

## **A Market Test for Discrimination in the National Hockey League**

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March 2001

**Abstract:** It has been argued by some that National Hockey League (NHL) teams located in English-speaking Canada have discriminated against francophone players. If this is so, then the market opportunities for francophone players will be diminished and they will earn a lower wage than equivalently talented anglophone players. A further consequence of such discrimination will be that teams with a below average proportion of francophone players (discriminators) will achieve a lower level of success in competition, for a given wage expenditure, than their less discriminating rivals. This paper implements a market test for discrimination against francophone players in the NHL over the period 1989-1998. We find that econometric specifications in which wages are a significant explanatory variable for team performance also support the hypothesis that teams with a below average proportion of francophone players have achieved a lower level of performance than would otherwise have been expected.

**Keywords:** discrimination, NHL, francophones  
**JEL classification number:** J71, J15, L83

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## 1. Introduction

Tests to detect the presence and nature of labor market discrimination have often focused on the professional sports industry. Unlike many other industries, the data required to conduct such tests – for example, data on worker productivity, on salaries, and on firm revenues – is readily available in the professional sports industry. Kahn (2000) surveys briefly the evidence on three types of discrimination in the sports literature: employer, co-worker and customer, and points out that the first type of discrimination should be competed away by the market, as firms bid for undervalued factors of production. This is in principle a testable hypothesis: if prejudice reduces the market opportunities for certain factors, then teams containing an above average proportion of these underpriced factors will perform better in league competition than would have been expected given their wage expenditure.

Szymanski (2000) tested this hypothesis using data on the English soccer leagues where there was perceived to be widespread prejudice against black players during the 1970s and the 1980s, and where wage expenditure is a powerful explanatory variable for league performance. Econometric tests showed that during this period teams with an above average proportion of black players did indeed perform better than expected, given team wage expenditure, and therefore it could be inferred both that prejudice existed and that it had not been competed away by the market.

The present paper concerns the case of the National Hockey League (NHL). Here the issue has not been racial discrimination, but rather discrimination based on cultural, linguistic, or political factors, and has focussed specifically on the case of French Canadians. Proving the existence of discrimination is, however, notoriously difficult. For example, the work of Longley (2000) has demonstrated that French Canadians have been significantly under-represented on English Canadian teams, but this is not, in itself, proof of discrimination. Moreover, salary studies that estimate earnings functions from player characteristics are subject to the complaint of omitted variable bias – player characteristics that are correlated with productivity and associated with group

membership can explain away any apparent underpayment to particular groups of players<sup>3</sup>.

The market test employed in this paper is not subject to this omitted variable bias critique. As long as there is a market for players, discriminators will have to pay a premium to indulge their “taste for discrimination”, and this will be captured by a regression of team performance on team spending and the proportion of players from the group suffering discrimination. If no premium exists, then there is no evidence of discrimination, at least in this sense.

In this paper we implement a market test using a database of NHL teams from 1989-1998. Our findings are mixed. There is a correlation between wages and team success in the NHL, but not as great as that found in European league soccer. The impact of wage spending is swamped in a fixed effects regression where each team is treated as a separate group, but if the groups are defined more broadly (French Canadian, English Canadian and US) both the wage and the French Canadian effects are statistically significant. Indeed, if each team is treated as a separate group except for the three teams defined as French Canadian, wages and the share of French Canadians are significant. Thus, when wages are found to be significant we also find evidence that underrepresentation of French Canadians carries an economic penalty in terms of lower performance for a given wage expenditure.

The paper is set out as follows. In the next section the institutional structure of the NHL and the literature on discrimination in the sport is briefly reviewed. Section 3 develops a model of two-way discrimination (to allow for the possibility that French Canadian teams discriminate against anglophones) and Section 4 reports our data and results. Section 5 concludes.

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<sup>3</sup> This critique is hard to rebut directly — French Canadians are accused of failing to “fit in” with the prevailing culture of the English Canadian teams — in economic terms, group membership defines them as possessing lower productivity — on English Canadian teams at least.

