A Fall Classic?
Assessing the Economic Impact of the World Series

Victor A. Matheson
and
Robert A. Baade

February 2005

COLLEGE OF THE HOLY CROSS, DEPARTMENT OF ECONOMICS
FACULTY RESEARCH SERIES, WORKING PAPER NO. 05-01*

Department of Economics
College of the Holy Cross
Box 45A
Worcester, Massachusetts 01610
(508) 793-3362 (phone)
(508) 793-3710 (fax)
http://www.holycross.edu/departments/economics/website

*All papers in the Holy Cross Working Paper Series should be considered draft versions subject to future revision. Comments and suggestions are welcome.

A Fall Classic?
Assessing the Economic Impact of the World Series

Victor A. Matheson†
College of the Holy Cross

and

Robert A. Baade††
Lake Forest College

February 2005

Abstract

An empirical analysis of the economic impact of the Major League Baseball's post-season on host-city economies from 1972-2001 suggests that any economic benefits from the playoff are small or non-existent. An examination of 129 playoff series finds that any increase in economic growth as a result of the post-season is not statistically significantly different than zero and that a best guess of the economic impact is $6.8 million per home game. As a general method of economic development, public support of a baseball team's attempt to reach the World Series should be seen as a gamble at best.

JEL Classification Codes: L83, R53

Keywords: baseball, World Series, impact analysis, sports, mega-event

---

†Victor A. Matheson, Department of Economics, Box 157A, College of the Holy Cross, Worcester, MA 01610-2395, 508-793-2649 (phone), 508-793-3710 (fax), vmatheso@holycross.edu

††Robert A. Baade, Department of Economics and Business, Lake Forest College, Lake Forest, IL 60045, 847-735-5136 (phone), 847-735-6193 (fax), baade@lfc.edu

Introduction

Major League Baseball (MLB) teams desiring public funding to help build new playing facilities frequently claim that a new stadium is needed to allow the team to be competitive. For many teams this claim is entirely true. New stadiums, along with the generous lease terms that often accompany them, nearly always generate significantly higher revenue for the tenant than the stadium they replace. To the extent that the team management turns around and spends this extra revenue on player salaries, the extra revenue generated by a new stadium will tend to improve a team's performance on the field as well as on the books.

It is a well established fact that higher team payrolls are strongly correlated with winning percentage. An examination of winning percentage and team payroll shows that between 1994 and 2000, each additional $2 million in team payroll equated to approximately one additional regular season win. High payrolls are even more strongly related to post-season success. Since MLB switched to its current playoff format in 1995 through the 2000 season, teams in the highest quartile of payrolls have appeared in the playoffs 30 times compared with 15 appearances by teams in the 2nd quartile, 1 appearance by a team in the 3rd quartile, and 2 appearances by teams in the bottom quartile. In terms of success in the playoffs the gulf been "haves" and the "have nots" is even wider still. Teams in the top quartile have won 168 of the 190 playoff games played since 1995 with 2nd quartile teams winning another 20 of the 190 games. Of course, a high payroll is no guarantee of success as witnessed by such big budget failures as the 2000 L.A. Dodgers who failed to make the playoffs with the 2nd highest payroll in baseball or the 1998 Baltimore Orioles who failed to even break .500 with MLB's highest payroll.

The connection between new stadiums and team success (due to increased team payrolls) is nearly as clear. Team payrolls nearly always increase along with stadium revenues leading to higher winning percentages and playoff appearances. This trend is most easily shown by example. Following the opening of the SkyDome in Toronto in 1989, the Blue Jays won World Series in 1992 and 1993 with baseball's largest payroll. Baltimore, near the bottom of league payrolls in 1992, went on have the 2nd largest team payroll by 1995 after the opening of the wildly popular Camden Yards Ballpark in 1992. Finally, Cleveland probably presents the greatest success story of stadium construction leading to on-field success. The Cleveland Indians, with one of baseball's three lowest payrolls in 1992 and 1993 and a 50-year record of post-season futility, turned around their franchise after the construction of Jacobs Field in 1994. The Indians were among the top 3 franchises in payroll in 1996 and 1997 and made World Series appearances in 1995 and 1997. In fact, on-field success following the opening of a new ball park is the rule not the exception. Of the 10 clubs receiving new stadiums between 1989 and 1999, 8 made playoff appearances within 2 years of the construction of the stadium. Only Tampa Bay, a 1997 expansion franchise, and Baltimore, whose potential playoff appearance was postponed by two years due to the 1994 MLB players' strike, have defied the pattern.

Of course, in large media markets such as New York City and Los Angeles, stadium revenues represent a much smaller fraction of total team revenues, and therefore teams in these markets can afford large payrolls despite outdated stadiums. Similarly, for older parks such as Chicago's Wrigley Field or Boston's Fenway Park, the historic nature of the stadium itself may be an attraction for many fans, and, therefore teams like the Chicago Cubs or the Boston Red Sox can afford large payrolls because of, rather than in spite of, an old ball park. (Baade, 2000)

It is also important to note that wins and losses in MLB are a zero-sum game as any increases in winning percentage by a club with a new stadium must be matched by an increase in losses for another team. The construction of Camden Yards in 1992 has prompted a boom in stadium construction that has seen 15 new stadiums being completed during the 1992-2003 period with new stadiums being proposed or under construction for another 11 cities (Munsey and Suppes, 2000). If 25 of baseball's 30 teams are playing in essentially new stadiums in the next 5 years, it is clear that not every team with a new stadium can support an above average payroll with the above average on the field performance that generally accompanies such a payroll. It is likely that the automatic on-field success that accompanied teams such as the Blue Jays, Indians, Orioles, and Texas Rangers, who built new stadiums in the early stages of the building boom, will not necessarily accrue to the most recent new builders. It is equally likely that with so many new stadiums and the increased payrolls that accompany the new stadiums, teams that fail to build new stadiums, especially those located in small media markets, will increasingly likely be condemned to lower and lower positions in the win/loss standings.

While it is clear that new stadiums tend to fill the pockets of team owners and the players they hire, it is not so clear how the economies of the communities fare in which the new stadiums are constructed. Many studies, including Baade and Dye, 1990; Rosentraub, 1994; Baade, 1996; Noll and Zimbalist, 1997; Coates and Humphreys, 1999 to name just a few, have examined the economic impact of stadium construction. Without exception, these studies have found that new stadiums provide little or no net economic stimulus to the communities in which they are located.

Since new stadiums tend to improve the on-field performances of their tenant team, the construction of a new stadium also tends to increase the chance of a team hosting post-season playoff games. These games potentially lead to a flurry of economic activity in the cities hosting them. If the economic gains to the host city from hosting post-season games are very large, then it could be rational for cities to make large investments in new stadiums in order to increase their chances of capturing the post-season economic windfall. But the question remains, how big is the true economic impact of these post-season “mega-events” on the host cities?

An Overview of the World Series

Major League Baseball (MLB) determines its champion each October with the playing of the World Series. As with any major sporting event, the World Series is often accompanied by announcements from local chambers of commerce and economic consultants about the economic impact that the games have on the host cities. These estimates vary widely from Series to Series. On the low end, a study of the 1995 World Series in Atlanta placed a value of $26 million on the Series, and the Convention and Visitors Bureau of Greater Cleveland estimated an impact of $53 million for the Indians’1997 post-season play including a $21.7 million impact directly from the World Series itself. On the other end of the spectrum, a study sponsored by the Florida Marlins placed the value of their 1997 World Series appearance at $155.7 million including the entire post-season. A second study by Kathleen Davis sponsored by the Broward (County) Economic Development Council placed the value of the World Series alone at $61.8 million. The Chicago Chamber of Commerce estimated the potential impact of the Chicago White Sox’ 1993 trip to the post-season at $180 million. The highest estimate for the economic impact of the post-season comes from the 2000 “Subway Series” between the New York Yankees and New York Mets where the Comptroller of New York City placed the combined value of the playoff and World Series at nearly $250 million.

The differing estimates of the economic impact of the event are due in part to the assumptions used by the models. Moreover, the variation is also due to the nature of the event itself. Unlike the Super Bowl or an All-Star game, the World Series is not a single event but rather a series of events. The World Series itself is a best-of-seven series of games played in the cities of the competing teams. The games alternate between cities in a fashion such that each city is guaranteed hosting a minimum of two and a maximum of four games. In order to qualify for the World Series, each competing team has participated in a five-game (from 1969-1984) or seven-game (from 1984-present) League Championship Series, and since 1995, teams have participated in a five-game divisional championship series as well. Each of the playoff series generate significant public attention and economic activity in addition to the impact of the World Series itself. In total, a city that makes it to the World Series might host as many 11 post-season games (including 4 World Series games), each of which can be seen as a "mini Super Bowl." Of course, the playoff series need not go the full 5 or 7 games and a city may host fewer games than their opponent meaning that even a team that makes the World Series may host as few as few a 5 post-season games (including 2 World Series games). The largest economic estimates generally assume that the city hosts the maximum number of playoff and World Series games.

On a per game basis, the economic impact estimates in 2000 dollars range from as low as $2 million to as high as $26.8 million with World Series games often being slightly considered slightly more valuable than League and Division Series games. The majority of the estimates lie between $10 and $20 million in economic benefits per post-season home game.

MLB understands that it is competing for the sports entertainment dollar, and the League believes that stadiums factor prominently into consumer decisions relating to leisure spending. Since modern sports facilities nearly always are built with some form of public funding, baseball's boosters could rationalize the construction of a new stadium to a skeptical public on the grounds that the economic impact from hosing a single World Series could potentially cover a substantial portion of the cost of building a new stadium.

Reasons for skepticism, however, abound. The purpose of this study is to estimate the economic impact of the post-season appearances from 1972 through 2001. The results indicate that the economic impact of the baseball's playoffs and post-season are not statistically significantly different than zero, but a best guess would place the impact in the neighborhood of the lower estimates.

Review "Mega-Event" Economic Impact Studies

The numbers quoted by MLB and city officials are generated using a standard expenditure approach to estimating the direct economic impact of the event. The numbers are derived by estimating the number of "visitor days" as a result of the playoffs and multiplying that statistic by the average estimated per diem expenditures per visitor. Once an estimate of direct impact is obtained, the total economic impact is estimated by applying a multiplier which typically doubles the direct economic impact. Using this technique, if a mistake is made in estimating direct expenditures, those errors are compounded in estimating indirect expenditures. The secret to generating credible economic impact estimates using the expenditure approach is to accurately estimate direct expenditures.

