THE IMPACT OF A PROFESSIONAL SPORTS FRANCHISE ON COUNTY EMPLOYMENT AND WAGES

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Last working version, final version published in:
International Journal of Sport Finance November 2008, Vol. 3, Is. 4

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ABSTRACT

Stadium boosters have long used the promise of economic development as a means of gaining public support to finance local sports teams. Past research has shown little or no impact on employment or income when viewed at the MSA level. This paper expands the current literature on the economic impact of professional sports franchises. Following Coates and Humphreys (2003) we look at employment and wages at the county level using detailed SIC and NAICS industry codes. We find mixed results on employment within a county, but find a negative effect on the payrolls within these industries.

I. INTRODUCTION

The use of public funds to subsidize privately owned professional sport franchises has been a hot topic. Across the United States politicians are singing the praises of sports as a way to develop the economy in their city. Places like Arlington, TX are supporting the development of new stadiums to lure, or keep, a franchise in their city. Judith Grant Long (2005) has estimated public subsidies amount to $177 million per facility while Rappaport and Wilkerson (2001) say more than $6 billion in public funds were spent on stadium and arena construction in the 1990s. Politicians often claim the local economy will benefit from the creation of new jobs and higher incomes in order to gain public support for the use of tax dollars to fund stadium and arena construction.

These claims have lead to research on the actual advantages sports franchises bring to their city, measured in terms of local economic activity. Over time there have been many studies on this issue. In earlier works Baade and Dye (1988, 1990) look at retail sales and aggregate income in Metropolitan Statistical Areas (MSAs). Their 1988 paper finds little support of a link between major league sports and manufacturing activity, while their 1990 paper finds an insignificant impact of stadiums on MSA incomes. Baade (1996) looks at a professional sports team's ability to create jobs, again failing to find a positive correlation. When looking at the employment in ten MSAs, Baade and Sanderson (1997) find nine cities with a significant impact from the presence of a professional sports team. Interestingly, of the nine significant cities, five were positive and four were negative.

More recently, Coates and Humphreys (2003) find a small positive, and significant, effect on the earnings and employment in the amusement and recreation sector, but they find an offsetting decrease in earnings and employment in other sectors. This supports the idea that franchises do not create employment and income, they just cause a shift in consumption, from one sector to another. Additional studies have attempted to estimate the non-use benefits franchises bring. For example, when an individual has the ability to watch a local game on television, read about it in the newspaper, or talk about it with friends, they are receiving benefits beyond raised income and jobs (Noll and Zimbalist, 1997; Rapport and Wilkerson, 2001; Johnson, Groothuis, and Whitehead 2001; and Owen 2006).[1]

[1] Noll and Zimbalist (1997) state that these non-use benefits may be important. However, Johnson, Groothuis, and Whitehead (2001) find that while the Pittsburgh Penguins generate substantial civic pride, the value of these public goods falls far short of the cost of the new arena.

Many studies have looked at the impact these franchises have had on MSAs, because MSAs give us a good look at how sports franchises impact economic activity. However, sports related spending is a small portion of overall spending in a MSA. For this reason, it may be difficult to pick up the impact of a franchise when measuring it over such a 'large area'. This may also be the reason many of the previous studies find mixed results. This paper expands the current literature by using county level data, instead of the larger MSA, and by using more detailed industry codes. This will provide the opportunity, given it exists, to measure the benefits sports, and new sports arenas, have on economic activity.

The next section discusses the data used. Section three describes the setup of the model, followed by the presentation of results in section four. Finally, section five concludes and discusses further research.

II. DATA

Sports related spending represents a small fraction of total spending in an MSA, so it can be difficult to detect an effect when examining the presence of a sports franchise and it's impact on employment. This paper narrows the area of observation in two ways:

> First we use the County Business Pattern dataset, which is produced by the US Census Bureau, to get county level data from 1986 to 2005.
>
> Secondly we use more detailed, two and four-digit, SIC (Standard Industrial Classification) employment data.

By narrowing the geographic region of interest, it is anticipated that some impact from the presence of a sports franchise, should it exist, will be more readily detected. Using this more defined data set will give us more accuracy in picking up changes in employment and income related to a sports franchise.

This is contradicted by Carlino and Coulson (2004) who estimate the willingness to pay for an NFL franchise by looking at rental rates and wages in cities. Their hypothesis is that sports fans are willing to pay for a team by accepting lower wages and paying higher rental rates. Based on their results, they conclude that in order to retain an NFL franchise, some subsidies may be justified in large cities. When measuring quality of life, Rappaport and Wilkerson (2001) find that although residents generally revise the estimates upward (of their willingness to pay) after losing a football team, only one area allocated considerably more public funding to obtain a new team (or to try to persuade the old team to come back).

Coates and Humphreys (2003 – hereafter C&H) find a small positive effect on earnings per employee in amusement and recreation, but an offset decrease in earnings and employment in other sectors. Although they find only one industry benefits at the cost of other industries, these other industries are thought, by some, to have a positive benefit from a franchise. The apparel and accessory store industry is said to benefit because of an increase in foot traffic of visitors of stadium events. Fans of the local sports teams will also purchase sports related memorabilia from local stores. If this occurs in stores near new stadiums, additional spending at these stores will increase retail employment. Employment in eating and drinking places may also increase due to a new sports team. The argument is that fans that frequent the stadium will also spend money at local restaurants and bars. Also, fans not attending the game will seek out bars and restaurants to watch the events on television. If the claims made in economic impact studies are correct, then we should be able to observe an increase in employment and income in these industries after a new franchise moves into the area (or a decrease as a franchise leaves).

The industries used in this study are areas thought to benefit from the presence of a sports franchise. We will use apparel and accessory stores (SIC code 56, NAICS[2] code 448), hotels and other lodging (7011, 7211), drinking places (5813, 7224), eating places (5812, 722) and liquor stores (5921, 4453). We will be looking at employment and wages for all five of these industries. In addition we will look at the total employment and total wages within the county, for all industries.

The data include all counties in the US that have, or had, a professional sports team from 1986-2005. Sports include: baseball (MLB), basketball (NBA), hockey (NHL), and football (NFL). This means we have information on 58 different counties in the US, many of which have more than one franchise in the county at any given period of time.[3] As an example (Table I) there are 35 counties in the US that have, or had, a professional football team during this time period, three of which both lost and gained a team over the twenty years included in our study.