## 2. French Canadians in the NHL

At any given point in time throughout the NHL's history, players of French Canadian origin have never comprised more than a small minority of the total number of players in the League. However, the prominence of French Canadians in the NHL goes well beyond their relatively small overall representation in the League. French Canadian players have long been associated with both individual and team excellence. Some of the all-time great players in the history of the NHL, such as Maurice Richard, Jean Beliveau, Guy Lafleur, and Mario Lemieux have been of French Canadian origin. In addition, the legendary Montreal Canadiens teams that dominated the NHL throughout much of the 1950s, 1960s, and 1970s always had a disproportionately large contingent of French Canadians on their roster.

Almost all French Canadians that have ever played in the NHL were born and raised in the province of Quebec. Francophones comprise the majority of Quebec's population, and the province is linguistically, culturally, and politically very different from Canada's other nine provinces (so-called "English Canada"). It is the existence of these differences that has caused researchers to examine whether French Canadians may face barriers when playing in the (traditionally Anglophone-dominated) NHL.

There is a substantial literature on the issue of discrimination against French Canadians as a minority within the NHL. Early work on the issue of salary discrimination (see, for example, Lavioe and Grenier, 1992, and Jones and Walsh, 1988) developed earnings models, isolating French Canadian players to ascertain whether this group was paid less, relative to non-French Canadians, for a given set of performance attributes. Longley (1995) argued that by aggregating all French Canadians in the League, potentially important relationships could be obscured. Since one would not expect, *a priori*, either of the two Quebec-based teams to discriminate against French Canadians, and since these teams tended to employ a disproportionate number of French Canadians in the NHL, aggregating all French Canadians into a single dummy variable may provide misleading results. He argued that this technique might statistically obscure instances of discrimination that may be occurring on teams outside of Quebec.

In Longley's empirical work, he found no evidence of salary discrimination against those French Canadians playing for teams based in either Quebec or in the US, but did find evidence of possible salary discrimination for those French Canadians playing for English Canadian teams. Results from his model showed that French Canadians playing for teams based in English Canada were paid, on average, 37% less than English Canadian players for those same teams. He hypothesized that these results may be attributable to the historic tensions that have long existed between English Canadians and French Canadians. He speculated these tensions might result in fans and the media of English Canadian teams having biases against French Canadian players; biases not held by fans of US-based teams.

Others have subsequently pursued this notion that team location may be an important variable to consider when testing for salary discrimination in the NHL. Jones, Nadeau, and Walsh (1999), using a data set pertaining to the same NHL season as Longley's, but using a salary model different from Longley's, did not find evidence to support Longley's contention. Lavoie (2000), using salary data from a more recent season, finds some evidence that French Canadians playing for English Canadian teams were underpaid, but attributes this result to all NHL teams having a preference for local players.

The potential effects of team location can also be examined by analyzing the distribution of French Canadian players across the various NHL teams. Historically, this distribution pattern has been quite uneven. The Quebec-based teams – the Montreal Canadiens and the now-defunct Quebec Nordiques – have tended to employ a disproportionate number of French Canadians.<sup>4</sup> This overrepresentation could be an attempt to appeal to the large francophone fan base of these teams, and/or could be a reflection of biases that these teams may hold towards non-French Canadians.

Furthermore, Longley (2000), presents data to show that French Canadians have been consistently underrepresented on English Canadian teams, relative to their representation on US teams. He also presents evidence that shows the magnitude of this

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<sup>4</sup> Prior to the establishment in 1969 of a draft system to allocate amateur players to NHL teams, the Montreal Canadiens, the province of Quebec's only NHL team at the time, were generally able to sign most of the top French Canadian prospects coming out of the province of Quebec

under-representation is larger during periods where the political threat in Quebec of sovereignty (i.e. the separation of Quebec from the rest of Canada) is more prominent.

This uneven distribution of French Canadians across teams provides the basis for the test conducted in this study. Specifically, it allows one to test whether the proportion of French Canadians that a team employs is related to that team's on-ice performance.

### **3. A model of two-way discrimination**

The case of discrimination in the NHL is radically different from that in most other sports, where in general discrimination is thought to exist against black players and team owners are exclusively white i.e. discrimination is one-way. In the NHL, it is possible that English Canadian teams may harbor prejudices against French Canadian players, but it is also possible that French Canadian teams may harbor prejudices against English Canadian players. In other words, there is the possibility of two-way, rather than one-way discrimination.

