
THUNDER UP THE TAXES!

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ABSTRACT

Oklahoma City taxpayers approved a 1% sales tax to raise an estimated \$120 million for improvements to lure the Seattle Supersonics, now the Oklahoma City Thunder. City civic leaders engaged a “Big League City” campaign, touting economic growth, increased business activity and jobs, and better quality of life as reasons to support the initiative. We evaluate the “Big League City” economic claims using local sales tax revenues to estimate the level and growth impacts resulting from the relocation of the now Oklahoma City Thunder. We find no significant relationship between the operation of the franchise and contemporaneous sales tax collections. However, we find a modest positive significant relationship between the presence of the franchise and the year-over-year growth rate of aggregate sales tax collections, providing some support for the amenity “Big League City” argument.

Keywords: Sports, tax revenue

INTRODUCTION

In 2008 the former Seattle Supersonics of the National Basketball Association (NBA) began the 2008 – 2009 season as the Oklahoma City Thunder. In a well-publicized move, new owners based in Oklahoma City relocated the franchise to Oklahoma’s capital city. As a relocation incentive, Oklahoma City residents agreed to continue a 1% temporary sales tax to fund improvements to the then “Ford Center” arena and to fund the construction of a new team practice facility. Passed in March of 2008, the tax lasted 15 months and raised just over \$105 million in revenues to fund the Thunder projects.

According to Forbes’ Christopher Helman (2012), the Oklahoma City-based owners purchased the franchise with the promise to remain in Seattle “so long as we are able to negotiate an attractive successor venue and lease arrangement”. Following a protracted discussion, the Seattle Legislature failed to approve the

necessary incentives for new construction and the franchise owner group set the move to Oklahoma City in motion.

Oklahoma City gained experience hosting an NBA franchise, the New Orleans Hornets, after Hurricane Katrina. The city served as the Hornets' temporary host for two seasons (2005-06 and 2006-07). Hosting the Hornets created enthusiasm for the NBA within OKC. The experience provided positive evidence of the city's ability to support an NBA franchise; the announced paid attendance averaged 18,737 per game according to an economic impact study by Bryant and Evans (2007). While citizens hoped to retain the Hornets, their relocation to OKC was temporary and they returned to New Orleans after only two seasons. However, the Hornets experience changed the expectations of OKC residents and signaled to the NBA that OKC was in the market and could support an NBA franchise.

Without support from Seattle taxpayers, the new ownership group decided to move the team after OKC voters approved the extension of an existing \$0.01 (1%) sales tax to fund arena and practice facility improvements. The sales tax extension was widely supported by local leaders as a means to increase economic activity and create long run growth, in turn making OKC a desirable place to live and work. OKC voters had previously approved two sales tax initiatives beginning in 1993 aimed at increasing local amenities, the Metropolitan Area Projects (MAPS) and MAPS for Kids. In a supportive "Vote Yes" television advertisement, Mayor Mick Cornett along with two previous mayors, Kirk Humphries and Ron Norick stated "...just like MAPS, improving the Ford Center will grow our economy, help attract even more companies, creating better paying jobs and improving quality of life". Using the tagline "Big League City," the message was clear that local leaders expected a long-run amenity effect from the relocated franchise.

The potential impacts from professional sports franchises may include both contemporaneous impacts on local sales tax collections and long run impacts on local labor markets and business development from the improved local amenity package and quality of life enhancement. We investigate both impact avenues in the body of this paper. The empirical investigation is intentionally limited to Oklahoma City in an effort to identify case-specific fiscal and amenity effects. The relevant literature is reviewed in the next section followed by a discussion of the data and methodology, results, and a conclusion.

LITERATURE

The economic benefits of sports franchises are difficult to estimate. Indeed, even obtaining agreement on the term “benefit” is a challenge as evidenced by the multiple approaches for estimation used in the literature. The first best method for determining the net value of public expenditure is to compare total benefits to total costs and estimate the net present value of net benefits for the years of implementation and operation. While the cost of local investment is relatively easy to calculate, benefit calculation requires the estimation of both use and non-use values as well as local growth benefits that may or may not occur due to amenity induced migration. These non-use and growth benefits are at best, difficult to determine and at worst, unknowable. Non-use valuation can be estimated, as seen by Johnson et al (2001), but the problem of determining the appropriate stakeholders still exists.