[2] The NAICS (North American Industrial Classification System) code has replaced the SIC code, according to the US Censuses Bureau (http://www.census.gov/epcd/www/naics.html), as a more accurate and standardized way of representing industries.

[3] We drop New Orleans (Orleans county) out of the data set, although it is one of the 58. We do this because of hurricane Katrina causing this county to have extreme abnormalities in the data that are unrelated to the sporting industry.

Table I - NFL Franchises in Dataset:[4]

County	State	Team	Last or First year with a team*
Alameda	CA	Raiders	Gained Team, 1995
Allegheny	PA	Steelers	
Baltimore	MD	Ravens	Gained Team, 1996
Bergen	NJ	Giants and Jets	
Brown	WI	Packers	
Cook	IL	Bears	
Cuyahoga	OH	Browns	Lost Team, 1995 - Gained Team, 1999
DC		Redskins	Lost Team, 1996
Dallas	TX	Cowboys	
Davidson	TN	Titans	Gained Team, 1997
Denver	CO	Broncos	
Duval	FL	Jaguars	Gained Team, 1995
Erie	NY	Bills	
Fulton	GA	Falcons	
Hamilton	OH	Bengals	
Harris	TX	Oilers and Texans	Lost Team, 1997 - Gained Team, 2002
Hennepin	MN	Vikings	
Hillsborough	FL	Buccaneers	
Jackson	MO	Chiefs	
King	WA	Seahawks	
Los Angeles	CA	Raiders	Lost Team, 1994
Maricopa	AZ	Cardinals	Gained Team, 1988
Marion	IN	Colts	
Mecklenburg	NC	Panthers	Gained Team, 1995
Norfolk	MA	Patriots	
Miami Dade	FL	Dolphins	
Oakland	MI	Lions	Lost Team, 2001
Orange	CA	Rams	Lost Team, 1994
Orleans	LA	Saints	
Philadelphia	PA	Eagles	
Prince George's	MD	Redskins	Gained Team, 1997
San Diego	CA	Chargers	
San Francisco	CA	49ers	
St. Louis	MO	Cardinals and Rams	Lost Team, 1987 - Gained Team, 1995
Wayne	MI	Lions	Gained Team, 2002

* - NFL franchise moves from 1986-2005.

[4] A list of all counties can be found in appendix A.

We have two different sets of information, county specific data (Table II) on each of the 58 counties, as well as team specific data (Table III) for each of the franchises located in these counties. The county data include the employment within each industry, total payroll in that industry, average wage per employee (total payroll divided by employees), the number of establishments within that industry, as well as yearly dummy variables to capture any time trends.

Table II - County Variables:

Variable	Description
emp	Employment
ap	Total Payroll (wages)
qp1	Total First Quarter Payroll (wages)
avgpay	Average Wage per Employee (ap/emp)
est	Number of Establishments
Y1987-y2005	Yearly Dummy Variables (years 1987-2005)

The team specific data include a dummy variable if a team is present, as well as a dummy if the stadium used by that team is a multiple use stadium. We also include the capacity of each stadium (with capacity squared, to capture non-linear possibilities) and a dummy variable to capture the novelty effect of a new stadium. To control for this novelty effect, we have dummies set up for both five and ten years. We also control for entry and exit of teams within five years and ten years in each sport.

Table III – Sports Related Variables:

Variable*	Description
L	Dummy variable if a team is present
Lmulti	Dummy if L stadium is multi-use
L_capac	Capacity of the Stadium
L_capac2	Capacity squared
Lco5	Dummy variable for the opening of a new stadium (5yr)
Lco10	Dummy variable for the opening of a new stadium (10yr)
Lentry5	Five year entry dummies
Lentry10	Ten year entry dummies
Lexit5	Five year exit dummies
Lexit10	Ten year exit dummies

* Where L stands for the league (each MLB, NBA, NHL and NFL)

We have the data to do the opening, entry, and exit variables at both the five and ten year level. However when using both, we use too many degrees of freedom.

We have therefore decided to use the five year dummies in our regressions, but find no significant differences when regressions are run using both variables together or either year lag separately.

III. MODEL

In this study, we replicate the C&H model with more specific data described in the previous section. We use a linear reduced form model; imitating earlier methodology by using employment, payroll, and average wages for each of the five different industry codes, as well as for the total employment. Following the same functional form, we use:

$$y_{jit} = \beta_j x_{it} + \gamma_j z_{it} + \mu_{jit}$$

Assuming:

$$\mu_{jit} = e_{jit} + v_{ji} + u_{jt}$$

Where t is the year, i is the county and j indexes the three dependent variables of interest. There are three dependent variables (employment, payroll, and average wage per employee) each run on the five industry codes as well as the total county data (18 different regressions). Continuing to follow C&H, we assume that the dependent variables differ, so that we can use the same explanatory variables, x_{it} and z_{it}, but are able to estimate different vectors of unknown parameters, β_j and γ_j.

As with their model, the vector of x_{it} captures the general economic climate in each county over the sample period. This includes the lagged value of the dependent variable. However, we will use the number of establishments in the county instead of the growth rate in the population. To control for time trends, or county trends, we will test the model for the appropriate use of fixed effects or random effects.

The z_{it} captures sport specific controls: dummies for the four major sports (MLB, NBA, NHL and NFL) with year dummies for the existence of a team (dummy equals 0 for no team and equals 1 for having a team, and the counties that experience a team move have both 0's and 1's, while the counties that have a team throughout the data set will have all 1's), variables for those counties that have multi-use stadiums[5], as well as capacity and capacity squared (for each league individually) are all included in this vector. It also includes five year

[5] The multi-use variables are statistically significant, however not economically meaningful.

dummies for each of the following: opening of a new stadium, the entry of a team, and the exit of a team.

