The Economic Impact of Hosting a Professional Sports Franchise

April 18, 2019

Herman Singh±

Abstract: This paper investigates the economic effects of hosting a professional team, I advance the literature in three ways: 1) adding the two women's professional sports leagues NWSL and WNBA, 2) using a more expansive set of dependent variables and 3) including the inverse of stadium age to test for the novelty effect. My results find that hosting an NFL, NBA, NHL, or MLB team will result in a decrease in income per person. However, hosting a NWSL or WNBA team will result in higher earnings in certain industries within the initial year, due to the novelty effect. The impact of hosting a professional sports franchise is minimal and therefore, unworthy of the cost of enormous government subsidies in the form of tax payer's dollars.

Keywords: professional sports, stadium, economic impact, MSA

JEL Classifications: Z2, Z28

± Herman Singh. MA Student, Department of Economics, California State University, Long Beach, CA 90803 USA. Herman.singh@csulb.edu

1. Introduction

Municipalities often are promoting growth by creating more jobs and promising higher wages to individuals. There are several ways this goal can be achieved, such as, investing in new development projects, education, and work programs that have been proven to enhance economic outlook. The sport industry is often portrayed as a revenue generating entity which can be enticing to many communities. Professional sports are often touted as a highly profitable industry; some city officials argue, by hosting a professional sports franchise they can increase wages, create more jobs, and increase the standard of living within the area.

The sports-led growth strategy is often used by professional organizations as a pitch to attract local governments to host a team and help publicly fund their stadium. Teams are incentivized to remain in a locale or relocate by enormous tax breaks and subsidies that help limit their costs of operation. Professional organizations often hire firms to help push their case on how much they can impact a local economy by presenting biased data that conveniently omits crucial factors and lacks correct model specification. Sports franchises believe they are the missing piece in the puzzle and can optimally help deliver the city's promise. Unfortunately, there is an ample amount of research done in this field where researchers have concluded that hosting a team and the adoption of a sports growth strategy is not beneficial in most, if not all circumstances (Baade and Dye 1990; Baade 2001; Coates 2007; Lertwachara et al. 2007; Noll et al. 2007; Baade et al. 2008; Jasina and Rotthoff 2008; Propheter 2012; Groothius and Rotthoff 2016; Coates 2018).

My research attempts to accurately capture the economic impact that is created by professional sport franchises by looking into metropolitan statistical area (MSA) data and comparing the presence against changes in income measures for different industries. I incorporate two women and five men professional sports franchises, which has not been done in previous literature. Also, originality of this paper can be attributed to using a more expansive set of dependent variables and the inclusion of inverse stadium age to measure the presence of a novelty effect. My research shows that hosting a professional sports team results in a decrease income per person. The impact is minimal and therefore, unworthy of the cost of enormous government subsidies in the form of tax payer's dollars. Results presented are persistent with previous literature and conclude that there is no significant impact made by professional franchises.

2. Literature Review

Many researchers have examined the effects of sports franchises on their local economy (Baade and Dye 1990; Baade 2001; Coates 2007; Lertwachara et al. 2007; Noll et al. 2007; Baade et al. 2008; Jasina and Rotthoff 2008; Propheter 2012; Groothius and Rotthoff 2016; Coates 2018). They estimate the impact of a sports franchise on changes in personal income and employment across different counties or metropolitan statistical areas (MSA). Researchers use two variations of the variable of interest: presence of a sports team and stadium characteristics. Each variable helps determine the sports environment and how it will affect the area of study which in most cases is metropolitan statistical area (MSA). They have generally found that professional sport franchises have no significant impact on the local economy.

Although the results are quite similar, the methodologies used by the researchers vary. The presence and age of a professional team are two of the most common measures used. For example, Baade (2001) uses a panel difference in difference and trend adjusted approach using the Bureau of labor Statistics County Business Pattern data set. He includes a set of dummy variables to show the presence of a professional team within the given MSA. This method has been widely adopted and improved by using dummies for MSA specific teams by other researchers such as Coates (2018), Coates and Humphreys (2003), Cochran and Lertwachara (2007), and Jasina and Rotthoff

(2008). Age of stadiums and time present in MSA is highly studied within this scope of literature. Most papers essentially capture the novelty effect of stadiums throughout their study. Baade (2001) implements dummy variables that capture the effects of stadiums that are less than ten years old and ten years after they are built. Researchers can observe change in economic activity that could be attributed to the gain or loss of a franchise through extended time. Some argue that the time periods observed in the panels are very limited with older data, but Coates (2018) and Baade, Baumann, and Matheson (2008) track the changes in the presence of professional teams in MSA for approximately thirty years up till 2011 and results remain consistent. Previous studies have utilized dummy variables to capture novelty effect and this paper takes it one step further in capturing the declining novelty effect over time. General findings for papers that include dummy variables for the presence of professional teams is that there is no substantial economic impact in terms of wages and employment.

