

ON TEAM RELOCATION, LEAGUE EXPANSION, AND PUBLIC POLICY: OR, WHERE DO WE PUT THIS HOCKEY FRANCHISE AND WHY WOULD YOU CARE?

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God, will there ever be a hundred goal scorer in the NHL?

Not in your lifetime.

Well, will there ever be a hockey game without a fight?

Not in your lifetime.

Will the rich teams ever help the poor teams?

Not in my lifetime.¹

I. INTRODUCTION

Few sectors of the economy owe their structure as much to the exceptions and vagaries of the Sherman Antitrust Act² as does major sports leagues. The laws apply universally to sport, except to Major League Baseball (MLB),³ except for agreements among teams for the joint sale of television rights, except for mergers that increase the number of teams within a league, and except for a number of union related limitations.⁴ The courts also implicitly

1. Harv Antoine, *God Shoots Left and Plays Centre Ice* in APOCRYPHAL NORTHERN TALES (unpublished book on file with the authors).

2. 15 U.S.C. §§ 1-2 (1982). Section 1 of the Sherman Act provides, in pertinent part, that:

Every contract, combination in the form of trust or otherwise, or conspiracy in the restraint of trade or commerce among the several states . . . is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, and on conviction thereof, shall be punished.

15 U.S.C. § 1 (1982).

Section 2 of the Sherman Act provides, in pertinent part, that:

Every person who shall monopolize, or attempt to monopolize, or combine to conspire with any other person or persons, to monopolize any part of the trade or commerce among the several states, or with foreign nations, shall be deemed guilty of a felony, and upon conviction thereof, shall be punished.

15 U.S.C. § 2 (1982).

3. Federal Baseball Club, Inc. v. National League of Professional Baseball Clubs, 259 U.S. 200 (1922). In *Federal Baseball*, a team from the rival Federal League filed suit against the Professional Baseball Leagues, alleging that the defendant conspired to monopolize baseball. *Id.* at 207. The Supreme Court decided that professional baseball did not fall within the scope of the Sherman Act for two reasons. *Id.* at 209. First, the Court found that professional baseball was not interstate commerce because it was "purely state affairs," and, second, the Court believed that "personal effort not related to production, is not a subject of commerce." *Id.*

4. See ROBERT C. BERRY & GLENN M. WONG, 1 THE LAW AND BUSINESS OF THE SPORTS

condone horizontal agreements and territorial restrictions, and the number and location of teams are a matter solely for the leagues concerned.⁵ The present structure of major league sport in North America is such that each league has a monopoly of the sport and each team has a monopoly in a defined spatial area.⁶

In more specific terms, this structure is the result of three processes: (1) existing major leagues selectively absorbed teams from competing leagues when the latter folded; (2) existing major leagues expanded by adding new teams in new cities; (3) and teams in existing major leagues relocated to different cities.⁷ The absorption component generated little criticism, but an active demand exists for government regulation of the relocation and expansion processes

INDUSTRIES (1986) (providing a comprehensive review of the impact of the Sherman Act on professional sports leagues). Canadian antitrust law is not as explicitly accommodating as the Sherman Act but has roughly the same impact as the Sherman Act in practice. JOHN BARNES, *SPORTS AND THE LAW IN CANADA* (1988); J. Colin H. Jones & Duncan K. Davies, *Not Even Semi-Tough: Professional Sport and Canadian Antitrust*, 23 ANTITRUST BULL. 713 (1978). Given that MLB, the National Basketball Association (NBA), and the National Hockey League (NHL) have or will have teams in both the United States and Canada, it is improbable that Canadian antitrust enforcement would run counter to the Sherman Act in the United States.

5. Prior to 1984, leagues, not teams, regulated franchise relocations and franchise expansions. Such regulations did not violate the Sherman Act. The decisions of the United States Court of Appeals for the Ninth Circuit in *Los Angeles Memorial Coliseum Comm'n v. NFL*, 726 F.2d 1381 (9th Cir. 1984), *cert. denied*, 469 U.S. 900 (1984), and *Los Angeles Memorial Coliseum Comm'n v. NFL*, 791 F.2d 1356 (9th Cir. 1986), *cert. denied*, 484 U.S. 826 (1987), transferred the right of franchise relocation from the league to the team and ushered in the era of franchise free agency. John Beisner, *Sports Franchise Relocation: Competitive Markets and Taxpayer Protection*, 6 YALE L. & POL'Y REV. 429 (1988). Similar franchise arrangements are also exempt from the Canadian antitrust laws. Barnes, *supra* note 4.

6. The number of teams and cities in each of the four major sports leagues are as follows: MLB, 28 teams and 26 cities; the NBA, 28 teams and 28 cities, including the expansion Toronto and Vancouver franchises which begin play in the 1995-96 season; the National Football League (NFL), 30 teams and 28 cities, including the expansion Charlotte and Jacksonville franchises which begin play in the 1995 season; and the NHL, 26 teams and 25 cities.

7. Between 1950 and 1994, 110 franchise changes occurred in the four major sports leagues either through absorption, expansion, or relocation. Arthur T. Johnson, *Municipal Administration and the Sports Franchise Relocation Issue*, 43 PUB. ADMIN. REV. 519 (1983); JOSEPH CUNIGLIO, *THE NAMES IN THE GAME: A HISTORY OF THE MOVEMENT OF SPORTS FRANCHISES* (1979). During this 44 year time-period, MLB did not absorb any teams, expanded by 12 teams, and relocated 11 teams. Johnson, *supra*. The NBA absorbed 4 teams, expanded by 17 teams, including the Toronto and Vancouver franchises, and relocated 16 teams. *Id.* The NFL absorbed 2 teams, expanded by 8 teams, including Charlotte and Jacksonville, and relocated 14 teams. *Id.* Finally, the NHL absorbed 4 teams, expanded by 17 teams, and relocated 6 teams. *Id.* These figures exclude the absorption, expansion, and relocation patterns of rival leagues which attempted to compete with the major sports leagues and failed. *Id.*

because they give rise to excessive social costs that result in the monopolistic restriction of league output or the number of franchises in a league.⁸

More precisely, those cities threatened with the loss of a franchise argue that, at worst, the unregulated movement of teams eliminates existing economic benefits or psychic benefits or, at best, forces the community to purchase these same benefits at an increased social cost by granting tax concessions and financing stadium improvements, for example. Other cities that hope to attract a franchise contend that expansion or relocation generates fierce inter-city competitive bidding that leads to a wasteful expenditure of social resources by forcing the building of playing facilities, granting tax concessions, or guaranteeing season ticket sales, for example.⁹

In response, Congressional legislators representing areas that either have lost a franchise or wish to acquire one¹⁰ reacted by introducing bills to establish the criteria under which professional sport franchises could relocate and leagues would be required to expand.¹¹ The criteria are largely location specific and they emphasize income, population, and the quality of local facilities.¹² Addi-

8. Beisner *supra* note 5; Glenn M. Wong, *On Franchise Relocation, Expansion and Competition in Professional Team Sports: The Ultimate Political Football*, 9 SETON HALL LEGIS. J. 7 (1985); Arthur T. Johnson, *The Sports Franchise Relocation Issue Public Policy Responses in GOVERNMENT AND SPORTS: THE PUBLIC POLICY ISSUES* 219 (1985).

9. Pamela Edwards, *How Much Does That \$8.00 Yankee Ticket Really Cost? An Analysis of Local Government's Expenditure of Public Funds to Maintain, Improve or Acquire an Athletic Stadium for the Use of Professional Sports*, 18 FORDHAM URB. L.J. 695 (1991); Kenneth Shropshire, *Opportunistic Sports Franchise Relocations: Can Punitive Damages in Actions Based Upon Contract Strike a Balance?*, 22 LOY. L.A. L. REV. 569 (1989). A recent and highly publicized example was the campaign of Los Angeles Raider owner Al Davis to move his NFL franchise from Los Angeles to Irwindale and to Oakland. Edwards, *supra*.

10. The legislators who sponsored the five bills introduced in Congress between 1983 and 1985 represented states that either lost a franchise to relocation or wished to acquire a franchise, or a franchise in their state threatened to relocate. Daniel S. York, *The Professional Sports Community Protection Act: Congress' Best Response to Raiders?* 38 HASTINGS L.J. 7 (1987). Efforts to prohibit team relocation failed. Thomas J. Campbell, *Keeping Possession of the Ball: The Use of Eminent Domain to Prevent the Relocation of Professional Sports Franchises*, 32 WASH. U. J. URB. & CONTEMP. L. 333 (1987).

11. Shropshire, *supra* note 9. Senator Gorton of Washington State introduced the Major League Baseball Equity Act in September 1991. 137 Cong. Rec. S13328-01. The bill was an attempt to force baseball teams to share local media revenue, but the purpose was to keep the Seattle Mariners of MLB in Seattle. *Id.*

12. In deriving the criteria, Congressional legislators followed the lead of the judiciary which emphasized these factors in various decisions. Wong, *supra* note 7. See DAVID HARRIS, *THE LEAGUE: THE RISE AND DECLINE OF THE NFL* (1987) (discussing the facility question in

tionally, the legislative proposals imply that the major sports leagues have not exhausted the number of appropriate locations. As a result, the major sports leagues could expand.

The major sports leagues may not have restricted entry or that compulsory expansion may not be appropriate. Taking the ability to break even as the measure of franchise viability, major sports leagues may be bypassing potentially profitable locations deliberately, but disputed cases may involve locations that are viable only during an initial honeymoon phase¹³ with their fans or while the locations have a particularly good team. In the long run, as the honeymoon phase passes and team quality varies, the apparent short run viability of a team can prove to be an illusion. Because of enhanced revenue opportunities, better locations will generate better teams over time.¹⁴

Additionally, the number of franchises can depend on other aspects of league behavior that measures such as income, population, and the quality of local facilities do not address. In particular, the output of a league is the joint product of its teams, and many leagues make provisions for teams to share in the revenues that they generate in other locations. A potential franchise location may be viable only under such an arrangement and any measure that forces expansion to that city but does not consider the league's internal revenue distribution would be ineffective.

These comments define a number of empirical questions that should be answered before embarking on any legislative action. First, to what extent does short run franchise profitability depend on the honeymoon phase and the quality of the team? Second, in the long run and with adjustments in team quality, do profitable locations exist that have been bypassed? Third, to what extent does the answer to the second question depend on the internal distribution of league revenues?

The object of this Perspective is to address these questions and consider the implications of the answers for public policy in the context of one major sports league. The sport is hockey, the league

the NFL).

13. The honeymoon phase is the formal hypothesis that the short run enthusiasm for a team in a new location is sufficient to attract crowds irrespective of team quality.

14. James Quirk & Mohomet El Hodiri, *The Economic Theory of a Sports League in GOVERNMENT AND THE SPORTS BUSINESS* (Roger G. Noll ed. 1974). The Quirk-El Hodiri Proposition states that, in the long run, the better quality financial franchises will have the better players because they can buy better players. *Id.*

is the National Hockey League (NHL), and the time period is from 1981 to 1984.