We assume the μ_{jit} follows the same functional form as in C&H. C&H state: where v is a disturbance specific to dependent variable *j* in MSA *i* which persists throughout the sample period, u is a time *t* specific disturbance which affects all areas in the same way, and e is a random shock to dependent variable *j* in MSA *i* at time *t* which is uncorrelated across dependent variables and MSAs [counties] as well as over time. Estimated this way, the regression purges the dependent variable of the effect of national events on each jurisdiction in a given year and generates an MSA-specific impact.[6]

We also control for a novelty effect of a new stadium. People find new stadiums to be a great place to visit, however this does not necessarily mean the impact of a stadium will have a sustained increase. Coffin (1996) finds the novelty effect of a new stadium begins to decline in the third year. Because of this, we use a dummy (example: NFLco5) for the five years after a new stadium is built to make sure we capture all of the novelty effect. This controls for a short burst in activity a new stadium creates. We also control for the entry (NFLentry5) or exit (NFLexit5) of a franchise (in each of the leagues) for the five years after they come or leave, respectively.

There can be issues in using a lagged dependent variable in the regression; biases can exist due to its high correlation with the dependent variable. But as shown in Judson and Owen (1997), this should not affect the independent variables. We believe it is not a problem because the coefficient of interest is not the lagged dependent variable; it is the other independent variables which will show any impact.

IV. RESULTS

In addition to the independent variables we still need to control for variations in the counties. An omitted variable bias may exist without additional independent variables including a control for county trends. C&H used year and county dummies to control for time trends and county trends, while we use year dummy variables for the time trends and a fixed effects model to control for county trends. Below (Tables IV, V, and VI) show the regressions using fixed effects. The FE at the bottom of each regression shows the results of the Hausman test, to

[6] From Coates and Humphrey's 2003 work "The effect of professional sports on earnings and employment in the service and retail sectors in US cities", page 182 describing equation 2.

see if the Fixed Effects model is a better estimator than a random effects model. A yes in the FE means that the X^2 of the Hausman test is significantly large enough to reject the null.[7]

Our test shows that the random effects are inefficient (except Hotel in employment and Total for both employment and payroll), so fixed effects should be used. However it is important to note that using fixed effects means that all counties that have a team throughout the study are essentially dropped from the regression. Using a fixed effects model takes away our ability to measure any variable that does not change across time, so if there is an NFL team in a given county over the whole sample, we cannot estimate the effects of the NFL (Dummy variable for having a team present) for that county. The benefit of using this model is that we only test counties which have franchise movement, helping us answer the question: does a franchise moving into town (or out of town) have an effect on employment and payroll in these industries? This is exactly what we need to answer in order to look at the politicians' claims that these franchises increase employment and payroll.

Table IV reports the estimated effects on employment within the county from having a major sports franchise present.

Table IV – Employment:[8]

	Employment					
	Clothing	Drinking	Food	Hotel	Liquor	Total
MLB	3085.464	-905.191	14143.1	2543.024	39.198	55770.02
	(2.57)*	(0.84)	(2.43)*	(1.05)	(0.24)	(1.30)
NBA	2360.039	-644.795	2896.93	1358.418	-215.237	-28221.6
	(3.57)**	(1.10)	(0.89)	(1.06)	(2.20)*	(1.21)
NHL	-2539.28	-1095.35	3577.842	2941.385	321.911	102174.1
	(1.01)	(0.48)	(0.29)	(0.57)	(0.93)	(1.13)
NFL	-7482.31	-5082.85	45854.2	10798.15	-1568.97	-6373.36
	(2.19)*	(1.67)	(2.76)**	(1.41)	(3.31)**	(0.08)
FE	Yes	N/A	Yes	Yes	N/A	N/A
Joint Sig	Yes	No	Yes	No	Yes	No

Absolute value of z-statistics in parentheses
* significant at 5% level; ** significant at 1% level

[7] A N/A in the row FE means that the Hausman test was unable to be run.
[8] Appendix B shows the full regressions for the Employment Data.

When looking at employment, it is shown that the presence of a Major League Baseball team positively affects the clothing and food industry in terms of employment. The National Basketball Association is split; they increase employment in the clothing industry but decrease employment in the liquor industry. The league that has the most significant impact is the NFL. The NFL has a negative effect on the clothing and liquor industries while having a positive impact on the food industry. The NHL has no significant impacts.

Table V reports the estimated effects on payroll within the county from having a major sports franchise present.

Table V – Payroll:[9]

	Payroll					
	Clothing	Drinking	Food	Hotel	Liquor	Total
MLB	23161.03	-30533.2	-41357.2	14463.66	-2858.98	1845916
	(0.93)	(2.88)**	(0.61)	(0.23)	(0.80)	(0.56)
NBA	13275.33	809.057	71407.82	14200.92	807.748	1733267
	(0.97)	(0.14)	(1.89)	(0.43)	(0.39)	(0.97)
NHL	21782.57	-3145.42	125915.3	36508.29	-5903.36	-1996375
	(0.42)	(0.14)	(0.88)	(0.28)	(0.79)	(0.29)
NFL	-95482.9	-81503.8	-621858	145047.3	-22100.4	-3081013
	(1.35)	(2.73)**	(3.22)**	(0.73)	(2.16)*	(0.48)
FE	Yes	Yes	N/A	No	Yes	N/A
Joint Sig	No	Yes	Yes	No	No	No

Absolute value of z-statistics in parentheses
* significant at 5% level; ** significant at 1% level

When looking at payroll, the NBA and NHL have no significant impact whereas both the MLB and the NFL have an impact in some industries. However, all payroll effects are negative. MLB has a negative effect on the drinking industry and the NFL has a negative effect on drinking, food, and liquor.

Table VI reports the estimated effects on the average wage per employee within the county from having a major sports franchise present.

[9] Appendix C shows the full regressions for the Payroll Data.