Previous studies have looked at stadium characteristics of professional teams as an alternate way to measure the potential economic impact it potentially has on its host's economy. These characteristics include stadium capacity, co-tenancy, and location. Coates (2018) uses stadium capacity and capacity squared to capture the nonlinear relationship. He concludes in his joint hypothesis that stadium capacity with a p-value of 0.10 and an F statistic of 1.39 that there is some predicative capability within the model. Also, this same idea that capacity has some effect on the economic impact is examined in Coates and Humphreys (2003), where capacity is used as opposed to attendance because that can vary with income levels of cities as well as sports. An additional characteristic that my research will use in the study and has previously been observed in literature is the tenancy of professional teams. Multiple teams can share stadiums across different sports; these multi-use facilities, in theory, are significantly efficient and have an overall positive effect on the economy (Propheter 2012). Previous literature, such as Propheter (2012), include variables that capture professional teams that share stadiums such as NBA/NHL teams and location of either downtown or away from the central business district. Results for this random effect panel model indicates that NBA arenas have a significantly small positive impact on the economy while location and tenancy are not significant. Through more research and data collection, one can derive a better method to include tenancy and the location of the stadium that Propheter (2012) attempts in his research. The main takeaway is that there is positive effect pertaining to presence of basketball arenas within an MSA, but it is hard to quantify without an economic strength variable that captures the local economies influence. Based on previous studies, stadium characteristics can help provide reasoning for the economic impact or lack thereof produced by professional sports teams.

One of the main limitations of this field of study is being able to isolate the effects of a stadium within its MSA. Metropolitan statistical areas are broad in the sense that multiple cities are condensed into one unit of measure such as Los Angeles, which consists of Long Beach and Anaheim. It is difficult to capture the effects the presence of a sports team such as the Los Angeles Angels who are in Anaheim but have no impact on Los Angeles' economy. Researchers have attempted to capture the true effect sport franchises have on their host economy in various ways within the literature. Baade (2001), Coates and Humphreys (2003), and Cochran and Lertwachara (2007) use the presence of a professional franchise within an MSA in the form of a dummy variable to observe the change over time. This variable is important to help distinguish both the entry and exit of a team, but due to the enormous population and areas of MSA, it is challenging to capture the effect it has on all individuals' income and employment. Baade, Baumann, and Matheson (2008) and Propheter (2012) set MSA restrictions by excluding either MSA with a population over

750,000. This helps aim the focus on some single city MSA's where it can be easier to narrow down the effects of team presence and to observe potential variation. However, excluding these large MSA and imposing restrictions can bias the results because large MSA most often hold more teams. Coates (2018) and Jasina and Rotthoff (2008) use industry specific dependent variables to capture the effect teams have on wage and employment. By using a defined data set it is easier to narrow down the effect in those specific industries that are correlated with a sports franchise. Like many researchers before, I will attempt to isolate the effects of stadiums within a given MSA in my research by investigating team presence.

This research aims to bridge the gap in previous literature and provide an accurate measure of the impact professional sports teams have on their host economies. I will be building upon Coates (2018) notion that presence does play a major role in determining the effect of the stadium on the local economy, as well as compiling my unique dataset which includes five male and two female professional sports leagues. Previous papers fail to incorporate women's sports teams in their models and I believe adding these female organizations better represents all sports leagues. Another important variation to be added to this research is using the inverse of stadium age to capture the geometric shape which can be classified as the novelty effect of the stadium. Previous studies use a dummy variable to capture the novelty effect, but I believe that capturing the novelty through the inverse age of the stadium will better capture the effect. The implementation of women's sports leagues and using the most recent data obtainable will provide city officials adequate information regarding the potential economic impact of sports franchises.

3. Methodology

This paper uses data from seven professional leagues: National Football League (NFL), National Basketball Association (NBA), Major League Baseball (MLB), Major League Soccer

(MLS), National Hockey League (NHL), Women's National Basketball Association (WNBA), and National Women's Soccer League (NWSL). Table 2 presents the current locations of each franchise. In my sample, there are 156 professional franchises located in the U.S. spread across 45 MSAs.[1] Each MSA hosts on average under 3.5 franchises with a minimum of 1 for small locales such as Green Bay, WI and Hartford, CT and a maximum of 13 for the New York-Newark-Jersey City MSA.

