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HONORS THESIS

The Impact of Professional Sports Franchises on Local Economies

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The Impact of Professional Sports Franchises on Local Economies
Senior Capstone Project for Jeffrey Pierro

ABSTRACT

There is no doubt that professional sports franchises and stadiums generate a significant amount of economic activity, but is the impact on the local economy positive, negative, or neutral? Studies have shown that, while franchises can give the economy a boost in the short term, there are little to no long-term positive effects. This capstone will examine the trend in public financing of stadiums, look at the impact of stadium location, explore the factors of the economy that are impacted by professional sports franchises, and determine if the effects vary by sport or by region. Several major case studies will be examined to provide specific examples, including the most recent Super Bowl in New Jersey. Once the literature review is complete, regression analysis will be used to make an ultimate conclusion on the value of professional sports franchises and stadiums in the United States and the optimal location in which to start a new professional sports franchise in the United States. This will be done using data from 2001-2012 and variables that have been proven to have an impact one way or another. The result will be a prediction of the type and location of the next professional sports franchise in the United States.

INTRODUCTION

I first became interested in examining the economic impact of sports franchises by following the Olympics. Countries put their best effort forward to earn the right to host the Olympics with the hope that it will generate large amounts of revenue and business in the area. The reality is that the entire infrastructure that needs to be built in a city in order to handle the capacity of an international event such as the Olympics is only needed for about a month. Once the Games are over, the fixed costs that are wrapped up in stadiums, hotels, and the Olympic Village are ultimately never utilized at full capacity again. The Olympics are an extreme example of a case in which a sporting event generates massive amounts of revenue in a short span, but over the long run ends up costing the city financially. Is the same trend true of professional sports franchises in the United States? There is evidence to suggest that this may be the case.

One of the biggest costs of a professional sports franchise is the stadium where the team plays. Sports stadiums cost hundreds of millions of dollars to construct; New York's Madison Square Garden alone cost $1.1 billion dollars to build. Owners of the franchise claim that the revenue generated by ticket sales, team merchandise sales, and jobs created will outweigh the costs. However, similar to the Olympics, the stadium is rarely used during the offseason. There are no ticket sales or jobs for stadium employees. The stadium is only generating money for about half of the year. The opportunity cost of building a stadium that only functions seasonally, as opposed to starting small businesses that function year round, indicates that the economic impact of the franchise is not necessarily that significant in the long run.

Another factor that determines the impact of a sports franchise on the economy is the success and popularity of the team. Big-market teams such as the Boston Red Sox, Pittsburgh Steelers, and Los Angeles Lakers are going to have a bigger impact than teams such as the Kansas City Royals, Jacksonville Jaguars, and Charlotte Bobcats. The success of the team plays an important role as well. A team that is consistently making the playoffs and winning championships will draw more fans to the game, sell more team merchandise, and be featured on national television more often than teams that do poorly year after year.

There are also factors that are not directly related to the sport that have an impact on the economy, such as geographic location. Hockey tends to be more popular in the Northeast and Canada because the nature of the sport is cold weather. This will make teams such as the Boston Bruins and Montreal Canadiens more successful financially than teams such as the Phoenix Coyotes or Nashville Predators. The demographics of a city or region should be taken into account as well. The Tampa Bay Rays have been very successful over the past six years, but have one of the worst attendance rates in Major League Baseball because the demographics of Florida feature a large portion of the population that are retired and not interested in attending baseball.

These are just a few of the factors that could potentially affect the impact of a professional sports franchise on its local economy. Many other factors and conditions will be analyzed throughout the course of this paper. I will also dig deeper into the numbers to find the most important factors that determine the economic impact of a sports franchise, and decide if there is an optimal location in the United States for building a new franchise that can be successful.

PUBLIC VS PRIVATE STADIUM FINANCING

Professional sports are a big industry both nationally and internationally. In the year 2000 alone, the United States brought in an estimated $213 billion from gross domestic sports product. Factors impacting the GDP of a local economy include franchise valuation and public contribution to stadium construction. Owners often justify using tax money to build a new stadium because of the positive impact it will have on the economy. However, there has been public debate surrounding the question of how much impact the sports franchise actually has on its local economy. Because of this, there has been a trend away from public financing of stadiums and a move toward private investment. This could indicate public skepticism about the true economic impact of sports stadiums and franchises (Walker, Enz 149-150).

Determining the type and amount of public funding that can reasonably be requested requires an evaluation of a sports team's economic impact on the local economy. Measuring the direct economic benefits such as ticket revenue and merchandise sales is not necessarily difficult, but it is the indirect economic benefits, such as fan spending, that are harder to accurately

measure. Professor Michael Enz states that, although it can be difficult to place a dollar value on intangible benefits of a sports team, the contribution to the community can be significant. For example, people spend time following their favorite teams, and since time has a monetary value, that sports team is adding value to a person's life. Quantifying this economic impact is difficult, but when looking at economic studies it is important to look at the underlying assumptions and the source of the money. Money that is being spent on sports that otherwise wouldn't have been spent at all is more beneficial to the economy than money spent on sports that was redirected away from another business (Walker, Enz 156).

Another important factor to take into consideration regarding the construction of a new sports stadium or facility is its potential for nonsporting events. Both Gillette Stadium and Fenway Park host concerts, festivals, and several other events during their respective offseasons. This opens the door for additional publicity and outside sponsors. A local facility makes it more convenient for consumers to spend money locally rather than travel to an outside market. For example, the MassMutual Center in Springfield has benefited from several sold out concerts and events held there, whereas fans might have gone to see events in Hartford or Boston if they did not have such a facility in their local area. In the case of a professional sports franchise, the economy is benefiting from the spending of the away team's players and fans in their local economy that would not have happened otherwise. Boston Red Sox fans are famous for traveling well, and as a result boost local business in other cities when the Red Sox are in their town (Walker, Enz 157).

One issue with public funding of sports stadiums is the opportunity cost of that money on other projects. Sports stadiums and teams can play an important role in economic development, but at the same time those taxpayer dollars could go toward education, public safety, and public works projects. Many people would consider these things priorities over the establishment of a professional sports franchise. For this reason, it is critical to be aware of the economic resources available in a local economy. It may be the case that public resources should be used to fund municipal projects rather than a professional sports stadium (Walker, Enz 159).

It is estimated that more than $21.7 billion was spent on 95 professional sports stadiums that have been built since 1990, and about two thirds of that funding was from the public. Do these facilities have a positive economic impact and provide the public a return on their investment? Siegfried and Zimbalist agree with Lertwachara and Cochran that the answer is in fact no. Consulting firms support facility construction based on projections with unrealistic assumptions regarding the local value contributed, new spending, and multipliers. In contrast, the academic studies relating to this issue generate results by comparing cities with stadiums to cities without stadiums, controlling for the appropriate variable. These results showed that there was not a net economic increase in the ten cities that acquired new sports teams between 1958 and 1993. It was observed that leisure spending habits changed, but that no additional income or employment growth was brought to the area (Siegfried, Zimbalist 103-104).

People often do not realize that professional sports franchises are actually fairly small businesses compared to the size of the overall economy, which is why many people are misled into believing that sports franchises have a positive economic impact. For example, the St. Louis Cardinals account for less than 0.3% of the economic activity in St. Louis, while the New York Yankees contribute less than 0.03% of the economic output in New York City. A typical sports team employs around 100 people in their front offices and between 1000-1500 people on game day, mostly in low-skilled, temporary, part-time jobs. An NFL team only has between eight and ten home games a year. At four hours of work per game, this equates to just 20 full time, year round jobs. Even if citizens spent the equivalent outside the stadium on things such as hotels, restaurants, etc., the impact on the overall economy would still remain very small (Siegfried, Zimbalist 104).

A key reason why professional sports teams do not promote economic development is due to something called the substitution effect. This concept claims that since most customers have a relatively strict leisure budget, money that is spent on going to a sports game is not additional money, but rather money that is not spent on other leisure activities. For example, a family that attends a football game would have spent that money on going out to eat or going on a vacation. The same is true for out-of-state fans; they are typically in the area for other reasons, so the money they spent on the game would have been spent at other entertainment facilities

in the area. This activity results in a net effect of zero on the overall economy, since the spending is only being redirected, not increased.

Leakage is another important factor in the distribution of revenue from professional sports teams. The majority of revenue goes towards the players and owners. They are usually in the top tax bracket, meaning that over 40 percent of their income leaks directly to the government. Players also save a higher rate of their income, which leaks out of the local economy and into the world's money markets. Finally, players and owners often do not live in the region year-round, so that money is being spent elsewhere (Siegfried, Zimbalist 105-107).

The trend in the past twenty years has been toward an increasing number of new sports facilities. Furthermore, the trend is away from single-purpose stadiums and toward more versatile facilities. A professional sports stadium could host a basketball game one night and a hockey game the next night. It could be used for a big-time college game such as the BCS Championship or a big-time professional game such as the Super Bowl. Facilities can also host events that are not even sports related, such as concerts, and coexist as one attraction that is part of a bigger shopping area, such as Gillette Stadium in Patriot Place. These factors complicate whether or not a sports franchise positively impacts the economy, because sometimes more than just the team benefits from the stadiums.

There are currently over 100 major sports facilities in the United States today, 70% of which are publicly owned. Cities are issuing hundreds of millions of dollars of bonds to subsidize these facilities and using certain taxes to pay off their debt. The hope is that the facilities will provide more economic benefit than it cost to construct them. This has become more controversial recently, but has not stopped cities from continuing to subsidize new sports facilities. There are several factors that support the construction of new facilities. The most obvious one is the creation of jobs. These include both jobs for construction of the facility and jobs for running the facility, such as maintenance personnel and ticket collectors. Supporters argue that there will be an increase in spending both in the local community and from tourists passing through. The increased income will lead to more spending and also to more jobs. There have also been cases made for intangible benefits, such as a community's quality of life, but these are often hard to measure (Robertson).

One interesting study was done that suggested positive economic impact for sports facilities. The study showed that sports facilities have a "significant positive effect on the value of surrounding houses and this positive effect decreases as the distance from the facilities increases (Robertson)." Residential areas within one mile of a major sports facility could increase up to hundreds of millions of dollars in value. This could be one reason that cities determine it is worth it to continue subsidizing major sports facilities (Robertson).

The sports industry is just like any other entertainment industry in that when the economy suffers, the industry suffers along with it. Over the last five years, the United States has been going through one of the worst economic stretches in its history, and this has no doubt impacted the sporting industry. NBA Commissioner David Stern had to lay off 80 employees during 2010, and this is just one example of the league's hardships. Many people are opting to watch games at home rather than pay the expensive price to see a game live, which has hurt professional sports franchises. Some cities, such as Miami, have had to delay the construction of a new stadium for their baseball team (Robertson). The strength of the economy is certainly an important factor to consider when building a new stadium.

Politicians have been spending money on sports facilities for decades, and it does not appear to be stopping any time soon. The Tax Act of 1986 did not help the situation, limiting the amount that municipalities can use to pay off their debt to just 8% of revenues generated from sports facilities. There are many examples of situations where the state has been harmed by hosting a professional sports franchise. Louisiana paid Saints owner Tom Benson $186.5 million to keep the Saints in New Orleans. San Diego bought unsold Chargers tickets as part of a lease arrangement in the 1990s. Jacksonville gave up the right to collect 25% of revenue in exchange for naming rights to the Jaguars stadium. Indianapolis gave Pacers owner Herb Simon $10 million a year for three years to persuade him to keep playing in the current arena. Cincinnati is struggling to pay off the debt of the Cincinnati Bengals NFL stadium. These are just a few examples that suggest that stadium and arena building has not spurred economic growth, but rather saddled a city or state with debt (Weiner).

Those who advocate in favor of publicly subsidizing professional stadiums claim that it is a fiscally responsible strategy. There are direct economic benefits of stadium revenue that come

from rent, concessions, parking, advertising, suite rental, etc.. The direct expenses are wages, utilities, repairs, maintenance, insurance, and debt. There has not been substantial research to support the argument that direct benefits exceed the direct costs. There is also the issue of rent. The city rents the stadium to the team that plays there, but in order to charge a substantial rent the team has to be profitable. This is often not the case. For example, in 1984 there were only eight professional baseball teams that were profitable, and teams lost an average of $2.2 million that year. There is also the issue of supply and demand. Since there are more cities seeking professional sports teams than there are teams themselves, the cities have had to make sacrifices, such as offering free rent in order to convince a team to move there or prevent one from leaving (Baade, Dye 2-3).

Stadium costs have been rapidly rising over the years, and are major concerns for cities trying to subsidize a public venue. Domed stadiums in particular, which have become a popular style, are among the most expensive. The figure below illustrates the costs associated with some of the most well-known domed stadiums. However, domes do have some economic advantages. The climate can be controlled more easily, which could attract more fans, and domed stadiums can host more non-sporting events such as conventions and exhibitions (Baade, Dye 3-5).

Stadium	Construction Cost in 1989 (millions)	Cost per Seat in 1989	Roof Structure	Year Completed
Superdome (New Orleans)	$374	$4,890	Steel	1975
Kingdome (Seattle)	$158	$2,420	Reinforced Concrete	1976
Astrodome (Houston)	$136	$2,580	Steel	1965
Silverdome (Detroit)	$108	$1,350	Air Support	1975
Hoosier Dome (Indianapolis)	$92	$1,530	Air Support	1984
Metrodome (Minneapolis)	$87	$1,390	Air Support	1982

Domed Stadium Costs

There are also indirect benefits associated with the construction of a stadium, such as increased sales in nearby areas as a result of the stadium and multiplier benefits. Multiplier benefits are the creation of new jobs resulting from increased income and spending within the community. There is controversy as to how much of an impact these indirect benefits have. In order to be successful, a stadium must cause a net increase in overall economic activity rather than a redistribution of money. Indirect benefits are very difficult to measure and require assumptions to be made, which is why most studies focus mainly on empirical benefits (Baade, Dye 6).

In 2012 a book was published that revealed a scary reality: professional sports stadiums cost the public taxpayers $10 billion more than expected in 2010. Harvard University professor Judith Long, who is also a sports stadium expert, says in her book "The costs of land, infrastructure, operations and lost property taxes add 25 percent to the taxpayer bill for the 121 sports facilities in use during 2010, increasing the average public cost by $89 million to $259 million, up from $170 million commonly reported by the sports industry and media" (Sports Fans Coalition). The most expensive public stadiums include Lucas Oil Stadium in Indianapolis, Paul Brown Stadium in Cleveland, and Miller Park in Milwaukee. The cost for these stadiums was more than double the original price tag. Long also pointed out that football and baseball stadiums tend to be much more expensive than basketball and hockey stadiums due to much larger capacities (Sports Fans Coalition).