Table VI – Average Wages per Employee:[10]

	Average Wage per Employee					
	Clothing	Drinking	Food	Hotel	Liquor	Total
MLB	0.413	-1.843	0.349	-0.854	3.239	1.988
	(0.27)	(1.10)	(0.34)	(0.30)	(0.83)	(0.83)
NBA	-0.955	1.058	-0.457	0.324	0.21	0.608
	(1.13)	(1.16)	(0.80)	(0.22)	(0.09)	(0.47)
NHL	-4.081	1.845	-0.838	-11.124	-2.881	-8.339
	(1.26)	(0.52)	(0.39)	(1.86)	(0.35)	(1.64)
NFL	4.006	-3.569	2.053	2.804	1.83	2.717
	(0.92)	(0.75)	(0.70)	(0.31)	(0.16)	(0.58)
FE	Yes	Yes	Yes	Yes	N/A	Yes
Joint Sig	No	No	No	No	No	No

Absolute value of z-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Looking at the average wage per employee, calculated by dividing the payroll by the employment in that industry, we find no significant impact by any industry. There is also no evidence of joint significance in any industry. This shows that although we find some effect on employment and payroll at the county level, it has an affect on overall workers (more or less workers in the industry), but not the individual worker.

Three key findings:

- Support of the theory that jobs are not created, there is just movement between industries.

  Employment in the clothing sector is mixed, employment in the liquor sector decreases, and there is an increase in the food sector.

- Payrolls don't increase, they only decrease.

  The presence of franchises have virtually no effect on payrolls, and when it does have an effect (NFL – drinking, food, and liquor and MLB – drinking) it is negative.

- Total employment and payroll of a county are independent of the existence of a professional sports franchise.

[10] Appendix D shows the full regressions for the Average Wage per Employee.

The joint significance (Joint Sig) test shows that, not only do sports franchises have no impact on the total employment and payroll in a county, but all sports jointly have no impact on the total county employment (this is in all industries).

Table VII - Overall Effect:

	Employment		Payroll		Average Wage per Employee	
	Positive	Negative	Positive	Negative	Positive	Negative
Clothing	2	1	0	0	0	0
Drink	0	0	0	2	0	0
Food	2	0	0	1	0	0
Hotel	0	0	0	0	0	0
Liquor	0	2	0	1	0	0
Total	0	0	0	0	0	0
Sum	4	3	0	4	0	0

As seen in Table VII, there are mixed effects in the employment industries from a franchise moving into (or leaving) a county. This supports the work done by C&H at the MSA level. However we find only negative effects on payroll and average wages as a franchise moves into a county, implying there is a positive effect on payrolls and average wages as a franchise leaves a county.

V. CONCLUSION

Public subsidies for professional sports stadiums are often used as a means to stimulate economic development in local communities. Economic impact studies, as well as the politicians pushing them, claim that stadiums will induce job creation and revenue expansion. Using data on metropolitan statistical areas, academics find little to support the claims that stadiums help create jobs and increase the income in the local economy. This paper adds to the current literature by using detailed county level data to analyze the effect of a stadium on a smaller area around the stadium.

This study finds that employment within these industries (clothing, drinking, food, hotel, and liquor) have mixed results when a franchise is present, this is consistent with Coates and Humphrey's (2003). However, although most of the payroll data is insignificant, the coefficients that are significant are all negative. This also supports Coates and Humphrey's (2003) findings that real per capita

income falls when sports franchises are present. Continued research using this more detailed data at the county level, over longer periods of time, will bring us more incite into the true effects of having these franchises present. In addition, research into the changes in rental rates of the industries when a stadium comes to town would be information revealing.

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APPENDIX A
Counties in Dataset

Alameda	CA	Hamilton	OH	Oakland	MI
Allegheny	PA	Harris	TX	Oklahoma	OK
Baltimore	MD	Hartford	CT	Orange	CA
Bergen	NJ	Hennepin	MN	Orange	FL
Bernalillo	NM	Hillsborough	FL	Orleans	LA
Bexar	TX	Jackson	MO	Philadelphia	PA
Bronx	NY	Jackson	TN	Pinellas	FL
Brown	WI	King	WA	Prince George's	MD
Clark	NV	Los Angeles	CA	Queens	NY
Cobb	GA	Maricopa	AZ	Ramsey	MN
Cook	IL	Maricopa	AZ	Sacramento	CA
Cuyahoga	OH	Marion	IN	Salt Lake	UT
Cuyahoga	OH	Marion	IN	San Diego	CA
D C		Mecklenburg	NC	San Francisco	CA
Dallas	TX	Miami Dade	FL	Santa Clara	CA
Davidson	TN	Miami Dade	FL	Shelby	TN
Denver	CO	Milwaukee	WI	St. Louis	MO
Duval	FL	Montgomery	PA	Suffolk	MA
Erie	NY	Multnomah	OR	Summit	OH
Fairfax	VA	Nassau	NY	Tarrant	TX
Franklin	OH	Norfolk	MA	Wake	NC
Fulton	GA	NY	NY	Wayne	MI
Guilford	NC	Oakland	MI		