Precisely measuring changes in direct expenditures is fraught with difficulties. Most prominent among them is an assessment of the extent to which spending in conjunction with the event would have occurred in the absence of it. For example, if an estimate was sought on the impact of a professional sporting event on a local economy, consideration would have to be given to the fact that spending on the event may well merely substitute for spending that would occur on something else in the local economy in the absence of the event. As pointed out by Andrew Zimbalist, “If you buy a $100 ticket to the Series, that’s money you might have spent on a Broadway show or food.” Therefore, if the fans are primarily indigenous to the community, an event like the World Series may simply yield a reallocation of leisure spending while leaving total spending unchanged. This distinction between gross and net spending has been cited by economists as a chief reason why professional sports in general do not seem to contribute as much to metropolitan economies as boosters claim (Baade, 1996).

One of the attributes of most mega-events is that gross and net spending changes induced by the event are more likely to converge. Spending at a mega-event is more likely to be categorized as export spending since most of it is thought to be undertaken by people from outside the community. According to the Sports Management Research Institute, 87% of attendees at the 1999 Super Bowl were from outside the host city of Miami. The World Series is a much different event than the Super Bowl, however. First of all, the Super Bowl and is played at a neutral site selected several years prior to the game. This means fans from both participating teams must travel to the host city to see their team. Furthermore, sports fans from non-participating cities may well attend the game since travel plans can be made in advance. In the World Series, each of the participating teams serves as a host city for the games. Fans of one team have little incentive to the opponent's city to watch games since some portion of the games can be attended at home. Furthermore, fans from non-participating cities may have difficulty attending the games since travel plans cannot be made in advance. At the 1997 World Series in Florida, only between 13 percent and 20 percent of fans at the games were visitors from outside the south Florida region. In comparison to the All-Star Game or the Super Bowl, the World Series is much more of a local event, and hence less likely to increase net incomes of local residents.

Spending by local residents is not the only potentially significant source of bias in estimating direct expenditures. While surveys on expenditures by those attending an event, complete with a question on place of residence, may well provide insight on spending behavior for those patronizing the event, such a technique offers no data on changes in spending by residents not attending the event. It is conceivable that some residents may dramatically change their spending during an event in order to avoid the congestion in the venue's environs. Similarly, while hotel rooms during a mega-event may be filled with baseball fans, if hotels in the host city are normally at or near capacity during the time period in which the event is held, it may be that mega-event visitors are simply crowding out other potential visitors. In general, a fundamental shortcoming of economic impact studies is not with information on spending for those who are included in a direct expenditure survey, but rather with the lack of information on the spending behavior for those who are not.

A second potentially significant source of bias in economic impact studies relates to leakages from the circular flow of spending. For example, if the host economy is at or very near full employment or if the work requires specialized skills, it may be that the labor essential to conducting the event resides in other communities. To the extent that this is true, then the indirect spending that constitutes the multiplier effect must be adjusted to reflect this leakage of income and subsequent spending.

Labor is not the only factor of production that may repatriate income. For example, even if hotels experience higher than normal occupancy rates during a mega-event, then the question must be raised about the fraction of increased earnings that remain in the community if the hotel is a nationally owned chain. In short, to assess the impact of mega-events, a balance of payments approach must be utilized. Since the input-output models used in even the most sophisticated *ex ante* analyses are based on fixed relationships between inputs and outputs, such models do not account for the expenditure complications associated with full employment and capital ownership noted here.

As an alternative to estimating the change in expenditures and associated changes in economic activity, those who provide goods and services directly in accommodating the event could be asked how their activity has been altered by the event. Unfortunately, "this requires that each proprietor have a model of what would have happened during that time period had the sport event not taken place. This is an extreme requirement which severely limits this technique." (Davidson, 1999).

Economists using different approaches to estimate the impact of similar sporting "mega-events" have typically found much smaller economic impacts. For example, Phil Porter (1999) used regression analysis to determine that the economic impact of the Super Bowl on the host city was statistically insignificant, that is not measurably different from zero. Likewise, Baade and Matheson (2000) challenged a MLB claim that the annual All-Star Game contributes $75 million to the host city economy. Their study of taxable sales data and employment data concluded that the All-Star Game was actually associated with lower than expected economic activity for host cities. Another study by Coates and Humphreys (2002) examining economic growth and appearances in the baseball, basketball, and football playoffs found no statistically significant impact from hosting any of these major championships.

Since the expenditure approach to projecting the economic impact of mega-events is most commonly used by league and city officials to generate economic impact estimates, it is useful to compare the results generated by economic models to the estimates quoted by league officials that were derived using an expenditure approach. In the next sections of the paper, the models that are used to estimate the impact of the post-season are detailed.

The Model

The economic activity generated by the playoffs and the World Series is likely to be small relative to the overall economy, and isolating the event's impact, therefore, is not a trivial task. To this end we have selected explanatory variables from past models to help establish what income would have been in the absence of the World Series and then compare that estimate to actual income levels to assess the contribution of the event. The success of this approach depends on our ability to identify those variables that explain the majority of observed variation in growth in income in those cities that have hosted the World Series.

One technique is to represent a statistic for a city for a particular year as a deviation from the average value for that statistic for cohort cities for that year. Such a representation over time will, in effect, "factor out" general urban trends and developments. For example, if we identify a particular city’s growth in income as 10 percent over time, but cities in general are growing by 4 percent, then we would conclude that this city’s pattern deviates from the norm by 6 percent. It is the 6 percent deviation that requires explanation and not the whole 10 percent for our purposes in this study. Furthermore, if history tells us that a city that experiences a growth in income that is 5 percent above the national average both before and during a mega-event, then it would be misguided to attribute that additional 5 percent to the mega-event. If during the Series, the city continued to exhibit income increases 5 percent above the national norm, the logical conclusion is that the World Series simply supplanted other economic developments that contributed to the city’s above-average rate of growth.

Given the number and variety of variables found in regional growth models and the inconsistency of findings with regard to coefficient size and significance, criticisms of any single model could logically focus on the problems posed by omitted variables. Any critic, of course, can claim that a particular regression suffers from omitted-variable bias, it is far more challenging to address the problems posed by not including key variables in the analysis.

In explaining regional or metropolitan growth patterns, at least some of the omitted variable problem can be addressed through representing relevant variables as deviations from city norms. This leaves the scholar with a more manageable task, namely that of identifying those factors that explain city growth after accounting for the impact of those forces that generally have affected national, regional or MSA growth. For example, a variable is not needed to represent the implications of federal revenue sharing if such a change affected all cohort cities in similar ways.

Following the same logic, other independent variables should also be normalized, that is represented as a deviation from an average value for MSAs or as a fraction of the MSA average. For example, a firm's decision to locate a new factory in city i depends not on the absolute level of wages in city i, but city i's wage relative to those of all cities with whom it competes for labor and other resources. What we propose, therefore, is an equation for explaining metropolitan income growth which incorporates those variables that the literature identifies as important, but specified in such a way that those factors common to MSAs are implicitly included.

The models presented here are designed to predict changes in income attributable to the World Series in host cities between 1970 and 2001. The cohort of cities used in the sample includes the seventy-three metropolitan areas that represent the largest MSAs in the United States by population over the time period 1970-2001 including every MSA that was among the largest sixty MSAs at some time during that period. While the choice of seventy-three cities is largely arbitrary, the list was expanded to include all metropolitan areas that have hosted the World Series, cities with professional sports franchises (with the exception of Green Bay, WI), and MSAs with professional sports aspirations. The data used are described more fully in Appendix 1.

Traditionally, researchers such as Coates and Humphreys (2002) and Baade and Matheson (2000) have used fixed effect models on this type of panel data with a dummy variable included for the sporting event(s) and individual dummy variables included for each city in the model to account for regional differences in economic growth. Equation (1) represents the model used to predict changes in income for host cities.

$$\Delta Y_t^i = \beta_0 + \beta_1 \Delta Y_{t-1}^i + \beta_2 \frac{Y_{t-1}^i}{\sum_{i=1}^{n} Y_{t-1}^i / n} + \beta_3 W_t^i + \beta_4 G_t^i + \beta_5 OT_t^i + \beta_6 POP_t^i + \beta_7 SB_t^i + \alpha_i C^i + \gamma_i t_t^i + \varepsilon_t^i \quad (1)$$

For each time period t, Y_t^i is the real personal income and ΔY_t^i is the change in real personal income in the ith metropolitan statistical area (MSA), n is the number of cities in the sample, W_t^i is the nominal wages in the ith MSA as a percentage of the average for all cities in the sample, G_t^i is the state and local taxes in the ith MSA as a percentage of the average for all cities in the sample, POP_t^i is the log population of the ith city, WS_t^i is a dummy variable for hosting the World Series, and ϵ_t^i is the stochastic error. OT_t^i is a dummy variable that represents any significant city-specific economic influences that cannot be explained by other variables in the model including the effects of the oil booms of the 1970s and the subsequent oil bust of the 1980s on oil patch cities of New Orleans and Houston, the effects of Hurricane Andrew on the economy of South Florida, and the economic consequences of the tech boom in Silicon Valley. C^i is a vector of dummy variables representing the fixed effect for each city i, and t is a vector of dummy variables representing each year t representing the business cycle.

The results of ordinary least-squares regression using equation (1) are shown in Table 2. The coefficient (0.4058%) and t-statistic (1.409) on the Super Bowl variable indicate that hosting the Super Bowl is associated with an increase in city personal income growth of 0.4% but that this figure is not statistically significantly different from zero at a 10% level.

While the use of fixed effect models is widespread due to their simplicity, they present numerous theoretical and applied difficulties that make their use undesirable when they can be avoided. First, the assumptions implicit in the model are quite extreme in that it is assumed the only difference in city growth rates is a fixed percentage in each period. This belies the fact that some cities (such as Detroit or San Jose) are strongly influenced by cyclical industries, and others have experienced growth spurts or slowdowns at varying times in their recent history. To assume that every economic variable affects every city's economic growth in exactly the same way is an absurd albeit often necessary assumption. Next heteroscedasticity is identified as a problem since the variability of the residuals differs widely between cities. Finally, because the size of the economies of the host cities varies widely, it is difficult to translate the coefficient indicating a 0.4% increase in economic growth into a convenient dollar figure. For these reasons a second method is tried, and equation (2) represents the revised model used to predict changes in income for host cities.

$$\Delta Y_t^i = \beta_0 + \beta_1 \sum_{i=1}^{n} \frac{\Delta Y_t^i}{n_t} + \beta_2 \Delta Y_{t-1}^i + \beta_3 \frac{Y_{t-1}^i}{\sum_{i=1}^{n} Y_{t-1}^i / n} + \beta_4 W_t^i + \beta_5 T_t^i + \beta_6 TR_t^i + \beta_7 OT_t^i + \alpha SB_t^i + \varepsilon_t^i \qquad (2)$$

The variables remain the same as in equation (1) except for the Super Bowl variable. SB_t^i is now a vector of dummy variables representing the Super Bowl with a separate dummy variable being included for each year a particular city has hosted the game. The major change is that equation (2) was separately estimated for each of the eleven different metropolitan areas that have hosted at least one Super Bowl since 1970. Not every variable specified in equation (2) emerged as statistically significant for every city. The decision of whether to include an independent variable known to be a good predictor in general but failing to be statistically significant in a particular city's case is largely an arbitrary one. The inclusion of theoretically valuable variables that are idiosyncratically insignificant will improve some measures of fit such as R-squared but may reduce other measures such as adjusted R-squared or the standard error of the estimate. Since the purpose of equation (2) is to produce predictive rather than explanatory results, variables were included in the regression equation as long as they improved predictive success, and as long as the omission of the variable did not significantly alter the coefficients of the remaining variables. Table 3 presents the regression results for all cities with the combination of variables that minimizes the standard error of the estimate (SEE).

