THE QUEST FOR THE CUP:

ASSESSING THE ECONOMIC IMPACT OF THE WORLD CUP

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ABSTRACT

Hosting the World Cup, the world's second largest sporting event, is a potentially expensive affair. The co-hosts of the 2002 games, Japan and South Korea, spent a combined $4 billion building new facilities or refurbishing old facilities in preparation for the event. An *ex post* analysis of the 1994 World Cup held in the United States suggests that the economic impact of the event cannot justify this magnitude of expenditures and that host cities experienced cumulative losses of $5.5 to $9.3 billion as opposed to *ex ante* estimates of a $4 billion gain touted by event boosters. Potential hosts should consider with care whether the award of the World Cup is an honor or a burden.

Sports, soccer, football, world cup, stadiums

I. INTRODUCTION

The World Cup and the Olympic Games qualify as mega-events. Nation states compete as vigorously to host these events as the athletes who participate in them. Why? A variety of reasons explain the quest to host these events, but no reason appears more compelling than the promise of an economic windfall. Does the World Cup provide a boost to the host nation's economy that justifies the substantial costs and risks? The purpose of this paper is to shed some light on this subject using the experience of the United States in 1994.

First played in 1930, the World Cup competition determines the best soccer team in the world. The Cup is held every four years on the years opposite of the Olympics, presumably to avoid direct competition with the Olympic Games for both players and fans. The tournament currently consists of teams representing 32 nations who qualify for the Cup finals through regional competitions with each region being awarded a specific number of spaces based on the number and quality of national teams in the area. For the 2002 Cup, a total of 193 nations competed in 777 qualifying matches for the 32 spots in the finals. (FIFA, 2002)

The Federation Internationale de Football Association (FIFA), the governing body for soccer worldwide, determines the site of the World Cup. Until 1994, the tournament alternated between Europe and Latin America, the traditional powerhouses of soccer. Motivated by a desire to promote the sport and to capitalize on surging soccer popularity elsewhere in the world, FIFA has recently designated host countries outside Europe and Latin America. In 1994, the United States hosted the tournament. While the event returned to a traditional soccer nation in 1998, France, in 2002 Japan and South Korea were designated as co-hosts for the Cup.

The intense competition to host the World Cup inevitably leads to second guessing FIFA's

designee. What criteria does FIFA employ in making its selections? Some would question FIFA's strategy to use the World Cup to open or expand markets for the sport which explains the selection of the United States and Japan, arguably the world's two most affluent countries but without notable soccer traditions. Many soccer purists would eschew the commercial imperative, and would continue to award the World Cup to countries whose on-the-field performance merits such an honor. Based on a performance criterion, the United States had certainly not earned the right to host the 1994 event since, at the time of the 1988 decision to award the World Cup to the USA, the country had not qualified for the finals since 1950. These competing points of view forged a compromise of sorts in the decision to have co-hosts for the 2002 Cup. Those intent on promoting soccer viewed Japan as a viable candidate more for its economic might and soccer potential rather than its distinction in the sport. South Korea, on the other hand, had achieved some soccer prominence as indicated by the fact that it had qualified for three straight Cup Finals. Indeed South Korea has been recognized as the dominant team among East Asian countries while Japan had qualified for the World Cup finals only once. Critical to understanding FIFA's decision making on host cities is a financial reality. FIFA finances its operation almost entirely through the promotion of tournaments like the World Cup, and it would be surprising if it did not select a venue that maximized the organization's profit.

The most controversial FIFA decision on site, perhaps, came in July 2000 with the award of the 2006 World Cup to Germany. In the wake of the earlier groundbreaking decisions of the United States and the Asian nations, a groundswell of support had emerged for awarding the event to an African nation. Supporters of the African application made or could make three compelling arguments: (1) Africa had never hosted the games previously; (2) the African Football Confederation had the largest number of members among any of the regions in FIFA; (3) African nations had become increasingly

competitive on the world soccer stage. Nigeria, for example, upset both Argentina and Brazil on its way to winning the gold medal in the 1996 Olympic Games, and African teams have routinely won world youth championships.

