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The Effects of Bringing an NBA Franchise to a City on Employment: A Case Study of Memphis, Oklahoma City, Orlando, Sacramento, and Salt Lake City

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Claremont McKenna College

The Effects of Bringing an NBA Franchise to a City on
Employment: A Case Study of Memphis, Oklahoma
City, Orlando, Sacramento, and Salt Lake City

Submitted to
Professor Ricardo Fernholz

By: Ravi Shah

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Abstract:

This paper utilizes a case study approach to explain the impact of having a franchise from the National Basketball Association (NBA) move to a city where a team from the four major American sports league had not existed on employment levels. This paper utilizes the synthetic control method to examine employment in Memphis, Oklahoma City, Orlando, Sacramento, and Salt Lake City. Applying the synthetic control method, this paper finds that employment is not impacted positively as the stadium proposals suggest they will when putting forth subsidy bids. Due to the large costs imposed on taxpayers as a result of the subsidies franchises receive, further research should be conducted to look at the impact of spending on public expenditures instead of stadiums and its impact on employment levels.

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I. Introduction:

This paper looks to explain the impact of bringing a National Basketball Association (NBA) franchise where no team from the Major League Baseball (MLB), National Football League (NFL), or National Hockey League (NHL) exists on employment levels by utilizing the synthetic control method. A typical time-series analysis cannot be used because it would encompass each city's own economics at the time the franchise was granted. Instead, this paper uses the synthetic control analysis which uses a donor pool to create a "synthetic" city meant to replicate how the city would have performed had the franchise not moved there. The donor pool consists of a combination of Metropolitan Statistical Areas (MSA) who do not have a franchise from a major sports league and also has similar employment and population levels at the treatment date. The evolution of the counterfactual in the post treatment period mimics the treated MSA's economics without treatment, and is the basis of the comparative case study between treated MSA and "synthetic" MSA. This paper finds that for four of the five MSA studied the impact on employment levels are not positively affected as stadium proposals would suggest. The implications of the results provided should be used to inform citizens on the true costs imposed on themselves when voting to approve or deny subsidies to build a new stadium.

The role of sports in modern society extends far beyond the entertainment value athletes provide to spectators. Athletes and their representative leagues have grown to be an integral part of America's culture as role models, businessmen, and philanthropists. This amplified role and popularity of sports over the past twenty years are in large part due to its increased accessibility locally and globally that resulted from the recent 26 billion dollar broadcasting television deal. This has resulted in soaring valuations for franchises

especially in the NBA where two of the most recent teams sold in Houston and Los Angeles have sold for upwards of two billion dollars (Cato 2017). In an annual column, Forbes estimated the average value of an NBA team is 1.365 billion dollars in 2017 compared to just 369 million dollars in 2001 (Ozanian 2011). These climbing valuations have allowed NBA franchises to leverage the city where they are enfranchised to build new stadiums and facilities more frequently to appease the owner of the team. Since 1990, every NBA team, except the New York Knicks who play in Madison Square Garden known as the Mecca of basketball, has built or in the process of building a stadium (Goldberg 2017). Cities without a franchise are constantly lobbying the NBA to allow an expansion franchise or relocation of a current team by publicizing the benefits the city would provide to the leagues popularity and the benefits the team would provide to its city's residents. This forces pressure on current enfranchised cities to provide the latest facilities as they are subdued to the demands of the franchise because of the threat of relocation. The problem is not getting the newest facilities, but rather how the stadiums are financed. Stadium subsidies for NBA arenas are well over 100 million dollars and come at the cost of taxpayers (Crompton 2011). The rationale for this is that cities with an NBA franchise see a boost in employment, but evidence provided in this paper show no sign of employment growth and in four of the five cities examined would have been better off without an NBA team.

In order to understand the dynamics between city and franchise, it is necessary to understand the economics of sports as a monopoly. Basketball is a monopoly because there is only one supplier of basketball at the professional level in the United States and the league commissioner controls the amount of firms or teams allowed to enter the league. Similarly, the league controls, reviews, and decides on franchise relocation. The barriers

to enter the professional sports business are exceedingly high due to the high monetary costs and more so the power of established popularity of the league and its players. This has already been borne out with the rise and fall of the American Basketball Association (ABA). Founded in 1967, the ABA sought to bring an entertainment value to basketball that the NBA lacked at the time by introducing a flair to basketball meant to encompass the backyard style of play. They introduced the three point shot, a colorful ball sporting the American flag colors, the Slam Dunk Contest, and a shot clock to speed up the pace of play. This style of basketball captured fans' imagination and the league saw its popularity rise, but its lack of television rights, a major source of revenue for teams, led to financial losses for teams (Lidz 2017). This led to an inevitable merger with the NBA, as it became clear that two leagues in the same sport could not survive. Even though the teams as a whole are in direct competition with each other, the league as a whole operates as a cartel. The league's commissioner provides the voice of the league after taking inputs from the different owners but in the end the commissioner of the league controls the decisions related to relocation and expansion.

This was seen when the ex-owner of the Charlotte Hornets began to lose money and needed to sell his team in 2010. The observed market value at the time was around 200 million dollars, and Larry Ellison, co-founder of Oracle, offered to buy the team for 350 million dollars. Even though this offer was well above market value the commissioner at the time, David Stern, blocked the deal because he did not want Ellison to move the franchise to Oakland where Oracle was founded. Instead the league took over the franchise and later orchestrated a sale to an owner who would keep the franchise in Charlotte (Bennett 2011). This exclusivity of the market grants franchises extraordinary powers over

the cities because it forces cities to provide subsidies for new stadiums and facilities in order to convince their respective franchises to stay.