There are some recent examples of cities struggling to finance stadiums. The city of Atlanta is realizing just how difficult it would be to pay for a new football stadium. Unrealistic revenue projections and skyrocketing construction costs are making it very difficult for a sports facility to generate enough cash to pay its debt. Indianapolis has had to increase tourism taxes and Cincinnati has had to sell a public hospital to help pay for sports facilities in their respective cities. This is not a good sign for a city that is trying to build a new $948 million stadium. Atlanta officials estimate they could raise $300 million from increased hotel taxes, but that would be the only public money available. Furthermore, many people expect that the actual stadium cost could be well over $1 billion (Stafford).

The NFL has tried to entice cities to build new stadiums by pointing to the potential reward of an opportunity to host the Super Bowl. However, past experience has shown that the cost of the Super Bowl could outweigh any potential profits. The city of Indianapolis spent almost $1 million more than expected during Super Bowl XLIV, the most watched sporting event that year. The exponentially increasing costs of stadiums have made revenue projections harder to make, and have often resulted in overestimating the true value of a stadium. The most recent football stadiums built have exceeded one billion dollars, most notably the $1.2 billion Cowboys stadium and the $1.7 billion MetLife Stadium (Stafford).

Due to the constantly increasing costs of constructing a professional sports stadium, more franchises and cities are relying on public tax dollars to pay for the majority of new stadiums. The state of Minnesota could potentially fund over half of the cost for a new Vikings stadium estimated to cost $975 million. Lucas Oil Stadium in Indianapolis was short by $10 million a year in revenue needed to pay expenses before the city increased some taxes and implemented several new ones. Cincinnati was forced to sell a public hospital for $15 million to pay part of the $26 million debt that was owed in 2012 for the Reds and Bengals stadiums. Houston has had to use its reserves to pay bond debt on Reliant Stadium, resulting in a downgrade from its bond insurer. Even though the economic realities are very clear, some experts hypothesize that cities continue to build new stadiums because of competition with each other. Owners want to increase their net worth and city officials do not want to give up a franchise to another city. This is why they are constantly trying to convince the public that the benefits outweigh the risks, even though the reality says otherwise (Stafford).

Between the years 2000 and 2009, a total of $8 billion in public funds was spent to construct 31 professional sports stadiums, most of which were used to replace existing facilities. One example is in Cincinnati, where the former Reds and Bengals stadium was replaced by two separate stadiums funded by over $600 million in subsidies from Hamilton County. Multiple facilities have also been built in Pittsburgh and Philadelphia to replace their old stadiums. The average cost of a football or baseball stadium since 2000 is nearly double that of a basketball or hockey arena and the majority of these costs has been covered by public funds (Santo, Mildner).

Local governments consistently justify the significant amount of public spending on professional sports franchises by touting the value of economic benefits. They promote sports teams, stadiums, and other events as an economic catalyst to the local economy. One example is a 1997 campaign for a new football stadium in San Francisco that used the slogan "Build the Stadium—Create the Jobs!" Another example is in Portland, where a campaign to bring a major league baseball team to the city published an ad that read "$150 million company seeks move to Oregon. Will bring jobs, development, and snappy new uniforms." There is no doubt that the sporting business is a big industry, but professional sports franchises as individual companies only play a minor role in urban economies. The average annual revenues for professional sports teams are $155 million in the NFL, $130 million in the MLB, $95 million in the NBA, and $70 million in the NHL (Santo, Mildner).

Although these revenues seem very large at first, they must be taken into context with the size of the economy. Most state universities spend more money and generate more revenue than the biggest professional sports team in that state. One example of this is Portland State University, whose $200 million budget is more than twice that of Portland's professional basketball team. Another comparison is that of the average Costco wholesale store. In 2003, the average store had $113 million in annual sales, which was more than the revenues of most sports teams. An alternative method of comparison involves observing the percentage of total payroll and employment in the economy that a sports team accounts for (Santo, Mildner). Later on I will look at a case study in Portland that illustrates this concept.

THE EVOLUTION OF STADIUM LOCATION

There have been many studies completed on sports stadiums and public spending that show little economic impact of the professional sports franchises and stadiums on their local economies. However, one major issue that has not been researched in depth is the impact of facility location. "While some authors have begun to investigate the location of sports facilities at the metropolitan level in their work, geographers have studied the landscape of sports, and practitioners have identified important criteria in the location of sports facilities, the question of location has often gone uninvestigated by political scientists and planners" (Chapin 362). Facility location is important because a key factor in a facility's impact is the

performance of the political economy surrounding it. Research has been done to investigate regional shifts and relocations of teams at the national level, but not on the political economy surrounding the location of professional sports facilities within metropolitan areas (Chapin 361-362).

Over the last century, the location of sports facilities has been directly connected to changes in the location of middle class families. In the earlier part of the century, many stadiums were built in urban areas to give the working and middle class fan base easy access to the facility. As cities began to decentralize and people moved to more suburban areas, sports facilities also migrated outward to provide easy access by car to middle class families in suburban areas. However, the trend has shifted again in the past thirty years or so--sports facilities are returning back to the city. Some examples include the Metrodome in Minneapolis, the new Marlins Park in Miami, and Camden Yards in Baltimore. This trend may seem puzzling, because the teams have become separated from their core fan base in rural areas and transportation is more difficult. “While economic development initiatives and public funding (political factors) have been partly responsible for pulling teams back to center city facilities, it was the changing economics of professional team sports that provided the essential ingredient in this locational shift” (Chapin 364). In other words, the realization that central city sites were profitable largely contributed to stadiums being built in the city again.

Many people do not realize that older stadiums, such as Fenway Park and Wrigley Field, were not built in the complex urban areas in which they appear today: Wrigley Field was built in 1914 on an undeveloped piece of land in the north side of Chicago; Comiskey Park was built in 1910 near a former garbage dump; andYankee Stadium in New York and Fenway Park in Boston were both built on inexpensive, undeveloped land because it was recognized that there was potential for development later on. These sites were chosen based on accessibility, neighborhood, room for expansion, and availability. This allowed the owners to easily profit off of the cheap land. Some ballparks even helped spur growth in the surrounding areas. People forget that these stadiums that are famous for their city environments began in cheap, undeveloped areas before complex urban developments were built to surround them (Chapin 368-369).

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As sports began to grow and become more profitable, larger stadiums were built to accommodate larger crowds. Memorial Coliseum in Los Angeles was one of the first stadiums to be publicly funded. Its location was chosen because of available land, easy transportation, and it was centrally located in the area. Cleveland Stadium was built near the city's waterfront because of the massive size of the stadium and also because it was more affordable. These are a few examples that illustrate that prior to 1950 the biggest factor in stadium location was inexpensive land, even more so than proximity to fan base and transportation access. This was mainly due to the team owners' responsibility for financing the costs of the stadiums themselves, so their main goal was to keep costs down (Chapin 369).

Suburbanization and growth of cities after World War II led owners to follow their fans into the new suburban landscapes. Professional sports franchises have moved over 40 times since 1950. Examples of the move toward suburban areas include the NFL's Kansas City Chiefs, Dallas Cowboys, Boston/New England Patriots, Buffalo Bills, New York Jets and Giants, and the NBA's Pistons, Cavaliers, and Wizards. "This spatial trend clearly mirrored demographic, business, and retail trends of the decade as people, jobs, and dollars continued to pour out of North America's central cities" (Chapin 372). In the 1990s, building a baseball stadium in the downtown area of the city became a hot trend. The biggest example of this is Camden Yards in Baltimore, which was built in 1992. Camden Yards successfully integrated into the urban area of the city and enjoyed massive commercial success. This paved the way for sports stadiums to once again be part of the urban city rather than separated from it in the suburbs (Chapin 372-373).

The modern day trend of sports stadium location is much different than it was in the early part of the 20th century. Many owners now choose to build stadiums on cramped, expensive, urban sites rather than large, inexpensive pieces of land. Although the use of public transportation has been declining and the use of automobiles has been increasing, stadiums are built in areas that are much more accessible to public transportation. This results in increased traffic on urban highways on the way to and from games. The fact that teams have moved back to central city locations means that they are now more inaccessible to middle and upper-middle class fans, which make up the core of their fan base. All of these trends

represent a significant shift of which factors are important to owners of professional sports franchises (Chapin 374).

There are several different factors that have contributed to the shifting of professional sports facilities back to the center of the city. The most important factor is the influence of the public sector. The public sector is responsible for discussing the costs and benefits of building a new facility, and the ideal location for it to be built. Since a project like a new sports facility will have a major impact on the environment, the public sector must make sure that all environmental regulations are met. However, this has not directly influenced the siting process, because an environmental review typically investigates suburban areas with easier access for automobiles and more space for expansion (Chapin 375).

The main reason that the public sector has acquired a major role in the location of a sports facility is due to the increased funding of professional sports facilities through public tax dollars. “The public sector has invested billions in sports facilities over the years, something on the order of $15 billion dollars during the twentieth century, with an estimated $6-$7 billion for the most recent building boom (1985-2005) ” (Chapin 375). This has essentially earned the public sector a voice in the location and even design of these sports facilities, and franchise owners have been happy to exchange construction costs for facility location and other characteristics (Chapin 375-376).

Another reason for the shift of stadiums back to the city is that team owners have convinced public officials that having a professional sports franchise located downtown will help the local economy grow. Owners have made the claim that the additional jobs, tax revenues, and indirect benefits of the franchise will more than offset the public investment in the stadium. However, since research has proven this is not the case, advocates for sports facilities have argued that they can help spur the economy at a district level and reestablish the center of the city as a place for recreation, tourism, and business, rather than focusing on broad-based economic development. “While the entire metropolitan area may not be much better off, revitalization of a long-dilapidated district will lead to new construction, new jobs, an improved image, and a better ability to compete for tourist and entertainment dollars at the regional and national level” (Chapin 377).

The trend toward suburban locations for professional sports stadiums in the 1960s and 1970s was due to the outward shift of the team's core fan base, the upper and middle classes. However, the return to the city has been identified with another important fan base. Corporations have been fueling the revenues of stadiums in recent years, providing another incentive for teams to return to the central city. Corporations purchase many of the luxury suites, which tend to be the most expensive seats in the stadium, in order to entertain clients or offer a reward to employees. These corporations include financial companies, law firms, beer companies, and local businesses. The revenues that these corporations help the stadium bring in are in the tens of millions of dollars (Chapin 378-379).

The decision of where to build a professional sports stadium is ultimately tied to three main sets of factors: logistical factors, such as the characteristics of the site, the physical land available, and its accessibility to fans; economic factors such as costs; and political factors such as development initiatives. While teams focused mainly on the logistical and economic factors in the early half of the 20th century, political factors have played a major role today due to the availability of public dollars, economic development opportunities, and the economics of professional team sports (Chapin 380-382).

FRANCHISE VALUE

There is no doubt that sports franchises generate tremendous value, but that trend may be decreasing in the future. Market values for sports teams may have reached an all-time peak, and there are four potential factors that may lead to a steady decrease of franchise values in the future. The first is that prices look bubbly. Despite the weak state of the global economy, a Magic Johnson-led group purchased the Los Angeles Dodgers for a record $2.3 billion. At some point these absurd purchases will decrease. The second reason is that some of the smartest owners in sports are looking to sell their teams, possibly indicating they believe their best chance to make a profit is now, since the value of the franchise will decline. A third reason is the terrible relationship between management and labor, which is among the worst in business. This has resulted in more than two dozen work stoppages in the four major sports, certainly not improving the value of any teams. Finally, there is always the possibility that

television contracts will decrease due to political legislation requiring an unbundling of channels or even new technology for streaming live sports (Belski).

There is one school of thought that says expanding media opportunities may help increase the value of sports teams. However, Leo Hindery Jr., who helped establish Yankees Entertainment & Sports Network, believes that this is not true. He said that valuation of new media opportunities is difficult because there is very little historical data, and the television industry cannot have constant growth. "'It's that assumption of perpetual ups in traditional media that's a fallacy,' Hindery said. 'It can't be proven to be true'" (Novy-Williams).

The record Dodgers sale of $2.3 billion in 2012 led many people to speculate that this would drive up the value of other sports franchises. One analyst estimated that the New York Yankees value rose to $2.85 billion after the Dodgers sale. According to Rob Tilliss, chief executive and managing partner of Inner Sports Circle LLC, "The basis of franchise valuation begins with analysis of the team's media contract, the status of its facilities and whether it will require a pricey management overhaul" (Novy-Williams). If you buy an NFL team, you are effectively buying a 3.3% stake in a league that pays its teams $100 million annually. Therefore, a simple approach for valuation would be to generate a dividend discount model and compare the present value of the dividend stream to the team's estimated value. No matter the valuation method used, it is entirely possible that the value of sports franchises may not continue to grow in the future (Novy-Williams).

The only way that a sports franchise is going to survive is if it is in a large metropolitan area. Therefore, the focus should be on largest cities in the United States and their sports teams. The top 12 metropolitan areas in the United States by Gross Metropolitan Product (GMP) from lowest to highest are Seattle ($242 billion), Miami ($260 billion), Atlanta ($284 billion), Boston ($326 billion), San Francisco ($335 billion), Philadelphia ($353 billion), Dallas ($401 billion), Houston ($420 billion), Washington D.C. ($434 billion), Chicago ($547 billion), Los Angeles ($755 billion), and New York City ($1.29 trillion) (Business Insider). Not only do each of these cities possess at least two professional sports franchises, but these franchises are also among the most successful and well-known franchises in the United States.

Valuing professional sports franchises is no doubt a difficult task. This is largely due to the effect of intangible assets that drive up the price and cause owners to pay a significant premium for a franchise beyond the value of its tangible assets. These intangible assets can include player contracts, television rights, stadium leases, advertising agreements, concession agreements, luxury suite agreements, season ticket-holder relationships, coach and management employment contracts, draft rights, and goodwill. There are some standard approaches, such as sales comparison and cash flow analysis, which are used for valuation. The method chosen is important due to the flexibility in the tax code that allows a potential owner certain write-offs. Intangible assets must be recorded at their fair market value at the time of the sale, and since each one of these assets is taxed differently, there are incentives to allocate a higher portion of the purchase price to the assets that will receive the most beneficial tax treatment (Vine 2-4). The following table displays the industry standards for valuation methodologies of intangible assets.