As mentioned previously, rather than specifying all the variables that may explain metropolitan growth, we attempted to simplify the task by including only the independent variables that are common to cities in general and the ith MSA in particular. In effect we have devised a structure that attempts to identify the extent to which the deviations from the growth of cities in general ($\Sigma\Delta Y_t^i/n_t$) and city i's secular growth ΔY^i_{t-1}, are attributable to deviations in certain costs of production (wages and taxes) or demand-side variables (relative income levels, wages, and taxes).

Relative values of wages and tax burdens are all expected to help explain a city's growth rate in income as it deviates from the sample norm and its own secular growth path. As mentioned above, past research has not produced consistency with respect to the signs and significance of these independent variables. It is not at all clear, for example, whether high levels of relative wages lead to higher or lower income growth. A similar situation exists with relative levels of taxation. As a consequence, *a priori* expectations are uncertain with regard to the signs of the coefficients. That should not be construed as an absence of theory about key economic relationships. As noted earlier, the models include those variables that previous scholarly work found important.

Everything discussed in this section of the paper to this point is intended to define the regression analysis that will be used to assess changes in income attributable to baseball's post-season in host cities between 1972 and 2001. Equation (1) represents the model used to predict changes in income for host cities.

$$\Delta Y_t^i = \beta_0 + \beta_1 \sum_{i=1}^{n} \frac{\Delta Y_t^i}{n_t} + \beta_2 \Delta Y_{t-1}^i + \beta_3 \frac{Y_{t-1}^i}{\sum_{i=1}^{n} Y_{t-1}^i / n} + \beta_4 W_t^i + \beta_5 T_t^i + \beta_6 TR_t^i + \beta_7 OT_t^i + \varepsilon_t^i \qquad (1)$$

For each time period t, Y_t^i is the real income and ΔY_t^i is the change in real income (GDP) in the ith metropolitan statistical area (MSA), n is the number of cities in the sample, W_t^i is the nominal wages in the ith MSA as a percentage of the average for all cities in the sample, T_t^i is the state and local taxes in the ith MSA as a percentage of the average for all cities in the sample, TR_t^i is an annual trend variable, and ϵ_t^i is the stochastic error. OT_t^i is a dummy variable used in certain cities's regression equations to specify city-specific events such the significant economic influence of Hurricane Andrew on the economy of Miami and the effect of the oil boom and bust on oil patch cities such as Denver, Ft. Worth, and Houston. The cohort of cities used in the sample includes the largest seventy-three metropolitan areas (MSAs) in the United States by population over the time period 1970-2000. The data used are described more fully in Appendix 1.

From this point there are two paths that can be taken. The traditional approach as used by Baade and Matheson (2001) and Coates and Humphries (2002) is to use a fixed effects model with all of the variables included as well as a dummy variable for each individual city and a variable for the number of post-season games hosted. The post-season variable takes a

For the purposes of this analysis, the functional form is linear in all the variables included in equation (1). The equation was estimated for 25 different metropolitan areas representing all of the cities that have hosted at least one baseball post-season series since 1972. Not every variable specified in equation (1) emerged as statistically significant for every city. The decision of whether to include an independent variable known to be a good predictor in general but failing to be statistically significant in a particular city's case is largely an arbitrary one. The inclusion of theoretically valuable variables that are idiosyncratically insignificant will improve some measures of fit such as R-squared but may reduce other measures such as adjusted R-squared or the standard error of the estimate. Since the purpose of equation (1) is to produce predictive rather than explanatory results, variables were included in the regression equation as long as they improved predictive success. Table 1 presents the regression results for all cities with the combination of variables that minimizes the standard error of the estimate (SEE). For about half of the cities, autocorrelation was identified as a significant problem, and, therefore, the Cochrane-Orcutt method was used for cities where its use again reduced the SEE.

As mentioned previously, rather than specifying all the variables that may explain metropolitan growth, we attempted to simplify the task by including only the independent variables that are common to cities in general and the ith MSA in particular. In effect we have devised a structure that attempts to identify the extent to which a city's deviation from the growth of cities in general ($\Sigma\Delta Y_t^i / n_t$) and it's own past growth (ΔY^i_{t-1}) are attributable to deviations in certain costs of production (wages and taxes) or demand-side variables (relative income levels, wages, and taxes).

Relative values wages and tax burdens are all expected to help explain a city's growth rate in income as it deviates from the sample norm and its own secular growth path. As mentioned above, past research has not produced consistency with respect to the signs and significance of these independent variables. It is not at all clear, for example, whether high levels of relative wages and relative taxes lead to higher or lower income growth. As a consequence, *a priori* expectations are uncertain with regard to the signs of these coefficients. That should not be construed as an absence of theory about key economic relationships. As noted earlier, the models include those variables that previous scholarly work found important.

Results

The model identified in Table 1 for each city is used to estimate income growth for each city for each year that data are available, 1972-2000. City specific wage data are not available for all cities prior to 1972, so only playoffs since 1972 are examined. In addition, data are not available for Canadian cities, and therefore post season appearances by Toronto and Montreal are excluded from the study. Finally, due to the 1994-95 MLB players' strike, no World Series was held in 1994. This leaves 129 post-season appearances to be examined.

Once income growth is estimated by the model, the predicted income growth is then compared to the actual income growth that each MSA experienced during the year(s) in which it hosted the playoff games. Using the difference between actual and predicted growth compared with the size of the host city's economy, a dollar value estimate of this difference can be determined. If it is assumed that any difference between actual and predicted income can be accounted for by the presence of the playoffs, this method allows for a dollar estimate of the impact of the games on host cities.

Table 2 shows the host city, the city's real income (in 2000 dollars), predicted growth, estimated growth, the difference between predicted and actual growth (the residual), the standardized residual, and the dollar value of the difference in growth for each year. In addition, the total number of post-season games hosted by the city is shown for each year. The standardized residuals for each city are calculated by taking the difference between the actual and the predicted growth rates and dividing by the corresponding SEE from Table 1. For example, the actual income (GDP) growth rate for Oakland in 1972 was 5.414 percent while the model predicted only a 5.066 percent increase in income corresponding to a residual of 0.348 percent and a standardized residual of 0.295. Based on Oakland's $38.6 billion economy, this 0.348 percent difference corresponds to an economy that produced income $134 million in excess of what would have expected during 1972 if the city had not hosted the championship. The $134 million can be interpreted as the combined contribution of the League Championship Series and World Series to the Oakland economy.

The statistics recorded in Table 2 suggest two things worth noting. First, the dollar differences recorded in final column vary substantially with some cities exhibiting income gains well in excess of reasonable booster predictions, and other cities showing a large negative impact. Second, actual and predicted growth on average are almost exactly the same with actual income growth exceeding predicted growth by .003%. It should also be noted that overall the model estimates that the average host city experienced a *reduction* in income of $57.1 million relative to the predictions of the model despite actual growth exceeding predicted growth. This seeming contradiction is due to the poor economic performance of several relatively large cities in the sample skewing the data.

The magnitude of the variation of the estimates at first blush appears high. Some host cities (New York City, 1996, and Boston, 1986) exhibited several billion dollars in increased economic activity while others (New York City, 1999 and 2000, and Los Angeles, 1988) experienced billions of dollars in reduced economic impact. The explanation for this range of estimates is simply that the models do not explain all the variation in estimated income, and, therefore, not all the variation can be attributable to the baseball playoffs. In short, there are omitted variables. While the model fit statistics for the individual city regressions display moderately high R-squared numbers, the standard error of the estimate for the typical city is roughly one percent meaning that one would expect the models to predict actual economic growth for the cities within one percentage point about two-thirds of the time. For the cities in question, a one percent error translates into a \$300 to \$500 million difference for the smallest MSAs such as Kansas City and Cincinnati and over a \$3 billion difference for New York City, the largest host city. Given the size of these large, diverse economies, the effect of even a large event with hundreds of millions of dollars of potential impact is likely to be obscured by natural, unexplained variations in the economy. Indeed, only three of the standardized residuals, San Diego in 1984, Anaheim in 1982, and Oakland in 1975, are statistically significant at the 5% level.

While it is unlikely that the models for any individual city will capture the effects of even a large event, one would expect that across a large number of cities and years, any event that produces a large impact would emerge on average as statistically significant. Using the seemingly unrelated regressions approach, one can compare the standardized residuals for the 129 observations with residuals being normally distributed with a standard deviation of 1. A test on the null hypothesis that the average standard residual is greater than zero provides a p-value of 32.2 percent. In other words, even if the games really had a no positive effect on the host cities, then the sample results had a 32.2 percent probability of occurring.

The seemingly unrelated regression analysis can be carried one step further. Since the presence of the playoff is not included in making predictions about the economic growth in a particular city, if the championships have a significant positive effect on host economies as the boosters suggest, then the appropriate hypothesis test would not be whether the average standardized residual is greater than zero (meaning simply that the event had a positive economic impact) but whether the average standardized residual is greater than some figure that essentially represents a combination of the size of projected impact in comparison to the size of the host city (meaning that the event had a positive economic impact of some designated magnitude.)

This method is complicated by the fact that the number of home games played in a post-season is subject to a great deal of variation. As noted earlier, since 1995 a team participating in the World Series may play as many as 11 and as few as 5 post-season games. Between 1985 and 1994 teams could play a maximum of 8 and a minimum of 4 post-season games, and from 1969 to 1984 a team could play a maximum of 7 and a minimum of 3 post-season games. Although some booster studies claim a larger impact from World Series games than the rest of the playoff games, for our the purposes of this study, all post-season games were treated identically.

Table 3 records various estimates that combine estimates provided by MLB boosters and those predicted by the model. For the purpose of exposition, a $25 million post-season (in 2000 dollars) effect per game is assumed, a figure on the high end of the economic impact estimates. Again examining Oakland in 1972, the basic model predicted economic growth of 5.066%.

Since Oakland hosted 5 post-season games that year, an impact of $25 million per game would lead one to expect the city income to increase by $125 million, or an additional 0.324%, above the model's prediction, for a total predicted income growth of 5.390%, or 0.024% below the observed growth for 1973. Using revised predicted growth rates that include the post-season growth projections, new standardized residuals can be calculated. A new test on the null hypothesis that the average standard residual is greater than zero provides a p-value of 10.78 percent. In other words, had the playoff had a positive effect of $25 million per game as asserted by the boosters, over the twenty-nine year period covered by the data, the actual growth rates experienced by the sample would have had only a 10.78 percent probability of occurring.