First, short run demand and long run demand for teams are modeled as local monopolists using a two reduced form equation system in which attendance and price are endogenous. Second, this model empirically determines the importance of location, including the honeymoon phase and the team specific attributes for location and team quality, and the results allow predictions for attendance revenue for existing and potential franchise locations. Third, attendance revenue, coupled with estimates of revenue from other sources and estimates of costs, allows profits to be estimated and franchise viability to be forecasted in current and potential locations. Locations then can be pin-pointed where relocation and expansion could occur and the issue of whether the NHL has exhausted viable locations can be addressed. Finally, the implications of public policy are considered.

Four reasons exist why the NHL during the 1981-84 time period is an appropriate vehicle for this study. First, the NHL of the 1980s provided an excellent example of the absorption — relocation — expansion process so characteristic of major league sports and the problems and policy issues this process generates. Structurally, the NHL absorbed four teams from the defunct World Hockey Association (WHA),¹⁵ approved two team relocations but aborted a third,¹⁶ and expanded by adding five franchises and expressed a willingness to add more.¹⁷ The problems ranged from a formal Canadian antitrust investigation over the abortive franchise shift¹⁸ to

15. The four teams absorbed into the NHL from the WHA for the 1979-80 season were the Edmonton Oilers, Hartford Whalers, Quebec Nordiques, and Winnipeg Jets. THE NATIONAL HOCKEY LEAGUE OFFICIAL GUIDE & RECORD BOOK 1993-94 133 (1993). While these teams were technically absorbed, the NHL categorized the absorption as an expansion. *Id.*

16. The NHL allowed the Atlanta Flames to relocate to Calgary, Alberta, Canada, for the 1980-81 season and allowed the Colorado Rockies to relocate to New Jersey and to be renamed the Devils for 1982-83 season. *Id.* In 1983, Ralston Purina sold the St. Louis Blues to Canadian businessmen who intended to shift the team to Saskatoon, Saskatchewan, Canada. The NHL vetoed the relocation, seized the franchise, and sold the team to Harry Ernest who kept the team in St. Louis. Because of the ownership problems, the Blues did not participate in the 1983 NHL Entry Draft. *Id.* at 86.

17. The NHL expanded by adding the San Jose Sharks for the 1991-92 season, the Ottawa Senators and the Tampa Bay Lightning for the 1992-93 season, and the Anaheim Mighty Ducks and the Florida Panthers for the 1993-94 season. *Id.* at 133. In 1990, John Ziegler, then President of the NHL, expressed that "we are striving to get 28 [teams] by the end of the century." *VIC. TIMES COL.*, Nov. 30, 1990, at B5.

18. When the NHL seized the St. Louis franchise, Ralston Purina, the original owners,

strident demands either for expansion or for the prospect of punitive legislation,¹⁹ or to team relocation threats should its current location deny them succor.²⁰

Second, the addition of six different locations²¹ in the NHL over the time period of 1979-83 presents the opportunity to test for the existence and the quantitative impact of the honeymoon phase. The existence of the honeymoon phase is vital in estimating short run revenue and establishing the short run viability of the location.

Third, the NHL's expansion into five new locations²² for the 1990s will be a test of the validity of the modelling and will allow a comparison of those locations that the model predicts to be viable on the basis of 1981-84 data with the five expanded locations. The model also should determine whether the NHL exhausted the num-

sued the NHL, alleging that the NHL violated the Sherman Act. The parties settled the case after 10 days of trial, but the parties did not make the terms of the settlement public. The abortive shift also caused Canadian authorities to investigate the NHL under the monopoly provisions of Canadian law. The investigation was "discontinued" because the authorities could not find sufficient evidence to support a charge. CANADIAN DIVISION OF CONSUMER AND CORPORATE AFFAIRS, ANNUAL REPORT, DIRECTOR OF INVESTIGATION AND RESEARCH COMPETITION ACT FOR THE YEAR ENDING MARCH 1986 (1986).

19. In response to the St. Louis affair, Ray Hnatyshyn, presently the Governor General of Canada, in his previous position as a Member of Parliament for Saskatoon West, Saskatchewan, Canada, introduced a bill which would have subjected franchises to Canadian law. Bill C-690, *Commons Debates*, 1st Sess. 32 Parliament 27553-59, Sept. 28, 1983.

20. Quebec City and Winnipeg are cases in point. For example, in 1991, the Nordiques were negotiating with municipal authorities, provincial authorities, and federal authorities for a new arena in Quebec City and the team threatened to move if financial support was not forthcoming. In 1985, the Jets obtained the right to play in the Winnipeg Arena rent free for 10 years. In 1991, Winnipeg invested more money in the team and promised to build a new arena. *THE SPORTING NEWS*, Dec. 9, 1991, at 4. When debating whether the city should finance the Jets or a new sewer system, a Winnipeg councillor graphically noted that "[i]t may not be as exciting to flush your toilet as to watch NHL hockey, but it's a lot more essential." *Id.* Winnipeg decided to finance the team, apparently on the grounds of the psychic benefits of having a professional sports team in the city. *TOR. GLOBE & MAIL*, Nov. 23, 1991, at 4. As another councillor explained, "without the Jets we'd be another Regina (Saskatchewan, Canada) only bigger." *Id.* Other reactions by city politicians under the pressure of losing a professional sports franchise include the following examples. Oakland Attorney Dave Self responded to the issue of whether the Raiders of the NFL should return to Oakland by stating "Have you heard of Brooklyn since the Dodgers left?" Beisner, *supra* note 5. Politician Hubert Humphrey in replying to a question asking if he thought keeping the Minnesota Twins of MLB and the Minnesota Vikings of the NFL in Minneapolis was important stated "Yes, what do you want to become, a cold Omaha?" *Id.*

21. The six locations were Calgary, Edmonton, Hartford, New Jersey, Quebec, and Winnipeg. *GUIDE & RECORD BOOK*, *supra* note 14.

22. The five locations were Anaheim, Florida, Ottawa, San Jose, and Tampa Bay. *Id.* The teams in Anaheim and Florida were added after this paper was written and therefore will not be explicitly considered in the qualitative analysis below.

ber of viable locations in light of the NHL's commitment to further expansion. The issue of whether the absorbed teams from the WHA or the relocated teams in the NHL were actually viable in 1984 or are ripe for relocation can be considered.

To make these comparisons, it would be desirable to have data for the NHL teams throughout the 1980s. Unfortunately, the data available only runs for three seasons, 1981-82, 1982-83, and 1983-84. The crucial consideration was the existence of price data per team, and 1983-84 was the last season for which such data is available to the public.²³ The data set consists of single observations of location specific attributes, such as population and income for each season, and multiple game observations. While the data does not cover the entire 1980s, it is more extensive, more complete, and better quality than any previously available.

Fourth, in contrast to the other major sports leagues, the NHL does not have a revenue sharing system for the teams and, more importantly, the NHL does not have a major national network television contract in the United States. As a result, the significance of locational effects is important, given the NHL's emphasis on location specific attributes for the expansion process.²⁴ In addition, the significance of the absence of intra-league revenue sharing for franchise survival can be gauged.

The conclusions from the analysis are that the honeymoon phase, team quality, and location are important for revenue determination in the short run. The evidence suggests that the NHL did not restrict the entry of viable locations but that the NHL may have over-expanded. A policy of extensive revenue sharing would make the present franchises viable and support a significant number of expansion franchises. The implication is two fold. Politicians should direct public policy initiatives at mandating revenue sharing, but, because revenue sharing may create incentives for a league to restrict the entry of new franchises, complementary man-

23. The only data on prices publicly available is for the 1983-84 season. TOR. GLOBE & MAIL Feb. 25, 1985, at 20. Al Strachan, a hockey journalist for the *Toronto Globe & Mail*, provided the prices for the 1981-82 season and the 1982-83 season.

24. In 1990, the NHL issued the following two documents to prospective franchises. The *NHL Plan of Sixth Expansion* and the *Memorandum of Requirements and Instructions to Applicants* detailed the requirements which new teams must meet in order to enter the NHL. The requirements are location specific and include size of population, per capita income, parking, concessions, luxury boxes, minimum season ticket commitments, and minimum regular season prices.

dating of expansion may also be necessary.

The remainder of this Perspective establishes the rationale for these conclusions. Part II outlines the theoretical model. Part III, reports the empirical results that are used to examine team viability, relocation, and expansion, and Part IV offers conclusions and policy prescriptions for the NHL to consider.

II. MODEL

A. Theory

The model starts with a linear demand function for attendance.

Formula One
$$A_{gt} = c_{gt}(a_t - b_t p_t)$$

where A_{gt} is attendance at game g of team t , $a_t - b_t p_t$ is the underlying demand in the team's home city, and c_{gt} represents the effects of a particular game's features on attendance.²⁵ Assuming that the marginal costs of attendance are negligible, the price is established to maximize season revenue.

Formula Two
$$R_t = (\sum_g c_{gt})(a_t - b_t p_t)p_t$$

yields

Formula Three
$$p_t = (1/2) a_t/b_t$$

and

Formula Four
$$A_{gt} = c_{gt}(a_t/2)$$

as the profit maximizing price and the profit maximizing quantity. The associated maximal revenue is

Formula Five
$$R_t = (1/4)(a_t^2/b_t)(\sum_g c_{gt})$$

25. J. Colin H. Jones & Donald G. Ferguson, *Location and Survival in the National Hockey League*, 36 J. OF INDUS. ECON. 443 (1988). The source for the game attendance figures from the 1981-84 time period is numerous issues of the *Victoria Daily Times*.

where

Formula Six
$$H_t = (1/4)(a_t^2 / b_t)$$

is the quality of the home city as a franchise location. Since the primary game characteristics are the characteristics of the teams playing in a game, and, since variation in $\sum_g c_{gt}$ across teams is dependant primarily on a home team's attributes,

Formula Seven
$$Q_t = (\sum_g c_{gt})$$

is a measure of team quality

This identification of the separate effects of locational quality, H_t , and team quality, Q_t , addresses two issues. First, the short run implications of franchise relocation are considered by examining the revenue that team t would generate in an alternate city τ .

Formula Eight
$$R_{\tau} = H_{\tau} Q_t$$

Second, allowing Q_t^L to denote long run team quality, the long run quality of a team's location is determined by looking at the relation between team quality and locational quality.