3.1 Specification

This paper uses panel data estimation to examine the impact of a sports environment on the local economy.

$$\Delta \ln(y_{it}) = \alpha \Delta \ln(y_{it-1}) + \sum_{k}^{7} \beta_k \, SportsFranchise_{kit} + u_i + \delta_t + \varepsilon_{it} \quad (1)$$

where *i* indexes the MSA, *t* indexes the year and *k* denote the professional league. The dependent variable *y* is income per person, wages and salaries per person, or earnings per person of specific industries. The industries are amusement, construction, eating and drinking, local government, local transportation, and real estate. The variable of interest *SportsFranchise* records the presence and magnitude of a professional sports team. The β_k captures the impact of each professional league on the dependent variable. The u_i is the unobservable cross-sectional effects, δ_t is the fixed time effects, and ε_{it} is an i.i.d. error term.

The paper uses two different specifications to estimate the impact of professional sports. The first specification follows Coates and Humphreys (2003a, 2003b) and includes a set of dummy variables for the presence of each franchise. I use this specification to predict differences in MSA-wide per capita income and wages and salaries.

[1] There are Canadian-based franchises in most leagues. For example, NBA: Toronto Raptors, MLB: Toronto Blue Jays, MLS: Toronto FC, Montreal Impact, Vancouver Whitecaps FC, NHL: Toronto Maple Leaf's, Winnipeg Jets, Calgary Flames, Edmonton Oilers, Vancouver Canucks. These franchises are not included in the sample due to a lack of information.

The second specification includes a set of dummies for each franchise along with the inverse of the age of each stadium:

$$stad\ age\ (inv)_{kit} = 1/stad\ age_{kit} \tag{2}$$

The variable *stad age* (*inv*) captures the effects of the age of the stadium in professional league *k*. The *stad age* (*inv*) is one when a new stadium is constructed and then declines geometrically. Previous studies confirm the significance of the novelty effect through the use of dummies, but this paper includes the inverse of stadium age. As such, the variable captures the declining impact of a new stadium on the dependent variable, holding the constant the presence of a franchise. The relationship is exponential; as age increases the value or benefit will simultaneously decline at an exponential rate. Interpreting this result requires the combination of both the coefficient of the presence of a franchise and the inverse of stadium age. The total of coefficient values will help describe the overall effect a team has on the MSA yearly earning measures. Also, denser and more populated MSAs have the tendency of hosting multiple professional franchises across different sports and that is captured within this model.

Following previous papers, I include a lagged dependent variable and fixed effects to account for unobservable changes in characteristics throughout the data. These unobservable changes take course over time and include changes in infrastructure, political organization, and climate as well as others. By using both fixed effects and a lagged dependent variable, the model accurately attributes the changes in the income measures specific to its MSA sports environment variables and excludes outside factors. Tests, such as the Hausman test, are implemented to accurately model this research. The Hausman test helps control for endogeneity as well as choosing a fixed or random effects regression. Based on the p value for all regressions ran within this research, the fixed effects regression is always preferred. Also, when using panel data, it is important to account for serial correlation. One way this paper accounts for the presence of a unit root is using the difference (Δ) of the dependent and lagged dependent variable on both sides of the equation. By including this first difference in the equation, I eliminate the common trend among variables of interest.

Furthermore, my research will use previously mentioned specification to accurately depict the true impact sport franchises have on local economies. Specifications and model choice robustness will set this paper apart from previous work. I will use two different specifications with various measures of the sports environment to confirm what previous literature has found: sports franchises have no significant impact on host economies.

3.2 Data

Multiple sources are used to compile the dataset for this project. Due to the complexity of this research and lack of an efficient method to capture the sports environment without years of data collection, it is most efficient to use metropolitan statistical area level data. Previous literature collectively used the same approach when studying the effects sports have on local economies. Metropolitan statistical areas can be defined as a conglomerate of cities that can be grouped together based on geographic location and population density. In this study, there is a total of 383 MSAs while only 46 have presence of a professional franchise that range from 1990 to 2016.

Dependent variables, which consist of income specific measures, were derived from the United States Department of Commerce's Bureau of Economic Analysis (BEA) website. This government organization collects statistics on employment and incomes at different levels across diverse industries within the United States. The BEA provides a vast list of variables, but the focus is the earnings of certain industries such as construction, eat/drink, real estate, amusement, local government, and income per capita at the MSA level. Each dependent variable is divided and logged within the regression to capture the non-linearity of the relationship.