The best illustrated example of this is the move of the Grizzlies from Vancouver to Memphis in 2001. In the 1980's the NBA established an expansion team in Vancouver as it looked to leverage its increased popularity in the United States into Canada. The franchise's career winning percentage from 1995-2001 of 28 percent coincided with a weak Canadian dollar and caused the franchise to lose money as popularity of the team waned. The city of Memphis capitalized on this opening by beginning to construct its first arena costing 113 million in 2014 dollars, The Pyramid Arena, in the hopes of enticing the NBA to choose Memphis as the next city to host a franchise. After completing the move after the 2000-2001 season, the Grizzlies played in Pyramid Arena for just 3 years before the team was able to convince the city yet again to build a bigger arena, The Fedex Forum. The total cost was 312 million in 2014 dollars and an additional 35 million dollars in subsidies to persuade local businesses to occupy the now vacant Pyramid Arena (Morris 2001). This interaction between city and franchise highlights the leagues stronghold over cities as the league exercises its monopolistic power to continually force cities to provide the latest facilities at the cost of the taxpayer.

From 1960-2000 70 percent of the costs for these new stadiums have been transferred from their billionaire owners to the cities taxpayers. The total costs of the stadiums have ballooned from under 100 million dollars in the late 1980's to over 500 million dollars today with some surpassing one billion dollars (Noll 1997 and Zhou 2014). The subsidies for construction of stadiums and facilities can be given two ways, directly or indirectly. The direct way is that a certain percentage of tax revenue the city government

receives is earmarked for the construction and maintenance of the stadium. The city can also give tax breaks to the stadiums, which indirectly is a subsidy because it alleviates a large portion of the taxable income the franchise would receive during its operations (Isidore 2015). In both cases, the result is the same and the city is on the hook for stadium financing sometimes lasting up to 30 years. This is due to the city having to pay back the original tax exempted municipal bonds at a later time.

Sports stadiums are seen as a public good and thus allowed to be subsidized by government projects pending approval from their constituents. The early funding of sports stadiums in the twentieth century were mainly financed privately. The exceptions were stadiums in Los Angeles, Chicago, and Cleveland, which received subsidies as part of a broader strategy to land The Olympic Games (Gleeson 2018). The paradigm shift to public financing happened in 1969 with the passing of the Revenue and Expenditure Control Act of 1968. In the act it states, “The second Senate amendment (sec. 10) dealing with industrial development bonds provided that interest on those bonds (as defined in the amendment issued after January 1, 1969 was not to be considered tax-exempt interest. The amendment exempted bonds issued with respect to certain listed facilities. These facilities included (among others) sports facilities, convention and tradeshow facilities, airports, docks wharves, and grain storage facilities, parking and certain other transportation facilities, facilities for furnishing air or water pollution abatement facilities, and facilities used by a State or local government in an active trade or business” (U.S. Government).

This act was later superseded by the Tax Reform Act of 1986 under Raegan’s tax cuts that aimed reduce taxes on individuals and stop the loophole of stadium financing by

the taxpayers. This act removed the exemption status for stadiums first created in 1968. It did so, by establishing new guidelines on the characterization of private bonds in section 57 Items of Tax Preference subsection 5 Tax-Exempt Interest (U.S. Government). TRA86 categorized a bond as private if it met two conditions: (i) more than 10 percent of the bond proceeds were to be used by a nongovernmental entity, and (ii) more than 10 percent of the debt service was secured by property used directly or indirectly in a private business. (Drukker, Gayer, Gold) This means that in the direct subsidy a bond issued for stadiums can retain its exempt status if it violates either the first test, the private business use test, or the second test, the private payment test. Since the stadiums are being used by the franchise which is a nongovernmental entity more than 10 percent of the time, in all cases it will pass the private business use test. In order to pass the second test, it says that to qualify for tax exemption status no more than 10 percent of the debt service can be secured by the franchise itself. This means that any state or local government can qualify bonds for tax exemption if it puts up more than 90 percent of the costs. This funding cannot come from stadium generated tax revenue, but rather tax revenue from its normal taxation practices (Drukker, Gayer, Gold). The implications that result are colossal because money earmarked for public spending on safety, infrastructure, educations, etc., now receive less of the cities government tax revenue and the ramifications for cutting public spending on more pressing needs can be extremely high.

Since the cost of the stadiums and its subsidies are so high, the constituents of the city have to approve any decision to finance the costs since funding the stadium often results in higher taxes. If the costs are so high, what rationale would citizens have to approve the financing costs? The perceived benefits must be greater than the costs, and in

proposals made to cities it is often promulgated that the cost of the stadium will be repaid in the form of a growth in jobs. To address this question it is necessary to first look at the literature on the effects of having a sports team on the local economy, and then conduct analysis of the effect of bringing an NBA franchise to a city on employment growth. This paper finds that the effect on employment growth for cities that are granted an NBA franchise for their first professional sports teams of the four major sports leagues are not impacted positively, but it cannot be concluded consistently at a statistically significant level, in large part due to the small economic impact sports teams have relative to other industries.

Section two of this paper talks about previous literature on sports economics as well as the costs and benefits a sports team provides to a city. Section three discusses the synthetic control method as well as the data used in the study. Section four discusses the results of the paper as well as its implications on stadium subsidies in the future.

