significance: * - 10% level; ** - 5% level; *** - 1% level; **** - 0.1% level.

Table 3

All Leagues Using Attendance Ratios to League Average

Model:		
Dependent Variable	Minor League Hockey Attendance Ratio ¹ (4 Leagues)	NBA and Minor League Hockey Attendance Ratio ¹ (5 Leagues)
F-statistic	363.06****	285.12****
R-squared	0.88	0.87
Number of Observations	228	304
Independent Variables:		
Team Attendance Ratio Lagged One Year	.916****	.905****
<i>2004 NHL Lockout Indicator Variable</i>	0.0229*	.019*
Team Winning Percentage	.328****	.258****
Population of MSA	--	3.21e-09**
Constant Term	-.124**	-.074*

Significance: * - 10% level; ** - 5% level; *** - 1% level; **** - 0.1% level.

¹Attendance Ratio is the team attendance divided by the league average for that year.