Independent variables include factors that establish a sports environment. Sports environment variables include presence of a professional franchise, stadium age, and capacities. These variables were constructed into a unique data set that consolidates information retrieved from Rodney Fort's Sports business data bank (University of Michigan) as well as professional team websites. The data derives from every MSA that has a sports franchise entry year, exit year, and year established across the seven sports leagues dating back to the 1960s.[2]

Summary statistics are presented in Table 1 where each variable is categorized by its measure. The first set describes the dependent variable in levels that will be estimated within this research. Income per person is roughly $30,000 for all MSA within the dataset and earnings range in each industry observed. Secondly, sports environment variables show if the MSA has a team present within a given time and is assigned the value of one, if there are multiple teams present, they are given the value of two. Based on the data roughly 12% of MSAs have a presence of at least one professional team across the seven major sports. Stadium age is reported for each team within each league. The NFL and MLB have the highest average stadium age which could be due to the fact that they have the largest capacities and stay in their respective stadiums longer. Lastly, capacity measures for sports teams are captured for each major league sports franchise. These summary statistics give a brief preview of what the dataset contains and how it will be used in regression analysis.

4. Empirical Results

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[2] There are of course additional economic factors that could impact per capita income and earnings, but there is a lack of data at the MSA level. The inclusion of state fixed effects however control for differences across states, while time effects control for changes in the national economy.

Results acquired for the estimations contradict what previous literature has stated. Tables 3, 4a, and 4b display the results, each regression includes a different measure of income. The original specification of sports environment and presence is included and measured with fixed effects with lagged and differenced variables. Random effects regressions were omitted due to the Housman test and concluded that the fix effects is the preferred regression. Also, MSA reported that these regressions must meet the requirement of having a population greater than 200,000. This value is assigned because the MSA with the smallest population and presence of at least one professional franchise is Green Bay, Wisconsin.

Based on the results, presence of professional franchise fluctuate in significance across the model. Table 3 uses the presence of a franchise controlling for the seven different leagues to establish the effect it has on income per capita and wages. These measures are used in this model with and without population constraints regarding MSAs with sports teams. When observing any significant team in the sample, restricted or unrestricted, there is always a negative effect which is consistent with the literature. The total sample results suggest that NFL and NBA teams have a negative effect of 1 percent on the per capita income with the implementation of fixed time and MSA effects. When observing wages and salaries as the dependent variable, there is a negative effect for both NFL and MLB presence that is roughly 1 percent decrease. Finally, results suggest that there is a negative impact of hosting teams although professional franchises promise higher wages. Government subsidies and tax breaks should not be awarded to professional teams when there is a detrimental effect on society, in this case a decrease in wages and income.

Table 4a and 4b controls for presence and inverse stadium age to capture the novelty effect with different samples across various industry earnings per person. Table 4a, presents significant variables within the constrained fixed effects model for income per capita and wages and salary include NFL and NBA, at different significance levels. Results for this regression have, on average, a greater impact than previous results have stated for income per person, wages, and salary. When focusing on income per person, the presence of NFL and NBA have a negative effect, similar to the original specification with team presence. In other words, the presence of an NFL and NBA team within an MSA will decrease income per person by 1 percent. However, interpreting the novelty effect requires one to combine the coefficients of team presence with its corresponding inverse stadium age. Inverse stadium age within this regression shows that NFL presence will have an overall effect of negative 0.82 percent in the first year and will decrease exponentially every subsequent year. NBA stadiums exhibit a decrease of 0.21 percent in income the first year and is cut in half every subsequent year. Wages and salaries are affected negatively with presence of NFL having a 0.65 percent. Also, results are confirmed and similar to Table 3 when using the total sample of MSA within Table 4b.

Other observed industries in the model that are affected by presence of professional teams include construction, eat/drink, local government, and real estate. Industries such as amusement, construction, local transportation, and real estate incur a positive effect from hosting specific teams. Within the restricted sample, by hosting a NWSL team, there is a positive effect of 5.3 percent on the earnings per person in the amusement sector and 5 percent in the real-estate industry. Also, hosting a WNBA team is associated with a positive effect in the initial year by 3.53 percent when observing the earnings in local transportation. Overall, hosting a female team has the most positive impact out of the seven sports leagues. In this scenario, there is evidence of the novelty effect; in most cases, it is negative which attributes to the decrease in earnings per industry over the life span of a stadium. Based on this evidence, it is shown that the first year of operation is the most desirable in terms of highest return and wages, but every year following, there is a marginal decrease which should disincentive cities to host a team. If teams can sustain this attractiveness in the succeeding years, they should be able to sustain higher wages and attractiveness which in turn can benefit society.