APPENDIX B
Employment Regressions

	Employment					
	Clothing emp	Drink emp	Food emp	Hotel emp	Liquor emp	Total emp
L.emp	0.647	0.363	0.326	0.686	0.529	0.738
	(31.44)**	(20.14)**	(18.27)**	(27.10)**	(26.44)**	(39.25)**
est	5.34	12.297	16.503	8.617	2.896	5.325
	(17.39)**	(31.67)**	(44.85)**	(4.72)**	(19.38)**	(11.80)**
mlb	3085.464	-905.191	14143.1	2543.024	39.198	55770.02
	(2.57)*	(0.84)	(2.43)*	(1.05)	(0.24)	(1.30)
mlbco5	-106.172	69.455	223.609	215.841	7.234	5937.624
	(1.18)	(0.86)	(0.51)	(1.13)	(0.59)	(1.83)
mlbentry5	272.517	-115.453	-678.183	-271.011	12.585	-82.833
	(1.52)	(0.71)	(0.78)	(0.79)	(0.52)	(0.01)
mlbexit5	0	0	0	0	0	0
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
mlbmulti	0	15.5	215.629	597.737	-15.895	30.538
	(0.00)**	(0.12)	(0.31)	(2.06)*	(0.79)	(0.01)
mlb_capac	-0.1	0.053	-0.618	-0.086	-0.001	-2.569
	(2.30)*	(1.36)	(2.95)**	(0.99)	(0.21)	(1.66)
mlb_capac2	0	0	0	0	0	0
	(1.97)*	(1.78)	(3.30)**	(1.01)	(0.39)	(1.87)
nba	2360.039	-644.795	2896.93	1358.418	-215.237	-28221.6
	(3.57)**	(1.10)	(0.89)	(1.06)	(2.20)*	(1.21)
nbaco5	23.687	-169.235	-3.81	-125.072	-3.834	816.681
	(0.32)	(2.53)*	(0.01)	(0.82)	(0.37)	(0.31)
nbaentry5	84.971	131.426	419.185	-648.062	41.818	-7153.49
	(0.64)	(1.10)	(0.65)	(2.32)*	(2.14)*	(1.52)
nbaexit5	356.524	12.006	-1774.6	-7.323	0.811	-3456.56
	(2.13)*	(0.08)	(2.15)*	(0.02)	(0.03)	(0.58)
nbamulti	53.839	228.851	1472.227	-366.149	-18.014	4961.555
	(0.35)	(1.69)	(2.01)*	(1.18)	(0.86)	(0.92)
nba_capac	-0.254	-0.006	-0.438	-0.09	0.017	2.676
	(4.71)**	(0.12)	(1.57)	(0.87)	(2.18)*	(1.39)
nba_capac2	0	0	0	0	0	0
	(5.26)**	(1.18)	(2.48)*	(1.02)	(1.89)	(1.35)
nhl	-2539.28	-1095.35	3577.842	2941.385	321.911	102174.1
	(1.01)	(0.48)	(0.29)	(0.57)	(0.93)	(1.13)
nhlco5	-109.003	-120.385	-1296.08	111.982	-18.9	-91.249
	(1.11)	(1.36)	(2.71)**	(0.54)	(1.38)	(0.03)
nhlentry5	87.993	89.378	833.243	506.567	18.393	-7570.86
	(0.82)	(0.92)	(1.59)	(2.15)*	(1.26)	(1.94)

nhlexit5	-108.378	-2.173	382.484	-524.553	-18.494	3583.446
	(0.78)	(0.02)	(0.56)	(1.56)	(0.98)	(0.72)
nhlmulti	0	0	0	0	0	0
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
nhl_capac	0.238	0.051	-0.387	-0.287	-0.038	-8.904
	(0.91)	(0.21)	(0.30)	(0.54)	(1.06)	(0.94)
nhl_capac2	0	0	0	0	0	0
	(0.87)	(0.01)	(0.26)	(0.41)	(1.12)	(0.78)
nfl	-7482.31	-5082.85	45854.2	10798.15	-1568.97	-6373.36
	(2.19)*	(1.67)	(2.76)**	(1.41)	(3.31)**	(0.08)
nflco5	-14.098	73.054	-314.899	64.358	-10.172	5338.499
	(0.13)	(0.78)	(0.62)	(0.26)	(0.71)	(1.48)
nflentry5	83.733	34.504	248.11	-159.763	22.32	-16782.8
	(0.62)	(0.29)	(0.37)	(0.49)	(1.21)	(3.65)**
nflexit5	-382.468	6.722	-1131.67	-600.314	-32.976	14851.81
	(2.60)**	(0.05)	(1.60)	(1.80)	(1.60)	(2.89)**
nflmulti	251.92	0	0	0	0	0
	(1.76)	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
nfl_capac	0.216	0.166	-1.328	-0.288	0.046	0.139
	(2.28)*	(1.97)*	(2.88)**	(1.36)	(3.47)**	(0.06)
nfl_capac2	0	0	0	0	0	0
	(2.51)*	(2.27)*	(3.08)**	(1.26)	(3.73)**	(0.01)
y1987	0	-769.814	2970.164	-678.919	9.357	0
	(0.00)**	(7.44)**	(5.60)**	(2.52)*	(0.61)	(0.00)**
y1988	-77.506	-584.371	3099.92	-316.954	-0.679	3985.991
	(0.74)	(5.87)**	(5.83)**	(1.17)	(0.05)	(1.11)
y1989	-78.876	-358.386	4385.142	-53.634	-14.851	15635.09
	(0.75)	(3.67)**	(8.09)**	(0.20)	(1.00)	(4.33)**
y1990	-168.259	-299.79	5123.326	89.794	-17.821	9268.983
	(1.60)	(3.09)**	(9.30)**	(0.34)	(1.20)	(2.54)*
y1991	-54.827	-103.603	4249.385	-410.113	-28.455	-10700
	(0.52)	(1.07)	(7.65)**	(1.59)	(1.95)	(2.91)**
y1992	-327.445	-439.825	2145.627	-729.998	-26.951	-11082.5
	(3.07)**	(4.47)**	(4.08)**	(2.78)**	(1.86)	(3.03)**
y1993	93.773	-396.787	1872.285	-324.784	-40.762	-1816.68
	(0.88)	(4.05)**	(3.65)**	(1.23)	(2.85)**	(0.50)
y1994	-36.243	-452.402	1111.894	-685.9	-29.442	-1615.58
	(0.33)	(4.63)**	(2.17)*	(2.57)*	(2.07)*	(0.44)
y1995	67.244	-220.017	3262.807	-259.33	-23.617	11397.52
	(0.60)	(2.28)*	(6.32)**	(0.97)	(1.69)	(3.05)**
y1996	-96.183	-489.725	1692.225	-473.132	-12.716	4953.335
	(0.86)	(5.02)**	(3.37)**	(1.79)	(0.91)	(1.31)
y1997	388.569	-324.454	0	4.389	-21.884	14458.92
	(3.36)**	(3.34)**	(0.00)**	(0.02)	(1.57)	(3.73)**
y1998	671.432	-369.24	-6767.25	-366.982	0	17616.84