II. Literature Review:

The increased popularity of sports across the globe has coincided with an increase in demand for the newest stadiums and the number of cities willing to subsidize these facilities. This is a result of the monopolistic power the leagues have over the cities willing to host a franchise. Since so many cities are clamoring to get a sports franchise this results in city officials making unduly aggressive bids in the form of subsidies. If so many cities are willing to impose taxes on its constituents to cover the subsidized amount, it must be true that the benefits of hosting a franchise outweigh this cost. Much of the literature has looked into this exact question, and what has been found is that there is often a chasm

between the economics of advocates for a franchise in their city and what is borne out empirically. This is due to the opaque economic assumptions made by those advocating for the subsidy in hopes of enticing citizens into voting for their proposal. In order to understand this more fully it is essential to disaggregate the benefits and costs of subsidizing a franchise and see what causes these discrepancies between proposed impact and actual impact.

In 2015, the annual subsidies provided by the state government for all stadium subsidies in the form of municipal bonds are in the range of billions of dollars, and the yearly tax exemptions provided cost cities around 146 million dollars a year based on the 2,700 securities already issued (Isidore 2015). These subsidies have to be repaid at some point and are done so with an increase in taxes. Most people would be excited and willing to pay a small percentage increase in taxes to get an NBA team. However, what is often misunderstood by the common taxpayer is that a percentage increase in taxes to fund the stadium should not be measured in absolute terms that the subsidy proposal simplifies. Measuring in absolute terms fails to account for the opportunity cost associated with the subsidy and thus should be measured by the reduction in net consumption benefits caused by imposing the tax. This means that the total cost of the subsidy is the costs paid by consumers in the form of the increased taxes plus the cost of collecting and enforcing the tax and any deadweight loss that is created by driving a wedge between the total cost of the stadium and the taxes paid by constituents (Shoven and Whalley 1984). By educating constituents on the true costs of the stadium, it allows for voters to make more informed decision making during the stadium subsidy approval process. The implications are far-reaching in economics and politics and educating constituents will allow them to voice a

versed opinion on whether or not they will be better off approving a stadium subsidy.

The benefits of hosting a franchise are measured by the tangible and intangible benefits that constituents receive. Since quantifying intangible benefits proves challenging, the benefits in proposals are made so that the tangible benefits are equal to or exceed the cost of the stadium. These proposals are crafted to make it seem as if there is no risk in the project and that the city and its citizens would benefit both in the short term and long term. However, the assumptions used to reach this conclusion have proved exaggerated in ensuing studies. To understand the total benefit of hosting a franchise, it is necessary to decipher between the types of benefits and attempt to quantify intangible benefits of hosting an NBA franchise.

The most common mistake made by advocates of providing subsidies to fund a stadium is how the perceived impact is measured. This is best illustrated in the context of a funding plan put forth by a city to get taxpayers to approve subsidies. In the recent subsidy funding proposal for Levi's Stadium in San Francisco, the proposal claims that the 100 million dollars in public financing to build a shopping mall around the stadium in Santa Clara, California will be self-financing. The president of the San Francisco 49ers went as far to say the city, is not at risk for anything (Adelmann 2014). While it may be true that the gross economic activity in that area may be enough to cover the costs, this proposal does not consider the opportunity cost of providing the subsidy. The proposal assumes that no further city development would occur in the Santa Clara area and that money spent at the shopping mall and stadium will not substitute for other sales in the surrounding area. Coates and Humphreys (2003) showed that a substitution of discretionary income occurred with an increase in spending in the recreation and amusement sector, but was offset by a

decrease in the eating and drinking establishment and retail sector.

Similarly, much of the flaws in stadium proposals relate to the uncertainty in future projections that are propped up to make the subsidy look attractive to the taxpayer. Studies done by Hamilton and Khan (1997) evaluate the realization of the revenues put forth by original subsidy documents and found that the actual results fell way short from the proposed realization of income (Noll 1997). Much of this divergence stems from the aforementioned evaluation of benefits in absolute terms rather than looking at the opportunity costs and benefits. For example, if workers who constructed the stadium would otherwise work on a different project with the same income, the net effect of adding a stadium is zero because employment and income would be accounted for in the other project. This means that benefits attributed to a franchise coming to the city should be new rather than counting reallocation from other projects as part of the benefit like typical stadium proposals do. Noll and Zimbalist (1997) promote the idea of measuring the total benefit attributable to a franchise coming to a city as the net benefit not the total benefit because it takes into account opportunity cost.

Noll and Zimbalist (1997) summarize the economic impact in an equation where $\text{net benefits} = (\text{consumption value of team to fans}) - (\text{annual costs of stadium} + \text{team operating cost}) - (\text{environmental, congestion and public safety costs}) + (\text{increase in local income} * \text{multiplier})$. The consumption value has three forms of revenue: attendance, broadcasting, and positive externality of having a team. Stadium costs are net of any rent paid by the team to have games in the stadium. The environmental congestion and public safety costs are negative externalities that a stadium creates. Since the consumption value of the team is a fairly straightforward calculation, the multiplier number chosen in stadium

proposals is where much of the stadium benefit is derived from and measuring in absolute terms instead of relative terms inflates the multiplier chosen, thus inflating the perceived benefits of the stadium (Noll 1997).