The playoff and World Series contribution to predicted growth (and hence the standardized residual) can be adjusted by assuming an economic impact larger or smaller than the $25 million figure used in this example. The resulting p-values shown are shown in Table 4.

The predicted economic impact at which the mean standardized residual is zero is $6.8 million, a figure roughly one-quarter that of the highest *ex ante* estimates and about half that of the typical projections. Per game impacts of $31.0 million and $41.3 million can be rejected at the 5% and 1% significance levels, respectively. While the $6.8 million figure is on low side of booster estimates, it is much more in line with the estimates than in other studies done on mega-events. It is a common rule of thumb among sports economists that the conversion from *ex ante* estimates to actual economic impact simply involves moving the decimal place one space to the left. It is, of course, an unfortunate reality when it is considered a surprise that booster numbers approximate reality.

The closeness of the estimates to the actual results may be due to two factors unique to baseball's playoffs in comparison to the Super Bowl, Olympics, or league All-Star events. First, the because the location of the playoffs is determined by team performance rather than some sort of bidding process, the baseball officials have less incentive to artificially inflate the figures. Even the most generous *ex ante* estimates of a single World Series game are only 5 to 10 percent that of the typical estimates of the Super Bowl's impact despite roughly similar attendances. Second, because the location of the World Series is not known in advance, less crowding out may occur. While conventioneers and vacationers can and do intentionally plan around scheduled events such as the Super Bowl, the World Series cannot be avoided by prior planning. A World Series host may, therefore get both the mega-event as well as its regular recreational and business travelers.

Conclusions

Major League Baseball teams have used the lure of post-season riches as an incentive for cities to construct new stadiums at considerable public expense. Estimates of the economic impact of baseball playoffs including a trip to the World Series on host communities have typically ranged from about $50 million up to $250 million. We in general would urge caution with respect to these sorts of economic impact estimates. Our detailed regression analysis reveals that over the period 1972 to 2000, cities appearing in the MLB post-season had higher than expected income growth by 0.003%. This is figure is not statistically significantly different than zero, although a best guess of the economic contribution of a single post-season game is $6.8 million, roughly half that of the typical *ex ante* projection.

Objective observers would be wise to view with caution the World Series economic impact estimates provided by the boosters of MLB. Certainly building a new stadium on the anticipation of gaining the expense back with World Series appearances is a poor gamble at best. Even the most favorable estimates result in economic benefits that are a small fraction of the costs of building a new stadium. Furthermore, in a market crowded with new stadiums, a new stadium is no longer a guarantee of post-season success. We would maintain that the World Series strikes out as engine for economic growth.

REFERENCES

Baade, Robert A., "Professional Sports as a Catalyst for Metropolitan Economic Development," *Journal of Urban Affairs*, Volume 18, Number 1 (1996), 1-17.

Baade, Robert A. and Victor A. Matheson, "An Assessment of the Economic Impact of the American Football Championship, the Super Bowl, on Host Communities," *Reflets et Perspectives,* Volume 39, Number 2-3 (2000), 35-46.

Baade, Robert A. and Victor A. Matheson, V. A. (2001). Home Run or Wild Pitch? Assessing the Economic Impact of Major League Baseball's All-Star Game. *Journal of Sports Economics,* 2(4), 307-327.

Coates, Dennis and Humphreys, Brad. (1999). The Growth Effects of Sports Franchises, Stadia, and Arenas. Journal of Policy Analysis and Management, 14(4), 601-624.

Coates, Dennis and Humphreys, Brad. (2002). The Economic Impact of Post-Season Play in Professional Sports. Journal of Sports Economics, 3(3), 291-299.

Davidson, Larry, "Choice of a Proper Methodology to Measure Quantitative and Qualitative Effects of the Impact of Sport," in *The Economic Impact of Sports Events*, ed. Claude Jeanrenaud (Neuchatel, Switzerland: Centre International d'Etude du Sport, 1999), 9-28.

Humphreys, Jeffrey, "The Economic Impact of Hosting Super Bowl XXVIII on Georgia," *Georgia Business and Economic Conditions,* May-June 1994, 18-21.

Munsey and Suppes, "Baseball Ballparks," www.ballparks.com/baseball, accessed September 13, 2000.

Noll, Roger and Zimbalist, Andrew. (1997). The Economic Impact of Sports Teams and Facilities. In Noll, R. and Zimbalist, A. Sports, Jobs and Taxes. Washington, D.C.:

Brookings Institution.

Porter, Philip. (1999). Mega-Sports Events as Municipal Investments: A Critique of Impact Analysis. In Fizel, J., Gustafson, E. & Hadley, L. Sports Economics: Current Research. Westport, CT: Praeger Press.

Rosentraub, Mark. (1994). Sport and Downtown Development Strategy. Journal of Urban Affairs, 16(3), 228-239.

Seigfried, John and Andrew Zimbalist, "The Economics of Sports Facilities and Their Communities," *Journal of Economic Perspectives*, Summer 2000, 95-114.

TABLE 1

Regression results for Equation 1 all variables included that minimize SEE. (t-stats in parentheses)

MSA	**Cons.**	**Avg. Y_t**	**Y_{t-1}**	**Inc.**	**Wages**	**Taxes**	**Time**	**Other**	**Fit**
Anaheim	4.915	1.259	-.032	-.190	-	-	-.0024	**	Adj. R^2 = .8934
	(3.48)	(12.61)	(-0.46)	(-2.26)			(-3.41)		SEE = 1.0317%
Atlanta	-4.539	1.171	.211	-.719	-	-.283	.0028	**	Adj. R^2 = .8925
	(-3.18)	(9.65)	(2.47)	(-3.09)		(-1.84)	(3.30)		SEE = 1.0330%
Baltimore	.333	.942	-	-	-.269	-.0500	-	**	Adj. R^2 = .9462
	(6.30)	(19.21)			(-6.67)	(-2.19)			SEE = 0.5452%
Boston	-1.778	1.045	-	-.419	-	-.241	.0012	**	Adj. R^2 = .8289
	(-0.81)	(11.31)		(-3.12)		(-3.07)	(1.13)		SEE = 0.962%
Chicago	.343	.961	-	-.073	.068	-.348	-	-	Adj. R^2 = .8954
	(4.94)	(12.00)		(-1.13)	(1.32)	(-4.90)			SEE = 0.7958%
Cincinnati	-3.276	1.11	-	-.312	-	-.190	.0019	-	Adj. R^2 = .8971
	(-4.83)	(15.50)		(-3.46)		(-3.75)	(5.00)		SEE = 0.7549%
Cleveland	.826	1.026	.117	-.587	-	-.272	-	**	Adj. R^2 = .8999
	(4.49)	(14.10)	(1.96)	(-4.52)		(-4.32)			SEE = 0.7258%
Denver	1.947	.918	.152	-.122	-	-.225	-.0008	-.0377	Adj. R^2 = .7549
	(1.44)	(-1.32)	(1.25)	(-1.29)		(-1.95)	(-1.32)	(-4.69)	SEE = 1.3175%
Detroit	8.683	1.216	.256	-.776	.402	-.353	-.0041	-	Adj. R^2 = .9110
	(4.78)	(6.99)	(3.44)	(-5.65)	(3.01)	(-5.29)	(-4.54)		SEE = 1.0909%
Ft. Worth	-1.284	1.021	.275	.089	-	-	.0006	.0222	Adj. R^2 = .6957
	(-1.84)	(7.45)	(2.49)	(1.19)			(1.80)	(4.39)	SEE = 1.3001%

Houston	.190	.741	.356	-.176	-	-	-	.0393	Adj. R^2 = .5234
	(2.45)	(2.96)	(2.12)	(-2.33)				(2.93)	SEE = 2.3831%
								-.0431	
								(-2.73)	
Kansas	.556	.917	.060	-.395	-	-.193	-	**	Adj. R^2 = .8147
City	(3.30)	(10.63)	(0.70)	(-2.51)		(-2.08)			SEE = 0.8933%
Los	10.81	1.032	-.071	-.530	-	-	-.0052	**	Adj. R^2 = .7831
Angeles	(2.55)	(8.67)	(-0.78)	(-2.46)			(-2.54)		SEE = 1.2470%
Miami	10.44	.809	.213	-.576	.331	-	-.0051	-.0871	Adj. R^2 = .8646
	(2.65)	(5.12)	(2.40)	(-2.55)	(2.16)		(-2.67)	(-6.02)	SEE = 1.3471%
								.0845	
								(3.35)	
Milw.	.235	1.062	-	-	-.117	-.102	-	-	Adj. R^2 = .8510
	(3.53)	(12.74)			(-3.69)	(-2.09)			SEE = 0.8382%
Mpls.	-1.951	.985	.083	-.211	.199	-	.0010	**	Adj. R^2 = .9662
	(-5.97)	(19.51)	(1.72)	(-2.97)	(3.18)		(5.96)		SEE = 0.4718%
New York	-7.601	1.018	-.249	-.421	.265	-	-	**	Adj. R^2 = .7374
City	(-4.88)	(8.07)	(-2.39)	(-3.69)	(1.87)				SEE = 1.265%
Oakland	-.210	.882	-	.361	-.202	.049	-	-	Adj. R^2 = .7678
	(-1.36)	(7.68)		(2.80)	(-4.06)	(1.34)			SEE = 1.1782%
Philly	-1.227	1.024	-.015	-.777	.285	-.305	.0010	**	Adj. R^2 = .9177
	(-3.31)	(14.08)	(-0.24)	(-4.41)	(2.37)	(-5.20)	(4.80)		SEE = 0.5946%
Phoenix	5.976	1.298	.263	-.516	-	-.110	-.0027	**	Adj. R^2 = .7752
	(1.98)	(8.05)	(2.66)	(-2.08)		(-1.22)	(-1.96)		SEE = 1.5195%
Pittsburgh	2.078	.613	.235	.248	-.169	-.150	-.0010	-	Adj. R^2 = .7461
	(3.08)	(7.10)	(2.34)	(2.16)	(-2.57)	(-1.84)	(-2.89)		SEE = 0.8575%

Saint	.613	.973	-	-.509	-	-.138	-	**	Adj. R^2 = .9134
Louis	(3.32)	(17.16)		(-2.87)		(-2.88)			SEE = 0.5552%
San Diego	.009	1.018	-	-	-	-	-	**	Adj. R^2 = .7685
	(1.15)	(9.91)							SEE = 1.1250%
San	-0.486	.8528	-	.338	-	-	-	-	Adj. R^2 = .6691
Francisco	(-5.27)	(5.40)		(5.29)					SEE = 1.714%
Seattle	-3.091	.862	.505	-.320	-	-.282	.0019	-	Adj. R^2 = .6611
	(-2.43)	(5.48)	(4.20)	(-2.80)		(-1.85)	(2.52)		SEE = 1.6451%

OLS regression used in all cases except those noted by **. The Cochrane-Orcutt method was used in these cases where the elimination of serial correlation improved model fit as measured by the SEE.