	(6.16)**	(3.82)**	(10.21)**	(1.37)	(0.00)**	(4.48)**
y1999	126.156	-280.63	1592.089	-165.941	7.939	18600.07
	(1.13)	(2.93)**	(2.63)**	(0.60)	(0.57)	(4.63)**
y2000	587.016	-274.056	1649.823	-195.427	0.435	23419.18
	(5.22)**	(2.92)**	(2.72)**	(0.73)	(0.03)	(5.77)**
y2001	309.034	-145.263	1004.201	-215.64	8.444	14440.23
	(2.68)**	(1.56)	(1.66)	(0.81)	(0.60)	(3.47)**
y2002	57.173	-186.312	657.008	-1614.03	17.515	-20657.4
	(0.50)	(2.01)*	(1.09)	(6.09)**	(1.24)	(4.95)**
y2003	736.304	39.935	407.425	69.838	3.778	878.391
	(6.31)**	(0.43)	(0.69)	(0.27)	(0.27)	(0.22)
y2004	982.749	29.935	-45.1	227.34	5.281	-2848.8
	(8.17)**	(0.33)	(0.08)	(0.87)	(0.37)	(0.69)
y2005	463.996	0	-165.781	0	-26.755	-6946.75
Number of id	57	57	56	56	56	57
Constant	-1181.19	-1278.31	-10593.3	1842.471	-48.508	-27460.1
	(4.89)**	(7.84)**	(10.70)**	(3.05)**	(1.84)	(2.51)*
R Squared	0.946	0.622	0.864	0.949	0.769	0.997
Observations	1054	1066	1064	839	1017	1083

Absolute value of z-statistics in parentheses

* significant at 5% level; ** significant at 1% level

APPENDIX C
Payroll Regressions

	Payroll					
	Clothing ap	Drink Ap	Food ap	Hotel ap	Liquor ap	Total ap
L.ap	1.016	0.641	0.247	0.985	0.765	0.962
	(93.07)**	(34.26)**	(14.75)**	(58.40)**	(31.68)**	(105.89)**
est	42.734	62.459	203.168	144.445	16.207	167.573
	(8.10)**	(17.98)**	(49.81)**	(2.96)**	(6.75)**	(6.53)**
mlb	23161.03	-30533.2	-41357.2	14463.66	-2858.98	1845916
	(0.93)	(2.88)**	(0.61)	(0.23)	(0.80)	(0.56)
mlbco5	-2827.84	259.297	5260.358	-2702.02	-187.816	-73618.7
	(1.52)	(0.33)	(1.03)	(0.55)	(0.71)	(0.29)
mlbentry5	3124.926	-822.148	7906.574	-225.693	-393.26	-13250.8
	(0.84)	(0.52)	(0.78)	(0.03)	(0.75)	(0.03)
mlbexit5	0	0	0	0	0	0
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
mlbmulti	0	-1454.26	14213.6	12381.89	-75.349	250089
	(0.00)**	(1.15)	(1.75)	(1.65)	(0.17)	(0.64)
mlb_capac	-0.782	1.333	2.278	-0.461	0.142	-82.097
	(0.87)	(3.48)**	(0.93)	(0.21)	(1.11)	(0.69)
mlb_capac2	0	0	0	0	0	0.001
	(0.65)	(3.86)**	(1.24)	(0.17)	(1.24)	(0.61)
nba	13275.33	809.057	71407.82	14200.92	807.748	1733267
	(0.97)	(0.14)	(1.89)	(0.43)	(0.39)	(0.97)
nbaco5	625.094	-757.95	-2204.07	1306.3	-25.391	167859.4
	(0.41)	(1.16)	(0.53)	(0.33)	(0.11)	(0.83)
nbaentry5	2815.736	1687.855	12687.97	-6028.76	281.616	-56108.6
	(1.03)	(1.43)	(1.69)	(0.85)	(0.67)	(0.16)
nbaexit5	3206.062	905.973	9444.884	-1130.4	377.327	-220104
	(0.93)	(0.61)	(0.99)	(0.13)	(0.75)	(0.47)
nbamulti	4141.72	767.134	-7168.92	-1582.09	318.878	438478.7
	(1.31)	(0.58)	(0.84)	(0.20)	(0.69)	(1.05)
nba_capac	-1.202	-0.607	-13.103	-1.205	-0.182	-129.191
	(1.08)	(1.29)	(4.11)**	(0.45)	(1.07)	(0.87)
nba_capac2	0	0	0	0	0	0.002
	(0.56)	(2.30)*	(5.77)**	(0.51)	(1.56)	(0.54)
nhl	21782.57	-3145.42	125915.3	36508.29	-5903.36	-1996375
	(0.42)	(0.14)	(0.88)	(0.28)	(0.79)	(0.29)
nhlco5	687.855	-1136.41	1708.066	401.988	-435.544	-200319
	(0.34)	(1.31)	(0.31)	(0.07)	(1.47)	(0.74)
nhlentry5	-153.942	802.055	-2743.24	10141.41	583.041	-324945
	(0.07)	(0.84)	(0.45)	(1.67)	(1.85)	(1.09)