Overall, team presence is found to be significant in many specifications presented in this model, but it is not substantial. Results, do in fact, confirm some of the literature within this scope of research, but nonetheless the percentages are very low. Essentially, results show that if an MSA hosts an NFL, NBA, NHL, or MLB team they will be less likely to have higher incomes. An important contribution this paper makes is identifying the significance of women's sports within this study and presenting the overall suggestion that hosting a women's team will provide higher wages in the initial year due to the novelty effect of a stadium. Unfortunately, that could be due to a small sample of women's sports teams and age of the whole league. Other regressions were conducted to test other sports environment variables by using stadium capacities and results are insignificant. I believe better results can be achieved with more detailed city and surrounding areas of stadiums level data to observe the effects at a smaller scope as opposed to a broad MSA level. This paper concludes that hosting a sports franchise will be the most beneficial in the first year of relocating to a stadium and this can be attributed to the novelty effect.

5. Conclusion

My research extends the growing literature by incorporating women's sports franchises, as well as the most current MSA level data to establish the effect team presence has on earnings in various industries. With the presence of women's sports franchise, there is a positive effect in certain industries, but that is not enough to offset the decrease in income by other sport franchises. Municipalities should be advised to not attempt a sport led growth strategy because as this research shows, it can be potentially harmful by decreasing income and wages. Novelty effect further strengthens the argument by showing that the initial year provides the highest benefit of increased income and declining as age of the stadium increases. Think tanks and professional franchises often pitch the idea that hosting teams can increase the standard of living by creating new jobs and higher wages, but there is insignificant amount of data that shows the accuracy in that statement. Officials should focus their attention to investing in education, infrastructure, and other necessities of a society. Although there are signs of positive impact on earnings in certain industries it is not enough to justify using tax payers' dollars in providing subsidies for minimal increase in income.

Every professional franchise operates as a business and adopts the same model of minimizing costs while maximizing its profits. Cities should treat these teams similar and have them seek funding through sponsorships, brand deals, or private funding. For example, the Oakland Raiders are locating to Las Vegas where the public will be paying 500 million dollars for the stadium which covers roughly half of the costs of stadium construction. However the Los Angeles Rams and Chargers will be sharing a five billion dollar stadium that is privately funded. Both regions are taking a huge gamble in hosting a professional franchise and its impact on their local economy. There are many teams that have built stadiums that have been successfully privately funded such as the New England Patriots, LA Rams, LA Chargers, and GS Warriors. One of the main limitations of this study is the data constraints for all surrounding areas potential impacted by a professional sports franchise. However, future research with more detailed data on surrounding areas as well as professional team information should investigate the impact these private versus publicly funded teams have on their respective host economy. Regardless, sports franchises make millions of dollars and should be able to invest within themselves without seeking subsides from their host cities.

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Table 1: Summary Statistics and Data Descriptions

Variable	Mean	Std. Dev.	Min	Max
Dependent Variable				
Income per person	30173.31	10220.2	9430	118295
Wage and Salaries	15412.21	5554.20	3358.21	66742.55
Construction earnings per person	1363.32	641.84	146.96	9127.48
Eat and Drink earnings per person	540.80	223.13	106.52	2955.21
Local Government earnings per person	2038.74	798.59	460.36	7842.02
Real Estate earnings per person	238.28	405.07	-15892.09	3707.28
Sports Environment				
Presence of Sports Franchise	0.12	0.35	0	2
Presence of NFL Franchise	0.08	0.29	0	2
Presence of NBA Franchise	0.07	0.28	0	2
Presence of MLB Franchise	0.07	0.3	0	2
Presence of NHL Franchise	0.05	0.25	0	2
Presence of MLS Franchise	0.03	0.2	0	2
Presence of WNBA Franchise	0.02	0.13	0	1
Presence of NWSL Franchise	0.003	0.06	0	1
Stadium Age				
NFL	1.313651	5.93388	0	59
NBA	0.854761	3.999326	0	50
MLB	1.326159	7.308609	0	104
NHL	0.610917	3.701528	0	67
MLS	0.121291	1.017602	0	20
WNBA	0.124006	1.140579	0	19
NWSL	0.006108	0.146921	0	7
Stadium Capacities				
NFL Capacity	66780.47	16641.34	27000	100000
NBA Capacity	19327.47	3841.83	12686	71228
MLB Capacity	46672.54	7880.47	34078	76273
NHL Capacity	18233.04	1518.98	11089	28153
MLS Capacity	20743.00	6579.74	18000	39419
WNBA Capacity	17216.54	3533.34	6115	20356
NWSL Capacity	8855.89	6593.72	4000	21114