The multiplier effect takes place when outside dollars are spent in the city hosting the franchise as well as local dollars that remain in the city and are spent again in the city. Stadium proposals often set their multiplier from 1.5 to 3, which doesn't reflect economic reality because they don't measure net economic activity (Rosentraub 1999). When considering for the effects of local spending if professional sports were present, Crompton (2011) found that the multiplier is actually between 0.4 to 0.8 and increases as the size of the population increases. This small number is because most of the income that sports teams generates goes to a concentrated group of wealthy individuals who allocate more income to taxes and savings. Secondly, the income that is generated is often spent outside the area of the sports teams because often players and executives do not permanently live in the city they play for. "While 93 percent of average employees live in the area where they work, only 29 percent of NBA players do the same" (Leeds 2018). Similar studies by Zimbalist (1997) demonstrate that using a standard local public expenditure multiplier exaggerates the multiplier effect of sports expenditures by over 400 percent. The last argument is the concessionaire in charge of the stadium takes a large portion of the revenue generated from concessions to the city where the company is located, which is not the franchise city. In sum, the overestimation of benefits is due measuring in gross terms instead of relative terms and often results in cities being worse off or having no impact than if the team had not moved there.

Work done by Baade (1994), show that there is no significant income growth from

1958 to 1987 for cities that hosted a franchise. Similarly, work by Coates and Humphreys (1999, 2003) have found that some new stadiums and sports teams reduce the income individuals receive in some cities that host a sports franchise. This is a result of the unilateral use of stadiums whose occupancy rate ranges from 8-100 days a year. It seems overwhelming that the impact franchises have on a city's economic activity is negative or nonexistent, but this is without consideration to the nonpecuniary benefits a franchise brings.

While it is much harder to quantify the intangible benefits of having a professional sports teams, several studies have been done to estimate the effect of intangible social benefits. "The presence of professional sports can bolster the perceived quality of life in a community hosting it by nurturing a sense of civic pride among residents" (Howard 2013). The intangible benefits of national attention and civic pride are captured in "psychic incomes", which is classified as the positive benefit resulting from increased happiness or pride associated with a franchise. Given the nature of these benefits, measuring them quantitatively proves challenging, however several studies have looked to quantify this impact. Johnson, Grootuis and Whitehead (2001) attempt to rectify this issue by developing a method known as the contingent valuation method. This method quantified consumer surplus by looking at the difference between willingness to pay to go to a game if the franchise moved to the city and the actual market price of the ticket. His results were similar to studies conducted in Jacksonville by Johnson, Mondello & Whitehead (2007) and in Portland by Santo (2007). The willingness to pay was outweighed by the amount of the subsidy, implying that the intangible social benefits are not enough to justify the costs.

Now that the true economic costs and benefits of hosting a franchise have been solidified, it is necessary to see the effect of having a franchise has on income and employment growth. In Coates and Humphreys (2003), they found that the effect of real per capita personal income is lowered with the introduction of a sports franchise and has no effect on employment growth. In a study conducted by Whaples (2006), over 80 percent of economist survived either agree or strongly agree that the stadium subsidy should be eliminated based on economic grounds. The reasoning is a result of the lack of recognition of the opportunity costs involved when considering the overall economic impact a team provides to a city. Instead governments should look to finance other underfunded projects that have more potential to stimulate sustained economic growth.

III. Data and Empirical Strategy:

The data on employment levels, per capita income, and population obtained to perform the synthetic control method of the 30 Metropolitan Statistical Areas (MSA) and the cities studied Memphis, Oklahoma City, Orlando, Sacramento, and Salt Lake City were obtained from the United State Bureau of Labor Statistics spanning 1970-2016. The Bureau of Labor Statistics organizes the country into MSA which is the area used in the study.

The goal of this paper is to look at the effect of bringing an NBA franchise to a city where none of the four major sports leagues had existed on employment level. To analyze this impact, the synthetic control method creates a counterfactual to represent how a cities employment growth would have transpired had the franchise not moved there. “The idea behind the synthetic control approach is that a combination of units often provides a better comparison for the unit exposed to the intervention than any single unit alone” (Abaide

2009). In order to create this counterfactual, a donor pool consisting of MSA’s similar to Memphis, Oklahoma City (OKC), Orlando, Sacramento, and Salt Lake City has to be constructed. This involved eliminating MSA’s that did not fit this profile. First cities with sports franchises from any of the four major sports leagues (NBA, NFL, NHL, and MLB) are eliminated. Next, cities with populations greater than or less than 350,000 of the population of the city in question at the treatment date were eliminated. Table 1 shows the 25 MSA that remain.

Table 1: Donor Pool MSA

<p>Albany, NY, Albuquerque, NM, Allentown-Bethlehem Easton, PA, Austin-Round Rock, TX, Bakersfield, CA, Baton Rouge, LA, Birmingham-Hoover, Al, Bridgeport-Stamford-Norwalk, CT, Dayton, OH, El Paso, TX, Fresno, CA, Grand Rapid-WY/MI, Greenville-Anderson-Mauldin, SC, Knoxville, TN, Las Vegas-Henderson-Paradise, NV, Louisville-Jefferson County, KY/IN, New Haven-Milford, CT, Omaha-Council Bluffs, NE/IA, Providence-Warwick, RI/MA, Richmond, VA Riverside-San Bernardino-Ontario, CA, Rochester, NY, Tulsa, OK, Virginia Beach-Norfolk-Newport News, VA/NC, Worcester, MA/CT.</p>
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Las Vegas as an MSA qualifies because in the time period the paper analyzes the Las Vegas Golden Knights had not been announced.

Since none of the cities in the donor pool received a franchise, they provide a good basis to simulate the counterfactual of the five cities in question during the pretreatment period. The weights on each city are selected so that the difference between employment growth of the “synthetic” control and actual city in question is minimized for the ten years prior to the treatment date. The minimized mean square predictor errors uses the “synthetic” city and actual city to create a counterfactual that closely replicates how the city would have performed without an

NBA franchise in the pretreatment period. This “synthetic” city can be used as a comparative case study to see what would have happened to employment levels had the NBA team not moved there in the post treatment period. To analyze the impact, it is necessary to look at the deviations in employment levels between the “synthetic” city and actual city in the post treatment period.