INDUSTRY STANDARD	
Intangible Asset	**Valuation Methodology**
Player Contracts	Cost Approach
Franchise Agreements	Income Approach
Stadium Leases	Market-based Analysis/Income Approach
Workforce	Cost Approach
Intellectual Property	Typically encompassed in workforce
Contracts	Income Approach
Season Ticket Holder Subscriptions	Income Approach
Acquired Goodwill	Residual Analysis of Price Allocations

Methods for Valuing Intangible Assets

A specific example of a case that went to court due to the dispute of the value of a professional sports franchise was Fishman v. Estate of Wirtz. Illinois Basketball Inc. claimed that their purchase of the NBA's Chicago Bulls was interfered with by Chicago Professional Sports Corporation. The main issues that were featured in this case were whether intangible assets should be included in the value of the franchise and why the owner would pay a significant premium for the franchise beyond its current market value. In order to determine the value, the court looked at the trend in value of other NBA teams based on sales transactions, the trend of profits and losses of other NBA teams, the trend of profits and losses

of the Chicago Bulls, and opinions of other NBA owners and experts. However, there were several important factors that the court ignored. These factors included the value of player contracts, the status that comes with owning a franchise, the revenues of the team (the court looked at the balance sheet instead), and media distribution rights (Vine 5-7).

This court case led to a desire to formulate a more accurate model for valuing sports franchises. Both Financial World Magazine and Forbes determined that revenue is the most important factor in valuation because it is the best representative of long term values. Operating income is not as important because there are specific events, such as a signing bonus, that can affect the operating income for any given year. Furthermore, the numbers on the financial statements can be manipulated in order to lower profitability and avoid taxes, whereas it is much more difficult to manipulate revenue. Despite these more accurate attempts at valuing a sports franchise, the prices paid for teams still significantly exceeded that of their value. In 1998, the Dodgers sold for $311 million, compared to Forbes estimated value of $236 million. This clearly indicates that there are several other factors that are not taken into account when valuing a professional sports franchise in the United States (Vine 7-9).

CASE STUDIES

Methodology

There are three methodological tools that can be used to measure the economic impact of sports on the economy. The first is national income and expenditure accounts, which can be measured by gross domestic product (GDP), public consumption, gross fixed capital formation, stock variation, exports, and imports. The second methodology is the input-output matrix. The rows in the matrix are calculated using the output of the industry, consumption of fixed capital in industry, taxes paid by industry, and the producer's profit in industry. The column describes how the value of an industry is distributed across total consumption of the economy. This is calculated using final private consumption, output of industry, public consumption, gross fixed capital formation, stock variation, and exports. The final methodology is the satellite account method, and its purpose is to apply the national accounting methodology to a specific area and adjust specific factors to account for characteristics in the area (Andreff 2-4).

The Meadowlands Case

A specific case of a sports facility that did more harm than good to a state is the original Meadowlands stadium in East Rutherford, New Jersey. The stadium, home to both the New York Jets and New York Giants, has put the New Jersey Sports and Exposition Authority in debt $830 million. The stadium was built in the 1970s, when horse racing was still popular and the Meadowlands Racetrack brought in a significant amount of revenue. This is not the case today, and the Meadowlands has become an unwanted money-draining facility for the state of New Jersey (Weiner).

However, the state continues to invest money into the football stadium while simultaneously providing tax breaks. This has upset New Jersey's elected officials and cost the municipality much needed revenue. The larger question is if any state is getting a return on their investment in a professional sports stadium (Weiner). New York has spent millions of dollars for stadiums and arenas in Buffalo, Rochester, the Bronx, Queens, and for professional sports franchises in Brooklyn. Thomas P. DiNapoli, the State Comptroller of New York, stated that he honestly was not sure if the state of New York was getting a return on the billions of dollars that have been spent on infrastructure for New York's professional sports teams (Weiner). Interestingly enough, the Meadowlands was home to Super Bowl XLVIII this year.

Portland Case Study

A case study was conducted in 2001 in order to determine if adding a professional baseball team to the city of Portland would have a significant effect on the local economy. This study looked at Multnomah County, which includes Portland and the six county primary metropolitan statistical areas for Portland. Table A-1 in the Appendix shows statistics for the spectator sport industry, which is NAICS 71121 and includes: "all professional and semiprofessional sport teams; athletes involved in individual professional sports; and businesses associated with automobile, horse, and dog racing" (Santo, Mildner).

It is interesting to note that spectator sports employ just 0.2% of all employees in Multnomah County and just 0.09% of employees in the Portland Metropolitan Area. In terms of payroll, spectator sports make up 0.82% of Multnomah County and only 0.37% of the metropolitan area. Clearly these numbers are too small to make a significant impact, but would things

change if the Oregon Stadium Campaign were successfully able to land a major league baseball team in Portland? The average MLB team's revenue in 2003 was about $130 million. However, Portland is not a big market city, so teams willing to relocate there would be on the lower end of the revenue spectrum. The assumption made is that this new Portland team will have annual revenues of $80 million. The revised Table A-2 in the Appendix shows the impact that this team would have economically (Santo, Mildner).

The baseball team alone would only account for 0.26% of the Portland Metropolitan Area's payroll, and the spectator sport industry would still only amount to 0.63% of the payroll. As this case study shows, it is important to take into account the size of professional sports franchise relative to its overall economy (Santo, Mildner).

Event Study

Cities often use inexpensive incentives such as tax incentives to persuade a professional sports franchise to move to or stay in their city. However, this affects the economic wellbeing of the taxpayers. The incentives are only worth it if the sports franchise brings in more revenue than it costs the taxpayers. There is one specific case study that was done to determine both the short-term and long-term effects of a sports team on its local economy. This study addresses specific issues that are often overlooked. The first factor is the impact of the overall United States economy, which is important because macroeconomic conditions affect local economies. In addition, the characteristics of each economy, such as the type of revenue it generates, should be factored in. To maintain consistency, comparisons should be made across the same year or time period. The causality of these effects also needs to be examined—is the economy influencing the sports team or is the sports team influencing the economy? The following case study looks at these issues and attempts to design a linear model that can predict the change in per capita income when an event (establishment or relocation of franchise) occurs (Lertwachara, Cochran 244-246).

The study examined expansions and relocations of professional sports teams from the MLB, NHL, NBA, and NFL from 1980 to 2000. During this time period, U.S. cities or metropolitan statistical areas (MSAs) gained four MLB franchises, seven NBA franchises, nine NFL franchises, and 13 NHL franchises for a total of 33 events. Inflation is taken into account and

adjusted for in the model. Regression analysis is then used to find the correlation between events and unexpected income. The first four years represent the short-term effects while the cumulative ten year span represents the long-term effects (Lertwachara, Cochran 247-248).

The results of the study are located in Table A-3 in the Appendix. Per capita income is listed in the first column for each year and the corresponding p value is listed in the second column. A p value of 0.05 will be used to determine if the result is significant or not. According to this model, income per capita decreased about $1117 during a franchise's first year in the city, regardless of sport. This number continued to decrease over the next four years, and the cumulative ten year per income capita was $13,901 less than it was for the city without the team. The results for each of the years were significant, meaning that the probability of the income discrepancy occurring by chance was 0.01%. The MLB experiences a similar decrease as well, although the results are not significant for years 4 and 5 ($p = 0.2335$ and 0.2813 respectively) or in the long term ($p = 0.0915$). The NBA also posts negative values for each year, but the results are not significant in the short term, while they are in the long term (-$22,854 income per capita, $p = 0.01$). The NFL has negative per capita incomes that are significant in the short and long term, while the NHL has by far the least significant results in both the short and long term, with income per capita values within a dollar of break-even (Lertwachara, Cochran 248-249).

The results of this study show that, despite cities' desire to lure a professional sports franchise to their area, having a professional sports franchise does not have a positive impact on the local economy in the short or long term. The results across all four major sports and each sport individually show that there is a decrease in income per capita in cities where there is a professional sports franchise, and often this decrease in income is significant. Based on this particular study, it is recommended that cities and municipalities not pursue a professional sports franchise because the costs outweigh the benefits and negatively impact their citizens' per capita income (Lertwachara, Cochran 253).

Econometric Valuation

There are different ways to value a professional sports franchise, but one of the more involved approaches is by using econometrics. There are three specific valuation models that can be

used to do this. The first is the cost/asset-based approach, which is based on the idea that investors will not pay for an asset if they can obtain a different asset with the same or higher cash flows. This model uses replacement and reproduction costs as measures. However, a large part of a sports franchise's value comes from intangible assets, so this model would not be ideal in valuation. The second model is the market/sales comparison, which makes the assumption that the price of the investment will apply to similar investments when the market is in equilibrium. This method looks at market size, location and demographics and compares them to other franchises. The problem is that this type of information is often difficult to obtain, and therefore this model can be impractical. The final method is the income approach, which focuses directly on the present value of the expected future cash flows of the franchise. This method is often used to make valuations of sports franchises (Smith).

A statistical analysis was done by Kelly Smith using econometric techniques to determine the most important factors that contribute to franchise value. Variables that were chosen include the revenue of the team, the payroll, the age of the team's home stadium, home attendance, ticket price, and the number of television-owning households in the major metropolitan area. Overall, data was collected for nineteen different variables for the NFL, NBA, MLB, and NHL for the 2001-2002 seasons, and a simple regression analysis was performed. A summary of the data is shown in Table A-4 in the Appendix. A scatter plot of value against revenue (Figure A-1 in Appendix) indicates that there is a high correlation between the two variables for each of the four leagues (Smith).

With this information in hand, a simple regression analysis was performed with revenue as the independent variable and value as the dependent variable. When other independent variables were included, there was a high degree of multicollinearity between revenue and the other variables, and resulted in revenue being overwhelmingly significant. A regression analysis was run for each of the four different leagues, and the summary outputs are shown in Tables A-5, A-6, A-7, and A-8 in the Appendix (Smith).

The first thing that can be observed is that all four of these models are significant. In other words, the revenue that a franchise brings in has a significant impact on the value of the franchise. This is not surprising; however, there are differences between the four major sports.

In the NFL model, revenue explains 76.7% of the variance in value, compared to 83.5% in the MLB, 93.1% in the MLB, and 79.3% in the NHL (Smith).

Fan Cost Index

One way to measure the cost of attending an NFL football game is by the Fan Cost Index. This is a measurement developed by sports information publisher Team Marketing Report to determine how much it would cost a family of four to attend an NFL game. The index takes into account four average price tickets, two small beers, four small sodas, four hot dogs, two game day programs and two adult hats. For 2011 the Fan Cost Index was $427.42, up 1.6% from 2010. Since this is only an average, Team Marketing Report also calculated the top five most expensive stadiums in 2011 based on the Fan Cost Index. The fifth place spot on this list goes to Soldier Field in Chicago at $557.18. Bears spokesman Jim Christman says that Chicago is the largest single-team market in the NFL with the smallest stadium capacity. Despite the average ticket price of over $100, the Bears have been able to sell out every game since 1984 and have a 98% season ticket renewal rate (Korch).

The fourth most expensive stadium is the newly built MetLife Stadium, home of the New York Giants, with a Fan Cost Index of $592.26. The $1.6 billion stadium opened in 2010 and is capable of seating 82,500 fans. Gillette Stadium in Foxborough, Massachusetts is the third most expensive stadium in which to attend a game, with a Fan Cost Index of $597.26. The New England Patriots have been one of the most successful teams in the last decade, and their average ticket price of $118 was most expensive in the NFL in 2010. The stadium with the second highest Fan Cost Index in 2011 was Cowboys Stadium in Arlington, Texas at $613.80. The Cowboys are the second most valuable sports franchise in the world at over $1.8 billion, only behind Manchester United. The number one most expensive stadium also goes to MetLife Stadium, this time for the New York Jets. The Jets and Giants set their prices independently, and the average price for a Jets game rose 5.4% to $120.85 in 2011, the most expensive in the league. This resulted in a Fan Cost Index of $628.90 to attend a New York Jets football game (Korch).

Regression Analysis: Football and Baseball (1965-1983)

Another model that was developed to measure the economic impact of sports on their local economies is regression analysis. The dependent variable was real aggregate personal income. The independent variables were population, stadium, football team, baseball team, and trend. One interesting observation was that the stadium variable was not correlated with either the football or the baseball variable. In other words, franchises were gained and lost without a change in stadium, and a stadium was built for existing teams. The time period for this study was from 1965 to 1983 (Baade, Dye 8-9).

The results showed that, after controlling for population and trend, the presence of a new or renovated professional sports stadium has an insignificant impact on the income for that city for eight out of the nine cities, with the exception being Seattle. The impact of gaining a professional baseball team or a professional football team was also insignificant. The results when all nine cities were pooled together showed that there was a significant impact from the stadiums, but it was negative for football teams and positive for baseball teams (Baade, Dye 9-10).

Regression Analysis: All Sports (1958-1987)

One particular study uses regression analysis to estimate the coefficients for 36 Metropolitan Statistical areas (MSAs). The variables are real personal income per capita at time 1, real personal income per capita at time 2, number of MSAs, number of professional sports franchises, and number of stadiums and arenas. The study was conducted over a 30 year period from 1958 until 1987. There were 36 cities chosen that had hosted a professional sports team or stadium, and 12 cities chosen that had not hosted a professional sports team or stadium for a total of 48 cities. The goal of the study was to determine if the variability in economic growth due to sports franchises and stadiums is statistically significant or not. The results are presented in Tables A-9 and A-10 in the Appendix (Baade 11).

The results clearly show that professional sports franchises do not have a statistically significant impact on real personal income per capita growth. There were 32 cities that had a change in the number of sports teams during the period, and for 30 of them there was no significant impact. For the remaining two, Indianapolis experienced positive impact while

Baltimore experienced negative impact. There were 30 cities that had a change in the number of sports stadiums and arenas, and for 27 of them there was no significant impact. The other three, St. Louis, San Francisco, and Washington D.C., experienced negative impact. In the regional analysis, no region showed a statistically significant impact of sports franchises on real personal income per capita. There were four regions in which having a stadium had no significant impact on income. There was a significant positive impact in two regions (Southwest, Rocky Mountains), and a significant negative impact in two regions (New England, far West) (Baade 15-19).