To examine this we consider a two team model, where each team is labelled E and F, in which team E has a prejudice against (in favor of) F type (E type) players and team F holds exactly the reverse prejudice. We focus primarily on team E and their choice between E types and F types, and therefore assume that team F buys only F type talent. Teams E and F meet in competition, and each team generates income from selling tickets, merchandising or local TV broadcasts and each team's income is increasing in its own success. Team F maximizes profits (given our assumption that it selects only from the type F pool), while team E maximizes a weighted sum of profit and the total E type talent on their team. The weight on this latter factor is the degree of the team's prejudice. It is assumed that there is a perfectly elastic supply of talent which is also perfectly divisible, and talent types are perfect substitutes as far as generating playing success is concerned — the designation "E" or "F" makes no real difference to the quality of a unit of talent. The wage rate of F type talent is assumed fixed, and we examine the conditions under which team E employs either type of talent. In the presence of discrimination the market wage rate for each type of talent can differ, depending on the demand of each team. If we normalize the wage rate of

one type of labor (type F) to unity, then the wage rate of the other type (E) can be higher or lower in equilibrium.

We can write the objective functions for each team as follows:

$$(1) \quad \Omega_E = \alpha t_{EE} + \frac{(1 - \alpha)T_E}{T_E + t_{FF}} - (1 - \alpha)(\lambda t_{EE} + t_{EF})$$

$$(2) \quad \Omega_F = \frac{t_{FF}}{T_E + t_{FF}} - t_{FF}$$

Where  $t_{EE}$  and  $t_{EF}$  are the number of units of E type and F type playing talent on team E,  $T_E = t_{EE} + t_{EF}$  is the total amount of talent hired by team E. The first term in the objective function of team E reflects that team's taste for discrimination ( $\alpha$  reflects the intensity of that preference), while the second term reflects the income generated from success. The final term is the cost of playing talent where  $\lambda$  reflects the premium/discount paid for type E talent. In fact it is assumed throughout that it is never a discount, so that  $\lambda \geq 1$ ; in other words, as long as the inequality is strict team E finds it costly to discriminate in favor of type E talent than in favor of type F talent.

Team E optimises with respect to  $t_{EE}$  and  $t_{EF}$  and team F with respect to  $t_{FF}$ , so there are three first order conditions (together with complementary slackness conditions). For team E these are:

$$(3) \quad \frac{\partial \Omega_E}{\partial t_{EE}} = \frac{(1 - \alpha)t_{FF}}{(T_E + t_{FF})^2} + \alpha - (1 - \alpha)\lambda \leq 0 \quad t_{EE} \geq 0$$

and  $t_{EE} \frac{\partial \Omega_E}{\partial t_{EE}} = 0$

$$(4) \quad \frac{\partial \Omega_E}{\partial t_{EF}} = \frac{t_{FF}}{(T_E + t_{FF})^2} - 1 \leq 0 \quad t_{EF} \geq 0$$

and  $t_{EF} \frac{\partial \Omega_E}{\partial t_{EF}} = 0$

And for team F it is:

$$(5) \quad \frac{\partial \Omega_F}{\partial t_{FF}} = \frac{T_E}{(T_E + t_{FF})^2} - 1 = 0$$

Several results follow immediately from this set-up. First, suppose  $\lambda = 1$ . Then so long as  $\alpha$  is strictly positive then discrimination leads to perfect segregation: team E hires only E types and team F hires only F types. This is because there is no economic cost to discrimination, and each team can indulge their prejudice without any penalty in terms of profits.

Now suppose  $\lambda > 1$ . First note that (3) and (4) depends only on the total amount of talent hired by team E, not the ratio of  $t_{EE}$  to  $t_{EF}$ . There are three possible cases:

- (a)  $\lambda > 1/(1-\alpha)$ . In this case any value of  $t_{EF} > 0$  that satisfies (4) implies that the derivative of (3) with respect to  $t_{EE}$  is negative. Therefore only type F players are hired by team E.
- (b)  $\lambda = 1/(1-\alpha)$ . In this case all combinations of  $t_{EE}$  and  $t_{EF}$  that yield the optimal value of  $T_E$  are valid: so the ratio of type E players to type F players is indeterminate.
- (c)  $\lambda < 1/(1-\alpha)$ . In this case any value of  $t_{EE} > 0$  that satisfies (3) implies that the derivative of (4) with respect to  $t_{EF}$  is negative. Therefore only type E players are hired by team E.