In the final round of voting, the 24 members of the venue selection committee chose among five finalists: England, Germany, Morocco, South Africa, and Brazil. In a series of preliminary votes, South Africa and Germany emerged as the African and European choices, respectively. Brazil withdrew its bid in an apparent "under-the-table" deal in which the South American confederation allegedly agreed to support the African bid in exchange for an African pledge to support a Brazilian bid in 2010. (BBC, 2000) In the final vote between South Africa and Germany, the eleven votes of the North and South American and African confederations went to South Africa. On the other side, the eight European and four Asian confederation votes supported Germany. The Asian confederation vote for Germany can be explained by the ongoing strife between it and FIFA's president, Joseph "Sepp" Blatter, who supported the South African bid. Blatter had won election to his position in 1998 by pledging his support for an African World Cup bid, and while having no formal vote, he would make the final decision in the case of a tie.

The Oceania Football Confederation (OFC) cast the deciding vote. The OFC represents Australia, New Zealand, and the tiny island nations of Polynesia and Melanesia. The OFC's pivotal role is ironic for at least three reasons: (1) it had but a single vote on the committee; (2) it did not have a single guaranteed slot in the World Cup finals; and (3) it had only qualified a team for the World Cup finals twice in the sixteen previous tournaments. The OFC had directed that its delegate, New Zealander Charles Dempsey, vote for the South African bid once England had been eliminated from consideration. Germany led by a single vote when the time came for Dempsey to cast his vote. A vote for South

Africa would have produced a tie with the tie-breaking vote going to President Blatter (who would support South Africa) while a vote for Germany would secure their bid. Dempsey broke with his confederation and abstained from voting, leaving the vote 12-11 in favor of Germany.

Allegations were made that Dempsey faced death threats and personal bribery in order to secure his "vote" (BBC, 2000). Dempsey resigned in the face of criticism from soccer federations in Oceania as well as pressure from the New Zealand government itself.

This brief history of World Cup site selection highlights the political nature of the process. Countries pursue the event, at least in part, because of the powerful economic impact boosters claim it will have on the country fortunate enough to host it. The theoretical basis for claims of substantial economic impact is evaluated in the next section of the paper.

II. REVIEW OF "MEGA-EVENT" ECONOMIC IMPACT STUDIES

Hosting the World Cup brings significant costs and potentially large benefits. On the cost side, FIFA requires that the host country provide at least 8 and preferably ten modern stadiums capable of seating 40,000 to 60,000 spectators. For the 2002 event in Japan and South Korea, each offered to provide ten separate stadiums. As neither country had a large existing infrastructure for soccer, South Korea built ten new stadiums at a cost of nearly $2 billion, and Japan built seven new stadiums and refurbished three others at a cost of at least $4 billion. The total investment for new infrastructure in Japan "is unknown but some analysts peg the expenditure at more than 750 billion yen ($5.6 billion)." (Sloan, 2002) The operating costs of a mega-event are also enormous and are growing. In the wake of terrorist incidents at the 1972 and 2000 Olympics and on September 11, 2001 in the United States, security arrangements alone can run into the hundreds of millions of dollars. Greece will reportedly

spend up to $1 billion on security for the 2004 Olympics. Can the economic impact of an event, even one the size of the World Cup, compensate the host nation for the substantial infrastructure and operating costs?

Past and present prospective economic impact analyses prepared by event boosters have predicted economic windfalls from hosting the World Cup. The 1994 World Cup Organizing Committee in the United States, for example, predicted that "as many as one million international visitors will travel to the United States in conjunction with the World Cup, making the event one of the most significant tourist attractions in American history. The 1994 World Cup economic impact could conservatively exceed four billion dollars in the United States." (Goodman and Stern, 1994) South Africa bid for the 2006 World Cup was based, in part, on the promise that it would bolster the economy by approximately $6 billion and create as many as 129,000 new jobs (Khoza, 2000). The largest estimates to date have been provided by the co-hosts of the 2002 World Cup. A study by the Dentsu Institute for Human Studies estimated a $24.8 billion impact for Japan and a $8.9 billion impact for South Korea. As a percentage of total national income, these figures represent 0.6 and 2.2 percent of the total Japanese and South Korean economies, respectively (Finer, 2002).

The promise of substantial economic impact provides a justification for public subsidies for mega-event infrastructure. Promoters of subsidies for mega-events throughout the world argue that the expenditures should properly be treated as investments that generate positive economic returns, that is to say yields that exceed those generated by the next-best, alternative use of those funds.