nhlexit5	-539.041	-1001.76	12721.64	-5929.5	-381.639	20739.9
	(0.19)	(0.81)	(1.60)	(0.68)	(0.94)	(0.05)
nhlmulti	0	0	0	0	0	0
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
nhl_capac	-2.955	-0.276	-15.29	-3.939	0.46	162.92
	(0.55)	(0.12)	(1.02)	(0.29)	(0.60)	(0.22)
nhl_capac2	0	0	0	0	0	-0.003
	(0.60)	(0.32)	(1.14)	(0.23)	(0.46)	(0.16)
nfl	-95482.9	-81503.8	-621858	145047.3	-22100.4	-3081013
	(1.35)	(2.73)**	(3.22)**	(0.73)	(2.16)*	(0.48)
nflco5	2984.059	-860.287	-4530.46	1207.863	481.157	232811.4
	(1.37)	(0.94)	(0.77)	(0.19)	(1.56)	(0.84)
nflentry5	-3691.73	2196.606	6718.147	-2247.39	26.815	-663367
	(1.31)	(1.86)	(0.86)	(0.27)	(0.07)	(1.87)
nflexit5	-1403.08	-696.383	-11953.5	-4994.69	-469.846	269112.3
	(0.46)	(0.54)	(1.45)	(0.58)	(1.05)	(0.68)
nflmulti	5076.586	0	0	0	0	0
	(1.71)	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
nfl_capac	2.843	2.373	18.831	-3.929	0.622	82.099
	(1.44)	(2.86)**	(3.51)**	(0.72)	(2.18)*	(0.45)
nfl_capac2	0	0	0	0	0	-0.001
	(1.59)	(3.05)**	(3.83)**	(0.65)	(2.29)*	(0.44)
y1987	0	-8508.28	-39181.8	-5198.58	0	0
	(0.00)**	(7.97)**	(6.14)**	(0.81)	(0.00)**	(0.00)**
y1988	-3629.95	-7565.45	-24696.5	-168.607	489.196	195343.6
	(1.68)	(7.43)**	(3.93)**	(0.03)	(1.58)	(0.70)
y1989	-1505.42	-6679.45	-251.068	1980.04	311.963	99199.55
	(0.69)	(6.77)**	(0.04)	(0.31)	(1.01)	(0.36)
y1990	-2482.9	-6931.96	22194.55	1036.13	110.468	21432.38
	(1.14)	(7.18)**	(3.48)**	(0.17)	(0.35)	(0.08)
y1991	-7265.01	-5026.21	25303.67	-6376.96	374.749	-598902
	(3.34)**	(5.18)**	(3.95)**	(1.03)	(1.20)	(2.14)*
y1992	-4467.43	-6273.68	-1380.07	-8427.48	159.179	-106470
	(2.04)*	(6.30)**	(0.22)	(1.36)	(0.51)	(0.38)
y1993	-5179.52	-5953.9	-6940.96	-2139.86	53.107	-335617
	(2.35)*	(6.00)**	(1.15)	(0.35)	(0.17)	(1.19)
y1994	-2043.09	-6256.9	-4192.76	-6500.86	370.444	-153688
	(0.92)	(6.35)**	(0.70)	(1.05)	(1.17)	(0.54)
y1995	-5124.88	-4832.28	27649.6	-46.58	475.122	469080.4
	(2.24)*	(5.00)**	(4.63)**	(0.01)	(1.50)	(1.62)
y1996	-393.456	-5559.1	23295.26	2281.9	608.266	512220.6
	(0.17)	(5.67)**	(3.99)**	(0.38)	(1.90)	(1.75)
y1997	3978.856	-4741.11	0	4497.529	896.041	578237
	(1.65)	(4.88)**	(0.00)**	(0.76)	(2.75)**	(1.92)
y1998	21057.16	-4080.12	-54678.3	8340.614	1268.863	1231080

	(9.29)**	(4.23)**	(7.26)**	(1.34)	(3.83)**	(4.04)**
y1999	2774.697	-3509.69	21848.46	0	1287.581	1057250
	(1.18)	(3.68)**	(3.10)**	(0.00)**	(3.86)**	(3.40)**
y2000	32.193	-2678.24	32403.59	17030.75	1363.952	1989645
	(0.01)	(2.88)**	(4.59)**	(2.58)*	(4.08)**	(6.32)**
y2001	-2387.42	-2191.68	27688.97	-28825.2	1450.337	-129766
	(0.99)	(2.40)*	(3.95)**	(4.25)**	(4.30)**	(0.40)
y2002	-3932.65	-2098.81	25671.2	-25269.9	1616.214	-1780898
	(1.63)	(2.30)*	(3.69)**	(3.71)**	(4.82)**	(5.48)**
y2003	-2302.01	-557.938	21195.47	2642.109	754.593	-525807
	(0.93)	(0.62)	(3.09)**	(0.40)	(2.21)*	(1.63)
y2004	534.956	-337.045	22008.9	14933.36	1608.141	261128.3
	(0.21)	(0.38)	(3.23)**	(2.11)*	(4.72)**	(0.80)
y2005	489.776	0	24224.74	19704.06	2116.831	495463.1
Number of id	57	57	56	56	56	57
Constant	-23085.7	(0.00)**	-90814	(2.76)**	(6.16)**	-4056923
	(4.54)**	-0.09	(7.75)**	-0.78	-0.77	(4.65)**
R Squared	0.964	1066.00	0.832	839.00	1017.00	0.988
Observations	1054	0.556	1064	0.976	0.721	1083

Absolute value of z-statistics in parentheses

* significant at 5% level; ** significant at 1% level

APPENDIX D

Average Wage per Employee Regressions

Average Wage per Employee						
	Clothing avgpay	Drink avgpay	Food avgpay	Hotel avgpay	Liquor avgpay	Total avgpay
L.avgpay	0.554	0.452	0.545	0.523	0.453	0.934
	(20.04)**	(15.17)**	(21.54)**	(15.14)**	(14.37)**	(67.90)**
est	0.001	0.001	0	0.002	0.002	0
	(4.81)**	(2.05)*	(2.11)*	(0.94)	(0.64)	(1.27)
mlb	0.413	-1.843	0.349	-0.854	3.239	1.988
	(0.27)	(1.10)	(0.34)	(0.30)	(0.83)	(0.83)
mlbco5	-0.213	-0.016	0.014	-0.296	-0.327	-0.067
	(1.84)	(0.13)	(0.18)	(1.33)	(1.13)	(0.37)
mlbentry5	0.008	0.091	0.027	0.089	-0.715	0.22
	(0.04)	(0.36)	(0.17)	(0.22)	(1.25)	(0.61)
mlbexit5	0	0	0	0	0	0
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
mlbmulti	0.431	-0.5	-0.074	-0.334	-0.461	-0.019
	(2.34)*	(2.49)*	(0.60)	(0.99)	(0.98)	(0.07)
mlb_capac	0	0	0	0	0	0
	(0.10)	(1.33)	(0.19)	(0.45)	(0.88)	(0.90)
mlb_capac2	0	0	0	0	0	0
	(0.22)	(1.40)	(0.07)	(0.68)	(0.98)	(0.82)
nba	-0.955	1.058	-0.457	0.324	0.21	0.608
	(1.13)	(1.16)	(0.80)	(0.22)	(0.09)	(0.47)
nbaco5	-0.079	0.065	-0.045	0.184	0.107	0.093
	(0.84)	(0.63)	(0.72)	(1.03)	(0.43)	(0.63)
nbaentry5	0.035	-0.333	0.006	-0.173	-0.269	-0.066
	(0.21)	(1.79)	(0.05)	(0.55)	(0.58)	(0.25)
nbaexit5	0.038	0.39	0.117	-0.475	0.193	0.056
	(0.18)	(1.67)	(0.81)	(1.19)	(0.35)	(0.17)
nbamulti	0	-0.017	0.016	0.082	0.468	0.357
	(0.00)**	(0.08)	(0.12)	(0.23)	(0.94)	(1.19)
nba_capac	0	0	0	0	0	0
	(1.29)	(1.23)	(0.22)	(0.16)	(0.03)	(0.26)
nba_capac2	0	0	0	0	0	0
	(1.73)	(1.56)	(0.31)	(0.06)	0.00	(0.12)
nhl	-4.081	1.845	-0.838	-11.124	-2.881	-8.339
	(1.26)	(0.52)	(0.39)	(1.86)	(0.35)	(1.64)
nhlco5	0.187	0.023	0.017	-0.34	-0.276	-0.187
	(1.49)	(0.17)	(0.21)	(1.40)	(0.85)	(0.95)
nhlentry5	-0.125	-0.052	-0.065	0.075	0.195	-0.294
	(0.91)	(0.35)	(0.70)	(0.27)	(0.57)	(1.36)