Formula Nine
$$Q_t^L = \delta_0 + \delta_1 H_t$$

A team's long run revenue is

Formula Ten
$$R_t^L = \delta_0 H_t + \delta_1 H_t^2$$

B. Empirical Implementation

The empirical implementation of the model requires that specific forms be given to a_t , c_{gt} , and b_t . Assume that

Formula Eleven
$$\log a_t = \alpha_0 + \alpha_1 \text{CAN} + \alpha_2 \text{HNYMN} + \alpha_3 \text{LPOP} + \alpha_4 \text{LINC}$$

$$\text{Formula Twelve} \quad \log b_i = \beta_0 + \beta_1 \text{CAN} + \beta_2 \text{HNYMN} + \beta_3 \text{LPOP} + \beta_4 \text{LINC}$$

$$\text{Formula Thirteen} \quad \log c_{gt} = \gamma_0 + \gamma_1 \text{LHTRL} + \gamma_2 \text{LVTRL} + \gamma_3 \text{UT3} + \gamma_4 \text{UT3B3} + \gamma_5 \text{PLD4Q} + \gamma_6 \text{STFF} + \gamma_7 \text{STFS} + \gamma_8 \text{STSS} + \gamma_9 \text{DAY} + \gamma_{10} \text{STAR}$$

where the prefix L denotes a logarithm.

For the locational attributes which determine locational quality, H_i, CAN is a dummy variable of one if the game is played in a Canadian city, HNYMN is the honeymoon phase dummy variable of one if the home franchise is less than six years old, POP is the city population of the home team,²⁶ and INC is the per capita income of the city of the home team.²⁷ For the game attributes that determine team quality, Q_i, HTRL and VTRL represent, respectively, the success of the home team and the visiting team measured by the team's NHL standing prior to the game,²⁸ UT3 and UT3B3 are dummy variables representing, respectively, situations where two of the top three ranked teams in the NHL play each other and where a team ranked in the top three of the NHL plays a team ranked in the bottom three of the NHL,²⁹ PLD4Q measures the playoff drive and is a dummy variable of one if two teams are within four points of each other in the fourth quarter of the season,³⁰ the ST variables³¹ are style dummy variables of one when games involve ei-

26. CENSUS OF CANADA (1986); *Standard Metropolitan Area*, STATISTICAL ABSTRACT OF THE UNITED STATES (1984); *Standard Metropolitan Area*, STATISTICAL ABSTRACT OF THE UNITED STATES (1983); *Standard Metropolitan Area*, STATISTICAL ABSTRACT OF THE UNITED STATES (1982); *Standard Metropolitan Area*, STATISTICAL ABSTRACT OF THE UNITED STATES (1981).

27. UNITED STATES DEPARTMENT OF COMMERCE, SURVEY OF CURRENT BUSINESS (1985); STATISTICS CANADA, INCOME ESTIMATES OF SUB-PROVINCIAL AREAS (1983).

28. The source for the NHL's standings for each game from the 1981-84 time period is numerous issues of the *Victoria Daily Times*.

29. *Id.*

30. *Id.* Since a NHL season consisted of 80 games played per team during the 1981-84 time period, the final quarter of the season consisted of the last 20 games of the schedule per team. GUIDE & RECORD BOOK, *supra* note 15.

31. If a team's penalty minutes in the previous season were greater than one half standard deviation above the mean, then that team is a fighting team. If a team's penalty minutes in the previous season were less than one half standard deviation below the mean, then that team is a skating team. THE NATIONAL HOCKEY LEAGUE OFFICIAL GUIDE & RECORD BOOK 1983-84 (1983); THE NATIONAL HOCKEY LEAGUE OFFICIAL GUIDE & RECORD BOOK 1982-83 (1982); THE NATIONAL HOCKEY LEAGUE OFFICIAL GUIDE & RECORD BOOK 1981-82

ther fighting teams, STFF, skating teams, STSS, or fighting-skating teams, STFS,³² DAY is a dummy variable of one for a game played on the weekend,³³ and STAR represents the number of superstars playing in a game.³⁴

Substituting Formula Eleven, Formula Twelve, and Formula Thirteen into Formula Three and Formula Four yields,

$$\begin{aligned} \text{Formula Fourteen} \quad \log A_{gt} = & (\log 1/2 \alpha_0 \gamma_0) + \alpha_1 \text{CAN} + \\ & \alpha_2 \text{HNYMN} + \alpha_3 \text{LPOP} + \alpha_4 \text{LINC} + \\ & \gamma_1 \text{LHTRL} + \gamma_2 \text{LVTRL} + \gamma_3 \text{UT3} + \\ & \gamma_4 \text{UT3B3} + \gamma_5 \text{PLD4Q} + \gamma_6 \text{STFF} + \\ & \gamma_7 \text{STFS} + \gamma_8 \text{STSS} + \gamma_9 \text{DAY} + \\ & \gamma_{10} \text{STAR} \end{aligned}$$

$$\begin{aligned} \text{Formula Fifteen} \quad \log p_t = & (\log 1/2 \alpha_0 - \beta_0) + (\alpha_1 - \beta_1) \text{CAN} + \\ & (\alpha_2 - \beta_2) \text{HNYMN} + (\alpha_3 - \beta_3) \text{LPOP} + \\ & (\alpha_4 - \beta_4) \text{LINC} \end{aligned}$$

These equations form a simultaneous system which is estimated using the Zellner Procedure.³⁵

For the specific variables in Formula Fourteen, the following relationships are anticipated. With the location variables, attendance should be related positively to the Canadian location, $\alpha_1 > 0$, the newness of the franchise, $\alpha_2 > 0$, and the size of the population, $\alpha_3 > 0$. The prediction for income is ambiguous and depends on whether society views hockey as a normal good or an inferior good, $\alpha_4 \lesseqgtr 0$. With the team specific variables, spectators prefer games that involve winning teams, $\gamma_1 < 0$, $\gamma_2 < 0$, in which a high degree of uncertainty in the outcome of the game exists, $\gamma_3 > 0$, $\gamma_4 < 0$, that are played closer to the playoffs, $\gamma_5 > 0$, that involve more violence, $\gamma_6 > 0$, $\gamma_7 > 0$, $\gamma_8 < 0$, that are played on the weekend, $\gamma_9 > 0$, and that involve a larger number of superstars, $\gamma_{10} > 0$. With regard to For-

(1981).

32. The sources for the NHL's penalty minutes figure for the individual teams from the 1981-84 time period is numerous issues of the *Victoria Daily Times*.

33. The sources for the NHL's schedule of weekend games from the 1981-84 time period is numerous issues of the *Victoria Daily Times*.

34. Based on qualitative assessment, STAR represents the number of superstars in a game plus one.

35. Arnold Zellner, *An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias*, 57 J. OF THE AMER. STAT. ASS'N 348 (1962).

mula Fifteen, since $\alpha_i - \beta_i$ represents the inverse effect of the locational variables on the elasticity of demand, the signs of the coefficients are expected to be the same as the equivalent coefficients in Formula Twelve. As a result, $\alpha_1 - \beta_1$, $\alpha_2 - \beta_2$, $\alpha_3 - \beta_3 > 0$ and $\alpha_4 - \beta_4 < 0$.

Given the model and its data content, the analysis can proceed in three steps. First, the importance of locational factors and team specific factors for attendance and market power can be determined by estimating Formula Fourteen and Formula Fifteen. The aggregate significance of these factors is represented by either locational quality or team quality. They are calculated by applying the appropriate coefficient of Formula Fourteen and Formula Fifteen to Formula Eleven, Formula Twelve, and Formula Thirteen. Estimating Formula Nine calculates long run team quality, Q_t^L .³⁶

Second, estimating short run revenue,³⁷ long run revenue,³⁸

36. For convenience in presenting locational quality, H_t , and team quality, Q_t , in Table Two, see Table Two, *infra* note 48 and accompanying text, a particular scaling that yields estimates of H_t and Q_t of the same order of magnitude was adopted. These numbers are unique to scalar multiplication and, to retain consistency with the estimated restrictions, team quality, Q_t , is scaled by factor λ thereby scaling locational quality, H_t , by factor λ^{-1} .

37. For short run revenue, season revenue equals game revenue plus broadcast revenue. Game revenue equals regular season attendance revenue plus playoff revenue. Season attendance revenue equals locational quality, H_t , multiplied by team quality, Q_t , for prospective franchises, where team quality, Q_t , is defined for minimum quality teams and maximum quality teams with and without a honeymoon phase. See Table Three, *infra* note 57 and accompanying text. Playoff revenue equals revenue per regular season game multiplied by the number of actual home playoff games for existing teams, and revenue per regular season game multiplied by the number of playoff games of minimum quality teams and maximum quality teams. Broadcast revenue equals 8%, 10%, or 12% of game revenue for existing teams based on average attendance over the three seasons within the 1981-84 time period. For existing teams, if the average attendance figure is greater than one standard deviation below the NHL's average, 8% is used. If average attendance is greater than one standard deviation above the NHL's average attendance or, if the average attendance is 100% of capacity, 12% is used. For the remainder, 10% is used. For new franchises, 8% is used for the first five years of the team's existence and, 10% is used for the remaining years of the team's existence.

38. For long run revenue, season revenue equals game revenue plus broadcast revenue. Game revenue equals regular season attendance revenue plus playoff revenue. Season attendance revenue equals locational quality, H_t , multiplied by long run team quality, Q_t^L , for existing teams, see Table Two, *infra* note 48 and accompanying text, and, revenue per regular season game, H_t , multiplied by long run team quality, Q_t^L , for prospective franchises. Playoff revenue equals revenue per regular season game, H_t , multiplied by long run team quality, $Q_t^L/120$, multiplied by the number of home playoff games, which is either 3, 10, or 17. Ten is the average number of home playoff games during the 1981-84 time period and 3 and 17 are one standard deviation on either side. If the long run team quality, Q_t^L , is greater than one standard deviation above the average, 17 playoff games are used. If long run locational quality, Q_t^L , is greater than one standard deviation below the average, 3 playoff games are used. For the remainder, 10 playoff games are used. Broadcast revenue equals 8%, 10%, or 12% of

and operating costs³⁹ to obtain profits is necessary to establish the short run viability and long run viability of existing teams in their current locations. Short run attendance revenue in any location can be simulated as the product of H_i and Q_i . This, together with estimates of revenue from other sources and costs, determines short run profits and short run viability. Long run viability can be estimated in a similar fashion. Long run attendance revenue is estimated from Formula Ten, and profits are determined by adjusting for other revenue and costs.

Third, the viability of potential new locations can be determined in a similar manner. Locational quality for a new city, H_i , is estimated by substituting the attributes of these new locations into Formula Eleven, Formula Twelve, and Formula Thirteen and applying the resulting coefficients to Formula Six and Formula Seven. From Formula Eight, attendance revenue can be simulated as the product of locational team quality, H_i , and a quality team, Q_i , and profit is the result of adjusting for other revenue and costs. Long run team quality, Q_i^L , is estimated from Formula Nine, and revenue and costs are adjusted again to produce estimates of profit and long run viability. These estimates indicate the short run implications and the long run implications of the relocation of existing teams or expansion.

game revenue for the teams based on average long run team quality, Q_i^L . For existing teams, if average long-run team quality, Q_i^L , is greater than one standard deviation below the NHL average, 8% is used. If the average long-run team quality, Q_i^L , is one standard deviation above the NHL average, 12 is used. For the remainder, 10% is used.