TABLE 2

MLB Post-Season Contribution to Local Economies

Year	Post-Season Location	Real GDP	Predicted Growth	Actual Growth	Difference	St. Residual	Income +/-	Games	SEE
1972	Cincinnati	$ 27,532,366	5.597%	5.418%	-0.179%	-0.237	$ (49,215)	7	0.755%
1972	Detroit							3	
1972	Oakland	$ 38,598,078	5.066%	5.414%	0.348%	0.295	$ 134,219	5	1.178%
1972	Pittsburgh	$ 51,202,105	3.776%	4.917%	1.141%	1.330	$ 584,140	2	0.858%
1973	Baltimore	$ 46,313,896	4.603%	4.351%	-0.252%	-0.463	$ (116,791)	3	0.545%
1973	Cincinnati	$ 28,721,855	3.662%	4.320%	0.659%	0.872	$ 189,170	2	0.755%
1973	New York City	$ 224,067,408	-0.293%	-0.963%	-0.670%	-0.530	$(1,502,179)	6	1.265%
1973	Oakland	$ 39,280,325	3.382%	1.768%	-1.614%	-1.370	$ (634,111)	5	1.178%
1974	Baltimore	$ 46,397,753	-0.366%	0.181%	0.547%	1.003	$ 253,825	2	0.545%
1974	Los Angeles	$ 164,200,866	-2.008%	-0.968%	1.040%	0.775	$ 1,708,178	4	1.342%
1974	Oakland	$ 39,298,464	-1.354%	0.046%	1.400%	1.188	$ 550,095	5	1.178%
1974	Pittsburgh	$ 52,975,189	-0.460%	0.286%	0.746%	0.870	$ 395,129	2	0.858%
1975	Boston	$ 109,672,605	-2.775%	-2.454%	0.321%	0.334	$ 351,970	6	0.962%
1975	Cincinnati	$ 27,787,908	-2.201%	-2.076%	0.125%	0.166	$ 34,785	5	0.755%
1975	Oakland	$ 39,786,592	-1.190%	1.242%	2.432%	2.064	$ 967,515	1	1.178%
1975	Pittsburgh	$ 53,200,153	-0.372%	0.425%	0.797%	0.929	$ 424,023	2	0.858%
1976	Cincinnati	$ 29,188,575	4.479%	5.041%	0.561%	0.743	$ 163,811	3	0.755%
1976	Kansas City	$ 30,888,942	4.493%	5.299%	0.806%	0.902	$ 248,965	2	0.893%
1976	New York City	$ 211,013,795	1.908%	0.313%	-1.595%	-1.261	$(3,364,664)	5	1.265%
1976	Philadelphia	$ 105,970,887	3.511%	3.663%	0.152%	0.284	$ 161,076	2	0.536%
1977	Kansas City	$ 32,424,396	4.965%	4.970%	0.005%	0.006	$ 1,621	3	0.893%
1977	Los Angeles	$ 178,398,660	4.378%	3.976%	-0.402%	-0.300	$ (717,534)	5	1.342%
1977	New York City	$ 213,359,650	1.280%	1.112%	-0.168%	-0.133	$ (359,069)	5	1.265%
1977	Philadelphia	$ 108,855,312	2.770%	2.722%	-0.048%	-0.090	$ (52,251)	2	0.536%
1978	Kansas City	$ 33,672,017	4.247%	3.847%	-0.400%	-0.448	$ (134,688)	2	0.893%
1978	Los Angeles	$ 189,323,671	4.434%	6.124%	1.690%	1.259	$ 3,199,439	5	1.342%
1978	New York City	$ 215,503,232	2.132%	1.005%	-1.127%	-0.891	$(2,429,411)	5	1.265%
1978	Philadelphia	$ 111,558,518	3.420%	2.484%	-0.936%	-1.747	$(1,044,188)	2	0.536%
1979	Anaheim	$ 53,723,585	3.919%	4.583%	0.664%	0.643	$ 356,497	2	1.032%
1979	Baltimore	$ 51,254,426	0.134%	-0.090%	-0.224%	-0.410	$ (114,619)	6	0.545%
1979	Cincinnati	$ 32,331,439	0.842%	0.658%	-0.184%	-0.243	$ (59,334)	1	0.755%
1979	Pittsburgh	$ 58,805,349	0.042%	-0.137%	-0.179%	-0.209	$ (105,201)	4	0.858%
1980	Houston	$ 72,898,467	4.314%	4.109%	-0.205%	-0.086	$ (149,391)	3	2.383%
1980	Kansas City	$ 33,021,724	-1.849%	-2.654%	-0.805%	-0.901	$ (265,747)	5	0.893%
1980	New York City	$ 204,934,863	-1.622%	-2.599%	-0.977%	-0.773	$(2,002,880)	1	1.265%
1980	Philadelphia	$ 108,438,037	-2.057%	-2.246%	-0.189%	-0.353	$ (204,986)	5	0.536%
1981	Los Angeles	$ 192,451,311	0.244%	1.351%	1.107%	0.825	$ 2,130,943	5	1.342%
1981	Montreal							3	
1981	New York City	$ 208,286,617	0.748%	1.636%	0.888%	0.702	$ 1,848,589	5	1.265%
1981	Oakland	$ 47,970,341	1.766%	1.753%	-0.013%	-0.011	$ (6,282)	1	1.178%
1982	Anaheim	$ 56,131,318	1.920%	-0.545%	-2.465%	-2.389	$(1,383,698)	2	1.032%
1982	Atlanta	$ 50,019,550	2.344%	1.898%	-0.446%	-0.432	$ (223,223)	1	1.033%
1982	Milwaukee	$ 33,123,282	-1.369%	-0.516%	0.853%	1.017	$ 282,495	6	0.838%
1982	St. Louis	$ 54,104,091	-0.392%	0.416%	0.808%	1.456	$ 437,269	6	0.555%

1983 Baltimore	$ 53,193,294	4.217%	4.472%	0.255%	0.468	$ 135,733	4	0.545%
1983 Chicago	$ 182,220,856	1.896%	1.881%	-0.015%	-0.019	$ (27,560)	2	0.796%
1983 Los Angeles	$ 198,560,886	3.201%	3.386%	0.185%	0.138	$ 366,785	2	1.342%
1983 Philadelphia	$ 114,115,967	3.095%	3.546%	0.451%	0.841	$ 514,361	5	0.536%
1984 Chicago	$ 192,591,813	5.222%	5.691%	0.470%	0.590	$ 904,571	2	0.796%
1984 Detroit	$ 104,145,426	6.930%	6.739%	-0.191%	-0.175	$ (198,910)	4	1.091%
1984 Kansas City	$ 36,022,911	6.250%	6.883%	0.633%	0.709	$ 228,025	2	0.893%
1984 San Diego	$ 52,431,494	7.294%	9.628%	2.334%	2.074	$ 1,223,591	5	1.125%
1985 Kansas City	$ 37,668,611	5.123%	4.568%	-0.555%	-0.621	$ (208,879)	7	0.893%
1985 Los Angeles	$ 220,263,102	3.710%	4.290%	0.580%	0.432	$ 1,278,625	3	1.342%
1985 St. Louis	$ 61,556,496	3.439%	3.503%	0.064%	0.116	$ 39,483	6	0.555%
1985 Toronto							2	
1986 Anaheim	$ 70,276,696	5.058%	5.351%	0.293%	0.284	$ 205,731	3	1.032%
1986 Boston	$ 159,618,309	4.596%	6.048%	1.452%	1.509	$ 2,317,618	7	0.962%
1986 Houston	$ 80,828,386	0.145%	-2.937%	-3.082%	-1.293	$(2,490,874)	3	2.383%
1986 New York City	$ 255,447,527	4.456%	5.182%	0.726%	0.574	$ 1,853,434	7	1.265%
1987 Detroit	$ 115,717,469	1.390%	0.059%	-1.331%	-1.220	$(1,539,645)	3	1.091%
1987 Minneapolis	$ 70,842,848	3.590%	4.114%	0.524%	1.110	$ 371,121	6	0.472%
1987 San Francisco	$ 60,718,448	2.920%	1.315%	-1.604%	-0.936	$ (974,198)	3	1.713%
1987 St. Louis	$ 65,190,212	2.253%	2.327%	0.074%	0.133	$ 48,025	7	0.555%
1988 Boston	$ 178,466,897	5.390%	5.966%	0.576%	0.599	$ 1,027,982	2	0.962%
1988 Los Angeles	$ 246,784,667	3.972%	2.606%	-1.366%	-1.018	$(3,371,558)	6	1.342%
1988 New York City	$ 279,496,535	3.595%	5.389%	1.794%	1.418	$ 5,012,810	3	1.265%
1988 Oakland	$ 64,525,726	4.517%	4.496%	-0.021%	-0.017	$ (13,253)	5	1.178%
1989 Chicago	$ 221,202,789	2.093%	0.933%	-1.161%	-1.459	$(2,567,835)	2	0.796%
1989 Oakland	$ 66,459,694	3.711%	2.997%	-0.713%	-0.606	$ (474,159)	4	1.178%
1989 San Francisco	$ 65,086,256	2.854%	2.320%	-0.534%	-0.312	$ (347,767)	5	1.713%
1989 Toronto							3	
1990 Boston	$ 176,411,810	-0.369%	-1.999%	-1.630%	-1.694	$(2,874,743)	2	0.962%
1990 Cincinnati	$ 40,611,884	1.337%	2.291%	0.954%	1.264	$ 387,478	5	0.755%
1990 Oakland	$ 68,068,414	2.218%	2.421%	0.203%	0.172	$ 137,972	4	1.178%
1990 Pittsburgh	$ 63,197,042	2.305%	1.446%	-0.859%	-1.002	$ (543,056)	3	0.858%
1991 Atlanta	$ 82,750,474	1.094%	0.299%	-0.795%	-0.770	$ (657,964)	6	1.033%
1991 Minneapolis	$ 76,478,821	0.232%	-0.130%	-0.362%	-0.767	$ (276,791)	6	0.472%
1991 Pittsburgh	$ 64,553,201	0.770%	0.702%	-0.068%	-0.079	$ (43,705)	4	0.858%
1991 Toronto							3	
1992 Atlanta	$ 87,316,596	4.739%	5.518%	0.779%	0.754	$ 680,145	7	1.033%
1992 Oakland	$ 69,152,758	2.863%	3.599%	0.736%	0.624	$ 508,697	3	1.178%
1992 Pittsburgh	$ 64,679,884	1.868%	2.146%	0.278%	0.324	$ 179,929	3	0.858%
1992 Toronto							6	
1993 Atlanta	$ 91,150,000	3.778%	4.390%	0.612%	0.593	$ 558,053	3	1.033%
1993 Chicago	$ 235,482,447	1.257%	0.678%	-0.579%	-0.727	$(1,363,194)	3	0.796%
1993 Philadelphia	$ 147,001,676	-0.024%	-0.093%	-0.069%	-0.129	$ (101,809)	6	0.536%
1993 Toronto							6	
1994 Not Held								
1995 Atlanta	$ 101,342,437	5.341%	5.519%	0.178%	0.173	$ 180,583	7	1.033%
1995 Boston	$ 185,337,596	3.075%	2.457%	-0.618%	-0.643	$(1,145,636)	1	0.962%
1995 Cincinnati	$ 43,769,041	2.169%	1.464%	-0.705%	-0.934	$ (308,444)	3	0.755%
1995 Cleveland	$ 64,491,874	0.911%	1.219%	0.308%	0.425	$ 198,844	8	0.726%
1995 Denver	$ 57,896,381	4.952%	5.568%	0.615%	0.467	$ 356,327	2	1.318%
1995 Los Angeles	$ 243,788,401	0.827%	1.247%	0.420%	0.313	$ 1,024,598	2	1.342%
1995 New York City	$ 303,606,418	2.261%	3.402%	1.141%	0.902	$ 3,462,766	2	1.265%