Regression Analysis: All Sports (1984-2001)

Despite the overwhelming evidence that has shown that sports stadiums do not have a significant positive impact on the economy, new evidence has emerged that contradicts this conclusion. The reason for this is because modern stadiums are "designed to serve as architectural symbols with tourist appeal and are often built into the urban fabric to facilitate synergy. This is in contrast to facilities of the previous generation, which were located near interstate exchanges to facilitate a quicker exit after the game" (Santo 178). A new study recasts the analysis done by Baade and Dye that claims sports facilities have a potentially negative impact on the economy. The study done by Baade and Dye looked at data from 1958 to 1987, while this study essentially picks up where they left off with data from 1984 through 2001 (Santo 178-180).

This study focuses specifically on current generation stadiums rather than older facilities. Table A-11 in the Appendix shows the nineteen Metropolitan Statistical Areas (MSAs) chosen for this study. These 19 MSAs represent every city that had a professional football team or professional baseball team leave or move to the city, or experienced stadium construction for an NFL or MLB team during the time period from 1984 to 2001. There were two regression equations used. The first one used the MSA's real aggregate personal income in 2001 dollars as the independent variable, with population, baseball stadium (0 = no, 1 = yes), football stadium (0 = no, 1 = yes), baseball team (0 = no, 1 = yes), football team (0 = no, 1 = yes), and a trend variable as the dependent variables. The second equation was the same as the first, except the income as a fraction of the region and the populations as a fraction of

the region were used instead to control for size. All data was taken from the Bureau of Economic Analysis (Santo 180-182).

The results from the first equation, which uses the aggregate income as the dependent variable, are shown in Table A-12 in the Appendix. The table shows some mixed results, indicating that the independent variables have a positive impact on income in some MSAs and a negative impact on income in others. Baseball stadiums in Anaheim, Phoenix, Seattle, and Tampa had a significant positive effect, while baseball stadiums in Baltimore and Chicago had a significant negative effect. Football stadiums in Baltimore, Jacksonville, Nashville, Tampa, and Washington D.C. had a positive effect but the Georgia Dome in Atlanta had a significantly negative effect. The pooled analysis revealed that new baseball stadiums have a significantly positive impact on income while baseball teams have a significantly negative impact. However, football teams and football stadiums did not have a significant impact one way or the other (Santo 183-185).

One issue with using this equation is that it does not account for the impact of the recession in the 1990s. The stadiums built during the recession tend to have more of a negative impact while those built during the prosperous latter half of the 1990s tend to show a positive impact. Therefore, the analysis was done again using equation two, which used transformations to redefine the dependent variable as a share of regional income. This allows the model to account for regional and national income trends, such as a recession or an economic boom. The population variable is also redefined to be a share of the regional population. The model was run again with these adjustments and the results are shown in Table A-13 in the Appendix (Santo 186).

The results of the analysis using equation two show a significant positive relationship between sports teams and regional income shares for the cities of Atlanta, Cleveland, Denver, Jacksonville, Nashville, Seattle, and Tampa. In particular, baseball stadiums have a significant positive impact for Atlanta, Denver, Seattle, and Tampa, while football stadiums have a significant positive impact in Jacksonville, Nashville, and Tampa. The significantly negative results were the baseball stadium in Arlington, Texas and the football stadium in Cleveland, Ohio. The pooled analysis showed that the presence of a baseball stadium has a significant

positive impact on regional income share. However, the other sports variables used did not have significance in predicting regional income share. It should also be noted that baseball stadiums host about ten times more home games than football stadiums, which means they are more likely to generate more income and economic activity (Santo 187).

These results clearly contradict many of the studies that show that professional sports franchises do not have a positive impact on their local economies. However, it is necessary to look at specific situations where sports related variables have a positive impact in order to determine the right context. One of the most important factors is stadium location. Six cities where a professional baseball or football franchise had a positive effect on the surrounding economy have stadiums located in a downtown or central city environment. The baseball stadium in Arlington, which had a negative economic impact, is located in a suburban area. Another factor that led to success was the acquisition of expansion teams. Tropicana Field and the Devil Rays, along with Coors Field and the Rockies, are specific examples of expansion baseball franchises having a positive impact. The same is true for NFL teams, including the Jacksonville Jaguars, Tennessee Titans, and Cleveland Browns (Santo 188).

Even in context, there are still many other variables to be considered that are not included in this study, such as the efficiency of public spending and the opportunity costs. This study simply shows that context, such as stadium location and acquisition of a new franchise, does make a difference in whether or not a professional baseball or football franchise will have an impact on the economy. Stadiums in downtown locations are more likely to generate higher spending, and a city that gains a new team is also more likely to attract more visitors in the area. Another potential benefit is if local residents spend money inside of the economy that they would have spent elsewhere because of the sports team (Santo 188).

A limitation with this study is that it does not consider the interaction between the economy and the decision to establish a franchise there. For example, a franchise may relocate to a city because they have a booming economy, and therefore it might seem like the franchise has a positive economic impact. Another limitation of the study is the variables chosen. Many other important variables could have been factored into this equation. However, these same

limitations apply to the previous study done by Baade and Dye, and therefore the two can be fairly compared (Santo 188-189).

Concluding that the methodology is flawed would indicate that the results of the original Baade and Dye study are also biased, and are, therefore, a poor foundation for arguments in opposition to stadium investments. To the extent that the methodology employed by Baade and Dye is accepted as sound, the new empirical evidence presented here provides an equally valid update that reflects the current context of stadium investments. Additional evidence, as presented below, supports the contention that context matters and that the character of stadium investments has changed (Santo 189).

A study by Nelson was done in 2001 that further supports the findings from this study. The study was a cross-section time series analysis that examined data from 43 MSAs from 1969 to 1994. The study found that the relationship between teams playing in the central business district and share of per capita income is positive, while teams playing outside the central business district have a significantly negative impact on income. Case studies done by Austrian and Rosentraub provide additional evidence as well. One study showed that the construction of sports facilities in Cleveland led to increased real wages per employee in the area, excluding player salaries, and had a higher growth rate than the county and metropolitan area. There was also an increase in sports related businesses such as general merchandise stores, apparel and accessory stores, restaurants, hotels, and amusement companies. The stadium may not have impacted Cleveland's economy as a whole, but had clear micro-level benefits. The overall conclusion is that broad interpretations of economic analyses regarding sports stadiums is not appropriate for supporting stadium development decisions, but rather that sports stadiums and franchises can have positive economic benefits if the context and situation are right (Santo 189-190).

Franchise Value

David Vine conducted a transaction analysis using Forbes' data from 1998 to determine the significant factors that affect franchise value. Each change in ownership from 1999-2003 for all four major sports leagues in the United States was analyzed by comparing actual sales price to Forbes' estimated value. The NFL had the highest average premium at 79%. This

means that owners paid 79% more for a professional NFL franchise than the value that Forbes had estimated. The NBA had the second highest average premium with 38%, followed by the MLB with 11% and the NHL with a discount of 1%. One possible explanation for the differences among sports is the financial standing and glamour of an NFL team over an NHL team. The NFL is currently the most popular sport in the United States. The complete summary of values, transaction prices, and premiums can be found in Table A-14 in the Appendix (Vine 11-12).

One specific case of a group of owners paying a premium to acquire a professional sports franchise occurred in 2003 with the Boston Celtics. They were sold at an NBA record $360 million, which was a 31% premium according to Forbes, and nearly four times the team's revenue. Further investigation revealed that the new owners were very optimistic about the Celtics' future, expecting many playoff games that would boost stadium revenue. It also appears there was an ego factor, since the Boston Celtics are the most storied and successful franchise in NBA history. That same year, the New Jersey Nets were sold for $300 million, a 38% premium over Forbes' estimated value. A main reason for this is the new state of the art arena scheduled to be built in Brooklyn. This would certainly increase revenues, but some still wonder if it is enough to offset the costs, which are expected to be in the billions (Vine 12-13).

Vine also conducted a multivariate regression analysis using several variables that would be important to a franchise such as revenues, attendance, and team performance measures. Forbes' value served as the dependent variable, and five different models were run. The independent variables debt/revenue and team relative productivity score (TRPS) were used in every model. In Model 1, operating income was also included, and was positively significant overall. Interestingly enough, team performance was significantly negative overall, indicating the value decreases when a team's performance increases (Vine 14). The complete breakdown by sport is shown in Table A-15 in the Appendix.

Model 2 analyzed debt/revenue, TRPS, revenues, and expenses. It was determined that both revenue and expenses had a significant positive effect on franchise value. The complete summary for Model 2 is shown in Table A-16 in the Appendix. Model 3 looks at

debt/revenue, team performance, gate receipts, and payroll. In this model, the only significant factor is payroll, which has a negative effect on franchise value. The summary table can be seen in Table A-17 in the Appendix. Model 4 analyzes debt/revenue, team performance, gate receipts, other revenue, and expenses. Out of these five variables, gate receipts, other revenue, and expenses all have a significant positive effect on franchise value. See Table A-18 in the Appendix for the complete summary. Model 5 focuses more on the expense side of operating income by looking at payroll and other expenses in addition to team performance and revenues. In this model, revenues, payroll, and other expenses all have a significant positive impact on franchise value. The complete breakdown is shown in Table A-19 in the Appendix.

The conclusion of this transaction analysis is that revenue is the most important factor in determining the value of a professional sports franchise in the United States. The analysis also shows that different sports leagues are influenced by different factors. The presence of an ego factor, which refers to the status and power of owning a professional sports franchise, is strongly supported by the significant premiums that owners will pay to acquire a team. In the future, owners need to focus on limiting expenses and analyzing sources of profitability, rather than just looking at growing revenue. Putting more efficient mechanisms in place, such as a salary cap, will help to stop overpayment and reduce financial problems in modern day sports (Vine 18-19).

MLB Franchise Value

Phillip Miller did a study examining the value of MLB franchises with data collected from the years 1990 through 2002. The empirical model used in this study was $\ln franchval = X\beta + PRIV\gamma + \varepsilon$. The natural log of franchise value is a vector that measures real franchise values with a base year of 2001. The X factor is a matrix of variables that affect franchise values, and the PRIV factor is a matrix of variables that control for financing of the stadium. The X matrix includes team winning percentage in current year and team winning percentage from the prior season. Prior winning percentage is a good indicator of value because it helps determine ticket prices, season ticket sales, media revenues, advertising prices, and player costs. A better prior and current winning percentage will indicate higher team value (Miller 11-12).

Stadium age is also included in the matrix, with 0 indicating a new stadium. New stadiums will attract more people in the first few years, but its value will diminish over time as operating costs remain consistent (excluding inflation). The fans that continue to attend games even after the stadium gets older most likely do so because of their team and not the stadium. Therefore, it is expected that revenues will increase at a falling rate as the fans that attended games while the stadium was new slowly decrease. As a result, the value of a franchise is expected to decline as the stadium increases in age. The PRIV matrix includes a dummy variable where 1 means that the team owns the stadium and 0 means that the stadium is owned by the municipality. Also included are an interaction between stadium age and the percentage cost of private financing, and an interaction between the ownership dummy variable and stadium age (Miller 12-13).

The data in this study was taken from the MLB during the years 1999-2002. Population and per capita income were taken from the BEA, and stadium information was taken from www.ballparks.com. Information was incomplete for the Skydome in Toronto and for macroeconomic data for Montreal and Toronto, so those cities were eliminated from the analysis. Franchise values were obtained from Financial World and Forbes. These values are estimates based on franchise revenues, costs, and profits. The real franchise value is what it is sold for, which is typically above the estimated value. Out of the 16 sales of professional baseball teams from 1990-2002, nine sales were within 20% of the estimated franchise values and 13 were within 25%, with nine out of the thirteen selling for higher than the estimated value. For the purposes of this study, the estimated franchise values are deemed to be reasonable enough to use (Miller 13-14).

Professional baseball stadiums that were built between 1990 and 2002 had an average cost of $211 million, compared to $345 million after 2002. This was an increase of 63.5% over a time period in which the building industry grew by only 20%. In addition, team owners have had a more difficult time accessing public funds since 1990. The average proportion of stadium costs that were publicly financed from 1962 to 1982 was 89%, compared to just 68% since 1990. Table A-20 in the Appendix shows the summary for teams with stadiums built before

1990, and Table A-21 shows the summary for teams with stadiums built after 1990 (Miller 15).

Five different regression models were run to examine the effects of different variables on real franchise values. Model 1controls for private financing, Model 2 controls for private ownership of the stadium, Model 3 adds the ownership/stadium age interaction effect, Model 4 uses a dummy variable for teams that play in stadiums owned by the team, and Model 5 removes the interaction terms. The complete summary statistics can be found in Table A-22 and the regression results are presented in Table A-23. All of the models had an R-square above 0.7 which means that the models were a good fit. The population variable is significantly positive in each of the models, and indicates an increase in franchise value by up to 0.12% for every 1% increase in population. Both winning percentage variables are also highly significant and positive for each of the models, although current winning percentage is more significant than previous year's winning percentage (Miller 16-17).

Stadium age was found to have a significant negative impact on franchise value in each of the models. This means that as the stadium ages, the value of the franchise decreases. Variables for age of the team and the time spent in the city by the team were not significant. This indicates that fans do not necessarily care how old the team is or how long they have been in the city, but they do care how old the stadium is. The time variable revealed an increase in franchise values from 1990 to 1999, but a leveling off from 2000 to 2002. The interaction between stadium age and public financing proportion was found to be insignificant in every model. These results show that "as the stadium ages, teams that built stadiums at least partially with private financing are paying off any debt associated with the construction costs. But at the same time, as the stadium itself ages (regardless of the financing mechanism), the team's franchise value is falling, offsetting the effect on private ownership" (Miller 19). Finally, the dummy variable for private ownership is insignificant in the models (Miller 17-19).

The conclusion of this study was that, regardless of how a stadium was funded, building a new stadium increases team franchise values. A team playing in a privately owned and financed stadium will increase in value as the stadium ages, while a team playing in a publicly

owned and financed stadium will decrease in value as the stadium ages. Moreover, the difference in playing in a private and public stadium does not offset the costs associated with building the stadium. These results implicate alternative motives in those who lobby for public funds to finance a professional sports franchise (Miller 21-22).

Super Bowl XLVIII: Impact on NY/NJ

On February 2nd, 2014, Super Bowl XLVIII was held at MetLife Stadium in New Jersey. The NFL estimated that the Super Bowl would bring in an estimated $600 million to the New York/New Jersey economy. However, economists say that this number may be far too optimistic. In fact, sports economist Robert Baade estimates that the revenue generated from the Super Bowl will be about one tenth of that number. This is partly due to the fact that most people spend their money at events that are sponsored by the NFL or on NFL brand memorabilia, rather than the tourist attractions. It was also reported that the Super Bowl cost New Jersey $17.7 million, a large portion of which was needed for additional transit on the day of the game. Analysis of previous Super Bowls has shown that the event generates tens of millions, as opposed to hundreds of millions. The average Super Bowl accounted for $32 million per game in increased economic activity from the 1970s through the 1990s (Fox News Latino).