Haughwout and Inman (2002) and Rappaport (2005) find that the benefits of local amenities are shared between central city and suburban dwellers, as the urban and suburban areas grow (or decline) together. In the case of a top-level sports franchise, the suggestion that cooperative efforts between the urban and suburban areas are likely to yield the best outcome for the region should result in cost sharing agreements, yet in practice, it is difficult to convince suburbs to bear, at least partially, any of the development costs. In Oklahoma City, voters within the city agreed to the continued 1% sales tax premium without explicit participation from nearby suburbs. Suburban residents contributed to the funding efforts only to the extent that local market conditions allowed for the tax to be successfully exported.

Studies examining the economic impact of hosting athletic events and franchises admit that the impact is generally negative to neutral, with a few exceptions worth noting. Coates and Humphreys (1999) find an overall negative effect on per capita income from supporting professional sports franchises in 37 MSAs from 1969 through 1994. Hudson (1999) examines 17 US cities for employment effects from professional franchises in those cities, but finds none. Matheson (2005) examines personal income growth in cities with Super Bowl champion teams and finds no evidence of a positive effect. Lertwachara and Cochran (2007) use an event study approach to examine the effect of relocation and expansion of professional sports teams on MSA per capita income and growth rates of per capita income. They find that professional sport franchises reduce MSA per capita income. Propheter (2012) examines 24 NBA host cities and finds only scant evidence of a positive effect on personal income from building NBA arenas.

Conversely, Davis and End (2010) find that winning NFL teams increase local

per capita GDP. Coates and Humphreys (2003) find both positive and negative wage effects for cities hosting professional franchises estimating the net effect to be neutral and interpret the finding as evidence of household's substituting in consumption. Carlino and Coulson (2004) show that wages are lower in franchise cities, though not statistically significant, while rents are significantly higher. Coates, Humphreys, and Zimbalist (2006), in a rejoinder, find that the Carlino and Coulson results are not robust to model specifications. Coates and Humphreys (2011) admit that there are some positive effects on wages for NFL hosting cities, but the results are confined to announcers, athletes and others employed in recreation.

A subset of papers focus more narrowly on the fiscal impacts of sporting events and franchises. Coates (2006) examine the effect of the Super Bowl and the MLB All-star game on Houston sales tax revenues and find positive and significant effects. Coates and Depken (2009) examine 4 mid-sized Texas cities and the effect that college football games had on sales tax revenues in those cities, finding mixed effects, but generally negative and dependent on the opponent in each game. Extending their 2009 paper, Coates and Depken (2011) examine Texas sales tax revenue responses to hosting college and professional sports. They find, in many cases, negative effects on sales tax revenues, with positive effects limited to college football towns and the Super Bowl. Finally, Somerville & Wetzel (2010) find that there was no effect on the residential property tax base from hosting the Olympics in Vancouver.

For the purposes of this paper, the most directly comparable work is Baade, Baumann, & Matheson, (2008). Within the work, they examine the impacts to taxable sales in Florida counties from hosting a variety of one-time major sporting events and building/improving the venues necessary to accommodate them. In virtually all cases neutral to negative effects were found. In a subsequent paper Baade and Matheson (2011) discuss the quality of life justification directly, stating that while there is evidence in support of the quality of life argument, the significance of the quality of life benefit may be appropriate for public/private development partnerships but inappropriate for 100% public subsidization. Where previous research investigated the impacts of hosting one-time events across a series of cities, this paper modifies the strategy by investigating a series of one-time events hosted in a single city.

The quality of life literature provides some guidance in considering the growth effects of local franchises. Local quality of life measures were pioneered by Roback (1982) who looks specifically at local amenity and productivity effects using hedonic estimates of willingness to pay for local amenities. Initial research included naturally occurring amenities leading to questions of whether localities' long run

equilibrium condition rested only with the uncontrollable forces of Mother Nature. Gyourko and Tracy (1991) add local fiscal conditions to the mix and find that man-made factors could influence long-run outcomes for municipalities. Later research by Glaeser et al (2001) finds that not only is urban density good for productivity growth, it is also vital for the creation of consumer amenities which are directly correlated with population growth, as discovered by Ciccone and Hall (1996). Rappaport (2009) studied the migration-induced effects of local amenities and concludes that amenities are the sole determinant of population density asymptotically and that the population densities of cities with identical amenities but different productivity levels eventually converged. Noll & Willner (2003) provide evidence of a positive role for professional franchises in the quality of city life.

In this paper we examine changes in the Oklahoma City sales tax revenue growth rates from hosting a series of “one-time” Thunder events and finding no evidence of a contemporaneous effect on year-over-year growth rates but modest evidence in support of a longer run, amenity growth effect.

DATA

Monthly gross sales tax receipts were provided by the City of Oklahoma City. The data in levels exhibits a unit root indicating a nonstationary time series. Accordingly, the monthly data is converted into year-over-year growth rates for the January 2002 – June 2014 period.