39. Operating costs include player salaries for a 21 player roster, rent, administrative costs, player development, and game costs. These costs were estimated for each city by extrapolating the costs from the 1978-79 season through the 1981-84 time period using the Consumer Price Index in the existing and potential franchise cities. Jones, *supra* note 25. Operating cost equals net operating cost plus player salary cost which equals \$4,153,065. Net operating cost equals operating cost of \$3,462,000 for the 1972-73 season, GOVERNMENT AND THE SPORTS BUSINESS 25 (Roger G. Noll ed. 1974), less player depreciation of \$1,000,000 less player salary cost of \$892,500 which is based on a roster size of 21 players per team at an average salary of \$42,500 per player, Jones, *supra* note 4, at 733. When these figures are added, net operating cost equals \$1,569,500. Using the rate of inflation as measured by the Consumer Price Index in the sixteen franchise cities during the 1972-73 season, the net operating cost figure was extrapolated to 1977-78 dollars to determine a net operating cost of \$2,307,165 in the 1977-78 season. Player salary cost equals the average roster of 21 players per team multiplied by the average per player salary of \$87,900 which equals \$1,845,900. TOR. GLOBE & MAIL, Mar. 14, 1978, at 37.

III. EMPIRICAL RESULTS

A Chow Test⁴⁰ revealed that the American components and the Canadian components of the model should be separated for statistical purposes. Separating these components, together with severe multicollinearity, required eliminating CAN and STAR from Formula Fourteen and Formula Fifteen. The estimated model is for a subset of the independent variables in Formula Fourteen and Formula Fifteen. As a result, the regression results for the adjusted formulas, the revenue simulations, and the cost estimates are reported separately for the United States and Canada.⁴¹

A. Determination of Attendance, Market Power, Locational Quality, and Team Quality

Table One shows the results of estimating the short run model and the long run model for American locations and for Canadian locations. Three points should be emphasized. One, with the short run model, differences exist between the American cities and the Canadian cities. With attendance, A_{gt} ,⁴² in the United States, hockey may be considered an inferior good unless another influence effects the variable.⁴³ Fighting, STFF, may increase attendance, but the honeymoon phase, HNYMN, is considerably weaker. With

40. A Chow Test is a statistical test for the existence of structural change. Gregory C. Chow, *Tests for Equality Between Sets of Coefficients in Two Linear Regressions*, 28 *ECONOMETRICA* 3 (1960). In the context of this Perspective, the issue is whether separating NHL teams into an American subset and a Canadian subset and estimating separate regression equations or using one regression equation covering the teams is legitimate. The Chow Test established that separating American teams from Canadian teams and estimating the equations for statistical purposes is desirable.

41. These results cannot be compared with earlier estimates when separating the sample was not a statistical necessity, but estimates can be provided on request. 41. The number of observations or games played in American cities is 1,674 and the number of observations or games played in Canadian cities is 759. Games played in Calgary during the 1981-82 season and the 1982-83 season were omitted because those games were played in the Stampede Corral, an arena with a seating capacity of 7,242. *CALGARY FLAMES 1987-88 MEDIA GUIDE* 3 (1987). The variable number of superstars playing in a game, STAR, was highly collinear with the success of the home team, HTRL, and the success of the visiting team, VTRL. In addition, attempts to introduce location specific variables to account for competition offered by other professional sports teams and the potential impact of ethnicity floundered because of multicollinearity. J. Colin H. Jones, *Winners, Losers and Hosers: Demand and Survival in the National Hockey League*, 12 *ATL. ECON. J.* 54 (1984).

42. See col. One, Table One.

43. Attendance, A_{gt} , could be effected by the influence of competition offered by other professional sports teams.

TABLE 1
Determination of A_{gt} , P_t , and Q_t^L for the United States and Canada
using the Zellner Procedure

	<u>American</u>			<u>Canadian</u>		
	A_{gt} [1]	P_t [2]	Q_t^L [3]	A_{gt} [1]	P_t [2]	Q_t^L [3]
<i>R-Squared</i>	0.278	0.289	0.054	0.481	0.560	0.001
<i>n</i>	1,674	42	40	759	19	19

Variable

<i>CONST</i>	<i>Constant</i>	11.6340 (14.405)	-2.5539 (0.641)	1,725.53 (12.245)	5.5771 (17.033)	0.2274 (0.314)	2,402.92 (27.621)
<i>H_t</i>	<i>Hockiness</i>			0.0864 (.058)			-0.0005 (0.007)
<i>HNYMN</i>	<i>Honeymoon</i>	0.0250 (0.958)	0.1811 (1.504)		0.2863 (15.114)	-0.0460 (1.122)	
<i>LPOP</i>	<i>Ln (Population)</i>	0.1090 (10.130)	0.0689 (1.318)		0.2517 (19.105)	-0.1300 (4.458)	
<i>LINC</i>	<i>Ln (Income)</i>	-0.2870 (3.279)	0.4620 (1.070)		0.2430 (7.919)	0.3286 (4.788)	
<i>LHTRL</i>	<i>Ln (Home Team Rank in League)</i>	-0.1071 (13.271)			-0.0414 (9.489)		
<i>LVTRL</i>	<i>Ln (Visiting Team Rank in League)</i>	-0.626 (8.446)			-0.0220 (5.197)		
<i>UT3</i>	<i>Teams Ranked in Top 3</i>	-0.0806 1.639			0.0423 (1.412)		
<i>UT3B3</i>	<i>Top 3 and Bottom 3 Ranking</i>	-0.0203 (0.719)			-0.0005 (0.028)		
<i>PLD4Q</i>	<i>4th Quarter Playoff Drive</i>	0.0167 (2.859)			0.0129 (3.969)		
<i>STFF</i>	<i>Fighting Teams</i>	0.0113 (0.504)			-0.0033 (0.326)		
<i>STFS</i>	<i>Fighting and Skating Team</i>	-0.0334 (2.308)			-0.0144 (1.762)		
<i>STSS</i>	<i>Skating Teams</i>	-0.0070 (0.393)			-0.0727 (4.770)		
<i>DAY</i>	<i>Weekend Day</i>	0.0947 (7.844)			0.0158 (2.264)		

* Results are shown with the asymptotic t statistic in parentheses.

price, P_t ,⁴⁴ the smaller Canadian cities have a lower price elasticity and new teams have less market power than established teams.

Two, both locational, INC and POP, and team specific, HTRL, VTRL, PLD4Q, and DAY, variables are significant determinants of attendance in the United States and Canada. On the one hand, this result lends support to the mechanism which relates the revenue determinants of franchise survival to both locational attributes and team attributes. On the other hand, the poor performance of the variables that measures the uncertainty of a game's outcome, UT3 and UT3B3, together with the significance of other team specific variables, confirms the questionable relevance of the competitive equality mechanism that justifies league restrictions on player mobility.⁴⁵

Three, with the long run model in the United States, the relationship between location quality and team quality, Q_t^L ,⁴⁶ is positive but weak. As a result, the proposition that better quality locations beget better quality teams is not overpowering.⁴⁷ In Canada, this proposition is negative and insignificant.

From the parameter estimates of Table One, Table Two summarizes the aggregate importance of location and team specific variables by constructing measures of short run locational quality, H_t ,⁴⁸ short run team quality, Q_t ,⁴⁹ and long run team quality, Q_t^L ,⁵⁰ for existing teams in both countries. These measures provide the basis for simulating attendance revenue⁵¹ and represent the first step in considering the viability of existing teams.

B. Viability of Existing Teams

Team viability is a function of profit which is a function of cost. As a result, estimates of broadcast revenue and playoff revenue are added to the attendance revenue to determine season revenue⁵² and estimates of operating costs.⁵³

44. See col. Two, Table One.

45. Jones, *supra* note 34.

46. See col. Three, Table One.

47. Quirk, *supra* note 13.

48. See col. Three, Table Two.

49. See col. Four, Table Two.

50. See col. Four, Table Two.

51. See col. Six, Table Two; col. Eight, Table Two.

52. See col. Seven, Table Two; and col. Nine, Table Two.

53. See col. Two, Table Two. Both short run broadcast revenue and long run broadcast

Few American teams and no Canadian teams are profitable from attendance revenue alone in the short run.⁵⁴ Even when season revenue is added,⁵⁵ a number of weak locations still exist. In the long run, the profit picture with season revenue is similarly mixed.⁵⁶ Six loss franchises exist in the United States and two in Canada. As a result, the NHL's decision to absorb the Whalers, Nordiques, and Jets from the WHA in 1980 could be classified as less than a successful decision. On the positive side, the Oilers, another former WHA team, appears viable as does the relocation of the Flames to Calgary, but the shift of the Colorado Rockies to New Jersey has not been a triumph. As a result, although a number of the existing teams are financially strong, a number of weak teams exist with a potential for relocation. The NHL either expanded too extensively or cities may exist which, in financial terms, would be preferred to some existing locations.

C. Relocation and Expansion

Table Three summarizes revenue, cost, and profit for a set of potential new locations⁵⁷ under a number of different scenarios. Conclusions can be drawn as to the viability of relocating existing teams or expanding the NHL by adding teams in new locations.

A large number of different simulations are possible depending on which assumptions are to be made. The following two factors are important: (1) the significance of the honeymoon phase in calculating locational team quality for a new city, H_t , and (2) the significance of teams of different quality. As a result, attendance revenue can be calculated with the HNYMN variable and without the HNYMN variable in the short run. In addition, a maximum quality team in the short run, a minimum quality team in the short run, and an average quality team in the long run are introduced. Given

revenue were estimated as different percentages of game revenue depending on the success of the team. In effect, the more successful the team, the greater the broadcast revenue. GOVERNMENT AND THE SPORTS BUSINESS, *supra* note 39.

54. See col. Six, Table Two.

55. See col. Seven, Table Two.

56. See col. Nine, Table Two.

57. The cities in Table Three represent both those cities that have expressed an interest in having an NHL team in their city and those cities that have not expressed an interest in having an NHL team in their city. The list also includes those cities that submitted formal bids to the NHL for a franchise in August 1990.