To prove that the validity of these deviations are due to the impact of the franchise moving there, placebo tests are done to look at the efficacy of the model. Placebo tests look to see how well the model works by creating counterfactuals for each of the cities in the donor pool. If the model works well, the deviations in employment growth between each of the “synthetic” donor pool cities and actual donor pool cities would be small. Placebos serve as a form of falsification test. The placebo test distribution is the treatment effect under the assumption that the null hypothesis that an NBA franchise to a city has no effect on employment levels. This is confirmed by conducting p-values to see what the chance is during each year that the deviations took place were random. The null hypothesis in this model is that bringing an NBA franchise to a city has no effect on employment growth. Conducting these tests allows for interpolation of the deviations between the “synthetic” cities and the five host cities. This is done by calculating p-values that looks to define if the deviations that occurred are in fact due to a city receiving an NBA franchise. A p-value measures the impact assuming that the NBA expansion into a host city has no effect on employment growth, meaning the observed difference between “synthetic” host city and actual host city equals to the p-value due to random error and cannot be directly attributed to the NBA’s presence in the city. To be statistically significant at the 95% level and reject the null hypothesis, in favor of the NBA having an effect on employment growth the p-value must be below 0.05.

IV. Discussion and Results

The discussion and results of the model will look at the five cities independently and jointly to see if there are any discernable trends that can be extrapolated. Table 2 shows the weights for each of the five cities counterfactuals in question.

Table 2: Synthetic City Weights from MSA

Donor Pool	Weights	Weights	Weights	Weights	Weights
MSA's	Memphis	OKC	Orlando	Sacramento	Salt Lake City
Albany	0.0%	0.0%	0.0%	0.0%	0.0%
Albuquerque	0.0%	0.0%	0.0%	0.0%	0.0%
Allentown/Bethlehem/Easton	0.0%	0.0%	0.0%	0.0%	0.0%
Austin/Round Rock	0.0%	14.3%	58.2%	11.3%	52.3%
Bakersfield	0.0%	0.0%	0.0%	0.0%	0.0%
Baton Rouge	0.0%	0.0%	0.0%	0.0%	0.0%
Birmingham/Hoover	0.0%	0.0%	0.0%	0.0%	0.0%
Bridgeport/Stamford/Norwalk	0.0%	0.0%	0.0%	0.1%	0.0%
Dayton	0.0%	0.0%	0.0%	0.0%	0.0%
El Paso	0.0%	22.8%	0.0%	0.0%	0.0%
Fresno	0.0%	0.0%	0.0%	0.0%	0.0%
Grand Rapids	50.8%	12.7%	0.0%	0.0%	0.0%
Greenville/Anderson/Mauldin	0.0%	0.0%	0.0%	0.0%	0.0%
Knoxville	0.0%	0.0%	0.0%	0.0%	0.0%
Las Vegas/Henderson/Paradise	9.6%	0.0%	0.0%	0.0%	5.5%
Louisville/Jefferson County	0.0%	23.9%	0.0%	0.0%	0.0%
New Haven-Milford	0.0%	0.0%	0.0%	0.0%	0.0%
Omaha-Council Bluffs	0.0%	0.0%	0.0%	0.0%	0.0%
Providence-Warwick	0.0%	0.0%	0.0%	0.0%	0.0%
Richmond	0.0%	0.0%	0.0%	0.0%	15.7%
Riverside/San Bernardino/Ontario	0.0%	0.0%	41.8%	57.3%	0.0%
Rochester	0.0%	0.0%	0.0%	0.0%	0.0%
Tulsa	0.0%	0.0%	0.0%	17.8%	26.5%
Virginia Beach/Norfolk/Newport	39.6%	26.4%	0.0%	13.5%	0.0%
Worcester	0.0%	0.0%	0.0%	0.0%	0.0%

Table 2 demonstrates that a lot of the cities from the donor pool are chosen for each counterfactual at varying percentages. Figures 1 through 5, show the path of actual employment levels (line) in the cities studied and the “synthetic” control employment (dotted line) whose weights are shown in Table 2.