Claims that sports mega-events provide a substantial boost to the economy of the host city, region, and country have been strongly criticized by some scholars. In assessing the impact of the American Football Championship, the Super Bowl, Philip Porter disputed claims by the National

Football League (NFL) that the contest provided substantial economic impact. In fact, Porter claimed a proper measurement of the Super Bowl's economic impact would show the event had no impact. Porter (1999) observed,

> Investigator bias, data measurement error, changing production relationships, diminishing returns to both scale and variable inputs, and capacity constraints anywhere along the chain of sales relations lead to lower multipliers. Crowding out and price increases by input suppliers in response to higher levels of demand and the tendency of suppliers to lower prices to stimulate sales when demand is weak lead to overestimates of net new sales due to the event. These characteristics alone would suggest that the estimated impact of the mega-sporting event will be lower than impact analysis predicts. When there are perfect complements to the event, like hotel rooms for visitors, with capacity constraints or whose suppliers raise prices in the face of increased demand, impacts are reduced to zero."

Baade and Matheson (2000) challenged an NFL claim that as a result of the 1999 Super Bowl in Miami, taxable sales in South Florida increased by more than $670 million dollars. Their study of taxable sales data in the region concluded that the NFL has exaggerated the impact of the Miami Super Bowl by approximately a factor of ten using assumptions that favored identifying a strong economic impact.

III. THEORETICAL ISSUES

The exaggeration of benefits induced by a sports mega-event may occur for several reasons. First, the increase in direct spending attributable to the games may be a "gross" as opposed to a "net"

measure. Some subsidy advocates estimate direct spending by simply summing all receipts associated with the event. The fact that the gross-spending approach fails to account for decreased spending directly attributable to the event represents a major theoretical and practical shortcoming. Surveys on expenditures by those attending the event, complete with a question on place of residence, would appear to be a straightforward way of estimating direct expenditures in a manner that is statistically acceptable. However, while such surveys may well provide acceptable spending estimates for those patronizing the event, they do not reveal changes in spending by residents not attending the event. It is conceivable that some local residents or potential visitors may dramatically change their spending given their desire to avoid the congestion at least in the venue(s) environs. A fundamental shortcoming of typical economic impact studies, in general, pertains not to information on spending by those included in a direct expenditure survey, but rather to the lack of information on the spending behavior for those who are not.

Failure to account for the difference between gross and net spending has been cited by economists as a chief reason why sports events or teams do not contribute as much to metropolitan economies as boosters claim (Baade, 1996). However, in the case of an international soccer tournament, a very large proportion of all attendees come from other countries, and their spending qualifies as export spending. Furthermore, the host country's residents who do not attend probably do not reduce their expenditures in the country, even if they avoid temporarily the cities or neighborhoods of the stadiums. Thus one might that direct expenditure by nonresidents who attend events approximates net impact. Unfortunately, this will not be true if some nonresidents, who might have visited the country, decide not to do so because of congestion and high prices during the event's period.

Recent evidence assessing the economic impact of the Summer Olympics in 2000 in Sydney,

Australia indicate the "substitution effect" may be substantial even in cases where the event has a clear international character. An Arthur Andersen (2000) survey on hotel activity in Sydney and other capital cities prior to and during the Olympic Games concluded,

> As expected, survey results indicate the vast majority of Sydney hotels peaking at near 100% occupancies during the Games period from September 16-30. This represents an increase of 49% in occupancy levels relative to the first half of September. In contrast, other capital cities experienced significant demand shortfalls for the same period. For example, occupancies in Melbourne and Brisbane plummeted by 19% and 17% in the second half of September relative to the period from 1-15 September. Overall, with the exception of Sydney and Adelaide, all hotel markets in Australia experienced a decline in occupancy in September 2000 relative to September 1999 despite the Olympic Games, as reported in the Hotel Industry Benchmark Survey. Hoteliers indicate that while international demand was strong..., domestic leisure travel traditionally taking place during the September school holiday period was displaced to Sydney for the Olympics.

The Anderson report indicates the importance of the substitution effect, and compels consideration of which, if any, governmental entities should be involved in subsidizing sports mega-events. Sydney's gains may well have come at the expense of other Australian cities, and if the federal government subsidizes the games there must be a rationale for enriching Sydney at the expense of Adelaide and other regional cities.

A second reason economic impact may be exaggerated relates to what economists refer to as the "multiplier," the notion that direct spending increases induce additional rounds of spending due to

increased incomes that occur as a result of additional spending. If errors are made in assessing direct spending, those errors are compounded in calculating indirect spending through standard multiplier analysis. Furthermore, correct multiplier analysis includes all "leakages" from the circular flow of payments and uses multipliers that are appropriate to the event industry. Leakages may be significant depending on the state of the economy. If the host economy is at or very near full employment, for example, it may be that the labor essential to conducting the event resides in other communities where unemployment or a labor surplus exists. 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. 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 should be utilized. That is to say, to what extent does the event give rise to money inflows and outflows that would not occur in its absence? Since the input-output models used in the most sophisticated *ex ante* analyses are based on fixed relationships between inputs and outputs, such models do not account for the subtleties of 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. In summarizing the efficacy of this technique Davidson (1999) opined:

The biggest problem with this producer approach is that these business managers must be

able to estimate how much "extra" spending was caused by the sport event. 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.