TABLE 3
Location, Team Quality, Revenue, Cost and Profitability for New Locations

Team/ Location [1]	Short Run					No Honeymoon					Long Run**		
	Honeymoon		Local			No Honeymoon			Team		Revenue		
	Cost [2]	Quality [3]	Min [4]	Max [5]	Quality [6]	Quality [7]	Quality [8]	Min [9]	Max [10]	Quality [11]	Quality [12]	Quality [13]	Attendance [14]
United States													
Denver	\$20,658	3,156	\$16,916	\$18,269	\$20,798*	\$26,594*	2,568	\$13,764	\$14,866	\$16,923	\$21,639*	5,842	\$15,002
Houston	\$19,185	3,135	\$16,804	\$18,148	\$20,660*	\$26,417*	2,551	\$13,673	\$14,767	\$16,811	\$21,496*	5,838	\$14,893
Tampa Bay	\$19,025	3,022	\$16,198	\$17,194	\$19,915*	\$25,465*	2,459	\$13,180	\$14,235	\$16,205	\$20,721*	5,814	\$14,297
Milwaukee	\$19,025	3,015	\$16,160	\$17,453	\$19,869	\$25,406*	2,454	\$13,153	\$14,206	\$16,172	\$20,678*	5,812	\$14,263
Indianapolis	\$19,025	2,880	\$15,437	\$16,672	\$18,979	\$24,268*	2,344	\$12,564	\$13,569	\$15,447	\$19,752*	5,784	\$13,558
Dallas	\$20,076	2,845	\$15,249	\$16,469	\$18,749	\$23,973*	2,315	\$12,408	\$13,401	\$15,256	\$19,507	5,776	\$13,371
San Francisco	\$19,054	2,808	\$15,051	\$16,255	\$18,505	\$23,661*	2,285	\$12,248	\$13,227	\$15,058	\$19,254	5,769	\$13,182
Cleveland	\$20,838	2,573	\$13,791	\$14,895	\$16,956	\$21,681*	2,094	\$11,224	\$12,122	\$13,799	\$17,645	5,719	\$11,976
Seattle	\$19,367	2,536	\$13,593	\$14,680	\$16,712	\$21,369*	2,063	\$11,058	\$11,942	\$13,595	\$17,384	5,711	\$11,782
Portland	\$18,218	2,353	\$12,612	\$13,621	\$15,506	\$19,827*	1,915	\$10,264	\$11,086	\$12,620	\$16,137	5,673	\$10,864
Canada													
Ottawa	\$19,512	2,770	\$19,265	\$21,153*	\$20,803	\$26,600*	2,178	\$15,148	\$16,632	\$16,357	\$20,915*	7,204	\$15,690
Hamilton	\$19,759	2,637	\$18,340	\$20,138*	\$19,804	\$25,323*	2,074	\$14,425	\$15,838	\$15,576	\$19,916*	7,205	\$14,943
Regina	\$19,270	2,412	\$16,775	\$18,419	\$18,114	\$23,162*	1,897	\$13,194	\$14,487	\$14,246	\$18,216	7,206	\$13,670
Saskatoon	\$19,409	2,398	\$16,678	\$18,313	\$18,009	\$23,027*	1,886	\$13,117	\$14,403	\$14,164	\$18,111	7,206	\$13,591
Halifax	\$19,612	2,381	\$16,560	\$18,183	\$17,881	\$22,864*	1,873	\$13,027	\$14,303	\$14,066	\$17,986	7,206	\$13,497
Fredericton	\$19,759	1,928	\$13,409	\$14,723	\$14,479	\$18,514	1,516	\$10,554	\$11,577	\$11,385	\$14,558	7,207	\$10,926

* Indicates that revenue is greater than estimates of operating costs

** Long run locational quality is equal to short run locational quality (col 8)

Minimum quality team (cols 4,5 and 9,10) is 5,360 for the United States and 6,955 for Canada

Maximum quality team (cols 6,7 and 11,12) is 6,590 for the United States and 7,510 for Canada

the quality of the teams that have relocated in the NHL and the manner in which the NHL inadequately stocked expansion franchises with players in the past, the worst team scenario is the most realistic assumption in the short run.

As far as locational quality for a new city, H_t , the importance of the honeymoon phase can be seen by comparing column Three of Table Three and column Eight of Table Three. Should an established team wish to relocate, it could expect a significant boost to locational quality for the new city, H_t , as a result of the honeymoon phase. Indeed, a number of new locations with the honeymoon phase are superior to existing locations without the honeymoon phase.⁵⁸ The optimum strategy would be for existing teams to shift continually to take advantage of the honeymoon phase, but whether cities would allow themselves to be targets of opportunity for a team guaranteed to relocate is doubtful.

The significance of differences in team quality is also apparent. In the short run, maximum quality teams produce viable locations in a number of cities as long as the honeymoon phase is operational.⁵⁹ This is also true, to a lesser degree, when the effect is absent.⁶⁰ In Canada, a minimum quality team would produce a profit only with the honeymoon phase in Hamilton and in Ottawa.⁶¹ Since a honeymoon phase coupled with a minimum quality team is the likely expansion scenario, short run viability in potential American expansion locations is problematical. Again, this is evident when the honeymoon phase is not a factor in Canada.⁶² In the long run, the prospects are not better with an average quality team since not one Canadian city provides a viable location.⁶³

On the basis of two reasonable expansion scenarios, a minimum quality team with a honeymoon phase in the short run and an average quality team in the long run, the NHL's decision to expand to Ottawa, San Jose, and Tampa Bay is questionable. This raises doubt about the wisdom of the NHL's professed willingness to expand further unless something is done to improve the present value of potential locations by adjusting either revenue or costs.

58. Compare column Three, Table Two with Column Three, Table Three.

59. See col. Seven, Table Three.

60. See col. Twelve, Table Three.

61. See col. Five, Table Three.

62. See col. Ten, Table Three.

63. See col. Fifteen, Table Three.

D. Relocation, Expansion, and Revenue Adjustment

Consider, first, the potential revenue sources to be adjusted. As Table Two indicates, the major proportion of an existing team's season revenue is from attendance. This ranges from approximately eighty percent of capacity to over ninety percent of capacity depending on the team, the location, and the short run or the long run,⁶⁴ but attendance revenue alone guarantees survival for few teams in either the short run or the long run.⁶⁵ When broadcast revenue and playoff revenue are added, the chances of survival improve dramatically both in the short run and the long run.⁶⁶ As a result, broadcast revenue and playoff revenue are critical for team viability irrespective of the overall importance of attendance revenue.

Table Four shows the specific estimates of broadcast revenue and playoff revenue used in calculating season revenue in Table Two. Of these two revenue sources, the playoffs are vital, because the NHL does not have a major national network television contract in the United States.

The playoffs have three advantages from a revenue point of view. First, the playoffs allow teams to raise ticket prices. Since playoff attendance is close to capacity, and, as playoff costs are minimal, profit increases.⁶⁷ Second, playoff success allows teams to boost ticket prices for regular season games in the following season. The evidence indicates that, despite these increased prices, both season ticket sales and general attendance are related positively to

64. See col. Six, Table Two; col. Nine, Table Two.

65. See col. Six, Table Two; col. Eight, Table Two.

66. See col. Seven, Table Two; col. Nine, Table Two.

67. For example, the Toronto Maple Leafs made the playoffs in 1990 and raised the price of their best seats 50%. 1991 TORONTO MAPLE LEAFS FACT BOOK 118 (1990). Given the inevitable capacity attendance, playoff attendance revenue was approximately \$500,000 per game as compared to season capacity attendance revenue of approximately \$350,000 a game. When the Oilers won the Stanley Cup in 1988, playoff revenue reportedly increased by \$5.9 million of which \$3.25 was profit. Part of this is due to the fact that playoff bonuses to players are relatively small. In 1989, if a team played seven games in each playoff series before winning the Stanley Cup, each player would have played 28 games to earn only \$25,000. As Peter Pocklington, owner of the Oilers, proclaimed, a team should "advance to the seventh game of the Cup — and lose." TOR. GLOBE & MAIL, Mar. 30, 1990, at A19. As a result, it is not surprising that the 1992 players' strike occurred near the beginning of the playoffs in order for the players to inflict the maximum potential financial loss on the NHL owners and suffer the minimum income loss for themselves. As Mike Smith, the former General Manager of the Jets, a self-proclaimed have not franchise, stated, "[t]he playoffs represent the difference between making a little money and not making any money at all." TOR. GLOBE & MAIL, Mar. 30, 1990.

TABLE 4
Playoff Revenue, Broadcast Revenue and Profits (Losses)
Existing Locations

<i>Team/ Location</i> [1]	<i>Revenue (000)</i>					
	<i>Short Run</i>			<i>Long Run</i>		
	<i>Playoff</i> [2]	<i>Broadcast</i> [3]	<i>Season Profit (Losses)</i> [4]	<i>Playoff</i> [5]	<i>Broadcast</i> [6]	<i>Season Profit (Losses)</i> [7]
United States						
<i>New York (R)</i>	\$2,061	\$2,945	\$9,152	\$1,401	\$2,690	\$6,765
<i>New York (I)</i>	\$5,030	\$2,585	\$10,092	\$1,401	\$2,690	\$6,765
<i>Los Angeles</i>	\$628	\$1,558	\$2,115	\$1,338	\$2,569	\$5,064
<i>Chicago</i>	\$2,816	\$2,270	\$5,440	\$1,325	\$2,544	\$4,223
<i>Philadelphia</i>	\$798	\$1,996	\$3,539	\$1,205	\$2,314	\$3,184
<i>Detroit</i>	\$277	\$1,692	(\$433)	\$1,183	\$2,271	\$2,162
<i>Washington</i>	\$556	\$1,378	(\$34)	\$1,159	\$2,226	\$2,136
<i>Boston</i>	\$2,629	\$2,119	\$4,592	\$1,108	\$2,127	\$1,138
<i>St. Louis</i>	\$1,558	\$1,714	(\$482)	\$1,050	\$2,015	(\$529)
<i>New Jersey</i>	\$238	\$1,164	(\$3,318)	\$1,044	\$2,005	(\$314)
<i>Minnesota</i>	\$1,740	\$1,779	\$550	\$1,043	\$2,003	(\$329)
<i>Pittsburg</i>	\$243	\$1,184	(\$3,658)	\$1,029	\$1,976	(\$1,206)
<i>Buffalo</i>	\$978	\$1,565	(\$1,145)	\$906	\$1,740	(\$2,125)
<i>Hartford</i>	\$0	\$979	(\$5,814)	\$854	\$1,639	(\$3,725)
Canada						
<i>Toronto</i>	\$324	\$2,369	\$2,211	\$1,335	\$2,563	\$4,028
<i>Vancouver</i>	\$2,113	\$2,023	\$2,699	\$1,228	\$2,358	\$2,461
<i>Calgary</i>	\$1,723	\$2,461	\$3,159	\$1,205	\$2,313	\$1,765
<i>Montreal</i>	\$1,825	\$2,409	\$2,624	\$1,192	\$2,288	\$1,496
<i>Edmonton</i>	\$3,425	\$2,554	\$4,143	\$1,143	\$2,195	\$776
<i>Winnipeg</i>	\$498	\$1,549	(\$2,293)	\$1,032	\$1,982	(\$789)
<i>Quebec</i>	\$1,534	\$1,258	(\$3,044)	\$948	\$1,820	(\$3,012)

playoff success in the previous season.⁶⁸ As a result, a good playoff performance leads to revenue increases in the following season. Third, merchandise sales appear to be correlated positively with playoff success as does the size of the local broadcast revenue.⁶⁹

Television revenue is not as important for the NHL as it is for other leagues.⁷⁰ In the mid-1980s, the only major national network television contract was in Canada. This contract was small and the teams divided the proceeds from the contract unequally.⁷¹ Broadcast revenue is primarily local in the NHL where the size of the market is crucial. As a result, teams in Boston, Chicago, Los Angeles, and New York have an advantage because their television markets are considerably larger than any Canadian city or any other American city.