In all of these cases Type E players are more costly per unit of talent hired than type F players, but only in case (a) are they entirely priced out of the market. In case (c) there is perfect segregation even though type E players are more expensive. The natural equilibrium is case (b), since one might suppose that  $\lambda$  will be bid up in the market place to the point where team E is indifferent between the two types of labor. In case (b) discrimination will have no effect on the profit maximizing choice of talent since the first order conditions for teams E and F are identical — the league will be

perfectly balanced. In case (c) team E will in fact invest in a higher level of success than team F, since its perceived marginal cost of win percent is lower than for team F ( i.e.  $[(1-\alpha)\lambda-\alpha]/(1-\alpha)$  compared to 1). However, this also means profits must be lower, since there are diminishing returns to investment in talent and team E is paying a premium per unit of talent hired.

Note that our assumption that team F is prejudiced in favor of type F labor is not critical to the argument — only that type E labor can command a premium (if type F carried a premium, then team E would hire only E type labor, while team F would have to choose between E types and F types dependent on the wage premium). It also follows that even if team F were not prejudiced, the model would be unaffected (the first order condition (5) would be the same).

The market test for discrimination depends on the wage premium for type E players. If team E does not discriminate then they will not hire type E players at all or the wage premium will be competed away until  $\lambda = 1$ . If team E is prejudiced in favor of type E players then it will be possible to sustain an equilibrium where team E has a higher cost per unit of talent. We can conclude that, if prejudice exists, in a regression of win percentage on wages spent, the estimated coefficient on a variable measuring the proportion on type F players employed on each team will be positive and significant. In other words, more type F players imply a higher win percentage at a given level of wage expenditure. If there is no prejudice, then the coefficient for the proportion of type F players will be insignificantly different from zero.

#### **4. Data and testing**

To implement the market test we need to have a measure of team performance (output), a measure of team expenditure on players (inputs) and a measure of the representation of the different labor types in each team.

The data set covers nine seasons (1989-90 to 1997-98) and is based on the earlier work of Longley (2000).<sup>5</sup> The 1989-90 season is the first for which complete salary data is available, when the NHL Players' Association began publicly releasing the salaries for all players. The data does not form a balanced panel due to both franchise relocation and expansion. The data includes five franchise expansions (San Jose, Ottawa, Tampa Bay, Anaheim, Florida) and two relocations (Winnipeg moved to Phoenix, and Quebec moved to Colorado).

We measure output as win percentage during the regular season, derived by dividing the team's total number of "points" for the season (teams get two points for a win, and one point for a tie) by the total number of possible points they could have earned (i.e. the number of games they played, multiplied by two). Of course, the teams themselves may care a good deal more about the post-season playoffs than the regular season competition, but the latter provides us with a much less noisy indicator of relative performance, since each team has essentially completed exactly the same set of tasks.

Team payrolls have been calculated using data on individual player salaries. Average team payrolls increased about five-fold during the sample period, and since we are interested in the impact of spending on performance relative to one's rivals, team spending is expressed as a proportion of the league average for that season<sup>6</sup>. The variable used to identify the test for discrimination was derived by identifying all the French Canadian "skaters" (forwards and defencemen) in the NHL over the sample period. These are defined as players born in the province of Quebec with French surnames – this will in fact omit the small number of French Canadians born outside Quebec, and/or those with "English sounding" surnames, but we do not believe this bias in our measure to be significant for our results.

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<sup>5</sup> The data set used in this paper is actually more extensive and detailed than the one used by Longley (2000). First, Longley examined only those French Canadians employed by English Canadian and US teams, and not those employed by either of the two Quebec-based teams. Secondly, Longley's data set did not code players by the specific team for which they played, only by whether they played for an English Canadian team or a US team.