1995	Seattle	$ 72,687,993	2.808%	2.657%	-0.150%	-0.091	$ (109,267)	6	1.645%
1996	Atlanta	$ 107,618,019	5.078%	6.192%	1.114%	1.079	$ 1,199,351	8	1.033%
1996	Baltimore	$ 72,432,741	1.125%	1.114%	-0.011%	-0.021	$ (8,146)	5	0.545%
1996	Cleveland	$ 64,698,841	-0.084%	0.321%	0.405%	0.558	$ 262,030	2	0.726%
1996	Dallas	$ 39,723,254	3.631%	2.590%	-1.041%	-0.801	$ (413,525)	2	1.300%
1996	Los Angeles	$ 246,885,596	0.802%	1.270%	0.468%	0.349	$ 1,156,521	2	1.342%
1996	New York City	$ 314,874,059	1.741%	3.711%	1.970%	1.558	$ 6,203,856	7	1.265%
1996	San Diego	$ 72,557,088	1.650%	3.020%	1.370%	1.217	$ 993,746	1	1.125%
1996	St. Louis	$ 73,782,306	1.286%	1.037%	-0.249%	-0.448	$ (183,718)	5	0.555%
1997	Atlanta	$ 113,115,220	7.040%	5.108%	-1.932%	-1.870	$(2,185,310)	5	1.033%
1997	Baltimore	$ 75,161,009	2.765%	3.767%	1.002%	1.837	$ 752,831	5	0.545%
1997	Cleveland	$ 66,274,795	1.504%	2.436%	0.932%	1.284	$ 617,569	9	0.726%
1997	Houston	$ 121,049,093	5.312%	7.873%	2.561%	1.075	$ 3,100,282	1	2.383%
1997	Miami	$ 52,492,918	2.985%	2.229%	-0.755%	-0.561	$ (396,511)	9	1.347%
1997	New York City	$ 320,105,629	3.705%	1.661%	-2.044%	-1.616	$(6,541,422)	2	1.265%
1997	San Francisco	$ 75,463,688	4.578%	3.102%	-1.476%	-0.862	$(1,114,154)	1	1.713%
1997	Seattle	$ 81,574,743	5.673%	6.590%	0.916%	0.557	$ 747,351	2	1.645%
1998	Atlanta	$ 123,206,887	8.599%	8.922%	0.323%	0.312	$ 397,443	5	1.033%
1998	Boston	$ 210,706,935	6.383%	5.832%	-0.551%	-0.573	$(1,161,440)	2	0.962%
1998	Chicago	$ 280,446,881	5.507%	5.387%	-0.121%	-0.152	$ (338,177)	1	0.796%
1998	Cleveland	$ 68,280,954	3.860%	3.027%	-0.833%	-1.148	$ (568,780)	5	0.726%
1998	Dallas	$ 45,960,341	8.238%	8.273%	0.035%	0.027	$ 15,887	1	1.300%
1998	Houston	$ 131,932,442	7.650%	8.991%	1.340%	0.562	$ 1,768,513	2	2.383%
1998	New York City	$ 339,327,238	5.642%	6.005%	0.363%	0.287	$ 1,230,980	7	1.265%
1998	San Diego	$ 82,195,355	6.591%	8.454%	1.863%	1.656	$ 1,531,165	7	1.125%
1999	Atlanta	$ 130,105,709	6.144%	5.599%	-0.545%	-0.527	$ (708,581)	7	1.033%
1999	Boston	$ 219,553,252	3.838%	4.198%	0.360%	0.375	$ 791,267	5	0.962%
1999	Cleveland	$ 68,698,720	0.417%	0.612%	0.195%	0.269	$ 133,963	3	0.726%
1999	Dallas	$ 47,895,370	5.435%	4.210%	-1.225%	-0.942	$ (586,668)	1	1.300%
1999	Houston	$ 134,728,805	5.461%	2.120%	-3.342%	-1.402	$(4,502,551)	2	2.383%
1999	New York City	$ 348,859,366	4.415%	2.809%	-1.606%	-1.270	$(5,602,244)	11	1.265%
1999	Phoenix	$ 84,996,706	5.288%	3.870%	-1.418%	-0.933	$(1,205,352)	2	1.519%
2000	Atlanta	$ 136,688,674	6.225%	5.060%	-1.165%	-1.128	$(1,592,826)	1	1.033%
2000	Chicago	$ 292,809,967	2.761%	2.596%	-0.165%	-0.208	$ (483,992)	2	0.796%
2000	New York City	$ 365,949,852	6.046%	4.899%	-1.147%	-0.907	$(4,197,586)	15	1.265%
2000	Oakland	$ 95,106,610	7.017%	8.744%	1.727%	1.466	$ 1,642,264	3	1.178%
2000	San Francisco	$ 99,323,357	9.875%	11.879%	2.004%	1.169	$ 1,990,014	2	1.713%
2000	Seattle	$ 98,341,310	5.304%	2.193%	-3.110%	-1.891	$(3,058,854)	4	1.645%
2000	St. Louis	$ 81,603,230	2.004%	1.990%	-0.014%	-0.025	$ (11,424)	4	0.555%
	Average		3.015%	3.018%	0.003%	0.041	$ (59,197)	3.8	

TABLE 3

MLB Post-Season Contribution to Local Economies

Year	Post-Season Location	Real GDP	P-S Boost	P-S % Boost	Pred. Growth	Total Growth	Actual Growth	Difference	St. Residual
1972	Cincinnati	$ 27,532,366	$ 175,000	0.636%	5.597%	6.233%	5.418%	-0.814%	-1.079
1972	Detroit								
1972	Oakland	$ 38,598,078	$125,000	0.324%	5.066%	5.390%	5.414%	0.024%	0.020
1972	Pittsburgh	$ 51,202,105	$ 50,000	0.098%	3.776%	3.874%	4.917%	1.043%	1.217
1973	Baltimore	$ 46,313,896	$ 75,000	0.162%	4.603%	4.765%	4.351%	-0.414%	-0.760
1973	Cincinnati	$ 28,721,855	$ 50,000	0.174%	3.662%	3.836%	4.320%	0.485%	0.642
1973	NYC (NL)	$ 224,067,408	$150,000	0.067%	-0.293%	-0.226%	-0.963%	-0.737%	-0.583
1973	Oakland	$ 39,280,325	$125,000	0.318%	3.382%	3.700%	1.768%	-1.933%	-1.640
1974	Baltimore	$ 46,397,753	$ 50,000	0.108%	-0.366%	-0.258%	0.181%	0.439%	0.806
1974	Los Angeles	$ 164,200,866	$100,000	0.061%	-2.008%	-1.947%	-0.968%	0.979%	0.730
1974	Oakland	$ 39,298,464	$125,000	0.318%	-1.354%	-1.036%	0.046%	1.082%	0.918
1974	Pittsburgh	$ 52,975,189	$ 50,000	0.094%	-0.460%	-0.365%	0.286%	0.651%	0.760
1975	Boston	$ 109,672,605	$150,000	0.137%	-2.775%	-2.638%	-2.454%	0.184%	0.191
1975	Cincinnati	$ 27,787,908	$125,000	0.450%	-2.201%	-1.752%	-2.076%	-0.325%	-0.430
1975	Oakland	$ 39,786,592	$ 25,000	0.063%	-1.190%	-1.127%	1.242%	2.369%	2.011
1975	Pittsburgh	$ 53,200,153	$ 50,000	0.094%	-0.372%	-0.278%	0.425%	0.703%	0.820
1976	Cincinnati	$ 29,188,575	$ 75,000	0.257%	4.479%	4.736%	5.041%	0.304%	0.403
1976	Kansas City	$ 30,888,942	$ 50,000	0.162%	4.493%	4.655%	5.299%	0.644%	0.721
1976	NYC (AL)	$ 211,013,795	$125,000	0.059%	1.908%	1.967%	0.313%	-1.654%	-1.308
1976	Philadelphia	$ 105,970,887	$ 50,000	0.047%	3.511%	3.558%	3.663%	0.105%	0.196
1977	Kansas City	$ 32,424,396	$ 75,000	0.231%	4.965%	5.196%	4.970%	-0.226%	-0.253
1977	Los Angeles	$ 178,398,660	$125,000	0.070%	4.378%	4.448%	3.976%	-0.472%	-0.352
1977	NYC (AL)	$ 213,359,650	$125,000	0.059%	1.280%	1.339%	1.112%	-0.227%	-0.179
1977	Philadelphia	$ 108,855,312	$ 50,000	0.046%	2.770%	2.816%	2.722%	-0.094%	-0.175
1978	Kansas City	$ 33,672,017	$ 50,000	0.148%	4.247%	4.395%	3.847%	-0.548%	-0.614
1978	Los Angeles	$ 189,323,671	$125,000	0.066%	4.434%	4.500%	6.124%	1.624%	1.210
1978	NYC (AL)	$ 215,503,232	$125,000	0.058%	2.132%	2.190%	1.005%	-1.185%	-0.937
1978	Philadelphia	$ 111,558,518	$ 50,000	0.045%	3.420%	3.465%	2.484%	-0.981%	-1.830
1979	Anaheim	$ 53,723,585	$ 50,000	0.093%	3.919%	4.012%	4.583%	0.571%	0.553
1979	Baltimore	$ 51,254,426	$150,000	0.293%	0.134%	0.427%	-0.090%	-0.516%	-0.947
1979	Cincinnati	$ 32,331,439	$ 25,000	0.077%	0.842%	0.919%	0.658%	-0.261%	-0.346
1979	Pittsburgh	$ 58,805,349	$100,000	0.170%	0.042%	0.212%	-0.137%	-0.349%	-0.407
1980	Houston	$ 72,898,467	$ 75,000	0.103%	4.314%	4.417%	4.109%	-0.308%	-0.129
1980	Kansas City	$ 33,021,724	$125,000	0.379%	-1.849%	-1.470%	-2.654%	-1.183%	-1.325
1980	NYC (AL)	$ 204,934,863	$ 25,000	0.012%	-1.622%	-1.610%	-2.599%	-0.990%	-0.782
1980	Philadelphia	$ 108,438,037	$125,000	0.115%	-2.057%	-1.942%	-2.246%	-0.304%	-0.568
1981	Los Angeles	$ 192,451,311	$125,000	0.065%	0.244%	0.309%	1.351%	1.042%	0.777
1981	Montreal								
1981	NYC (AL)	$ 208,286,617	$125,000	0.060%	0.748%	0.808%	1.636%	0.828%	0.654
1981	Oakland	$ 47,970,341	$ 25,000	0.052%	1.766%	1.818%	1.753%	-0.065%	-0.055
1982	Anaheim	$ 56,131,318	$ 50,000	0.089%	1.920%	2.009%	-0.545%	-2.554%	-2.476
1982	Atlanta	$ 50,019,550	$ 25,000	0.050%	2.344%	2.394%	1.898%	-0.496%	-0.480
1982	Milwaukee	$ 33,123,282	$150,000	0.453%	-1.369%	-0.916%	-0.516%	0.400%	0.477
1982	St. Louis	$ 54,104,091	$150,000	0.277%	-0.392%	-0.115%	0.416%	0.531%	0.956