While many potential criticisms of *ex ante* economic analysis exist, the real question is whether the estimates of the economic impact of the 1994 World Cup hosted by the United States conform to *ex post* estimates of the economic impact this events on its host cities? In the next section of the paper, the model that is used to develop *ex post* estimates is detailed.

IV. THE MODEL

Ex ante models may not provide credible estimates on the economic impact of a mega-event for the reasons cited. An *ex post* model may be useful in providing a filter through which the promises made by event boosters can be strained. A mega-event's impact is likely to be small relative to the overall economy, and the primary challenge for those doing a post-event audit involves isolating the event's impact. This is not a trivial task, and those who seek insight into the question of economic impact should be cognizant of the challenges and deficiencies common to both *ex ante* and *ex post* analyses.

Several approaches are possible in constructing a model to estimate the impact an event has had on a city, and are suggested by past scholarly work. Mills and McDonald (1992) provide an extensive summary of models that have been used to explain metropolitan economic growth. Growth theories seek to explain growth through changes in key economic variables in the short-run (export base and neoclassical models) or the identification of long-term developments that affect metropolitan economies

in hypothetical ways (product cycle, cumulative causation, and disequilibrium dynamic adjustment models).

Our task is not to replicate explanations of metropolitan economic growth, but to use past work to help identify how much growth in economic activity in U.S. cities hosting Cup matches is attributable to the event. To this end we have selected explanatory variables from existing models to predict economic activity in the absence of the World Cup. Estimating the economic impact of the Cup involves comparing the projected level of economic activity without the event to the actual levels of economic activity that occurred in cities hosting matches. The success of this approach depends on our ability to identify variables that account for the variation in growth in economic activity in host cities.

In modeling those factors that are unique to individual cities, it is helpful to identify some conceptual deficiencies characterizing the demand side of *ex ante* and *ex post* models that exaggerated economic impact estimates. Many prospective economic impact studies, particularly older ones, fail to distinguish between gross and net spending changes. In *ex post* studies, failure to control for the city's own secular growth path could embellish an estimate of the contribution of the World Cup. *Ex ante* studies even in very sophisticated forms are based usually on the premise that important economic relationships remain unchanged.

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, but it is far more challenging to specify the model so as to remedy the problem. In explaining regional or metropolitan growth patterns, at least some of the omitted variable problem can be addressed through a careful specification of the independent variables.

As noted above, representing relevant variables as deviations from city norms, leaves the scholar 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 regional or national MSA growth. It is important, for example, to model the fact that relocating a business could occur as a consequence of wages increasing in the MSA under study or a slower rate of wage growth in other MSAs. What matters is not the absolute level of wages in city i, but city i's wage relative to that of its competitors.

The purpose of *ex ante* studies is to provide a measure of the net benefits a project or event is likely to yield. To our knowledge there is no prospective model that has the capacity for measuring the net benefits of a project relative to the next best alternative use of those funds. If one assumes that the best use of funds has always occurred prior to a mega-event, then the growth path observed for a city can be construed as optimal. If this optimal growth path, identified by the city's secular growth trend, decreases after the mega-event occurs, then the evidence does not support the hypothesis that a publicly subsidized mega-event put those public monies to the best use. Our model is designed to predict changes in income attributable to the World Cup in host cities in 1994 based on historical data between 1970 and 2000. Equation (1) represents the model used to predict changes in income for host cities.

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

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 $\mathring{a}_t^i$ is the stochastic error. O_t^i is a dummy variable that represents the effects of the oil booms of the 1970s and the subsequent oil bust of the 1980s upon host economies that cannot be explained by other variables in the model. The cohort of cities used in the sample includes seventy-three metropolitan areas that represent the largest MSAs in the United States by population over the time period 1970-2000. The data used are described more fully in Appendix 1.

For the purposes of this analysis, the functional form is linear in all the variables included in equation (1). The equation was estimated for 13 different metropolitan areas representing the 9 host cities. For two host sites, Stanford Stadium in Palo Alto, and the Cotton Bowl in Dallas, the calculations were performed on two local MSAs since two MSAs were in close proximity to the host venue. At Giants Stadiums in New Jersey, three local MSAs were examined. 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 most 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 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 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.