nhlexit5	0.022	-0.126	0.117	0.242	0.037	-0.074
	(0.12)	(0.65)	(0.97)	(0.62)	(0.08)	(0.27)
nhlmulti	0.837	0	0	0	0	0
	(4.24)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
nhl_capac	0	0	0	0.001	0	0.001
	(1.17)	(0.58)	(0.38)	(1.80)	(0.37)	(1.58)
nhl_capac2	0	0	0	0	0	0
	(1.07)	(0.60)	(0.35)	(1.70)	(0.38)	(1.45)
nfl	4.006	-3.569	2.053	2.804	1.83	2.717
	(0.92)	(0.75)	(0.70)	(0.31)	(0.16)	(0.58)
nflco5	0.347	-0.421	0.031	0.083	-0.054	-0.074
	(2.58)*	(2.89)**	(0.35)	(0.29)	(0.16)	(0.37)
nflentry5	-0.466	0.338	-0.24	-0.185	-0.287	-0.14
	(2.67)**	(1.81)	(2.03)*	(0.49)	(0.66)	(0.55)
nflexit5	0.126	0.003	0.028	0.423	-0.828	-0.17
	(0.67)	(0.01)	(0.22)	(1.09)	(1.70)	(0.59)
nflmulti	0	0	0	0	0	0
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(0.00)**
nfl_capac	0	0	0	0	0	0
	(0.77)	(0.67)	(0.56)	(0.32)	(0.30)	(0.71)
nfl_capac2	0	0	0	0	0	0
	(0.66)	(0.60)	(0.47)	(0.34)	(0.42)	(0.85)
y1987	0	0	0	0	-5.859	-2.241
	(0.00)**	(0.00)**	(0.00)**	(0.00)**	(13.62)**	(6.21)**
y1988	-0.048	0.48	0.127	0.081	-4.502	-2.026
	(0.36)	(3.39)**	(1.45)	(0.36)	(10.46)**	(5.80)**
y1989	0.397	0.446	0.291	0.307	-4.605	-2.481
	(2.93)**	(3.08)**	(3.31)**	(1.39)	(11.26)**	(7.38)**
y1990	0.565	0.722	0.544	0.507	-4.485	-2.145
	(4.10)**	(4.82)**	(6.07)**	(2.25)*	(11.18)**	(6.52)**
y1991	0.157	0.936	0.775	0.765	-4.001	-2.107
	(1.11)	(6.07)**	(8.40)**	(3.36)**	(10.15)**	(6.60)**
y1992	0.998	0.849	0.817	1.111	-3.979	-1.385
	(7.10)**	(5.56)**	(8.59)**	(4.74)**	(10.36)**	(4.47)**
y1993	0.437	0.663	0.846	1.284	-4.279	-2.307
	(2.95)**	(4.32)**	(8.64)**	(5.30)**	(11.43)**	(7.85)**
y1994	0.997	1.03	0.985	1.475	-3.777	-1.96
	(6.77)**	(6.72)**	(9.75)**	(5.84)**	(9.96)**	(6.79)**
y1995	0.847	1.263	1.108	1.71	-3.362	-1.541
	(5.47)**	(7.92)**	(10.60)**	(6.58)**	(9.10)**	(5.54)**
y1996	1.705	1.424	1.455	2.722	-3.54	-1.228
	(10.84)**	(8.78)**	(13.40)**	(10.05)**	(9.78)**	(4.60)**
y1997	1.805	1.403	1.281	2.497	-2.668	-1.311
	(10.27)**	(8.33)**	(10.84)**	(8.38)**	(7.30)**	(5.14)**
y1998	2.739	1.9	0.762	3.9	-2.408	-0.536

	(15.65)**	(11.05)**	(6.06)**	(11.92)**	(6.81)**	(2.19)*
y1999	2.742	2.02	1.406	3.459	-2.078	-0.696
	(13.54)**	(11.10)**	(11.99)**	(8.95)**	(6.03)**	(3.01)**
y2000	2.073	2.557	1.796	4.746	-1.686	0.123
	(9.50)**	(13.61)**	(14.72)**	(11.82)**	(5.02)**	(0.56)
y2001	2.675	2.498	1.699	3.118	-1.616	-1.561
	(12.57)**	(12.41)**	(12.96)**	(7.05)**	(4.89)**	(7.47)**
y2002	2.865	2.539	1.772	4.951	-1.34	-1.587
	(12.90)**	(12.38)**	(13.17)**	(11.58)**	(4.09)**	(7.69)**
y2003	2.408	2.237	1.697	3.884	-1.699	-1.645
	(10.28)**	(10.71)**	(12.34)**	(8.58)**	(5.22)**	(8.05)**
y2004	2.292	2.699	1.915	5.159	-1.113	-0.462
	(10.01)**	(13.18)**	(13.83)**	(11.28)**	(3.44)**	(2.29)*
y2005	3.239	3.527	1.985	5.838	0	0
Number of id	57	57	56	56	56	57
Constant	3.39	3.612	(13.88)**	5.229	10.927	3.714
	(9.35)**	(11.18)**	(13.49)**	(8.37)**	(13.16)**	(4.22)**
R Squared	0.857	0.713	1064.00	0.86	0.631	0.968
Observations	1054	1066	0.865	839	1017	1083

Absolute value of z-statistics in parentheses

* significant at 5% level; ** significant at 1% level