For each team, the number of games-played by French Canadians in a particular season is divided by the average number of games-played by French Canadians per team in that season. If there is discrimination, in the sense that non-French Canadian players obtain a wage premium relative to francophone players of equal talent, then teams with an above average proportion of francophone players should outperform relative to teams with a below average proportion, once the effect of wage spending is allowed for.

Tables 1 and 2 summarise the data by year and by team. Table 2 divides the teams into three main groups: French Canadian, English Canadian and US teams. The French Canadian teams comprise Montreal, Quebec and Ottawa. Ottawa is categorized as French Canadian because, like the two Quebec teams, it has a significant francophone fan base in its local market. While the city of Ottawa is located in the province of Ontario (and hence technically in English Canada), the metropolitan Ottawa region sprawls into the neighboring province of Quebec. As a result, the francophone population in the Ottawa metropolitan area (about 33%) is much higher than in the other English Canadian NHL cities (all are under 5% francophone). During their existence, the Senators have always made a considerable effort to market themselves to this francophone population.<sup>7</sup>

More than three quarters of the data relates to US based teams – teams that are somewhat more successful and have a higher relative wage bill than the Canadian teams. Success appears positively correlated with wage bill expenditure, although the difference between French and English Canadian spending is negligible. The French Canadian teams employ well above the average number of French Canadians, while the US teams employ a proportion of French Canadians that is not far below average. English Canadian teams, however, are significant under-employers of French Canadians, a fact well documented by Longley (2000).

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<sup>6</sup> Team payroll figures are never exact, since team rosters can change significantly within in a given season (Example: players traded, players called-up or sent-down to minor leagues, players released, players "holding- out" for a new contract and only joining the team in mid-season, etc.)

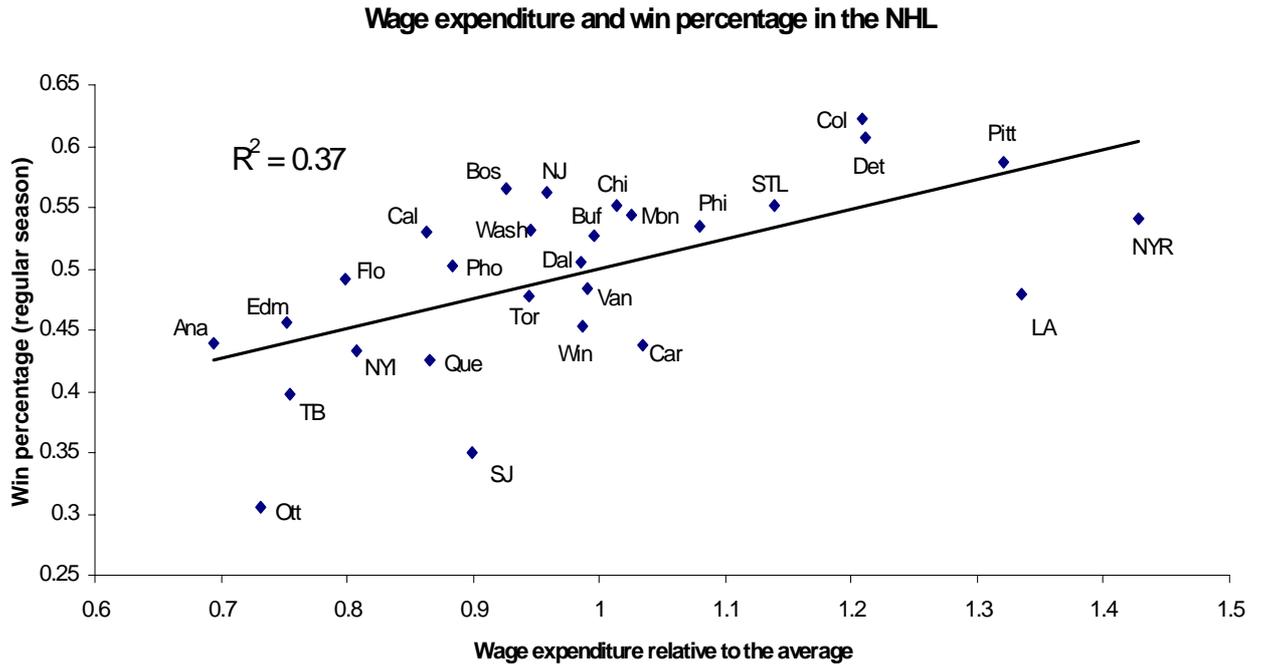
<sup>7</sup> For example, Ottawa's decision to draft French Canadian Alexandre Daigle with the first overall pick in the 1993 draft was seen by some as an attempt to appeal to the francophone community in the area.