As mentioned previously, visitors from outside of New York and New Jersey are likely to spend more time at NFL funded events rather than local establishments. Rather than visiting a Broadway show or going to the Statue of Liberty, fans are more likely to spend time at Super Bowl Boulevard in Times Square, which consists of NFL-sponsored events. Tourist attractions typically have lower attendance rates during major sporting events. The NFL includes the revenue generated from the events and products that they sell in order to come up with these large estimates, which is not accurate because that revenue goes directly back to the NFL. Another factor to take into account is the tourists that intentionally avoided the city because they were not interested in getting caught up in all of the Super Bowl activities. Many hotels reported that they had not reached the capacity that was expected from the Super Bowl, and had to keep dropping rates to attract customers. The silver lining in all of this is that January and February are typically the slowest months of the year to begin with, so it is likely

that tourism activity was increased compared to previous years at this time (Fox News Latino).

On the day after the Super Bowl, New York Governor Andrew Cuomo estimated that the game brought in $300 million in economic activity to the state of New York. Empire State Development claimed that approximately 1.5 million people visited Super Bowl Boulevard in the days leading up to the main event. Forty-five of the fifty corporate-sponsored Super Bowl events took place in New York, and a record 6300 credentials were issued to the media for the game.

The game was broadcast in 180 countries all around the world. There were an estimated 230,000 out of town visitors that stayed in New York during Super Bowl week, generating more than $12 million in hotel spending alone. In addition, 2500 Super Bowl personnel and family and 3000 out of town media members occupied New York for the week. Over 400,000 visitors attended non-game day related events, spending an average of $150 a day. This generated $14 million in local and state tax revenues and generated 2400 full-time equivalent jobs (Stegon). Governor Cuomo stated the following:

> New York was proud to serve as co-hosts for what, by all accounts, will have been the biggest Super Bowl ever. This week has been a real opportunity to showcase the best of what the Empire State has to offer, from our world-class vacation destinations and tourist attractions to home grown and made in New York products. I hope every single visitor enjoyed their New York experience and will come back in the future (Stegon) .

However, while the Super Bowl was considered a big success in New York, the ramifications are now being felt in New Jersey. Taxpayers are on the hook for several expenses associated with hosting the Super Bowl. These expenses include 700 state troopers, two helicopters, the New Jersey National Guard, and local police that were needed for security on game day. There were additional security expenses including hotel security, security for Media Day, and

police escorts as well. New Jersey could not collect sales tax on ticket sales, parking, or luxury box sales, and the NFL keeps 100% of the revenue. The state did not benefit from a boost in hotel and restaurant activity, since the number of customers was much lower than expected, and had to fully fund any public Super Bowl parties on their own. Transportation was limited in New Jersey, forcing many fans to use New York transit instead (Di Ionno).

Aside from the actual expenses New Jersey incurred from hosting the Super Bowl, there were plenty of other frustrations. Transportation was a disaster, with 32,000 fans overwhelming the transit system. It was not well organized or equipped to handle the traffic associated with hosting the Super Bowl. One fan who attended the Super Bowl said "I think this is a shameful mess" after waiting nearly three hours to leave the game. Another fan stated "I hope they never have another Super Bowl in New Jersey" (Di Ionno). So what is the overall take away from hosting the Super Bowl? There are plenty of costs and plenty of benefits, but most people overestimate the economic activity that is actually generated in the host city or state.

REGRESSION ANALYSIS: 2001-2012

There is plenty of evidence from past studies that indicate that, for the most part, professional sports franchises in the United States have little to no impact on the overall economy of a city, and in some cases they even have a negative impact. The majority of the most well-known studies on this topic were conducted before 2001. Using regression analysis, I conducted my own study using data from 2001-2012 and the variables that I believe were most important in determining significance based off of previous research. I chose to use regression analysis so that I could observe how the overall model impacted the response variable, but also how each independent variable impacted the response variable and if there was any interaction that had an effect.

This study used information from 45 Metropolitan Statistical Areas (MSAs) in the United States, representing every major professional sports team located in the country. The dependent variable was change in GDP per capita over the eleven year time period, which was obtained from the Bureau of Economic Analysis (BEA) website. This variable was chosen in order to control for population and also measure economic growth or decline over time. The independent variables were the number of NFL teams, number of NBA teams,

number of MLB teams, number of NHL teams, costs of stadiums built between 2001 and 2012, cumulative winning percentage among an MSA's teams, and number of championships won.

There are five important assumptions of regression analysis that must be satisfied in order to have an accurate model. The first assumption is that the data is normally distributed. This was confirmed by observing the histogram of the residuals to see if they fit the normal curve. The second assumption states that there is equality of variance among the different variables. This condition was satisfied by observing the residual plots and making sure the residuals were evenly distributed. The data should not have any outliers or missing variables, both of which were confirmed by scanning the data. Finally, there should be independence between the different observations. This condition is satisfied because all of the MSAs used are separate from each other, and do not depend on each other economically. Relevant graphs can be located in Appendix B.

The overall regression model for this analysis was highly **insignificant**, with a p-value of 0.9884. The model had an R-square value of 0.033, which means that the model was able to explain only 3.3% of the variation in GDP/capita. In addition, each of the independent variables were insignificant. Only one variable had a p-value below 0.6 and that was the number of NFL teams, which had a p-value of 0.3515. There was some correlation between the independent variables. Stadium costs and winning percentage were both negatively correlated with the number of NFL, NBA, and NHL teams, but positively correlated with the number of MLB teams. In addition, championships were only positively correlated with number of NFL teams and stadium costs. Complete outputs can be found in Appendix B.

REGRESSION ANALYSIS: IDEAL LOCATION FOR A NEW FRANCHISE

Based on the literature review and my own regression analysis, I conclude professional sports franchises do not have a significant positive impact on their local economies. However, this does not mean that the United States should no longer pursue any new sports teams. Therefore, with this information in hand, I conducted another regression analysis to determine

the most significant factors of an MSA that will affect a franchise. The end goal will be to use the results of this study to find the best possible match for where the next professional sports franchise should be located.

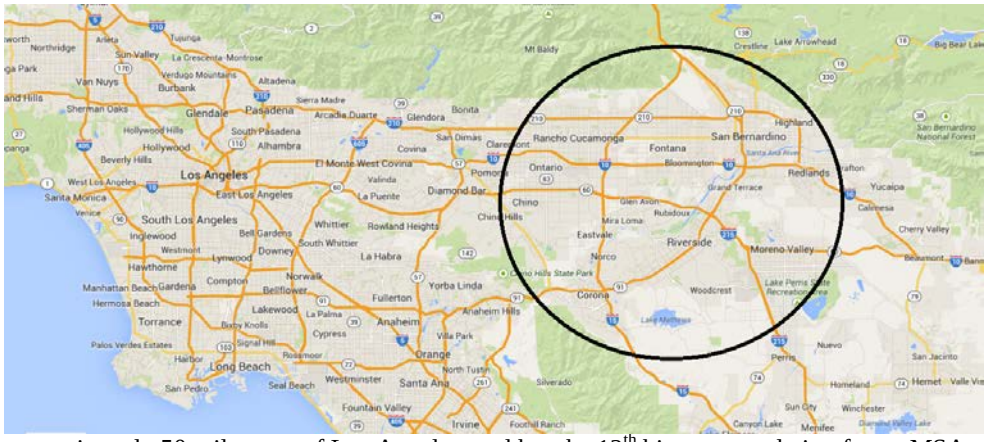
The dependent variable in this study was franchise value. These values were obtained from Forbes Franchise Values for the year 2012. The independent variables for this study are GDP per capita, age (measured by % of population 18-44 years old), population, region (Northeast, Midwest, South, and West), and type of team (NFL, MLB, NBA, and NHL). The data was analyzed for violations of assumptions and none were found. Residual plots can be found in Figure C-1 in the Appendix.

The overall model for this regression analysis was highly **significant**, with a p-value of less than 0.0001. This result confirms that the location and demographics of a city do have a significant impact on franchise value. However, not every variable was highly significant. GDP/capita was insignificant with a p-value of 0.22, and age was insignificant with a p-value of 0.43. Population was highly significant with a p-value of less than 0.0001. This result indicates that an increase in population size results in an increase in the value of a franchise. The complete ANOVA output for the full model is located in Figure C-2. Region and Sport were dummy variables, and therefore portions of the model needed to be tested to determine if they were significant or not. Testing the portion of the model without region revealed that region was insignificant with an F value of 0.0482. Testing the portion of the model without sport revealed that sport was significant with an F value of 21.91. The outputs for these models are found in Figures C-3 and C-4. Finally, the correlation matrix showed that age was negatively correlated with both GDP/capita and population, while the latter two were positively correlated. The complete matrix can be found in Figure C-5.

Since there was a significant difference in franchise value between teams with different demographic variables, the ideal location for a brand new sports franchise cannot be any random city. In particular, we want to focus on the specific variables that had a significant impact on franchise value, which were type of sport and population. Out of the four different

sports, the NFL had the most positive impact on franchise value, so the next new franchise will be an NFL team. Population had a positive correlation with franchise value, which means that the greater the population in an area was, the higher franchise value the team(s) in the area had. In order to assume independence, the new franchise will be located in a city that does not currently possess a professional sports franchise.

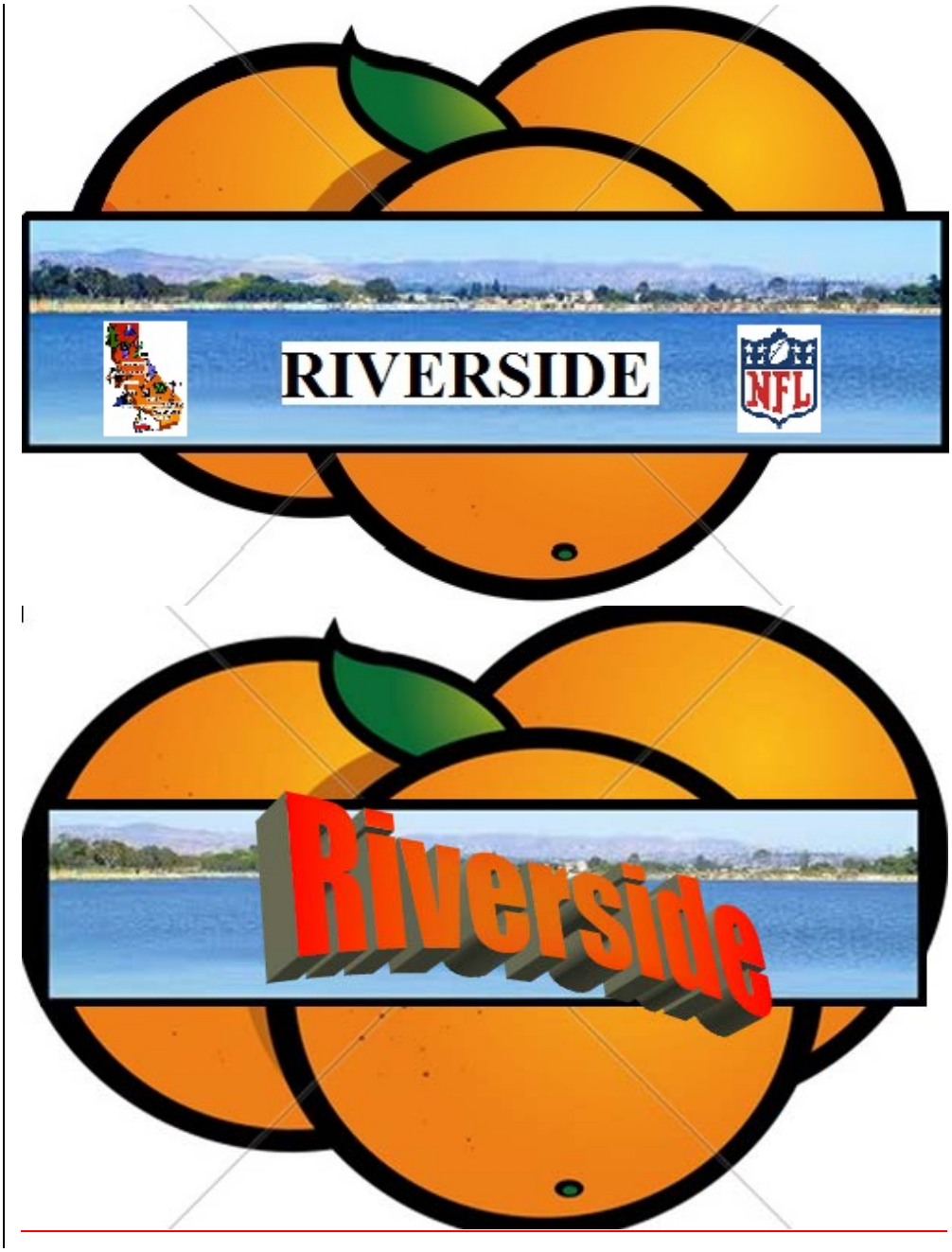
Based on this information, the ideal location for the next professional sports franchise, which will be an NFL team, is in the metropolitan statistical area of Riverside-San Bernardino-Ontario, California, otherwise known as the Inland Empire. This MSA is located



approximately 50 miles east of Los Angeles, and has the 12th biggest population for an MSA in the United States with approximately 4.35 million people. It has the largest population of any MSA without a professional sports franchise, and the next closest MSA is Las Vegas with only two million people. See Figure C-6 for a comparison of MSAs by population.

Of the three major cities in this area, Riverside has the largest population with approximately 313,000 people. The population grew nearly four percent from 2010 to 2012. Approximately 60% of the residents are between age 18 and 65, and the median household income is $57,000 per year. Aside from the demographic statistics, I think an NFL franchise in Riverside makes sense because Los Angeles has been begging for an NFL team since the Rams moved to St. Louis. If not Los Angeles, why not set up shop 50 miles east and start an NFL franchise? I

have even taken the liberty of naming this new team and creating their logo. They will be known as the Riverside Orange Groves.


RIVERSIDE
NFL
Riverside

The navel orange was first introduced in North America from Brazil in Riverside in 1873, which is why it is of significance to the Riverside area. Of course, many more factors would need to be considered for this to be a reality, but my hope is that these experiments and this data will get the ball rolling for more sophisticated experiments and analysis in the future.