Figure 1: Memphis Employment and “Synthetic” Memphis Employment

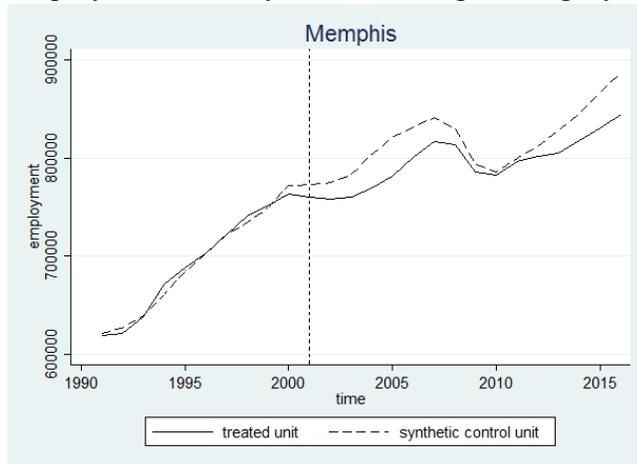


Figure 2: OKC Employment and “Synthetic” OKC Employment

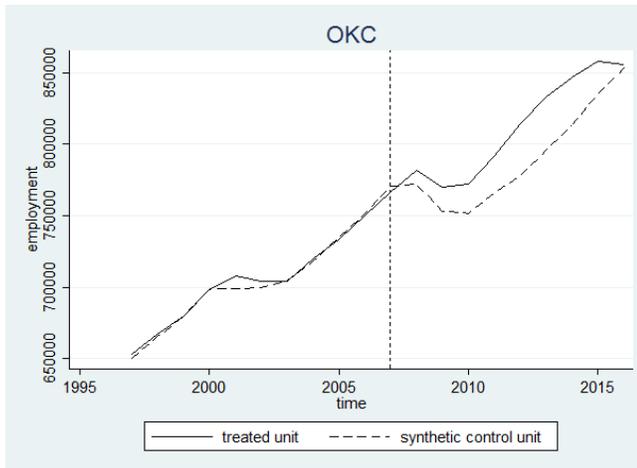


Figure 3: Orlando Employment and “Synthetic” Orlando Employment

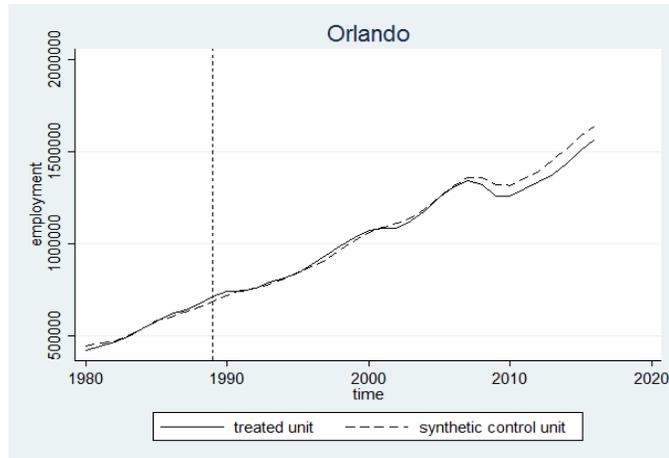


Figure 4: Sacramento Employment and “Synthetic” Sacramento Employment

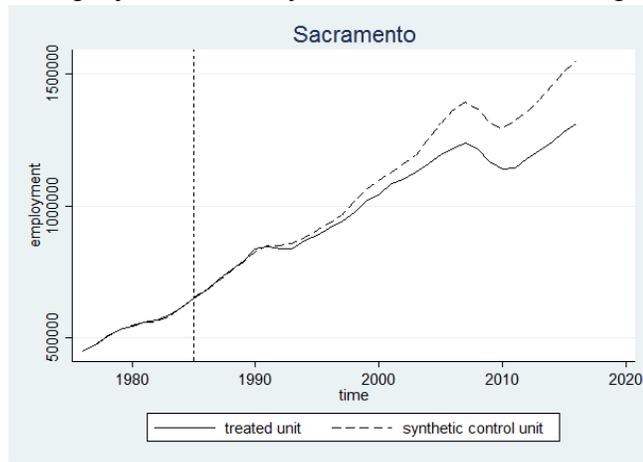
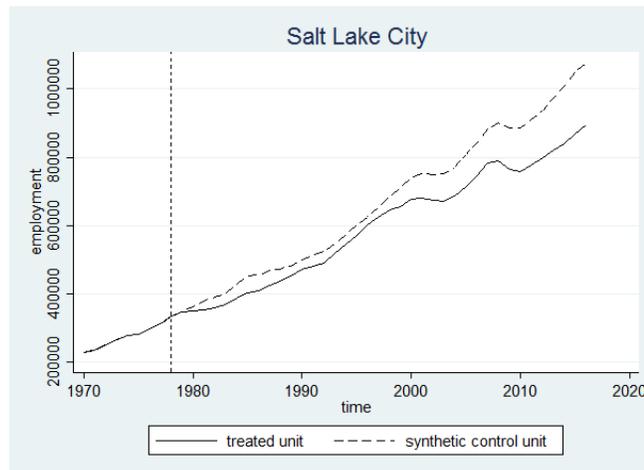


Figure 5: Salt Lake City Employment and “Synthetic” Salt Lake City Employment



For Memphis (Figure 1), Orlando (Figure 3), Sacramento (Figure 4), and Salt Lake City (Figure 5) the actual employment growth in each of those cities are less than what the model would have predicted they would be at without the NBA franchise, while Oklahoma City (Figure 2) showed that bringing a franchise to a city increased their employment growth. The synthetic control method is a comparative case study where inferences can be made based off of the deviations between the two lines. The deviations that occur cannot be taken in isolation, and placebo tests must be conducted to ensure the effect of bringing an NBA franchise was the cause for the changing employment levels in each MSA and not chance. Placebo tests are performed by undertaking the same “synthetic” MSA process used to derive the counterfactual for the host city, but used for each of donor pool MSA. If the donor pool MSA and their counterfactual have little deviations from their actual path, the model’s efficacy is confirmed and the p-value for the host city will be statistically significant. The placebo effects graph demonstrate the impact at each time period in the post treatment period of bringing an NBA franchise to that city. These are the differences between the actual city employment and “synthetic” city employment. These distributions for each city are shown in Figures 6-10 below, and each cities respective p-values per year are shown in Table 3.