**Table 1: Descriptive statistics by group**

	Observations	Win percentage	Wage bill relative to the average	French Canadian players relative to the average
French Canadian	21	0.442	0.896	2.680
English Canadian	43	0.481	0.904	0.558
US	154	0.514	1.041	0.894
Total	218	0.500	1	1

**Table 2: Descriptive statistics by team**

	Observations	Win percentage	Wage bill relative to the average	French Canadian players relative to the average	location
Montreal	9	0.544	1.025	4.420	QB
Quebec	6	0.426	0.865	1.707	QB
Ottawa	6	0.305	0.732	1.042	QB
Calgary	9	0.530	0.863	0.525	EC
Edmonton	9	0.456	0.752	0.454	EC
Toronto	9	0.477	0.944	0.932	EC
Vancouver	9	0.484	0.991	0.568	EC
Winnipeg	7	0.453	0.987	0.241	EC
Anaheim	5	0.440	0.694	0.962	US
Boston	9	0.565	0.926	1.035	US
Buffalo	9	0.527	0.996	0.746	US
Carolina	9	0.438	1.035	0.777	US
Chicago	9	0.552	1.014	1.460	US
Colorado	3	0.622	1.208	2.648	US
Dallas	9	0.505	0.986	0.707	US
Detroit	9	0.607	1.211	0.847	US
Florida	5	0.492	0.799	0.412	US
Los Angeles	9	0.480	1.335	1.381	US
New Jersey	9	0.562	0.958	0.785	US
NY Islanders	9	0.433	0.808	0.733	US
NY Rangers	9	0.541	1.428	0.514	US
Philadelphia	9	0.535	1.080	0.820	US
Phoenix	2	0.503	0.884	0.285	US
Pittsburgh	9	0.587	1.321	0.710	US
San Jose	7	0.350	0.899	0.340	US
St. Louis	9	0.552	1.139	1.472	US
Tampa Bay	6	0.397	0.755	1.374	US
Washington	9	0.532	0.946	0.427	US



**Figure 1**

Table 2 illustrates the wide variation in performance of the teams in our sample and figure 1 plots the relationship between average win percentage and wage expenditure relative to the average for the sample teams. The regression line can be interpreted as the win percentage that each team should have achieved given its wage expenditure, and therefore deviations that lie above the regression line indicate better than expected performance while deviations below the line indicate worse than expected performance. The  $R^2$  of the regression can be interpreted as the extent to which the market for players operates efficiently, and the figure of 0.37 indicates that while a relationship exists, there are other factors at work. For example Szymanski and Kuypers (1999) and Szymanski and Smith (1997) show that over a similar period a simple regression of team performance in English league soccer on wages explains as much as 90% of the variation. The most obvious reasons for this difference in explanatory power is the draft system that distorts wage rates by creating monopsony power (not used in soccer) and the lesser acceptance of the cash market for players

(which is the norm in soccer). These factors mean that teams can pay some players wages well below their marginal revenue product but have limited opportunities to turn this opportunity into cash through trading a player: hence the connection between expenditure and performance is relatively weak. These observations can also be made in relation to the other predominantly North American sports, baseball, American football and basketball.

From the point of view of estimation, a natural way to deal with these distortions for a relatively short panel as in our sample is through fixed effects. Advantages that arise though the draft system will translate into consistently above average performance relative to wage expenditure over a number of years.

**Table 3 Regression Results**

Variable	OLS	FE1	FE2	FE3
Constant	0.498 (51.9)			
Wages relative to the average	0.159 (5.52)	0.053 (0.38)	0.132 (4.43)	0.080 (1.95)
French Canadian players relative to the average	0.0068 (1.00)	0.0003 (0.01)	0.0227 (2.48)	0.0241 (2.36)
Adjusted R <sup>2</sup>	0.13	0.35	0.16	0.31
Log likelihood	199.15	246.32	204.87	238.44

Note: Heteroscedastic t-statistics in parentheses.