CONCLUSION

All of the evidence that has been examined throughout this paper clearly shows that, by and large, professional sports franchises do not have a significant impact on their local economies. Many people do not realize this because they get caught up in the emotion and excitement of having a professional sports franchise to cheer for in their own town. They also do not realize all of the costs that are required to run a franchise. A sports team is like any other company in terms of its economic impact, and a single company is not going to swing the entire economy one way or the other. Since the modern trend in sports today is publicly financing stadiums, it is especially important for the average citizen to be aware of the impact that a new stadium could have on their city. Politicians and governments need to be held accountable and responsible when considering proposals for new stadiums, because often times the costs are underestimated. Do not get caught up in the hype of a new professional sports franchise or a new stadium. Voice concerns to local politicians and make sure that they are aware of all of the costs and benefits included in these types of projects. Sports are a wonderful thing that we all love, but like anything else, they are first and foremost a business.

APPENDICES

Appendix A – DATA FOR CASE STUDIES

Table A-1: Employment and Payroll in Portland's Spectator Sport Industry

	Employees			Payroll ($100,000s)		
	Total	Spectator sports	Spectator sports as % of total	Total	Spectator sports	Spectator sports as % of total
Multnomah County	380,379	762	0.20%	14,130,922	116,550	0.82%
Portland Metropolitan Area	836,996	762	0.09%	31,086,682	116,550	0.37%

(Santo, Mildner)

Table A-2: Portland's Spectator Sport Industry with an MLB Team

	Payroll ($100,000s)		
	Total	New MLB team	MLB team as % of total
Multnomah County	14,210,922	80,000	0.56%
Portland Metropolitan Area	31,166,682	80,000	0.26%
	Total	Revised spectator sports	Revised spectator sports as % of total
Multnomah County	14,210,922	196,550	1.38%
Portland Metropolitan Area	31,166,682	196,550	0.63%

(Santo, Mildner)

Table A-3: Short- and Long-Term Impact on Per Capita Annual Income (in $)

Type	Overall	MLB	NBA	NFL	NHL	Expansion
Year 0	-1116.96	-1463.91	-372.61	-1252.95	-1393.70	-0.07
	0.0001	0.0006	0.2661	0.0007	0.0001	0.9410
Year 1	-1365.46	-2141.31	-676.82	-1433.63	-1498.50	0.51
	0.0001	0.0014	0.1136	0.0059	0.0008	0.6160
Year 2	-1668.62	-2262.92	-821.70	-1753.95	-2035.82	0.11
	0.0001	0.0033	0.1662	0.0003	0.0012	0.9110
Year 3	-1769.17	-2179.58	-1004.74	-1869.73	-2205.47	0.05
	0.0001	0.2335	0.1152	0.0034	0.0005	0.9638
Year 4	-2107.75	-2562.48	-1674.34	-2456.38	-2112.44	0.42
	0.0001	0.2813	0.0743	0.0038	0.0054	0.6760
Cumulative	-13901.08	-12581.74	-22854.05	-14403.54	-9400.93	-0.51
10 Year	0.0001	0.0915	0.0100	0.0411	0.0112	0.6107

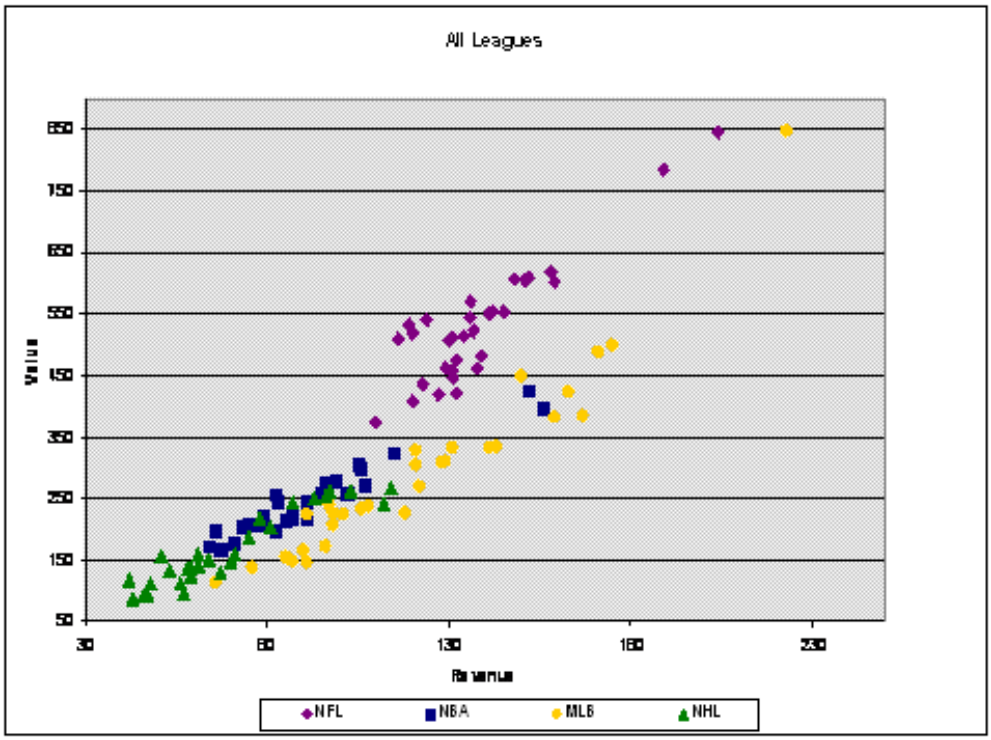
(Lertwachara, Cochran 248)

Table A-4: 2001-2002 Summary Averages

Variable	NFL Average	NBA Average	MLB Average	NHL Average
Value ($mil)	530.52	247.83	294.53	160.00
Revenue ($mil)	138.19	91.86	121.73	69.23
Payroll ($mil)	67.00	52.57	67.46	38.22
Stadium Age	22.23	10.14	23.63	9.60
Stadium Capacity	69192.71	19749.03	44839.17	18464.07
Attendance	524016.06	695620.62	2264707.03	687052.03
Ticket Price	47.61	41.91	18.30	41.02
TV Households	1878987.42	2285926.55	2394880.00	2399688.00
FCI – tickets	88.28	76.79	72.71	75.15
Firms >500 emp.	2063.65	2265.27	2353.03	2249.36

(Smith)

Figure Error! No text of specified style in document.**-1: Revenue/Value Correlation for each League**



(Smith)

Table A-5: Summary Output (NFL)

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	0.710116324	0.177529081	21.45204857	6.38232E-08
Residual	26	0.215166215	0.008275624		
Total	30	0.925282539			

R Square = 0.767458904

Table A-6: Summary Output (NBA)

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	7	1.0678	0.153	15.200	6.299E-07
Residual	21	0.2107	0.010		
Total	28	1.2785			

R Square = 0.835

Table A-7: Summary Output (MLB)

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	8	2.139	0.267	35.366	0.000
Residual	21	0.159	0.008		
Total	29	2.298			

R Square = 0.931

Table A-8: Summary Output (NHL)

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	8	1.834	0.229	10.072	0.000
Residual	21	0.478	0.023		
Total	29	2.312			

R Square = 0.793
(Smith)

Table A-9: Impact of New Stadiums and Professional Sports Teams by City

City/Result	Team Presence Statistically Significant	New Stadium Presence Statistically Significant
Atlanta	NO	NO
Baltimore	YES (Negative)	N.A.
Boston	N.A.	NO
Charlotte	NO	N.A.
Chicago	NO	N.A.
Cincinnati	NO	NO
Cleveland	NO	NO
Dallas	NO	NO
Denver	NO	NO
Detroit	N.A.	NO
Green Bay	N.A.	NO
Phoenix	NO	NO
Pittsburgh	NO	NO
Portland	N/A	N/A
Sacramento	NO	NO
Saint Louis	NO	YES (Negative)
Hartford	NO	NO
Houston	NO	NO
Indianapolis	YES (positive)	NO
Kansas City	NO	NO
Los Angeles	NO	NO
Miami	NO	NO
Milwaukee	NO	NO
Minneapolis	NO	NO
New Orleans	NO	NO
New York	NO	NO
Orlando	NO	N.A.
Philadelphia	NO	NO
San Antonio	NO	NO
San Diego	NO	NO
San Francisco/ Oakland	NO	Yes (Negative)
Seattle	NO	NO
Tampa Bay	NO	NO
Washington D.C.	NO	YES (Negative)
ALL	NO	NO

(Baade 16-17)

Table A-10: Impact of New Stadiums and Professional Sports Teams by Region

Region/Result	Team Presence Statistically Significant	New Stadium Presence Statistically Significant
Far West	NO	YES (negative)
Great Lakes	NO	NO
Mideast	NO	NO
New England	NO	YES (negative)
Plains	NO	NO
Rocky Mountains	NO	YES (positive)
Southeast	NO	NO
Southwest	NO	YES (positive)

(Baade 18)

Table A-11: Sample Metropolitan Areas

MSA	Baseball Team	Baseball Stadium	Football Team	Football Stadium
Atlanta		Turner Field 1997		Georgia Dome 1992
Baltimore		Oriole Park 1992	Ravens 1996	M&T Bank Stadium 1998
Charlotte			Panthers 1996*	Ericsson Stadium 1996
Chicago		US Cellular 1991		
Cleveland		Jacobs Field 1994	(Browns 1995) Browns 1999	Cleveland Stadium 1999
Denver	Rockies 1993	Coors Field 1995		
Fort Worth-Arlington		The Ballpark 1994		
Houston			(Oilers 1996)	
Jacksonville			Jaguars 1995	Alltell Stadium 1995 renovated
Los Angeles			(Raiders 1994)	
Miami	Marlins 1993			Pro Player Stadium 1987
Nashville			Titans 1999**	The Coliseum 1999
Oakland			Raiders 1995	
Orange Co. (Anaheim)		Edison Int'l Field 1999 renovated	(Rams 1994)	
Phoenix	Diamondbacks 1998	Bank One Ballpark 1998	Cardinals 1988	
St. Louis			(Cardinals1987)	Edward Jones Dome 1995
Seattle		Safeco Field 1999		
Tampa	Devil Rays 1998	Tropicana Field 1998 renovated		Raymond James Stadium 1998
Washington, DC				Fed Ex Field 1997

Note: Franchise names in parentheses denote teams that left an MSA during the indicated year.

* The Carolina Panthers played at Memorial Stadium in Clemson, South Carolina in 1995.

** The Tennessee Titans played at the Liberty Bowl in Memphis in 1997 and at Vanderbilt Stadium in 1998.

(Santo 181)

Table A-12: 1984-2001 Aggregate Results

TABLE 2

Equation One Results

MSA	Pop	Trend	BSTAD	FSTAD	BASE	FOOT	R-square
Atlanta	78.13**	−3,219,298**	1,777,076	−3,787,657*			0.996
	6.73	−2.95	0.76	−2.06			
Baltimore	50.77	594,527	−4,787,847**	3,330,034**		1,709,893	0.979
	1.18	0.58	−3.22	2.11		0.84	
Charlotte	46.29**	8,630		1,071,831		#	0.992
	3.06	0.02		1.03			
Chicago	32.79**	5,310,800**	−15,812,199**				0.992
	2.81	6.01	−5.09				
Cleveland	−56.39**	771,259**	1,172,395	1,256,781		−1,032,980	0.982
	−3.72	10.31	1.38	1.51		−1.58	
Denver	89.42**	−405,637	−831,040		−5,882,092**		0.994
	9.62	−1.38	−0.49		−3.74		
Fort Worth-Arlington	86.95**	−1,571,095**	932,767				0.978
	4.83	−2.54	0.44				
Houston	44.15**	274,669				−10,201,917**	0.993
	5.20	0.53				−4.56	
Jacksonville	4.26	669,971		1,368,767**		#	0.982
	0.13	1.04		2.23			
Los Angeles	98.62**	−6,494,622*				−208,900,001	0.925
	3.26	−1.96				−1.69	
Miami	−22.98	2,089,532		−1,458,449	−2,162,037		0.919
	−0.33	0.87		−0.85	−0.75		
Nashville	24.65	813,385		5,721,500*		#	0.894
	0.37	0.56		1.95			
Oakland	114.58**	−2,063,453				7,710,813**	0.967
	2.28	−1.17				2.25	
Orange Co. (Anahiem)	133.05**	−2,679,828*	7,225,047**			−1,083,293	0.994
	3.97	−1.77	4.60			−0.64	
Phoenix	56.84**	−2,627,994**	4,555,841**			1,664,882	0.995
	5.10	−2.43	3.06		#	0.80	
St. Louis	−10.44	1,354,480		1,116,316		663,492	0.970
	−0.11	1.24		0.44		0.48	
Seattle	25.59	1,527,690	10,096,357**				0.984
	0.81	1.07	4.18				
Tampa	55.53**	−513,499	2,035,197**	2,035,197**	#		0.987
	2.29	−0.61	4.38	4.38			
Washington, DC	150.21**	−6,702,802**		10,259,852**			0.997
	12.22	−7.45		7.72			
POOLED	44.25**	531,175**	4,619,880**	1,321,021	−8,126,238**	−254,955	0.993
	20.72	4.16	3.85	0.99	−4.93	−2.50	