A little more than half of the observations occur in the pre-Thunder period. The potential amenity effect is represented by a Thunder binary variable that takes the value of 1 from November 2008, the Thunder’s inaugural season in Oklahoma City. The Thunder has experienced both deep playoff runs and disappointing season finishes outside the eighth and final playoff position. This reality provides richness in the dataset as many months are characterized by significantly more (or less) home games than the same month of the previous year. The difference between the number of home games played in a month relative to the same month of the previous year serves effectively as a series of “one-time” hosted events. If a contemporaneous effect on monthly sales tax receipts (as measured in year-over-year growth rates) exists, we expect to see it in the differential number of home games variable. Year-over-year differentials in the number of away games is also captured and reported.

A vector of regional economic control variables is included in the model to capture fluctuations in city economic conditions. The preferred model specification includes economic control variables on the annualized change in Oklahoma City

MSA nonfarm employment, a U.S. recession dummy variable, and the annualized change in statewide active rig counts (a proxy for expansion or contraction in the state's primary oil and gas industry). This parsimonious control vector minimizes concerns of correlated explanatory control variables. Alternative specifications are reported for other economic controls, including measures of year-over-year growth in Oklahoma personal income and year-over-year growth in crude oil and natural gas spot prices for the months under study. All time-series data are stationary in their transformations. The tax rate is unchanged over the entire set of observations. The model results are robust to alternative specifications of the macroeconomic control vector. Finally, a time trend is included in all models. A summary of all model variables is provided in table 1.

Variables				
Variable	Definition	Mean	Std. Dev.	N
Growth rate aggregate collections	Annual growth rate in Total sales tax revenue per month	0.047	0.075	149
Thunder1	Binary: 1 for each month from November 2008 forward, 0 otherwise	0.421	0.495	164
Change in home games	Year-to-Year difference in the number of home games played by the Thunder	0.315	2.159	149
Change in away games	Year-to-Year difference in the number of home away played by the Thunder	0.309	1.989	149
Change in nonfarm employment	Year-to-Year difference in the number of non-farm employees in Oklahoma City	4.950	10.624	149
Recession1	Binary: 1 for each month of a national recession, 0 otherwise	0.171	0.377	164
Change in active rig counts	Year-to-Year difference in the number of oil and gas drilling rigs operating in Oklahoma	3.453	44.763	148
Growth rate state personal income	Annual growth rate in Oklahoma nominal Personal income, per month	0.051	0.045	165
Growth rate crude oil spot price	Annual growth rate in West Texas Intermediate Crude Oil price, per month	0.143	0.322	165
Growth rate natural gas spot price	Annual growth rate in Henry Hub Natural Gas Spot price, per month	0.137	0.549	165

ANALYSIS

Year-over-year growth rates of aggregate tax collections are modeled as a function of regional economic activity, a time trend, a Thunder amenity effect, and fluctuations in the number of home and away games played. Tax rates, generally a component of revenue models, were unchanged over the entire observation period and are therefore omitted from our analysis.

Using a General Linear Model we estimate the following model:

GR Agg Collections_t

$$= \alpha + \beta_1 * Thunder + \beta_2 * (Home_t - Home_{t-12}) + \beta_3 * (Away_t - Away_{t-12}) + \sum_{j=1}^n \gamma_j * X_t + t + \varepsilon_t$$

A positive fiscal impact attributable to the presence and operations of the Thunder franchise would be expected to manifest in either or both of the coefficients on the Thunder presence and change in home games played being reported as positive and statistically significant. The primary purpose of the investigation is the influence of a change in the number of home games – the one-time events for that month but, also of interest, is a secondary investigation of the potential amenity effect captured by the Thunder presence binary indicator.

RESULTS AND DISCUSSION

The results are reported in table 2 with nine alternative specifications of the macroeconomic control vector. Across all models, the Thunder presence variable is positive and statistically significant, but may be overstated as a result of lingering serial correlation. This finding is consistent with the anecdotal evidence that the arrival of the Thunder as a permanent Oklahoma City franchise is correlated with a rapid development of the city's core as both businesses and residents return to the city center. We acknowledge that it is difficult to interpret the magnitude of the estimated amenity effect, but our findings suggest we cannot dismiss the notion that a professional sports franchise can be an important component of the urban amenity complex and a catalyst for encouraging density.