Table 2: Franchise Locations across Metropolitan Statistical Areas

MSA	NFL	NBA	MLB	NHL	MLS	WNBA	NWSL	Total
Atlanta-SandySprings-Roswell,GA	1	1	1		1	1		5
Baltimore-Columbia-Towson,MD	1		1					2
Boston-Cambridge-Newton,MA-NH	1	1	1	1	1			5
Buffalo-Cheektowaga-NiagaraFalls,NY	1			1				2
Charlotte-Concord-Gastonia,NC-SC	1	1						2
Chicago-Naperville-Elgin,IL-IN-WI	1	1	2	1	1	1	1	8
Cincinnati,OH-KY-IN	1		1					2
Cleveland-Elyria,OH	1	1	1					3
Columbus,OH				1	1			2
Dallas-FortWorth-Arlington,TX	1	1	1	1	1	1		6
Denver-Aurora-Lakewood,CO*	1	1	1	1	1			5
Detroit-Warren-Dearborn,MI	1	1	1	1				4
Hartford-WestHartford-EastHartford,CT						1		1
GreenBay,WI	1							1
Greensboro-HighPoint,NC				1			1	2
Houston-TheWoodlands-SugarLand,TX	1	1	1		1		1	5
Indianapolis-Carmel-Anderson,IN	1	1				1		3
Jacksonville,FL	1							1
KansasCity,MO-KS	1		1		1			3
LasVegas-Henderson-Paradise,NV				1		1		2
LosAngeles-LongBeach-Anaheim,CA	2	2	2	2	2	1		11
Memphis,TN-MS-AR		1						1
Miami-FortLauderdale-WestPalmBeach,FL	1	1	1	1				4
Milwaukee-Waukesha-WestAllis,WI		1	1					2
Minneapolis-St.Paul-Bloomington,MN-WI	1	1	1	1	1	1		6
Nashville-Davidson--Murfreesboro--Franklin,TN	1			1				2
NewOrleans-Metairie,LA	1	1						2
NewYork-Newark-JerseyCity,NY-NJ-PA	2	2	2	3	2	1	1	13
OklahomaCity,OK		1						1
Orlando-Kissimmee-Sanford,FL		1			1		1	3
Philadelphia-Camden-Wilmington,PA-NJ-DE	1	1	1	1	1			5
Phoenix-Mesa-Scottsdale,AZ	1	1	1	1		1		5
Pittsburgh,PA	1		1	1				3
Portland-Vancouver-Hillsboro,OR-WA		1			1		1	3
Raleigh,NC				1				1
Sacramento--Roseville--Arden-Arcade,CA		1						1
St.Louis,MO-IL			1	1				2
SaltLakeCity,UT		1			1		1	3
SanAntonio-NewBraunfels,TX		1						1
SanDiego-Carlsbad,CA			1					1
SanFrancisco-Oakland-Hayward,CA	2	1	2					5
SanJose-Sunnyvale-SantaClara,CA				1	1			2
Seattle-Tacoma-Bellevue,WA	1		1		1	1	1	5
Tampa-St.Petersburg-Clearwater,FL	1		1	1				3
Washington-Arlington-Alexandria,DC-VA-MD	1	1	1	1	1	1	1	7
Total	**32**	**29**	**29**	**25**	**20**	**12**	**9**	**156**

Table 3: The Effects of a Professional Franchise Presence

	D.personal income per person				growth in wages per person			
VARIABLES	OLS	FE	OLS	FE	OLS	FE	OLS	FE
lag_ln(D.dep var)	0.0835**	0.0567	0.139***	0.108***	0.296***	0.258***	0.340***	0.298***
	(0.0338)	(0.0345)	(0.0258)	(0.0224)	(0.0210)	(0.0164)	(0.0350)	(0.0265)
NFL	0.000576	-0.011***	0.000635	-0.001***	0.00159	-0.0091**	0.00158	-0.00794**
	(0.00132)	(0.00333)	(0.00126)	(0.00297)	(0.00115)	(0.00415)	(0.00114)	(0.00395)
NBA	-0.000384	-0.0071**	-0.000237	-0.00463*	-0.000313	-0.00220	-0.000150	-0.000671
	(0.00128)	(0.00313)	(0.00123)	(0.00278)	(0.00114)	(0.00232)	(0.00113)	(0.00185)
MLB	0.000650	0.000745	0.000549	0.000837	0.000434	-0.00594*	0.000402	-0.00548*
	(0.00158)	(0.00436)	(0.00151)	(0.00377)	(0.00154)	(0.00316)	(0.00152)	(0.00278)
NHL	-0.000831	-0.00374	-0.000782	-0.00368*	-0.000236	-0.00245	-0.000143	-0.00240
	(0.00132)	(0.00280)	(0.00125)	(0.00213)	(0.00133)	(0.00271)	(0.00129)	(0.00215)
MLS	0.00232	0.00113	0.00221	0.00151	0.00190	0.00238	0.00169	0.00218
	(0.00167)	(0.00181)	(0.00156)	(0.00177)	(0.00174)	(0.00191)	(0.00165)	(0.00192)
WNBA	-0.00179	-0.00319	-0.00130	-0.00187	-0.00183	-0.00137	-0.00143	-0.000410
	(0.00171)	(0.00198)	(0.00159)	(0.00178)	(0.00146)	(0.00244)	(0.00139)	(0.00225)
NWSL	0.000858	0.00267	1.15e-05	0.00171	0.000641	0.000754	-0.000740	-0.000612
Observations	9,550	9,550	5,024	5,024	9,550	9,550	5,024	5,024
Number of MSA	382	382	220	220	382	382	220	220
R-squared	0.379	0.383	0.507	0.512	0.459	0.457	0.560	0.560
State Effect	No	Yes	No	Yes	No	Yes	No	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	155.22	187.96	128.47	167.62	173.17	269.00	164.33	334.10