Table A-13: 1984-2001 Proportional Results

Equation Two Results

MSA	Pop/PopR	Trend	BSTAD	FSTAD	BASE	FOOT	R-Square
Atlanta	3.17**	−0.0018**	0.0012*	0.0008			0.9930
	7.16	−4.58	2.00	1.29			
Baltimore	0.23	0.00002	−0.0005	0.0004		0.0001	0.5430
	0.70	0.23	−1.43	1.11		0.15	
Charlotte	1.35**	0.00004		0.0001		#	0.9860
	3.35	0.52		0.46			
Chicago	0.28	0.0011**	−0.0018				0.9340
	0.54	3.23	−1.11				
Cleveland	−2.13*	−0.0009**	−0.0007	−0.0015**		0.0008*	0.9810
	−1.87	−2.78	−1.66	−2.95		2.00	
Denver	3.64**	−0.0008*	0.0099**		0.0001		0.9210
	6.55	−2.00	3.78		0.03		
Fort Worth-Arlington	0.99**	0.00004	−0.0008*				0.9580
	8.70	0.73	−2.00				
Houston	2.02**	0.0009**				−0.0021	0.9480
	5.87	5.89				−1.15	
Jacksonville	0.85**	0.0000		0.0004**		#	0.8880
	3.55	−1.29		2.57			
Los Angeles	1.09**	−0.0009				0.0013	0.9860
	3.66	−1.60				0.68	
Miami	−0.03	−0.0003		−0.0003	0.0001		0.7350
	−0.02	−1.43		−0.17	0.04		
Nashville	4.99	−0.0016**		0.0030**		#	0.9580
	1.52	−4.30		2.80			
Oakland	2.47**	0.0005**				0.0004	0.8060
	4.60	4.43				0.58	
Orange Co. (Anahiem)	1.94**	−0.00001	−0.0007			0.0027**	0.7730
	3.09	−0.12	−0.69			2.39	
Phoenix	3.28**	−0.0040**	0.0001		#	−0.0002	0.9830
	11.16	−7.97	0.07			−0.21	
St. Louis	1.29**	0.00001		0.0000		−0.0017	0.9440
	3.97	0.06		−1.58		−0.01	
Seattle	4.26**	0.0002	0.0031**				0.9850
	4.67	1.24	3.60				
Tampa	0.74**	−0.0001**	0.0004**	0.0004**	#		0.4150
	2.72	−2.86	2.33	2.33			
Washington, DC	1.57**	−0.0005		0.0009			0.9830
	5.56	−1.62		1.04			
POOLED	1.33**	−0.0001	0.0022**	−0.0008	−0.0011	−0.0006	0.9980
	24.94	−0.79	2.93	−0.54	−1.63	−1.44	

(Santo 186-187)

Table A-14: Comparison of Value, Price, and Premium

Sport	Football	Basketball	Baseball	Hockey
Average Forbes Value	$354	$175	$241	$132
Average Transaction Price	$632.50	$240.86	$268.10	$131.23
Average Premium	79%	38%	11%	-1%

(Vine 11)

Table A-15: Model 1 Results

	Football	Basketball	Baseball	Hockey	All
Intercept	482.7935*	220.6666*	593.0414*	240.0713*	353.0970*
Debt/Revenue	43.3003	23.9015	-13.2022	12.3389	28.1356
TRPS	-0.1176	0.1928	-2.8010*	-0.8135*	-0.9561*
Income	3.5263*	0.6587	4.7631*	2.9727*	6.6186*
R Square	0.7070	0.0906	0.4996	0.3689	0.5394

(Vine 14)

Table A-16: Model 2 Results

	Football	Basketball	Baseball	Hockey	All
Intercept	-12.8575	30.9665	-217.0535*	-20.4887	-91.3932*
Debt/Revenue	16.5265*	-8.5810	-0.5032	2.3022	7.0044
TRPS	-0.1175	-0.0779	0.0364	-0.1977*	-0.2357
Revenues	3.8219*	2.6754*	3.2947*	2.8567*	5.9244*
Expenses	-0.3804	0.0258	-0.8722	0.0375	2.0214*
R Square	0.9540	0.8647	0.9173	0.9381	0.8846

(Vine 15)

Table A-17: Model 3 Results

	Football	Basketball	Baseball	Hockey	All
Intercept	346.1121*	173.6968*	-67.9440	39.5076	-125.6140
Debt/Revenue	21.5139	-15.8540	-6.4470	4.3752	20.6415
TRPS	-0.4443	-0.2559	-0.0231	-0.2813	0.3373
Gate Receipts	7.0152*	5.3568*	2.6838*	3.5111*	0.1908
Payroll	-0.7089	0.8737	-3.2059*	-0.6985	-6.1807*
R Square	0.5737	0.7161	0.8507	0.7828	0.4182

(Vine 15)

Table A-18: Model 4 Results

	Football	Basketball	Baseball	Hockey	All
Intercept	-21.6596	38.9924	-269.7988*	-19.1196	-90.1351*
Debt/Revenue	22.6583*	-9.5753	2.7859	2.3731	11.5693
TRPS	-0.0298	-0.1046	0.0896	-0.2024*	-0.1978
Gate Receipts	2.5467*	3.0297*	3.0232*	2.9138*	2.9558*
Other Revenue	4.4256*	2.4786*	4.3476*	2.8048*	6.2462*
Expenses	-0.1169	0.0792	-0.6518	0.0479	1.3032*
R Square	0.9635	0.8663	0.9223	0.9382	0.9177

(Vine 16)

Table A-19: Model 5 Results

	Football	Basketball	Baseball	Hockey	All
Intercept	-18.3433	105.2621	-213.4741*	-16.9789	-104.7534*
Debt/Revenue	16.6355*	-9.2111	0.1598	3.1527	11.3428
TRPS	-0.1116	-0.0734	0.0425	-0.1862	-0.1694
Revenues	4.0222*	2.4097*	3.3414*	2.9601*	5.9843*
Payroll	-0.3716	1.3791	-0.9087	-0.0256	1.4868*
Other Expenses	0.2011	-0.9993	-0.5623	0.6040	3.1074*
R Square	0.9545	0.8753	0.9174	0.9398	0.8871

(Vine 17)

Table A-20: 2002 Stadiums Built Before 1990

Team	Stadium	Year Opened	Construction Cost (Real 2002 Dollars)	Public Finance Proportion
Boston Red Sox	Fenway Park	1912	$650,000*	0.0%
Chicago Cubs	Wrigley Field	1914	$250,000*	0.0%
New York Yankees	Yankee Stadium	1923	$2,500,000*	0.0%
L.A. Dodgers	Dodger Stadium	1962	$136,904,762	17.0%
New York Mets	Shea Stadium	1964	$147,398,844	100.0%
Anaheim Angels	Anaheim Stadium	1966	$132,596,685	96.0%
St. Louis Cardinals	Busch Stadium	1966	$138,121,547	80.0%
Oakland Athletics	Network Associates Coliseum	1966	$140,883,978	100.0%
San Diego Padres	Qualcomm Stadium	1967	$149,193,548	100.0%
Cincinnati Reds	Cinergy Field	1970	$208,333,333	100.0%
Philadelphia Phillies	Veterans Stadium	1971	$200,000,000	100.0%
Kansas City Royals	Kauffman Stadium	1973	$283,400,810	100.0%
Minnesota Twins	Hubert Humphrey Metrodome	1982	$139,664,804	97.3%
Average (1962 - 1982)			$167,649,831	89.0%

(Miller 25)

Table A-21: 2002 Stadiums Opened 1990-2002

Team	Stadium	Year Opened	Construction Cost (Real 2002 Dollars)	Public Finance Proportion
Chicago White Sox	US Cellular Field	1991	$220,607,662	100.0%
Baltimore Orioles	Oriole Park	1992	$128,205,128	100.0%
Cleveland Indians	Jacobs Field	1994	$212,378,641	48.0%
Texas Rangers	Ameriquest Field	1994	$231,796,117	71.0%
Atlanta Braves	Turner Field	1997	$263,157,895	100.0%
Seattle Mariners	Safeco Field	1999	$558,963,283	66.0%
Houston Astros	Minute Maid Park	2000	$261,233,020	68.0%
San Francisco Giants	SBC Park	2000	$266,457,680	0.0%
Detroit Tigers	Comerica Park	2000	$313,479,624	38.0%
Pittsburgh Pirates	PNC Park	2001	$265,989,848	81.3%
Milwaukee Brewers	Miller Park	2001	$406,091,371	78.0%
Average			$284,396,388	68.2%

(Miller 26)

Table A-22: Summary Statistics

Variable	Mean	Std Dev
Real Franchise Value	203000000	108000000
Real Per Capita Income	32629.35	4418.259
SMSA Population	4674193	3283690
Team Winning Percentage	501.2308	69.78258
Lagged Team Winning Percentage	499.8669	67.38866
Stadium Age	30.1716	24.40059
Age of Team	73.86391	40.58722
Tenure in City	57.97929	38.97374
Privately Owned Stadiums	0.204142	0.4036708
n	338	

(Miller 27)

Table A-23: Regression Results

Model	1	2	3	4	5
Intercept	14.24374*** *2.316335*	14.7302*** *2.359887*	14.41158*** *2.298477*	14.43349*** *2.306191*	14.15988*** *2.322058*
Log of Real Per-capita Income	0.265987 *0.2237044*	0.2219265 *0.2273032*	0.2927276 *0.2224856*	0.2882827 *0.2243932*	0.2705483 *0.2240027*
Log of SMSA Population	0.1195067** *0.0565972*	0.1175212** *0.0562964*	0.0933814* *0.0542452*	0.0946953* *0.0543678*	0.1214541** *0.0566885*
Winning Percentage	0.0006301*** *0.0001118*	0.0006291*** *0.0001119*	0.0006262*** *0.0001111*	0.0006266*** *0.0001114*	0.0006321*** *0.000112*
Lagged Winning Percentage	0.0004567*** *0.0001101*	0.0004569*** *0.0001102*	0.0004262*** *0.00011*	0.0004258*** *0.0001103*	0.0004543*** *0.0001105*
Stadium Age	-0.0066157*** *0.0024173*	-0.0066522*** *0.0024154*	-0.0064038*** *0.0023721*	-0.0061522** *0.0027639*	-0.0059346** *0.0026941*
Stadium Age Quadratic Term	0.0000566 *0.0000368*	0.0000571 *0.0000368*	0.000055 *0.0000361*	0.0000521 *0.0000396*	0.0000486 *0.0000394*
Age of Team	-0.0078749 *0.008824*	-0.0084358 *0.0088047*	-0.0067315 *0.0084813*	-0.0065908 *0.0086247*	-0.0067991 *0.0089635*
Age of Team Quadratic Term	0.0000562 *0.0000617*	0.0000619 *0.0000617*	0.0000459 *0.0000595*	0.0000447 *0.0000607*	0.0000474 *0.0000631*
Years in City	0.0107296 *0.0090703*	0.0113765 *0.0090512*	0.0084322 *0.0087611*	0.0083586 *0.0088631*	0.0096521 *0.0092031*
Years in City Quadratic Term	-0.0000743 *0.0000634*	-0.0000803 *0.0000634*	-0.0000591 *0.0000614*	-0.0000584 *0.0000623*	-0.0000658 *0.0000647*
Stadium Age-Private Financing Proportion Interaction	0.0038313 *0.0048578*	0.0029927 *0.0049204*	-0.0063556 *0.0056244*	-0.0064901 *0.0056818*	0.0031502 *0.0049932*
Stadium Age-Private Financing Proportion Interaction Quadratic Term	-0.00000833 *0.0000674*	0.0000284 *0.0000758*	0.0002156** *0.0000932*	0.000217** *0.0000935*	-0.00000438 *0.0000677*
Stadium Age-Private Ownership Dummy Interaction	-	-0.0025606 *0.0024065*	0.0185678*** *0.0068171*	0.0177701*** *0.0081222*	-
Stadium Age-Private Ownership Dummy Interaction Quadratic Term	-	-	-0.0003337*** *0.0001015*	-0.0003258*** *0.00011*	-
Private Ownership Dummy	-	-	-	0.0148966 *0.0834405*	0.0397416 *0.0649171*
d1990	-0.460214*** *0.0670466*	-0.4614644*** *0.0670254*	-0.4752323*** *0.0655251*	-0.4756602*** *0.0658331*	-0.4632025*** *0.0671372*
d1991	-0.5123435*** *0.0674302*	-0.5163667*** *0.0675299*	-0.5273889*** *0.0660078*	-0.5278817*** *0.0663512*	-0.5144807*** *0.0674477*
d1992	-0.621675*** *0.0640277*	-0.6254588*** *0.0641266*	-0.6364634*** *0.0627313*	-0.6367101*** *0.0629591*	-0.6231076*** *0.0640003*
d1993	-0.6419987*** *0.0630505*	-0.6465167*** *0.0632029*	-0.6566021*** *0.0618693*	-0.656945*** *0.0621262*	-0.6432963*** *0.0630307*
d1994	-0.669801*** *0.0598977*	-0.6745092*** *0.0600753*	-0.684053*** *0.0588383*	-0.6840455*** *0.0589732*	-0.6699663*** *0.0598476*
d1995	-0.6708641*** *0.0564767*	-0.6734981*** *0.0565411*	-0.6839827*** *0.055485*	-0.6838305*** *0.0555908*	-0.6712524*** *0.0564406*
d1996	-0.5548749*** *0.0531188*	-0.5569667*** *0.0531702*	-0.5669657*** *0.0522666*	-0.5667532*** *0.0523633*	-0.5551039*** *0.0530949*

d1997	-0.2170261*** *0.0486774*	-0.2181281*** *0.0487061*	-0.2285896*** *0.0480031*	-0.2286528*** *0.0481319*	-0.2181757*** *0.0487047*
d1998	-0.1457435*** *0.0441055*	-0.1454422*** *0.0441243*	-0.1575888*** *0.0436636*	-0.1574864*** *0.0437573*	-0.1468201*** *0.0441521*
d1999	-0.0899428** *0.0403738*	-0.0905437** *0.0403942*	-0.0930193** *0.0398616*	-0.0925096** *0.0399865*	-0.0889268** *0.0404302*
d2000	-0.0418286 *0.034073*	-0.0417888 *0.0340901*	-0.0482836 *0.0337997*	-0.047886 *0.0339093*	-0.0414406 *0.0341228*
d2001	-0.0125282 *0.025077*	-0.0121153 *0.0251029*	-0.0138845 *0.0249624*	-0.013824 *0.0250201*	-0.0126942 *0.0251307*
R-sq: Within	0.8007	0.7999	0.8089	0.8091	0.8027
R-sq: Between	0.5651	0.5704	0.6158	0.6141	0.5565
R-sq: Overall	0.7036	0.7084	0.7349	0.7343	0.7005
Number of Observations	338	338	338	338	338
Breusch and Pagan Lagrangian Multiplier Test for Random Effects (Ho: Random effects not present)	397.00***	393.06***	369.59***	347.81***	397.75***
Hausman Test for Random Effects (Ho: individual effects uncorrelated with regressors)	8.97	11.06	8.05	20.3	11.45
Wooldridge Test for an AR1 Process (Ho: No First-Order Autocorrelation Present	65.102***	65.696***	63.046***	62.786***	65.056***

*** significant at the 1% level or better

** significant at the 5% level up to but not including the 1% level

* significant at the 10% level up to but not including the 5% level

Standard Errors are given below the parameter estimates

(Miller 28-29)