1983	Baltimore	$ 53,193,294	$100,000	0.188%	4.217%	4.405%	4.472%	0.067%	0.123
1983	Chicago	$ 182,220,856	$ 50,000	0.027%	1.896%	1.924%	1.881%	-0.043%	-0.053
1983	Los Angeles	$ 198,560,886	$ 50,000	0.025%	3.201%	3.226%	3.386%	0.160%	0.119
1983	Philadelphia	$ 114,115,967	$125,000	0.110%	3.095%	3.205%	3.546%	0.341%	0.637
1984	Chicago	$ 192,591,813	$ 50,000	0.026%	5.222%	5.248%	5.691%	0.444%	0.558
1984	Detroit	$ 104,145,426	$100,000	0.096%	6.930%	7.026%	6.739%	-0.287%	-0.263
1984	Kansas City	$ 36,022,911	$ 50,000	0.139%	6.250%	6.389%	6.883%	0.494%	0.553
1984	San Diego	$ 52,431,494	$125,000	0.238%	7.294%	7.532%	9.628%	2.095%	1.863
1985	Kansas City	$ 37,668,611	$175,000	0.465%	5.123%	5.588%	4.568%	-1.019%	-1.141
1985	Los Angeles	$ 220,263,102	$ 75,000	0.034%	3.710%	3.744%	4.290%	0.546%	0.407
1985	St. Louis	$ 61,556,496	$150,000	0.244%	3.439%	3.683%	3.503%	-0.180%	-0.323
1985	Toronto								
1986	Anaheim	$ 70,276,696	$ 75,000	0.107%	5.058%	5.165%	5.351%	0.186%	0.180
1986	Boston	$ 159,618,309	$175,000	0.110%	4.596%	4.706%	6.048%	1.342%	1.395
1986	Houston	$ 80,828,386	$ 75,000	0.093%	0.145%	0.237%	-2.937%	-3.174%	-1.332
1986	NYC	$ 255,447,527	$175,000	0.069%	4.456%	4.525%	5.182%	0.657%	0.520
1987	Detroit	$ 115,717,469	$ 75,000	0.065%	1.390%	1.454%	0.059%	-1.395%	-1.279
1987	Minneapolis	$ 70,842,848	$150,000	0.212%	3.590%	3.802%	4.114%	0.312%	0.662
1987	San Fran.	$ 60,718,448	$ 75,000	0.124%	2.920%	3.043%	1.315%	-1.728%	-1.008
1987	St. Louis	$ 65,190,212	$175,000	0.268%	2.253%	2.521%	2.327%	-0.195%	-0.351
1988	Boston	$ 178,466,897	$ 50,000	0.028%	5.390%	5.418%	5.966%	0.548%	0.570
1988	Los Angeles	$ 246,784,667	$150,000	0.061%	3.972%	4.033%	2.606%	-1.427%	-1.063
1988	NYC	$ 279,496,535	$ 75,000	0.027%	3.595%	3.622%	5.389%	1.767%	1.397
1988	Oakland	$ 64,525,726	$125,000	0.194%	4.517%	4.710%	4.496%	-0.214%	-0.182
1989	Chicago	$ 221,202,789	$ 50,000	0.023%	2.093%	2.116%	0.933%	-1.183%	-1.487
1989	Oakland	$ 66,459,694	$100,000	0.150%	3.711%	3.861%	2.997%	-0.864%	-0.733
1989	San Fran.	$ 65,086,256	$125,000	0.192%	2.854%	3.046%	2.320%	-0.726%	-0.424
1989	Toronto								
1990	Boston	$ 176,411,810	$ 50,000	0.028%	-0.369%	-0.341%	-1.999%	-1.658%	-1.724
1990	Cincinnati	$ 40,611,884	$125,000	0.308%	1.337%	1.645%	2.291%	0.646%	0.856
1990	Oakland	$ 68,068,414	$100,000	0.147%	2.218%	2.365%	2.421%	0.056%	0.047
1990	Pittsburgh	$ 63,197,042	$ 75,000	0.119%	2.305%	2.424%	1.446%	-0.978%	-1.140
1991	Atlanta	$ 82,750,474	$150,000	0.181%	1.094%	1.275%	0.299%	-0.976%	-0.945
1991	Minneapolis	$ 76,478,821	$150,000	0.196%	0.232%	0.428%	-0.130%	-0.558%	-1.183
1991	Pittsburgh	$ 64,553,201	$100,000	0.155%	0.770%	0.925%	0.702%	-0.223%	-0.260
1991	Toronto								
1992	Atlanta	$ 87,316,596	$175,000	0.200%	4.739%	4.939%	5.518%	0.579%	0.560
1992	Oakland	$ 69,152,758	$ 75,000	0.108%	2.863%	2.972%	3.599%	0.627%	0.532
1992	Pittsburgh	$ 64,679,884	$ 75,000	0.116%	1.868%	1.984%	2.146%	0.162%	0.189
1992	Toronto								
1993	Atlanta	$ 91,150,000	$ 75,000	0.082%	3.778%	3.860%	4.390%	0.530%	0.513
1993	Chicago	$ 235,482,447	$ 75,000	0.032%	1.257%	1.289%	0.678%	-0.611%	-0.767
1993	Philadelphia	$ 147,001,676	$150,000	0.102%	-0.024%	0.078%	-0.093%	-0.171%	-0.320
1993	Toronto								
1994	Not Held								
1995	Atlanta	$ 101,342,437	$175,000	0.173%	5.341%	5.514%	5.519%	0.006%	0.005
1995	Boston	$ 185,337,596	$ 25,000	0.013%	3.075%	3.088%	2.457%	-0.632%	-0.657
1995	Cincinnati	$ 43,769,041	$ 75,000	0.171%	2.169%	2.340%	1.464%	-0.876%	-1.161
1995	Cleveland	$ 64,491,874	$200,000	0.310%	0.911%	1.221%	1.219%	-0.002%	-0.002
1995	Denver	$ 57,896,381	$ 50,000	0.086%	4.952%	5.039%	5.568%	0.529%	0.402
1995	Los Angeles	$ 243,788,401	$ 50,000	0.021%	0.827%	0.848%	1.247%	0.400%	0.298
1995	NYC	$ 303,606,418	$ 50,000	0.016%	2.261%	2.277%	3.402%	1.124%	0.889

1995	Seattle	$ 72,687,993	$150,000	0.206%	2.808%	3.014%	2.657%	-0.357%	-0.217
1996	Atlanta	$ 107,618,019	$200,000	0.186%	5.078%	5.264%	6.192%	0.929%	0.899
1996	Baltimore	$ 72,432,741	$125,000	0.173%	1.125%	1.298%	1.114%	-0.184%	-0.337
1996	Cleveland	$ 64,698,841	$ 50,000	0.077%	-0.084%	-0.007%	0.321%	0.328%	0.452
1996	Dallas	$ 39,723,254	$ 50,000	0.126%	3.631%	3.757%	2.590%	-1.167%	-0.898
1996	Los Angeles	$ 246,885,596	$ 50,000	0.020%	0.802%	0.822%	1.270%	0.448%	0.334
1996	NYC	$ 314,874,059	$175,000	0.056%	1.741%	1.797%	3.711%	1.915%	1.514
1996	San Diego	$ 72,557,088	$ 25,000	0.034%	1.650%	1.684%	3.020%	1.335%	1.187
1996	St. Louis	$ 73,782,306	$125,000	0.169%	1.286%	1.455%	1.037%	-0.418%	-0.754
1997	Atlanta	$ 113,115,220	$125,000	0.111%	7.040%	7.151%	5.108%	-2.042%	-1.977
1997	Baltimore	$ 75,161,009	$125,000	0.166%	2.765%	2.931%	3.767%	0.835%	1.532
1997	Cleveland	$ 66,274,795	$225,000	0.339%	1.504%	1.843%	2.436%	0.592%	0.816
1997	Houston	$ 121,049,093	$ 25,000	0.021%	5.312%	5.333%	7.873%	2.541%	1.066
1997	Miami	$ 52,492,918	$225,000	0.429%	2.985%	3.413%	2.229%	-1.184%	-0.879
1997	NYC	$ 320,105,629	$ 50,000	0.016%	3.705%	3.721%	1.661%	-2.059%	-1.628
1997	San Fran.	$ 75,463,688	$ 25,000	0.033%	4.578%	4.612%	3.102%	-1.510%	-0.881
1997	Seattle	$ 81,574,743	$ 50,000	0.061%	5.673%	5.735%	6.590%	0.855%	0.520
1998	Atlanta	$ 123,206,887	$125,000	0.101%	8.599%	8.700%	8.922%	0.221%	0.214
1998	Boston	$ 210,706,935	$ 50,000	0.024%	6.383%	6.407%	5.832%	-0.575%	-0.598
1998	Chicago	$ 280,446,881	$ 25,000	0.009%	5.507%	5.516%	5.387%	-0.129%	-0.163
1998	Cleveland	$ 68,280,954	$125,000	0.183%	3.860%	4.043%	3.027%	-1.016%	-1.400
1998	Dallas	$ 45,960,341	$ 25,000	0.054%	8.238%	8.292%	8.273%	-0.020%	-0.015
1998	Houston	$ 131,932,442	$ 50,000	0.038%	7.650%	7.688%	8.991%	1.303%	0.547
1998	NYC	$ 339,327,238	$175,000	0.052%	5.642%	5.694%	6.005%	0.311%	0.246
1998	San Diego	$ 82,195,355	$175,000	0.213%	6.591%	6.804%	8.454%	1.650%	1.467
1999	Atlanta	$ 130,105,709	$175,000	0.135%	6.144%	6.279%	5.599%	-0.679%	-0.657
1999	Boston	$ 219,553,252	$125,000	0.057%	3.838%	3.895%	4.198%	0.303%	0.315
1999	Cleveland	$ 68,698,720	$ 75,000	0.109%	0.417%	0.526%	0.612%	0.086%	0.118
1999	Dallas	$ 47,895,370	$ 25,000	0.052%	5.435%	5.487%	4.210%	-1.277%	-0.982
1999	Houston	$ 134,728,805	$ 50,000	0.037%	5.461%	5.499%	2.120%	-3.379%	-1.418
1999	NYC (both)	$ 348,859,366	$275,000	0.079%	4.415%	4.494%	2.809%	-1.685%	-1.332
1999	Phoenix	$ 84,996,706	$ 50,000	0.059%	5.288%	5.347%	3.870%	-1.477%	-0.972
2000	Atlanta	$ 136,688,674	$ 25,000	0.018%	6.225%	6.243%	5.060%	-1.184%	-1.146
2000	Chicago	$ 292,809,967	$ 50,000	0.017%	2.761%	2.778%	2.596%	-0.182%	-0.229
2000	NYC (both)	$ 365,949,852	$375,000	0.102%	6.046%	6.148%	4.899%	-1.250%	-0.988
2000	Oakland	$ 95,106,610	$ 75,000	0.079%	7.017%	7.096%	8.744%	1.648%	1.399
2000	San Fran.	$ 99,323,357	$ 50,000	0.050%	9.875%	9.926%	11.879%	1.953%	1.140
2000	Seattle	$ 98,341,310	$100,000	0.102%	5.304%	5.405%	2.193%	-3.212%	-1.952
2000	St. Louis	$ 81,603,230	$100,000	0.123%	2.004%	2.127%	1.990%	-0.137%	-0.246
					3.015%	3.144%	3.018%	-0.126%	-0.110