Note: the dependent variable is lagged and differenced into the model. The robust standard errors are in parentheses where *** p<0.01, ** p<0.05, * p<0.1

Table 4a: The Effects of a Professional Sports Franchise and Age of Stadium in Restricted Sample

VARIABLES	D.ln_percap	D.ln_wagesal	D.ln_loctrans	D.ln_construct	D.ln_amuse	D.ln_localgov	D.ln_realestate
lag_ln(D.dep var)	0.108***	0.298***	0.00922	0.192***	-0.0544	0.102**	0.0369**
	(0.0224)	(0.0266)	(0.0357)	(0.0247)	(0.0351)	(0.0406)	(0.0185)
NFL	-0.0100***	-0.00737*	0.0451***	-0.0146*	-0.0511	-0.00849**	-0.0155
	(0.00295)	(0.00386)	(0.0126)	(0.00809)	(0.0403)	(0.00331)	(0.0251)
NBA	-0.00547**	-0.000928	0.0376***	-0.0148	-0.0357	-0.00303	0.0364
	(0.00273)	(0.00193)	(0.0106)	(0.0112)	(0.0807)	(0.00379)	(0.0324)
MLB	0.00249	-0.00380	0.00836	-0.00761	-0.0294***	0.00504	-0.0186
	(0.00405)	(0.00311)	(0.0315)	(0.0107)	(0.0112)	(0.00624)	(0.0346)
NHL	-0.00344	-0.00220	-0.0247	-0.0171**	0.00377	0.00206	0.0201
	(0.00229)	(0.00215)	(0.0284)	(0.00779)	(0.0147)	(0.00497)	(0.0247)
MLS	0.000582	-0.000143	-0.0133	0.00695	-0.00893	0.00126	0.0149
	(0.00239)	(0.00238)	(0.0143)	(0.00856)	(0.0130)	(0.00331)	(0.0207)
WNBA	-0.00121	-0.000733	0.0271*	0.00128	0.00144	0.00314	0.0328*
	(0.00145)	(0.00184)	(0.0151)	(0.00610)	(0.0159)	(0.00379)	(0.0169)
NWSL	0.00254	0.000288	-0.0307*	0.0247**	0.0251*	0.00223	0.0775**
	(0.00347)	(0.00503)	(0.0160)	(0.0116)	(0.0132)	(0.00307)	(0.0309)
NFL stad age(inv)	0.00163	-0.00289	-0.00582	-0.0398***	-0.00691	-0.00300	-0.0317
	(0.00444)	(0.00373)	(0.0219)	(0.0138)	(0.0367)	(0.00400)	(0.0592)
NBA stad age(inv)	0.00338	0.000855	-0.0578*	0.00244	0.00599	0.00408	0.00187
	(0.00337)	(0.00320)	(0.0329)	(0.0122)	(0.0245)	(0.00569)	(0.0233)
MLB stad age(inv)	-0.00799*	-0.00805	-0.0140	0.00275	-0.0157	0.000966	0.0685
	(0.00409)	(0.00554)	(0.0306)	(0.0141)	(0.0301)	(0.00273)	(0.0606)
NHL stad age(inv)	-0.000474	0.000442	0.0132	-0.00218	0.0189	0.00140	0.0161
	(0.00302)	(0.00264)	(0.0165)	(0.00845)	(0.0167)	(0.00399)	(0.0546)
MLS stad age(inv)	0.00137	0.00553**	0.00773	0.0148*	0.0307**	0.00357	0.000829
	(0.00270)	(0.00254)	(0.0217)	(0.00786)	(0.0140)	(0.00530)	(0.0282)
WNBA stad age(inv)	-0.00231	0.00170	0.00821	-0.0112	-0.0119	-0.0112*	-0.0721
	(0.00385)	(0.00520)	(0.0207)	(0.0163)	(0.0257)	(0.00616)	(0.0655)
NWSL stad age(inv)	-0.00165	-0.000878	0.0283	-0.0219	0.0278	0.0110**	-0.0300
	(0.00844)	(0.0107)	(0.0197)	(0.0177)	(0.0482)	(0.00495)	(0.0446)
Observations	5,024	5,024	3,298	4,775	3,970	4,556	4,280
R-squared	0.513	0.560	0.113	0.288	0.472	0.373	0.195
Number of MSA	220	220	211	220	216	219	219
F Statistic	141.00	295.62	8.74	54.32	56.93	99.41	75.30