Appendix B – REGRESSION ANALYSIS: 2001-2012

Figure B-1: Fit Diagnostics and Residual Plots

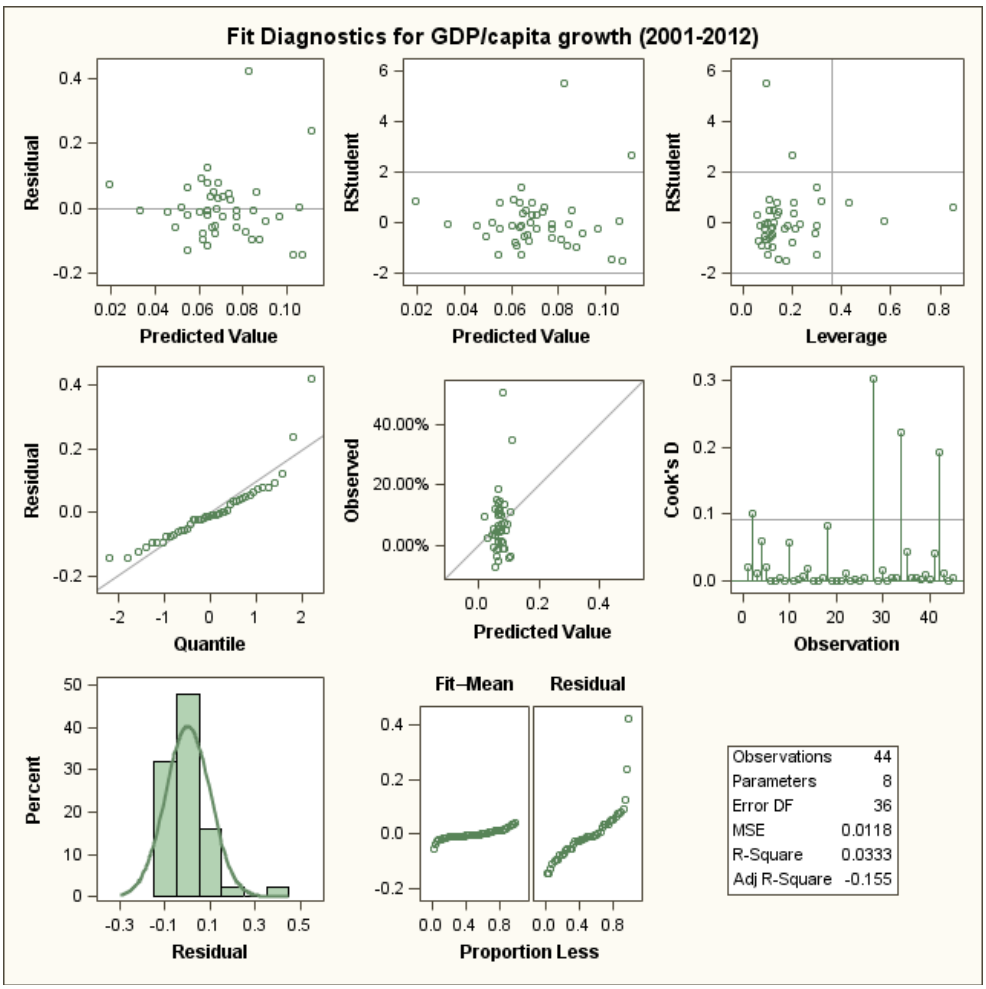


Figure B-2: ANOVA Output

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	0.01457	0.00208	0.18	0.9884
Error	36	0.42315	0.01175		
Correct Total	43	0.43772			

Root MSE	0.10842	R-Square	0.0333
Dependent Mean	0.07055	Adj R-Sq	-0.1547
Coeff Var	153.67373		

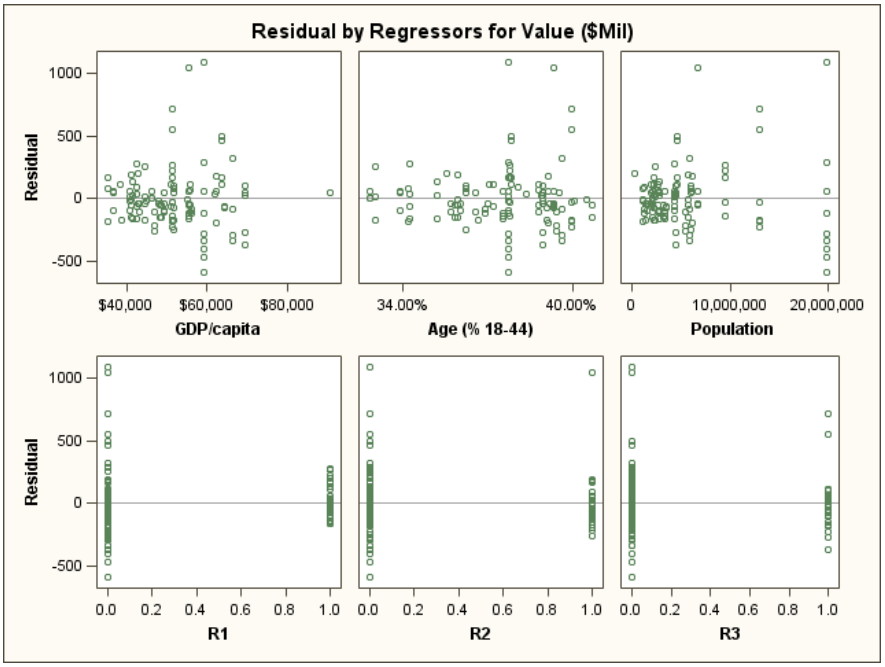
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.06395	0.05943	1.08	0.2890
NFL	1	-0.04297	0.04552	-0.94	0.3515
MLB	1	0.01305	0.04116	0.32	0.7530
NBA	1	-0.01302	0.03911	-0.33	0.7412
NHL	1	0.01285	0.03835	0.34	0.7395
Stadium Costs	1	6.63131E-12	3.01047E-11	0.22	0.8269
Winning %	1	0.06478	0.13760	0.47	0.6406
Championships	1	-0.00250	0.01363	-0.18	0.8555

Figure B-3: Correlation Matrix

Correlation of Estimates								
Variable	Intercept	NFL	MLB	NBA	NHL	Stadium Costs	Winning %	Champs
Intercept	1.00	-0.08	-0.06	-0.03	-0.13	0.10	-0.81	0.18
NFL	-0.08	1.00	-0.61	0.40	0.14	-0.42	-0.31	0.08
MLB	-0.06	-0.62	1.00	-0.35	-0.16	0.13	0.17	-0.28
NBA	-0.03	0.40	-0.35	1.00	0.18	-0.43	-0.35	-0.19
NHL	-0.13	0.14	-0.16	0.18	1.00	-0.55	-0.05	-0.47
Stadium Costs	0.10	-0.42	0.13	-0.44	-0.55	1.00	0.17	0.20
Winning %	-0.81	-0.31	0.17	-0.35	-0.05	0.17	1.00	-0.12
Championships	0.18	0.08	-0.28	-0.19	-0.47	0.20	-0.12	1.00

Appendix C – REGRESSION ANALYSIS FOR FUTURE FRANCHISE

Figure C-1: Residual Plots



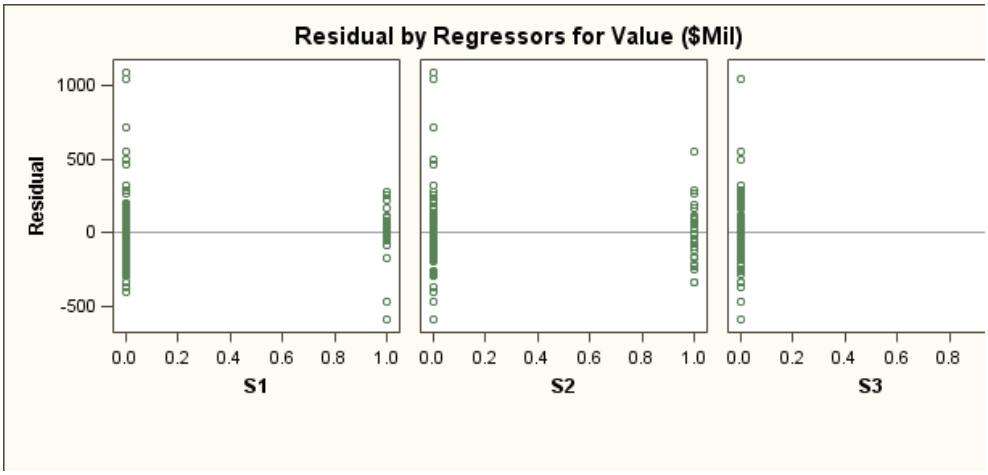


Figure C-2: ANOVA Output for Full Model

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	12777447	1419716	22.50	<.0001
Error	103	6498459	63092		
Corrected Total	112	19275907			

Root MSE	251.18089	R-Square	0.6629
Dependent Mean	759.06195	Adj R-Sq	0.6334
Coeff Var	33.09096		

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Type I SS
Intercept	1	381.98	583.39	0.65	0.5141	65107779
GDP/capita	1	0.004	0.003	1.23	0.2223	876731
Age (% 18-44)	1	1448.64	1843.06	0.79	0.4337	9081.78287
Population	1	0.00	0.00	4.47	<.0001	1079453
R1	1	-94.03	74.99	-1.25	0.2127	11089
R2	1	-89.65	84.61	-1.06	0.2918	20506
R3	1	-144.92	84.20	-1.72	0.0882	179126
S1	1	-875.05	69.60	-12.58	<.0001	5430503
S2	1	-547.76	65.24	-8.40	<.0001	2118812
S3	1	-453.02	65.13	-6.96	<.0001	3052146

Figure C-3: ANOVA output (No Region)

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	12572134	2095356	33.13	<.0001
Error	106	6703773	63243		
Corrected Total	112	19275907			

Root MSE	251.48	R-Square	0.6522
Dependent Mean	759.06	Adj R-Sq	0.6325
Coeff Var	33.13		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	732.30	472.04	1.55	0.1238
GDP/capita	1	0.01	0.00	1.84	0.0687
Age (% 18-44)	1	46.77	1441.13	0.03	0.9742
Population	1	0.00	0.00	5.77	<.0001
S1	1	-872.08	69.55	-12.54	<.0001
S2	1	-553.16	65.22	-8.48	<.0001
S3	1	-462.76	64.83	-7.14	<.0001

Figure C-4: ANOVA output (without sport)

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	2175986	362664	2.25	0.0441
Error	106	17099921	161320		
Corrected Total	112	19275907			

Root MSE	401.64662	R-Square	0.1129
Dependent Mean	759.06195	Adj R-Sq	0.0627
Coeff Var	52.91355		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	364.54	930.22	0.39	0.6959
GDP/capita	1	0.01	0.005	1.26	0.2110
Age (% 18-44)	1	45.04	2934.78	0.02	0.9878
Population	1	0.00	0.00	1.95	0.0538
R1	1	-71.38	119.36	-0.60	0.5511
R2	1	-53.83	134.61	-0.40	0.6900
R3	1	-141.19	133.99	-1.05	0.2944

Figure C-5: Correlation Matrix

Correlation of Estimates										
Variable	**Intercept**	**GDP/capita**	**Age (% 18-44)**	**Population**	**R1**	**R2**	**R3**	**S1**	**S2**	**S3**
Intercept	1.00	0.33	-0.96	0.25	-0.05	0.32	0.46	-0.01	0.03	-0.05
GDP/capita	0.33	1.00	-0.56	0.03	0.25	0.43	0.26	0.06	0.044	-0.001
Age (% 18-44)	-0.96	-0.56	1.00	-0.29	-0.09	-0.46	-0.53	-0.05	-0.08	0.001
Population	0.25	0.026	-0.29	1.00	0.34	0.41	0.38	-0.10	-0.06	-0.10
R1	-0.05	0.25	-0.09	0.34	1.00	0.57	0.49	0.04	-0.03	-0.06
R2	0.32	0.43	-0.46	0.41	0.57	1.00	0.64	0.05	-0.05	0.004
R3	0.46	0.26	-0.53	0.38	0.49	0.64	1.00	0.02	-0.051	-0.07
S1	-0.01	0.06	-0.05	-0.10	0.04	0.05	0.02	1.00	0.45	0.45
S2	0.03	0.04	-0.08	-0.06	-0.03	-0.05	-0.06	0.45	1.00	0.47
S3	-0.045	-0.001	0.001	-0.10	-0.06	0.00	-0.07	0.45	0.47	1.00

Figure C-6: Population by MSA (2012 Estimate)

Rank	Metropolitan Statistical Area	Population
1	New York-Newark-Jersey City, NY-NJ-PA	19,831,858
2	Los Angeles-Long Beach-Anaheim, CA	13,052,921
3	Chicago-Naperville-Elgin, IL-IN-WI	9,522,434
4	Dallas-Fort Worth-Arlington, TX	6,700,991
5	Houston-The Woodlands-Sugar Land, TX	6,177,035
6	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	6,018,800
7	Washington-Arlington-Alexandria, DC-VA-MD-WV	5,860,342
8	Miami-Fort Lauderdale-West Palm Beach, FL	5,762,717
9	Atlanta-Sandy Springs-Roswell, GA	5,457,831
10	Boston-Cambridge-Newton, MA-NH	4,640,802
11	San Francisco-Oakland-Hayward, CA	4,455,560
12	Riverside-San Bernardino-Ontario, CA	4,350,096
13	Phoenix-Mesa-Scottsdale, AZ	4,329,534
14	Detroit-Warren-Dearborn, MI	4,292,060
15	Seattle-Tacoma-Bellevue, WA	3,552,157
16	Minneapolis-St. Paul-Bloomington, MN-WI	3,422,264
17	San Diego-Carlsbad, CA	3,177,063
18	Tampa-St. Petersburg-Clearwater, FL	2,842,878
19	St. Louis, MO-IL	2,795,794
20	Baltimore-Columbia-Towson, MD	2,753,149
21	Denver-Aurora-Lakewood, CO	2,645,209
22	Pittsburgh, PA	2,360,733
23	Charlotte-Concord-Gastonia, NC-SC	2,296,569
24	Portland-Vancouver-Hillsboro, OR-WA	2,289,800
25	San Antonio-New Braunfels, TX	2,234,003
26	Orlando-Kissimmee-Sanford, FL	2,223,674
27	Sacramento--Roseville--Arden-Arcade, CA	2,196,482
28	Cincinnati, OH-KY-IN	2,128,603
29	Cleveland-Elyria, OH	2,063,535
30	Kansas City, MO-KS	2,038,724
31	Las Vegas-Henderson-Paradise, NV	2,000,759

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