Figure 6: Effect of Stadium on Memphis Employment Levels

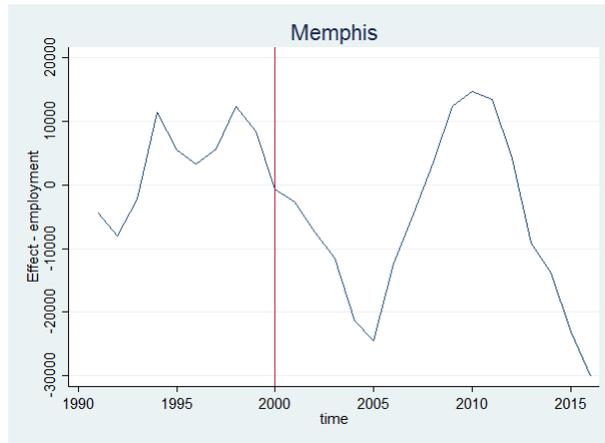


Figure 7: Effect of Stadium on OKC Employment Levels

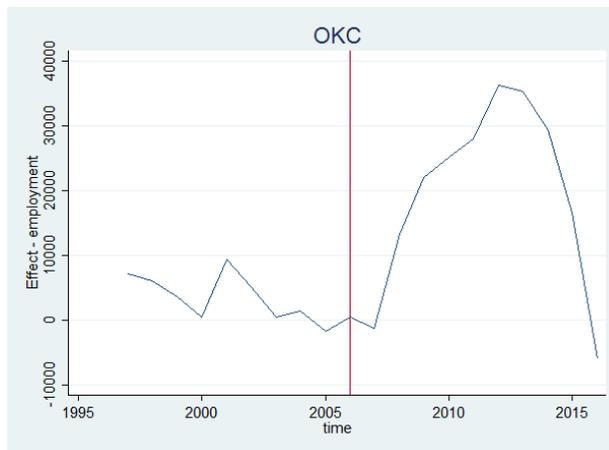


Figure 8: Effect of Stadium on Orlando Employment Levels

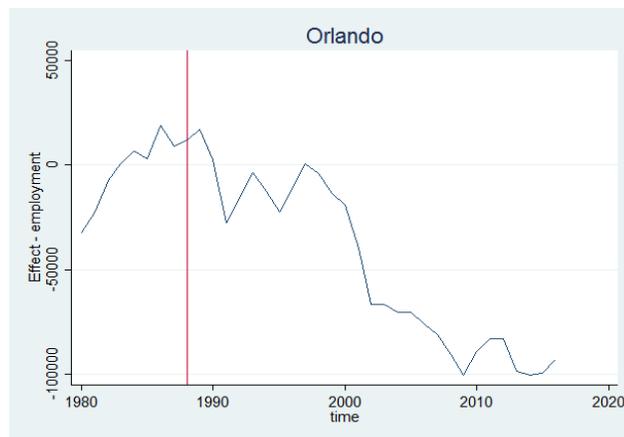


Figure 9: Effect of Sacramento Stadium on Employment Levels

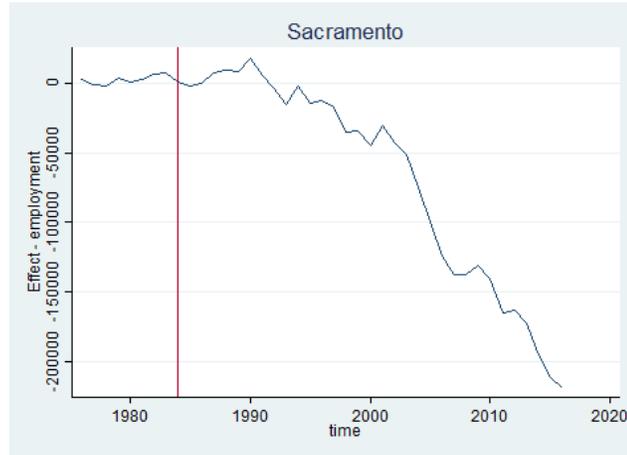


Figure 10: Effect of Salt Lake City Stadium on Employment Levels

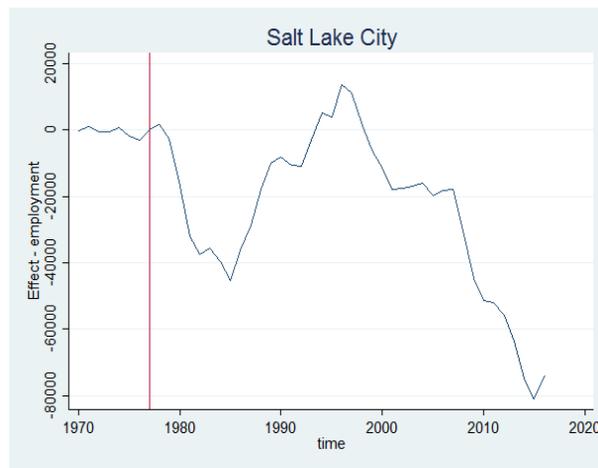


Table 3: P-Values from Placebo Tests

Year	p-value	p-value	p-value	p-value	p-value
Cities	Memphis	OKC	Orlando	Sacramento	Salt Lake City
1979	N/A	N/A	N/A	N/A	0.8
1980	N/A	N/A	N/A	N/A	0.84
1981	N/A	N/A	N/A	N/A	0.24
1982	N/A	N/A	N/A	N/A	0.16
1983	N/A	N/A	N/A	N/A	0.16
1984	N/A	N/A	N/A	N/A	0.28
1985	N/A	N/A	N/A	N/A	0.32
1986	N/A	N/A	N/A	N/A	0.28
1987	N/A	N/A	N/A	N/A	0.4
1988	N/A	N/A	N/A	0.92	0.48
1989	N/A	N/A	N/A	1	0.68
1990	N/A	N/A	N/A	0.72	0.84
1991	N/A	N/A	N/A	0.64	0.8
1992	N/A	N/A	N/A	0.76	0.76
1993	N/A	N/A	N/A	0.48	0.96
1994	N/A	N/A	N/A	0.8	0.8
1995	N/A	N/A	0.24	0.84	0.8
1996	N/A	N/A	0.92	0.8	0.72
1997	N/A	N/A	0.36	0.8	0.76
1998	N/A	N/A	0.68	0.64	1
1999	N/A	N/A	1	0.64	0.92
2000	N/A	N/A	0.76	0.64	0.84
2001	0.84	N/A	0.72	0.72	0.84
2002	0.52	N/A	0.6	0.64	0.84
2003	0.52	N/A	0.64	0.64	0.84
2004	0.44	N/A	0.64	0.6	0.84
2005	0.44	N/A	0.64	0.56	0.72
2006	0.56	N/A	0.68	0.52	0.8
2007	0.8	0.84	0.68	0.48	0.84
2008	0.76	0.24	0.68	0.44	0.72
2009	0.72	0.36	0.52	0.44	0.64
2010	0.68	0.32	0.56	0.32	0.6
2011	0.64	0.28	0.64	0.24	0.64
2012	0.88	0.16	0.64	0.24	0.6
2013	0.68	0.16	0.64	0.24	0.6
2014	0.64	0.28	0.68	0.24	0.56
2015	0.44	0.64	0.68	0.24	0.56
2016	0.28	0.88	0.68	0.2	0.6

In order to say definitively that the cause of the employment changes from year to year for the respective cities was caused by the NBA franchise the p-values in Table 13 must be below 0.05. From the table it is clear that none of the levels for any of the cities are statistically significant at the 5 percent level, though some are close. On average, the deviations from Memphis, Oklahoma City, Orlando, Sacramento, and Salt Lake City were 61, 42, 65, 57, and 66 percent due to chance respectively. This is because the employment

path from the five treated MSA's did not deviate significantly from the synthetic counterparty created during the placebo tests. This makes concrete conclusions impossible to make, and these results need to be understood within the broader context of the economy of each of the cities.

From Figure 6-10, only OKC experienced growth in employment levels. It is possible that the increase in employment levels are a result of franchises popularity and star players, but it is likely due to the growth in the energy sector. Oklahoma City's biggest employer is the energy sector, which experienced a lot of growth from 2009-2013 followed by a decline in 2014-2015 before rebounding slightly in 2016 (Bloomberg 2016). The change in the energy sector returns coincide with the large employment gains followed by the losses exhibited in Figure 7, which may explain what the model cannot. Further research needs to be conducted to see why Oklahoma City is the lone outlier.

The limited statistically significant impact seen across the five cases shows that much of the deviations in the model were a result of pure chance. To understand why, it is necessary to look at the employment opportunities that an NBA franchise brings to a city. Besides the construction effect that is seen in the first couple years after construction begins on the stadium, the NBA has a limited impact on employment growth as a whole. Besides the players, front office, and stadium workers there are no significant employment opportunities that a NBA franchise brings to a city. This is why people should be cautious when looking at stadium proposals presented by city officials because much of their assumptions is based on the multiplier effect being borne out in the city. If that were the case, the multiplier effect would be present in employment growth. This is because the local multiplier effect stadiums are said to produce would have created additional jobs