Given these three revenue advantages of the playoffs, what are the implications for existing loss teams that might wish to relocate? A number of potential alternatives exist for these teams to increase team revenue. First, consider attendance revenue and its team quality component, Q_t . In principle, a superior team would increase the value of the team quality, Q_t , components thereby increasing regular season revenue. If this increase carries into the playoffs, the usual price increases and near capacity attendance would further increase revenue. The difficulty lies in assuring financially losing franchises the superior teams. Nothing exists in the extremely restrictive rules governing the distribution of players within the NHL that would guarantee this result. A more radical redistribu-

68. The teams discussed in note 68, *supra*, raised ticket prices the following season. Another example is the Devils. The team qualified for the playoffs for the first time in 1988. TOR. GLOBE & MAIL, Mar. 30, 1990, at A19. The following season, ticket prices increased, season ticket subscriptions increased from 7,650 to 11,000, and average attendance increased from 13,000 per game to 17,000 per game. *Id.*

69. The increased merchandise sales of the Oilers after they won five Stanley Cups in seven years provides a example. TOR. GLOBE & MAIL, June 12, 1990, at A22.

70. In 1985, broadcasting revenue as a percentage of revenue for MLB, the NBA, the NFL, and the NHL was 37.5%, 21%, 56.3%, and 11.8%, respectively. Roger G. Noll, *The Economics of Professional Sports Leagues* in THE LAW OF PROFESSIONAL AND AMATEUR SPORTS § 17-1 (1988).

71. The NHL had a major national network television contract in Canada in 1984 in which the Canadian teams agreed to share the television revenue unequally among themselves. TOR. GLOBE & MAIL, July 25, 1984, at 54. As a result of the Trans Border Agreement between the Canadian Sports Network and the NHL, the Canadian owners made a relatively small payment to the American teams that appeared on the nationally televised Canadian games. *Id.* The revenue paid to the six Canadian teams playing in the NHL at the time - Calgary, Edmonton, Montreal, Toronto, Vancouver, and Winnipeg, but not Quebec - ranged from \$90,000 to \$5,000,000 per team, but the American teams only received \$178,000 per team. *Id.*

tion of players would be necessary⁷²

Other team quality, Q_t , components could be used. Because of the significance that games played on weekends has on attendance,⁷³ the schedule could be manipulated so that the better teams visit the lesser teams in mid-week. Similarly, fighting could be encouraged in games in American cities.⁷⁴ The problem with these potential adjustments to team quality, Q_t , is that they may not rectify a loss situation.

What about the effect of locational quality in a new city, H_c , on attendance revenue? Neither per capita income nor population change that quickly. Population may be increased by widening the size of the spatial area but relevance becomes an issue.⁷⁵ If the variable for a game played in Canada, CAN, had been retained in the analysis, it would have demonstrated the Canadian preference for hockey. This would have indicated a preference for a Canadian location, but limitations exist to the extent that the components of locational quality in a new city, H_c , can be manipulated to increase revenue.

Second, playoff revenue could be changed. At one extreme, every team could be allowed to make the playoffs, but this may devalue the playoffs and would devalue the regular season. Since a greater percentage of NHL teams make the playoffs than any other major league sport, it is doubtful whether such a strategy would increase revenue significantly for the loss teams.

Third, increasing broadcast revenue is one way to increase revenue. Specifically, a major national network television contract in the United States would increase the revenue in the NHL and this increase would be shared by the teams. While this is not impossi-

72. One example is to allow the better teams in the NHL to retain only between five players and ten players per year with the NHL redistributing the remaining players to the lesser teams in the NHL.

73. See col. One, Table One.

74. Attendance is related positively to the more extreme forms of game violence in American cities and is related positively to the minor forms of game violence in Canadian cities. J. Colin H. Jones et al., *Blood Sports and Cherry Pie: Some Economics of Violence in the National Hockey League*, 52 AMER. J. OF ECON. & SOCIO. 63 (1992).

75. For example, it has been argued that Saskatoon could support a NHL franchise, because of a "tradition of long distance travel to Saskatoon." Robert L. Geddert & R. Keith Semple, *Locating a Major Hockey Franchise: Regional Considerations*, 15 REG. SCI. PERS. 13 (1987). However, this does not necessarily make the city attractive. *Id.* In the United States, the majority of the attenders at a game "live within twenty miles of the sports facility." GOVERNMENT AND THE SPORTS BUSINESS, *supra* note 39, at 16. The hinterland population is more relevant for local television or pay television than for game attendance per se.

ble, nothing suggests that it is probable. Indeed, television viewer surveys have shown consistently that hockey has less television appeal than tractor pulls in the United States. As a result, it is not reasonable for loss teams to pin their survival on the expectation of a major national network television contract in the United States.

Finally, these three revenue components cannot be adjusted to increase the revenue of potential relocating teams sufficiently. Some teams are making money even though the teams unequally distribute revenue.⁷⁶ A judicious redistribution of revenue would create a profit for all of the teams in the short run and would guarantee the viability of the NHL in the long run.⁷⁷ Since the NHL is the least egalitarian of the major sports leagues,⁷⁸ a judicious redistribution of revenue is not possible even though it could mean long run survival for the teams and could forestall any relocations.

While redistribution may resolve the relocation problems, what about expansion? In this case, the position is bleaker. In the short run, only Hamilton and Ottawa are viable.⁷⁹ In the long run, neither city would survive.⁸⁰ Table Five reveals the simulated short run revenue or short-run losses and the long run revenue or long-run losses for these two locations. Insufficient profit exists for redistribution in order to maintain the potential teams, but the long run profit of the existing teams is positive. This long run profit could be used to cover the projected losses of some of the new franchises.⁸¹

Additionally, the long run losses of six potential new sites are smaller than for the existing franchise in Hartford, and the four new locations with the smallest projected losses have a smaller loss than Quebec. Hartford and Quebec could relocate to any of five cities to minimize long run operating losses. What the figures also indicate is that the NHL could expand to five cities if the NHL reallocated the profit from existing locations. For example, the long run losses of the four lowest loss sites could be covered by the profit of the New York Islanders and the New York Rangers.⁸² The one viable alternative to increase the present value of existing franchis-

76. See Table Two; Table Four.

77. See col. Nine, Table Two; col. Seven, Table Four.

78. Other major sports leagues redistribute revenue from attendance, broadcasting, and concessions to some degree, except the NHL.

79. See col. Five, Table Three.

80. See col. Fifteen, Table Three.

81. Compare col. Seven, Table Four with col. Seven, Table Five.

82. Compare col. Seven, Table Five with col. Seven, Table Four.

TABLE 5
Playoff Revenue, Broadcast Revenue and Profits (Losses)
New Locations

Team/ Location [1]	Revenue (000)					
	Short Run*			Long Run		
	Playoff** [2]	Broadcast*** [3]	Season Profit (Losses) [4]	Playoff** [5]	Broadcast*** [6]	Season Profit (Losses) [7]
United States						
Denver	\$0	\$1,353	(\$2,389)	\$500	\$1,550	(\$3,606)
Houston	\$0	\$1,344	(1,038)	\$496	\$1,539	(\$2,258)
Tampa Bay	\$0	\$1,296	(\$1,531)	\$477	\$1,477	(\$2,775)
Milwaukee	\$0	\$1,293	(\$1,572)	\$475	\$1,474	(\$2,814)
Indianapolis	\$0	\$1,235	(\$2,353)	\$452	\$1,401	(\$3,614)
Dallas	\$0	\$1,220	(\$3,607)	\$446	\$1,382	(\$4,877)
San Francisco	\$0	\$1,204	(\$2,799)	\$439	\$1,362	(\$4,0710)
Cleveland	\$0	\$1,103	(\$5,944)	\$399	\$1,237	(\$7,227)
Seattle	\$0	\$1,087	(\$4,686)	\$393	\$1,217	(\$5,975)
Portland	\$0	\$1,009	(\$4,597)	\$362	\$1,123	(\$5,869)
Canada						
Ottawa	\$321	\$1,541	\$1,615	\$523	\$1,621	(\$1,678)
Hamilton	\$306	\$1,467	\$354	\$498	\$1,544	(\$2,774)
Regina	\$280	\$1,342	(\$873)	\$456	\$1,413	(\$3,731)
Saskatoon	\$278	\$1,334	(\$1,119)	\$453	\$1,404	(\$3,961)
Halifax	\$276	\$1,325	(\$1,452)	\$450	\$1,395	(\$4,270)
Fredericton	\$223	\$1,073	(\$5,054)	\$364	\$1,129	(\$7,341)

* Locational quality and revenues based on minimum quality team including the Honeymoon influence.

**Short Run playoff revenue based on worst playoff record: United States 0 playoff games; Canada 2 playoff games. Long Run playoff revenue based on average playoff record: 4 playoff games.

***Short Run broadcast revenue based on 8% of attendance revenue. Long Run broadcast revenue based on 10% of attendance revenue.

es and some prospective franchises is to redistribute the revenue of existing teams.

E. Relocation, Expansion, and Cost Adjustment

The costs shown in Table Two and Table Three are estimates of operating costs and do not cover the costs for an expansion team or for teams wishing to relocate. The costs involve the addition of expanded player depreciation, expansion fees and indemnification of existing teams, and cost of facilities. For simplicity in the cost estimates, player depreciation was reduced to zero. This is unrealistic, particularly for an expansion team, but player costs can be written off which is a significant tax advantage for the new franchisee. On the balance sheet, depreciation would be at least one third of operating costs and would guarantee a book loss. Of course, in terms of cash flow, this would represent an addition to profit and, as such, is a de facto increase in revenue.

As far as expansion fees, these vary as to time and place. In 1967-68, when the NHL expanded by six teams,⁸³ the fee was two million dollars per team. During the 1970s, the expansion fee rose to six million dollars when the NHL added ten more teams.⁸⁴ During the 1980s, the price of a NHL franchise rose more significantly. In 1983, the Detroit Red Wings changed ownership for approximately six million dollars. In 1982, when John McMullen purchased the Colorado franchise and transferred the franchise to New Jersey, the owner agreed to indemnify the Islanders, Rangers, and Philadelphia Flyers \$12.5 million for entering their broadcast zones and agreed to pay a transfer fee of ten million dollars to the NHL. In addition, the team itself cost \$8.5 million. The Saskatoon group who almost purchased the St. Louis Blues allegedly offered \$11.5 million for the team and was prepared to pay an additional forty million dollars to construct an arena in Saskatoon. Harry Ornest, who finally bought the franchise in 1983, paid three million dollars in cash plus twelve million dollars in debentures and notes while

83. The six new teams for the 1967-68 season were the California Seals, Los Angeles Kings, Minnesota North Stars, Philadelphia Flyers, Pittsburgh Penguins, and Blues. GUIDE & RECORD BOOK, *supra* note 15.