FE1: Team specific fixed effects regression

FE2: Region specific fixed effects (French Canada, English Canada and US)

FE3: Team specific fixed effects for English Canada and US, region specific fixed effect for French Canada.

The first column of Table 3 reports an OLS regression in which wages exert a significant effect on performance but the proportion of French Canadian players in the team is insignificant. FE1 is regression with fixed effects for each of the 28 teams. A likelihood ratio test for the specification FE1 compared to the OLS is clearly cannot reject the former specification, but now not only is the French Canadian variable insignificant, so too is the wage variable. This is a commonly encountered problem with panel data studies. Fixed effects clearly add to the “explanatory” power of the regression, but fail to explain anything in economic terms other than the fact that

different teams can achieve different levels of performance from the same set of inputs. In this setting one cannot be sure whether the fixed effects are picking up some underlying differences in the treatment of inputs (such as discrimination) that may vary systematically between teams, or factors purely idiosyncratic to each team.

The FE2 regression represents a coarser grouping of the teams into their three regional types: French Canada, English Canada and the US. We now find that both the wage variable and the French Canadian variables are significant (and of the right sign). The wage effect is about five times larger— i.e. the impact of spending 10% more than your rivals adds about 1.2 percentage points to your win record, while having 10% more French Canadians adds about 0.2 percentage points to your win record. However, it is also clear that the FE2 regression is much worse at accounting for the variation of win percent than FE1 (the restrictions on the fixed effects are easily rejected by an F-test) and little better than the OLS regression. FE3 is a compromise, that retains the team specific fixed effects but imposes a single fixed effect for the three French Canadian teams. Although the restriction can still be rejected at the 5% level, it might be argued that the French Canadian teams above all form a homogeneous group in terms of the access to talent and cultural outlook, and therefore warrant treatment as a single group. This specification produces results that are very similar to FE2; in particular, teams with an above average proportion of French Canadians achieve a higher win percent than their rivals, all else equal.

In order to test the robustness of these results some alternative specifications were examined. The results were not sensitive the treatment of Ottawa as a French Canadian team, indeed the results were not sensitive to dropping one or two of the French Canadian teams from the regression. However, if all three teams are excluded the effect of French Canadians on the team is halved, and becomes insignificant. The effect of relocations was also considered, and an alternative specification was estimated where Winnipeg/Phoenix and Quebec/Colorado were treated as the same team, but this made no difference to the results.

## 5. Conclusions

The treatment of French Canadian players in the NHL has been a source of considerable controversy for many years. Attempts to estimate salary differentials using the conventional earnings function approach have produced little by way of convincing evidence, and has been subject to the omitted variable bias critique – that factors correlated with player quality are captured by their character as francophones or anglophones. However, the fact remains that francophones have been remarkably under-represented on English Canadian teams, but less so on US based teams. If there is prejudice associated with this distribution, then we should observe teams with a below average proportion of francophone players performing worse than their rivals, after controlling for the wage cost of players: this is the price of being a discriminator in the market. We have implemented a market test to try and identify such an effect.

What we have found has the potential to lend support to either side of the debate. Those who wish to argue that there has been no discrimination can point to the fixed effects regression which seems to suggest that all variations in team performance are purely idiosyncratic, while even team wage spending is not a component in the systematic variation of team performance. However, we are reluctant to accept as definitive econometric specifications that have superior statistical properties but are almost completely lacking in any economic interpretation. In particular, it seems hard to believe that wage spending does not exert some kind systematic influence, and it is noticeable that the alternative fixed effects regressions generated results where *both* the wage variable *and* the discrimination variable were significant. We might put our conclusions no more strongly than this: if wages matter as a determinant of team performance in the NHL, then there is reason to believe that teams employing a below average proportion of French Canadians have paid a financial penalty. Whether this reflects the owner's prejudice, or the prejudice of local fans who would be unwilling to see French Canadian stars performing in English Canadian teams, it seems plausible to argue that English Canadian teams, simply by hiring more French Canadians, could have enjoyed a betting winning record without any additional financial expenditure.

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