because of the increased demand for goods and services that a stadium induces. For example, much of the cities proposals are on urban development and if the demand for eating around a stadium would increase because of the game being played later that day then the restaurant would have to hire additional workers to meet this demand. This has not been borne out empirically based on this model and should shed light onto the deceptive assumptions presented by city officials to allow subsidies for stadiums.

The results of this study make sense when taken into the context of the overall economic activity in the five cities in question. Even though they are the five smallest cities to receive an NBA franchise the economic impact that an NBA franchise brings dwarfs in comparison to the rest of the economic activity. A study conducted by Leeds (2018) in the city of Chicago found that if all five of the cities sports teams left, the overall loss on the economy of Chicago would be a fraction of 1 percent. This highlights the fact that sports are not in fact an economic activity generator. This conclusion brings forward the fact that cities should not in fact provide subsidies to franchises to build stadiums as it has no positive effect on employment growth. The small activity level overall of sports makes it hard to prove definitively that this is the case. This has several implications with the most important being that cities are going to continue to subsidize stadiums for franchises because of their perceived benefits to the community that have not been borne out. Politicians should take these results as well as other economic studies done on the impact a franchise brings to a city when evaluating whether or not to subsidize a franchise.

V. Conclusion:

The purpose of this paper was to analyze the effect of bringing an NBA franchise to a

city on employment levels using the synthetic control method. It was borne out that for all five cases any deviations observed in Figures 1-5 were not a direct result of bringing an NBA franchise to the city and rather other economic factors within each city caused the deviations from the model. The results of this paper are generally in line with conclusions made by Islam (2017), Coates (2015) and Coates and Humphreys (1999). Further research should be conducted to try to isolate the impact of sports on general economic activity to see if subsidies are the best course of action for the welfare of the overall MSA economy. This proves to be a challenging task because of the limited impact sports makes on the general economy as a whole. The implications of this paper, like others highlights the fact that the end of stadium subsidies does not appear to be in the distant future. Cities will continue to be held hostage by the various sports leagues, and citizens will continue to pay for the cost. While sports is no means a bad thing for society as a whole, the fact that the billionaire owners get the average taxpayer to pay for a majority of the stadium while collecting the revenues seems unfair. Until citizens or the government is willing to stand up to the sports leagues, there is no choice but to build the stadium and hope for employment growth.

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