84. The NHL added the Buffalo Sabres and the Vancouver Canucks for the 1970-71 season, the Flames and the New York Islanders for the 1972-73 season, the Kansas City Scouts and the Washington Capitals for the 1974-75 season, and the Oilers, Whalers, Nordiques, and Jets for the 1979-80 season. *Id.*

also purchasing the arena for an additional \$5.5 million.⁸⁵

In the 1981-84 time period, the expansion fee would have been approximately six million dollars for a new team. This added cost, of course, places pressure on the revenue side of a franchise's operation to generate an acceptable rate of return. Indeed, these costs would not auger well for expansion. Of the cities in Table Five, Hamilton would seem to be in the least favorable position. Despite that it is projected to make a short run profit, it falls within the fifty mile spatial limits of both the Buffalo Sabres and the Toronto Maple Leafs. As a result, a team in Hamilton would have to compensate both of these existing teams. If an arena had to be built, the rent component of the operating cost figure may be far lower than the required implicit interest and capital cost. This further increases cost and places a premium on the taxpayers to fund the arena. Otherwise, cost would raise substantially.

Finally, the cost estimates are based on the fact that the conditions in the labor market are very restrictive, serving to keep salaries down. Until the entry of the WHA in the 1970s, the player draft and the standard player's contract severely limited salaries. The entry of the WHA boosted salaries significantly, but the demise of the WHA in 1979, the continuation of the draft, and the lack of any effective free agency policy restricted increases in salaries during the 1980s.⁸⁶ Should free agency have a more prominent role in the NHL, then player salaries, as in other sports, will escalate further. Once again, the result would be an increase in costs. In sum, little prospect of a reduction in costs for the existing loss teams or the prospective expansion teams exists.

F. Survival, Relocation, Expansion, and Redistribution

Substantial increases in revenue or decreases in cost which would improve the profits of existing loss teams or prospective expansion teams permanently do not exist. On the basis of the 1981-84 time period, survival of some existing teams is questionable and successful expansion would seem to be a dubious propo-

85. THE SPORTING NEWS, Dec. 17, 1990, at 32; TOR. GLOBE & MAIL, Nov. 3, 1990, at A14; TOR. GLOBE & MAIL, Feb. 5, 1985, at 16; TOR. GLOBE & MAIL, Aug. 18, 1984, at 53; TOR. GLOBE & MAIL, Nov. 30, 1979, at 30.

86. See J. Colin H. Jones & William D. Walsh, *The World Hockey Association and Player Exploitation in the National Hockey League*, 27 QUAR. REV. OF ECON. & BUS. 87 (1987) (discussing the impact of the WHA on the salaries and the profits in the NHL).

sition.

This gives rise to three specific corollary questions. First, why are the eight existing teams, which show short run losses plus potential long run losses over the 1981-84 time period,⁸⁷ operating in the same locations in the 1990s? Two, why did the NHL add San Jose for the 1991-92 season, add Ottawa and Tampa Bay for the 1992-93 season when the results in Table Five indicate that only Ottawa would survive in the short run and none of the expansion cities is viable in the long run? Finally, how, in general, could the NHL seriously consider expanding to twenty-eight teams by the end of the century given the results of column Four, Table Five and column Seven, Table Five?

1. Loss Teams and Survival in the 1991-92 Season

With regard to the first question, profits for existing teams are higher than shown. The definition of profit is quite narrow and excludes the tax advantages which accrue to a sports team.⁸⁸ These range, for example, from the amortization of player contracts to the ability to write off tax losses against the earnings of other enterprises. The result is that a book loss can be turned into a positive cash flow. Profit, in the broadest sense of the term, is higher than the estimates reported in Table Two through Table Five.

In addition, it is possible that conditions for these teams changed between the early 1980s and the 1990s. Harry Ornest apparently made money in St. Louis after purchasing the franchise in 1983 whereas Ralston Purina could not make a profit.⁸⁹ Increased playoff activity aided the Pittsburgh Penguins. Finally, a short run loss may be offset in the long run by the sale of the franchise if the franchise appreciates in value over time. This has happened in the NHL.⁹⁰ In 1983, a NHL franchise was worth approxi-

87. See col. Four, Table Four; col. Seven, Table Four.

88. GERALD V SCULLY, *THE BUSINESS OF MAJOR LEAGUE BASEBALL* ch. 7 (1989); Morton Rosenberg, *Proposed Sports Relocation Legislation: Background and Legal Implication*, CONG. RES. SER. 32 (1985).

89. Ralston Purina lost an estimated \$19 million over the previous six years. In 1986, Ornest sold the team for \$19 million of which \$10 million was cash and the city bought the arena for \$15 million. His pre-tax profit was \$11.6 million. Ornest concluded that "there are guys who say that I stole the club. I guess maybe they are right." *Tor. GLOBE & MAIL*, Nov. 3, 1990, at A14.

90. In the NHL, each expansion or each absorbed franchise cost \$6 million between 1970 and 1990. *THE SPORTING NEWS*, Dec. 17, 1990, at 32. In 1990, the price escalated to \$50 mil-

mately six million dollars, but, in 1991, the expansion fee for a new franchise was fifty million dollars. As a result, a franchise worth six million dollars in 1983 and sold for fifty million dollars in 1992 would not only have appreciated significantly in value but the capital gains tax laws would treat such a franchise preferentially. The tax treatment of a sports franchise is the companion piece to the permissiveness of the antitrust laws. In short, the continued existence of certain franchises can be explained by the tax advantages these franchises enjoy. This also means that the franchises that have been estimated as making a profit are doing even better when the tax breaks are considered.

2. Potential Losses and the Expansions of the 1991-92 Season and the 1992-93 Season

The answer to the question as to why the NHL expanded to Ottawa, San Jose, and Tampa Bay, given the long run losses shown in Table Five, is moot. The data could have changed between the early 1980s and the late 1980s. The locational attributes could have changed significantly or the implicit assumption that the NHL had to make about team quality in the long run may be more generous than the "average" assumption used in this model. This is impossible to check with the data at hand.

Alternatively, an intangible may exist about Ottawa, San Jose, and Tampa Bay which would not factor into any statistical analysis. In the case of Tampa Bay, the figures indicate that, after Houston, which withdrew from the expansion bidding when the expansion fee rose to fifty million dollars,⁹¹ Tampa Bay is the best long

lion. *Id.* The same pattern applies in the other major sports leagues. In MLB, a new team cost \$7 million in 1977. *TOR. GLOBE & MAIL*, June 28, 1991, at A11. In 1991, the same team would have cost \$95 million. *Id.* In the NBA, a team cost \$12 million in 1980. *Id.* In 1989, the same team would have cost \$32 million. *Id.* In the NFL, a new team cost \$16 million in 1976. In 1991, the same team would have cost \$150 million. *Id.*

91. The \$50 million expansion fee appears high in terms of estimates of the value of the existing franchises. For example, *Financial World Magazine* values the Montreal Canadiens at \$60 million, but the value of the remainder of the Canadian teams ranges from \$45 million to \$30 million. *FIN. WORLD MAG.*, July 9, 1991, at 43. In the United States, the valuation of the NHL teams ranged from \$57 million for the Boston Bruins to \$30 million for the now-relocated North Stars. *Id.* Ottawa and Tampa Bay paid \$50 million. A number of prospective franchise groups withdrew from the bidding for an expansion franchise as a result of the \$50 million payment. Because Hamilton and St. Petersburg wanted to restructure their payments, only Ottawa and Tampa Bay remained as cities that did not quibble with the expansion fee, but both cities had trouble meeting the \$50 million expansion fee. Tampa Bay raised

run prospect in the United States.⁹² As a result, if the NHL placed a new franchise in the American market to increase the prospect of a major national network television contract in the United States, the Tampa Bay location is better than most of the other American locations.⁹³

Ottawa is not necessary for a major national network television contract in the United States, but, like all Canadian NHL cities,⁹⁴ Ottawa has the advantage of strong attendance, a key factor given the importance of attendance revenue in overall revenue. Some sentiment and substantial political lobbying⁹⁵ existed for at least one Canadian expansion franchise and Ottawa does have the potential revenue advantage over Hamilton.⁹⁶ In addition, Hamilton would have to indemnify Buffalo and Toronto, although it did have an NHL size arena whereas Ottawa faced a potential zoning problem for its arena.

The San Jose decision had more to do with internal NHL politics.⁹⁷ It is, in fact, a partial relocation of the Minnesota North Stars. Why the NHL chose San Jose is debatable. The NHL's decision may have been based on the recent financial success of the Los

most of the money from Japanese investors which led Tampa Bay General Manager Phil Esposito to make the wonderful statement that " to those Japanese investors I say 'thank you.' You're going to love hockey. If you love sumo wrestling you're going to love hockey. We've got it all in hockey" *THE SPORTING NEWS*, Dec. 17, 1990, at 29.

92. See col. Seven, Table Five.

93. William Wirtz, owner of the Chicago Blackhawks and the then-Chairman of the NHL's Board of Governors, favored expanding to the west coast and Florida where the population is growing the fastest in the United States, a requirement for any major national network television contract in the United States. *TOR. GLOBE & MAIL*, Oct. 17, 1990, at A14.

94. See col. One, Table One.

95. A national hockey caucus of Canadian parliamentarians, representing the parties in the House of Commons, aimed to lobby the NHL for at least one expansion franchise in Canada. Terry Cliffords, Member of Parliament, established the tone by noting that " hockey has become big business on the international stage. We must not allow a group of backroom boys to dilute our leadership in this game by granting franchises to interests whose only familiarity with ice is in their whisky." *Commons Debates*, Oct. 31, 1990, at 14924.

96. See Table Five.

97. The Gund brothers, owned the North Stars and threatened to move the North Stars to San Jose if they did not get an expansion team, but the NHL wished to keep the franchise in Minnesota. *TOR. GLOBE & MAIL*, June 13, 1990, at A18. As a result, the NHL allowed the Gund brothers to sell their ownership interest in the Minnesota franchise, to claim a part of the Minnesota management and its players, and form an expansion team in San Jose. *Id.* The reported price for this new franchise was \$30 million with an additional \$20 million generated by future cable revenue. *Id.* Under the new ownership of Norman Green, the Minnesota franchise relocated to Dallas for the 1993-94 season. *GUIDE & RECORD BOOK*, *supra* note 15.

Angeles Kings, a potential television package, or simply moving a franchise to an area of population growth. Of course, it could be that the NHL made a mistake in selecting Ottawa, San Jose, and Tampa Bay as expansion cities, and these teams will not last in their present locations over the long run. The NHL does have a history of franchise relocations.⁹⁸

3. Loss Teams and Expansion

The answer to the third question is straight forward. If the NHL wishes to expand to twenty-eight financially stable teams by 2000, then a redistribution of revenue among the existing teams is the only answer. Would the existing teams agree to this redistribution? Based on past experience, the answer is in the negative, but a case can be made that redistribution of revenue may be in the NHL's best interest in certain circumstances. The decisions of the United States Court of Appeals for the Ninth Circuit in *Los Angeles Memorial Coliseum Commission v. NFL*⁹⁹ allows franchise free agency, so that loss teams could invade the spatial markets of profit teams. To ensure that an invasion of a spatial market does not happen, existing loss teams may pay existing profitable teams to forestall entry into their spatial markets by redistributing revenue to the existing loss teams.