Of course, our findings are not necessarily portable to other locales. It may be that the amenity effects are concentrated in the city's first franchise, where the franchise is most likely to be a significant component of the urban amenity portfolio, while diminishing returns exist to expansions into subsequent franchises. Similarly,

the amenity returns to Oklahoma City may be exaggerated by its economic geography. Oklahoma City is one of the largest major metropolitan areas in the nation as measured by area (square miles). In terms of area, Oklahoma City is roughly the size of Houston (about 600 miles²) and considerably larger than Dallas, Chicago, or San Diego. As such, Oklahoma City is historically one of the least dense metropolitan areas and conceivably was poised to benefit disproportionately from the productivity and agglomeration benefits associated with increased density. It is possible that the amenity effect is manifest through increased population growth rates generally or expedited urbanization of the city's core. Finally, it should be noted explicitly that our findings do not necessarily imply the optimality of public support for a professional sports franchise as there are potentially other public investment and infrastructure projects that could have impacted the urban amenity portfolio similarly.

In contrast to the positive and statistically significant amenity effect, we find no evidence of a contemporaneous impact on city sales tax collections. Across all models, playing more home games in a given month relative to the same month in the previous year does not appear to have a positive effect on year-over-year collections growth. This result is consistent with the literature on consumption substitution that concludes one-time events merely shift expenditures from one activity to another with no net increase in aggregate taxable activity. In our dataset, the months with the greatest change in home games played are the result of making a deep playoff run. For example, in the Thunder's second year the team secured the eighth and final playoff spot and faced the would-be champions that year, the Los Angeles Lakers. The Thunder lost the series in six games, but in the process secured three additional home games in Oklahoma City that were not part of the economic landscape the previous May. If a contemporaneous effect existed, we would expect to find it in this one-time event of hosting three NBA playoff games. However, purchase of playoff tickets is not a taxable sale. Therefore purchases of playoff tickets may actually be a substitution in discretionary spending away from taxable activities and towards a nontaxable activity. In addition to variations caused by playoff performance, our dataset also captures the effects of the 2011 NBA lockout. The combination of playoff performance and the lockout provides ample opportunity to find a contemporaneous effect if it existed in the dataset.

Table 2
Dependent Variable: Growth Rate of Aggregate Sales Tax Collections

Variable	1	2	3	4	5	6	7	8	9
Intercept	0.0916†	0.0936†	0.0944†	0.0384†	0.041†	0.0448†	0.0555†	0.0525†	0.0585†
Thunder1	0.0706**	0.0653**	0.0595**	0.0532**	0.0458*	0.0459*	0.0696**	0.0588**	0.0591**
Change_Thunder_Home_Games	-0.0031	-0.0035	-0.0036	-0.0034	-0.0041	-0.004	-0.0036	-0.0042	-0.0041
Change_Thunder_Away_Games	-0.0026	-0.003	-0.0028	-0.0014	-0.002	-0.0022	-0.0021	-0.0023	-0.0025
Growth_Rate_NonFarm_Employment	1.8494†	2.3853†	1.7463†	-	-	-	0.737	0.5937	0.6441
Change_rig_count	0.0004†	-	0.0005†	-	-	0.0001	0.0001	-	0.0001
Growth_rate_personal_income	-	-	-	0.9561†	0.9912†	0.9314†	0.7336†	0.8346†	0.7317†
Recession	0.0105	0.0023	0.0108	-0.0241	-0.023	-0.0196	-0.0123	-0.0158	-0.0106
Growth_rate_crude_oil_spot	-	0.0042	-0.0136	-	-0.0249	-0.0262	-	-0.0204	-0.022
Growth_rate_nat_gas_spot	-	-0.0082	-0.0134	-	-0.002	-0.0035	-	-0.0029	-0.005
TimeTrend	-0.0012†	-0.0013†	-0.0012†	-0.0008†	0.0007**	0.0007**	-0.001†	-0.0009†	-0.001†
adj. R2	0.265	0.221	0.266	0.299	0.299	0.298	0.299	0.299	0.298
N	148	149	148	149	149	148	148	149	148
Durbin-Watson	1.18	1.12	1.2	1.2	1.2	1.21	1.22	1.22	1.23

† = significant at 1%, ** = significant at 5%, * = significant at 10%

CONCLUSION

It often seems that economic development agents support the economic benefits of professional sport franchises with an enthusiasm that is only matched by the passion with which economists dismiss them. Perhaps the truth lies somewhere in the middle and benefits from case-specific rather than generalized analysis. We investigate the case of Oklahoma City, examining specifically the municipal fiscal impacts of the city's first and only major professional franchise. We find no evidence that the variation in the number of home games played has a statistically significant effect on sales tax growth. However, we do find some evidence of an amenity level effect, suggesting the franchise is an important component of Oklahoma City's developing urban amenity portfolio.

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