TABLE 4

Probabilities for Various Levels of Economic Impact Induced by the MLB post-season

Economic Impact per post-season game hosted	Probability of such an impact or greater having occurred
$50 million	0.19%
$41.1 million	1.00%
$31.0 million	5.00%
$25 million	10.78%
$20 million	18.42%
$10 million	41.35%
$6.8 million	50.00%
$0	67.85%
negative	32.15%

APPENDIX

Table A1: Cities and years used to estimate model in Table 1.

MSA Name	1969 Population	1969 Rank	2000 Population	2000 Rank	Wage Data availability
Akron, OH	676,214	59	695,781	77	1972-2000
Albany, NY	797,010	50	876,129	68	1969-2000
Atlanta, GA	1,742,220	16	4,144,774	9	1972-2000
Austin, TX	382,835	88	1,263,559	47	1972-2000
Baltimore, MD	2,072,804	12	2,557,003	18	1972-2000
Bergen, NJ	1,354,671	26	1,374,345	44	1969-2000 (State data 1969-2000)
Birmingham, AL	718,286	54	922,820	67	1970-2000 (State data 1970-1971)
Boston, MA	5,182,413	4	6,067,510	4	1972-2000
Buffalo, NY	1,344,024	27	1,168,552	52	1969-2000 (Average of cities)
Charlotte, NC	819,691	49	1,508,050	42	1972-2000
Chicago, IL	7,041,834	2	8,289,936	3	1972-2000
Cincinnati, OH	1,431,316	21	1,649,228	34	1969-2000
Cleveland, OH	2,402,527	11	2,250,096	24	1969-2000
Columbus, OH	1,104,257	33	1,544,794	41	1972-2000
Dallas, TX	1,576,589	18	3,541,099	10	1972-2000
Dayton, OH	963,574	42	950,177	65	1969-2000
Denver, CO	1,089,416	34	2,120,775	25	1977-2000
Detroit, MI	4,476,558	6	4,444,693	7	1976-2000
Fort Lauderdale, FL	595,651	70	1,632,071	36	1969-2000 (State data 1988-2000)
Fort Worth, TX	766,903	51	1,713,122	30	1976-2000 (State data 1976-1983)
Fresno, CA	449,383	79	925,883	66	1969-2000 (State data 1982-1987)
Grand Rapids, MI	753,936	52	1,091,986	59	1976-2000
Greensboro, NC	829,797	48	1,255,125	48	1972-2000
Greenville, SC	605,084	67	965,407	63	1969-2000 (State data 1969)
Hartford, CT	1,021,033	39	1,150,619	53	1969-2000
Honolulu, HI	603,438	68	875,670	69	1972-2000
Houston, TX	1,872,148	15	4,199,526	8	1972-2000
Indianapolis, IN	1,229,904	30	1,612,538	37	1989-2000
Jacksonville, FL	610,471	66	1,103,911	57	1972-2000 (State data 1988-2000)
Kansas City, MO	1,365,715	25	1,781,537	28	1972-2000

Las Vegas, NV	297,628	116	1,582,679	39	1972-2000
Los Angeles, CA	6,989,910	3	9,546,597	1	1969-2000 (State data 1982-1987)
Louisville, KY	893,311	43	1,027,058	61	1972-2000
Memphis, TN	848,113	45	1,138,484	54	1972-2000
Miami, FL	1,249,884	29	2,265,208	23	1969-2000 (State data 1988-2000)
Middlesex, NJ	836,616	47	1,173,533	51	1969-2000 (State data 1969-2000)
Milwaukee, WI	1,395,326	23	1,501,615	43	1969-2000
Minneapolis, MN	1,991,610	13	2,979,245	13	1972-2000
Monmouth, NJ	650,177	62	1,130,698	56	1969-2000 (State data 1969-2000)
Nashville, TN	689,753	57	1,235,818	49	1972-2000
Nassau, NY	2,516,514	9	2,759,245	16	1969-2000
New Haven, CT	1,527,930	19	1,708,336	31	1969-2000 (Average of cities)
New Orleans, LA	1,134,406	31	1,337,171	46	1972-2000
New York, NY	9,024,022	1	9,321,820	2	1969-2000
Newark, NJ	1,988,239	14	2,035,127	26	1969-2000 (State data 1969-2000)
Norfolk, VA	1,076,672	36	1,574,204	40	1972-2000 (State data 1973-1996)
Oakland, CA	1,606,461	17	2,402,553	21	1969-2000 (State data 1969-1987)
Oklahoma City, OK	691,473	56	1,085,282	60	1969-2000
Orange County, CA	1,376,796	24	2,856,493	14	1969-2000 (State data 1982-1987)
Orlando, FL	510,189	76	1,655,966	33	1972-2000 (State data 1988-2000)
Philadelphia, PA	4,829,078	5	5,104,291	5	1972-2000
Phoenix, AZ	1,013,400	40	3,276,392	12	1972-2000 (State data 1972-1987)
Pittsburgh, PA	2,683,385	8	2,356,275	22	1972-2000
Portland, OR	1,064,099	37	1,924,591	27	1972-2000
Providence, RI	839,909	46	964,594	64	1969-2000
Raleigh-Durham, NC	526,723	73	1,195,922	50	1972-2000
Richmond, VA	673,990	60	999,325	62	1972-2000
Riverside, CA	1,122,165	32	3,280,236	11	1969-2000 (State data 1982-1987)
Rochester, NY	1,005,722	41	1,098,314	58	1969-2000
Sacramento, CA	737,534	53	1,638,474	35	1969-2000 (State data 1982-1987)
St. Louis, MO	2,412,381	10	2,606,023	17	1972-2000

Salt Lake City, UT	677,500	58	1,337,221	45	1972-2000
San Antonio, TX	892,602	44	1,599,378	38	1972-2000
San Diego, CA	1,340,989	28	2,824,809	15	1969-2000 (State data 1982-1987)
San Francisco, CA	1,482,030	20	1,731,716	29	1969-2000 (State data 1982-1987)
San Jose, CA	1,033,442	38	1,683,908	32	1972-2000 (State data 1982-1987)
Scranton, PA	650,418	61	623,543	84	1972-2000 (State data 1983-1984)
Seattle, WA	1,430,592	22	2,418,121	19	1972-2000 (State data 1982-2000)
Syracuse, NY	708,325	55	731,969	73	1969-2000
Tampa, FL	1,082,821	35	2,403,934	20	1972-2000 (State data 1988-2000)
Tulsa, OK	519,537	74	804,774	71	1969-2000
Washington, DC	3,150,087	7	4,948,213	6	1972-2000
W. Palm Beach, FL	336,706	105	1,136,136	55	1969-2000 (State data 1988-2000)

Complete data on population and income were available for all cities from 1969 to 2000. This implies that data on income growth and income growth lagged one year were available from 1971 to 2000. Data regarding state and local taxes as a percentage of state GDP were available for all cities from 1970 to 2000 and were obtained from the Tax Foundation in Washington, D.C. Wage data from the Bureau of Labor Statistics Current Employment Statistics Survey were available for cities as described above. When city data were not available, state wage data were used in its place. When possible, the state wage data was adjusted to reflect differences between existing state wage data and existing city wage data. For MSAs that included several primary cities, the wages of the cities were averaged together to create an MSA wage as noted in Table A1.

The “Other” dummy variable was included for cities highly dependent on oil revenues including Denver, Ft. Worth, and Houston. For Denver, the variable is set at a value of one for the bust years of 1985-1988. For Ft. Worth the variable was set at a value of 1 for boom years, 1974-1976 and 1979-1981, and at -1 for the bust years, 1985-1988. For Houston the firsts variable was set at a value of 1 for boom years, 1974-1976 and 1979-1981, and the second variable was set at 1 for the bust years, 1985-1988. The “Other” dummy variables were also set at a value of 1 for the years 1992 and 1993 for the city of Miami to account for the impact of Hurricane Andrew.

Income and population data were obtained from the Regional Economic Information System at the University of Virginia, which derives its data from the Department of Commerce statistics.

Table of Economic impacts

City	Year	World Series	postseason	2000 dollars
Cleveland	1995	$10	$10	$11.3
Cleveland	1997	$7.2	$5.3	$7.7
Chicago	1993	$22.5	$22.5	$26.8
Florida	1997	$15.5		$16.6
Florida	1997	$17.3	$17.3	$18.5
Atlanta	1995	$8.7		$9.8
NYC	1998	5.9-8.1	15.5	$16.5
NYC	1999	$12.4-15.5	4.7-8.1	$16.0
NYC	2000	$25		$25
Anaheim	2002	$10		$9.6
St. Louis	2002	$2.1	$2.1	
Arizona	2001	$18		$17.2