Table 4b: The Effects of a Professional Sports Franchise and Age of Stadium in Full Sample

VARIABLES	D.ln_percap	D.ln_wagesal	D.ln_loctalrans	D.ln_construct	D.ln_amuse	D.ln_localgov	D.ln_realestate
lag_ln(D.dep var)	0.0566	0.258***	0.00532	0.120***	-0.0325	0.0749***	0.0437***
	(0.0346)	(0.0164)	(0.0236)	(0.0170)	(0.0246)	(0.0245)	(0.0124)
NFL	-0.0111***	-0.00829**	0.0484***	-0.0149	-0.0528	-0.00758**	-0.0180
	(0.00332)	(0.00406)	(0.0126)	(0.0103)	(0.0417)	(0.00357)	(0.0256)
NBA	-0.00818***	-0.00260	0.0438***	-0.0188	-0.0362	-0.00272	0.0341
	(0.00313)	(0.00237)	(0.0110)	(0.0126)	(0.0825)	(0.00376)	(0.0323)
MLB	0.00278	-0.00390	0.0131	-0.00451	-0.0342***	0.00579	-0.0160
	(0.00459)	(0.00343)	(0.0302)	(0.0125)	(0.0119)	(0.00608)	(0.0343)
NHL	-0.00377	-0.00244	-0.0257	-0.0163*	0.00121	0.00231	0.0176
	(0.00286)	(0.00260)	(0.0293)	(0.00885)	(0.0155)	(0.00495)	(0.0250)
MLS	-4.36e-05	-0.000297	-0.00725	0.00716	-0.0118	0.00163	0.0173
	(0.00241)	(0.00235)	(0.0153)	(0.00847)	(0.0144)	(0.00340)	(0.0200)
WNBA	-0.00237	-0.00141	0.0317**	-0.000262	0.00330	0.00365	0.0275
	(0.00149)	(0.00193)	(0.0158)	(0.00686)	(0.0171)	(0.00380)	(0.0169)
NWSL	0.00274	0.00147	-0.0254*	0.0354***	0.0309**	0.00324	0.0800***
	(0.00397)	(0.00522)	(0.0152)	(0.0123)	(0.0139)	(0.00311)	(0.0304)
NFL stad age(inv)	0.000818	-0.00372	-0.00736	-0.0407***	-0.0114	-0.00335	-0.0338
	(0.00482)	(0.00418)	(0.0214)	(0.0150)	(0.0394)	(0.00411)	(0.0594)
NBA stad age(inv)	0.00450	0.00146	-0.0610*	0.00672	0.00578	0.00457	0.000359
	(0.00361)	(0.00356)	(0.0333)	(0.0125)	(0.0267)	(0.00582)	(0.0234)
MLB stad age(inv)	-0.00807*	-0.00860	-0.0153	0.00223	-0.0299	0.00105	0.0728
	(0.00451)	(0.00590)	(0.0317)	(0.0145)	(0.0351)	(0.00290)	(0.0609)
NHL stad age(inv)	0.000692	0.00135	0.0124	0.00267	0.0140	0.00181	0.0178
	(0.00355)	(0.00316)	(0.0163)	(0.00858)	(0.0157)	(0.00413)	(0.0550)
MLS stad age(inv)	0.00225	0.00663***	0.00263	0.0175**	0.0310**	0.00366	-0.00783
	(0.00288)	(0.00253)	(0.0217)	(0.00808)	(0.0146)	(0.00526)	(0.0272)
WNBA stad age(inv)	-0.00276	0.000704	0.00930	-0.00999	-0.0154	-0.00999	-0.0647
	(0.00432)	(0.00585)	(0.0208)	(0.0180)	(0.0308)	(0.00654)	(0.0674)
NWSL stad age(inv)	0.000252	-0.000343	0.0229	-0.0275	0.0353	0.00950*	-0.0224
	(0.00868)	(0.0104)	(0.0177)	(0.0182)	(0.0500)	(0.00499)	(0.0487)
Observations	9,550	9,550	5,716	9,028	7,648	8,515	7,983
R-squared	0.383	0.458	0.097	0.203	0.381	0.289	0.187
Number of MSA	382	382	368	382	382	382	382

F Statistic	159.51	234.83	9.32	51.22	58.52	95.58	92.73