Few existing teams invaded the spatial markets of other member teams. In most instances, existing teams relocated to cities without a team or used the threat of shifting to gain concessions from the local government in their existing locations. If the *Memorial Coliseum* decisions provide an incentive to share revenue among teams, then it may improve the stability of the NHL without team shifts occurring and without the local communities providing further subsidies. As a result, both the teams that wish to relocate and the communities that want to retain their teams would benefit. Redistribution of revenue is a means whereby the monopoly benefits extracted in one spatial market can support teams partially in

98. One team in the sun belt, the Atlanta Flames, relocated to Calgary in 1980, and the Seals, the first franchise owned by the Gund brothers, moved from Oakland to Cleveland and became the Barons in 1977. *Id.* The NHL merged the Cleveland franchise with the North Stars in 1978. *Id.*

99. *Los Angeles Memorial Coliseum Comm'n v. NFL*, 726 F.2d 1381 (9th Cir. 1984), *cert. denied*, 469 U.S. 900 (1984), and *Los Angeles Memorial Coliseum Comm'n v. NFL*, 791 F.2d 1356 (9th Cir. 1986), *cert. denied*, 484 U.S. 826 (1987).

other spatial markets. It is, in fact, cross subsidization. The end result would be an increase in monopoly output — or at least not a decrease in monopoly output since teams would not cease operations — which, given the demand for franchises, is beneficial to society

What about expansion teams? Is it in the NHL's best interest to subsidize these new teams? Expansion teams differ fundamentally from incumbent teams wishing to relocate. The latter, already established in the NHL, pose a more credible threat as a franchise free agent. The former can only enter the NHL at the NHL's permission and do not pose such a threat. Since new teams are unlikely to be viable in the long run,¹⁰⁰ why would the NHL wish to expand if the only way these new teams could survive would be to share the revenue of existing teams?

In general, two sets of circumstances exist in which teams may have an incentive to subsidize expansion teams. First, a new team may open profitable opportunities for the existing teams. For example, new teams in specific locations may be a prerequisite for an major national network television contract in the United States. This scenario guided the NHL's 1967 expansion of six American cities and the rejection of Vancouver,¹⁰¹ although market research predicted that this Canadian city would have the best attendance figures.¹⁰² Despite expanding by six teams, the NHL did not subsidize any of these cities. In the circumstances summarized in Table Five coupled with considerable doubt regarding a major national network television contract in the United States, it is unlikely that

100. See col. Seven, Table Five.

101. J. Colin H. Jones, *The Economics of the National Hockey League Revisited: A Postscript on Structural Change, Behavior, and Government Policy in CANADIAN SPORT, SOCIOLOGICAL PERSPECTIVES* (Richard S. Gruneau & John G. Albinson eds. 1972); J. Colin H. Jones, *The Economics of the National Hockey League*, 2 *CAN. J. OF ECON.* 1 (1969). The NHL obtained a major national network television contract in the United States with the Columbia Broadcasting Station, but the television station failed to renew the contract in 1972 because of low ratings. The National Broadcasting Company (NBC) signed a major national network contract with the NHL, but NBC did not renew its contract in 1975. Since 1975, the NHL has not had a major national network television contract in the United States. The Entertainment and Sports Programming Network (ESPN), Sportschannel America, and the USA Network provided modest national coverage of the NHL in the United States. Currently, the NHL has an agreement with ESPN.

102. From the 1970-71 season to the 1980-81 season, Vancouver's attendance averaged 96% of capacity. The team's record was on a par with relocated franchises such as Atlanta, California, and Kansas City, and the merged franchises of Cleveland and Minnesota. See Jones, *supra* note 43, at 62.

the addition of any of the American cities in Table Five would justify subsidizing any new teams. As a result, no incentive exists for the NHL to subsidize new teams on these grounds.

Second, a league may expand and subsidize teams for defensive reasons in that the costs of not expanding may exceed the costs of subsidizing new teams. Two examples are pertinent. One is the entry of new competing leagues. In the case of the NHL, the entry of the WHA in 1972 greatly increased costs through the competition for players.¹⁰³ To deal with the threat of a new league, existing leagues could pre-empt the threat through the judicious acceptance of new franchises in key locations even though subsidizing these new teams may be necessary. Under the present circumstances, the formation of a new league is doubtful.¹⁰⁴ As a result, the NHL does not have an incentive to expand.

Two, the government could impose costs on incumbent leagues by threatening to eliminate any statutory exceptions unless the existing leagues expand even though subsidization of the expansion franchises may be necessary.¹⁰⁵ The justification for this is straightforward. Positive social economic and psychic externalities associated with professional sports teams exist. For example, the antitrust exemption in professional baseball allows that sport to attain a monopoly position which may potentially reduce output, but MLB may increase output by adding teams if the existing teams redistribute revenue. The result is that social welfare would increase. Government policy should mandate both the redistribution of revenue and the addition of new teams. To only mandate the redistribution of revenue does not provide an incentive for existing leagues to increase the number of new teams, because, in order for a new team to be beneficial to the existing teams, the new team would not have to break even but would have to generate sufficient revenue to offset the reduction in the established teams' share of existing revenue. As a result, expansion also would have to be mandated.

If expansion can be undertaken by mandating the redistribution of revenue and increasing the number of teams, the obvious question is how many more teams can be added to the NHL? This de-

103. See Jones & Walsh, *supra* note 86.

104. See Table Five.

105. A classic example is the quid pro quo which allowed the NFL and the AFL to merge and to secure a NFL franchise for New Orleans. Harris, *supra* note 12, at 15.

pend on the profit being earned by the existing teams. At one extreme, teams could be added until the profit in the NHL is zero, but not all of the teams in Table Five would enter the NHL because, in the long run, the profit of the existing teams are less than the losses of the potential entrants.¹⁰⁶ Minimally, the NHL does have room for an additional four or five teams.

The following corollary points should be emphasized. First, redistribution of revenue is not advocated per se. Examples abound of the manipulation of accounting statements to reduce team profit either to zero or to a negative figure to make the redistribution of profit a viable option.¹⁰⁷ As a result, the redistribute revenue from all sources.

Second, if a weak team were to be guaranteed survival by redistribution of revenue, what incentive would that team have to improve its on-ice quality or its financial quality? An absolute guarantee does not exist that teams would improve, but the redistribution of revenue by equalizing locational quality, H_i , should, under normal profit maximizing assumptions, provide such an incentive.¹⁰⁸

Third, any expansion may reduce the quality of the output. If a significant reduction in the quality of the players to supply the new teams existed the quality of the game may suffer. This depends largely on the size of the player pool relative to the number of new teams. The importance of the reduction in quality depends on the extent to which hockey fans recognize this element as distinct from the other elements comprising team quality Q_i .

Fourth, the analysis of costs is geared to the institutional framework in 1984 when minimal free agency and minimal competition for players existed. If conditions change dramatically, then costs would escalate and the optimum number of teams would fall. To preserve the maximum number of teams under these circumstances necessitates an agreement between the NHL and the National Hockey League Players' Association on the amount of revenue to be devoted to salaries. In short, a salary cap.

From a policy perspective, the NHL could adopt the redistribution of revenue and team expansion without any detailed policy

106. Compare col. Seven, Table Four with col. Seven, Table Five.

107. Roger G. Noll, *The Economic Viability of Professional Baseball: Report to the Major League Players Association*, July, 1985.

108. Scott E. Atkinson et al., *Revenue Sharing As an Incentive in an Agency Problem: An Example from the National Football League*, 19 RAND J. OF ECON. 27 (1988).

measures being adopted by government. Economic self interest and political self interest should dictate that the major sports leagues redistribute revenue and the cost of not redistributing revenue would involve either closer government regulation or the elimination of any statutory exemptions. Major sports leagues assigned teams spatial monopoly power which, in conjunction with any statutory exemptions, translated into monopoly rents. Government must protect society from such monopoly exploitation. As a result, until the major sports leagues voluntarily engage in more redistribution of revenue to stabilize and to expand the number of teams in their leagues, they should be required to do so. This is the simplest approach and negates any further government involvement.

III. CONCLUSION

The major conclusions from the foregoing analysis of the NHL from the 1981-84 time-period are the following. First, not all existing teams are financially stable. Some teams are quite profitable, but the number of new locations which could profitably support a relocating or expansion team is zero in the long run.

Second, if the NHL wishes to expand, the NHL must redistribute revenue from all teams and from all sources. If the teams redistribute revenue, then the NHL could support a significant number of new teams. If the teams do not redistribute revenue, expansion teams would not be able to survive.

Third, the profitability of existing teams is the result of the monopoly position of the NHL, the spatial monopoly status of the teams, and statutory exemptions. Mandated revenue redistribution can be considered as payment for any statutory exemptions. At this juncture, prospective franchise sites could be ranked as to their quality because the redistribution of revenue may necessitate mandatory expansion.

Fourth, although these policy conclusions are geared to the NHL, they are equally applicable to the other major sports leagues. These other major sports leagues have a better record of revenue redistribution than the NHL, although their redistribution of revenue should also include revenue from all sources.

Finally, the redistribution of revenue is not going to ensure that existing teams remain in their locations, but it will attempt to equalize differences in locational attributes. This is important, for example, if the NHL wishes to maximize the number of its teams if

complete player free agency develops.

The redistribution of revenue is unlikely to prohibit teams from using public funds to attract or to retain teams. A demand for professional sports teams exists for a variety of economic and non-economic reasons. Psychic appeal for professional sports teams exists which goes beyond other community benefits such as the symphony or the opera,¹⁰⁹ but the evidence suggests that economic benefits are largely illusory.¹¹⁰ Nevertheless, politicians are continually willing to spend public funds to attract a team to satisfy either the psychic need or to make the team a central piece in an economic development project. The redistribution of revenue is not a panacea, but it will reduce the monopoly extractions created by statutory exemptions.

109. Sports teams have been placed in the same category as other publicly subsidized community goods. For example, Angela Alioto, a San Francisco supervisor and a supporter of keeping the Giants of MLB in San Francisco, noted that "losing the Giants would be like losing the symphony, the opera or the ballet." *SPORTS ILLUS.* June 1, 1992, at 57. Sports teams have also been considered superior community goods because, in contrast to operas, symphonies, and the ballet, these teams transcend class and are a more powerful force in binding the community together. Beisner *supra* note 5.

110. The consensus is that whether a franchise is economically feasible depends on the valuation of net intangible and indirect benefits. Robert A. Baade, *Is There an Economic Rationale for Subsidizing Sports Stadiums?*, 2 *HEARTLAND INST. POL. STUD.* (1987).