V. 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, 1970-2000. The predicted income growth is then compared to the actual income growth that each MSA experienced in 1994. 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 World Cup, this method allows for a dollar estimate of the impact of the 1994 World Cup on host cities.

Table 2 shows the 1994 nominal income, 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 host city. 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 Boston in 1994 was 2.556 percent while the model predicted only a 2.459 percent increase in income corresponding to a residual of 0.097 percent and a standardized residual of 0.101. Based on Boston's $155.7 billion economy, this 0.097 percent difference corresponds to an economy that produced income $151 million in excess of what would have expected during 1994 if the city had not hosted the Cup. The $151 million can be interpreted as the contribution of the World Cup matches to the Boston economy. In total, the model estimates that the average host city experienced a *reduction* in income of $712 million relative to predictions.

The statistics recorded in Table 2 suggest two things worth noting. First, the dollar differences recorded in final column vary substantially with some cities such as Chicago exhibiting income gains well in excess of reasonable booster predictions, and other cities showing a large negative impact. Second, the World Cup had an overall negative impact on the U.S. economy of $9.3 billion. While these numbers may be biased downward due to poor economic performance by the two largest host cities, nevertheless this estimate stands in stark contrast to the increase projected by the boosters of the event of "conservatively" $4 billion.

The magnitude of the variation of the estimates at first blush appears high. Some host cities (Chicago) exhibited nearly a billion dollars in increased economic activity while others (Los Angeles, New York, and San Francisco) 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 World Cup. 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 above one percent meaning that one would expected the models to predict actual economic growth for the cities in question within one percentage point less than about two-thirds of the time. For the cities in question, a one percent error translates into a $300 million difference for the smallest cities such as Orlando and Fort Worth and over a $2 billion difference for the largest metropolitan areas of New York City, Chicago, and Los Angeles. 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, the standardized residual does not approach statistical significance in any of the host cities.

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, 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 thirteen cities during the World Cup year 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 6.3 percent. In other words, if the Cup really had a positive effect on the thirteen host cities, then the sample results had only a 6.3 percent probability of occurring.

It should be noted that the seemingly unrelated regressions approach can only be used if there is no correlation between the residuals in the different cities. If the models for the individual cities each

systematically over- or under-predict economic growth in a particular year for some reason, then the individual residuals could not be compared in this way. An analysis of variance test for the residuals from the thirteen cities, however, fails to reject the null hypothesis that the average residual for the cities is the same in every year and equal to zero.

The seemingly unrelated regression analysis can be carried one step further. Since the presence of the World Cup is not included in making predictions about the economic growth in a particular city, if the World Cup has a significant positive 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.)

Table 3 records various estimates that combine reasonable estimates predicted by boosters for the World Cup and those predicted by the model. The estimates for the booster impact on particular cities were obtained through multiplying the total economic impact of $4 billion for the United States, which is what tournament officials claimed, by the individual city's share (out of 52) of total matches hosted in 1994. (Alternatively, one could multiply by the individual city's share of total attendance). In venues where two or more MSAs were designated as host cities, the economic impact was evenly split between the MSAs. For example, a reasonable booster prediction for Boston based on a $4 billion national economic impact for the U.S. hosting the 1994 World Cup is $461.5 million based on Boston hosting 6 of the 52 matches. The model indicates that Boston exhibited an increase in income of $155.7 million over that predicted for Boston during 1994 if it had not hosted matches. The difference of

$305.8 million represents the contribution of the World Cup matches to the Boston economy below that of boosters' estimates. While the model predicts that Boston should have grown 2.459 percent in 1994 compared with 2.5561 percent actual growth, if a booster estimate of $461.5 million is accurate, the prediction for Boston's economic growth would have been 2.755 percent. Using these new predicted growth rates that include booster 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 0.76 percent. In other words, had the Cup had the positive effect asserted by the boosters on the thirteen host cities, the actual growth rates experienced by the sample would have had only a 0.76 percent probability of occurring. Furthermore, economic impact at which the mean standard residual equals zero is –$5.52 billion.

The World Cup contribution to predicted growth (and hence the standardized residual) can be adjusted by assuming an economic impact larger or smaller than the booster's claims of $4 billion. The resulting p-values shown are shown in Table 4.

The apparent negative impact of the Cup can be explained by the fact that matches are not held on consecutive days. The "crowding-out" effect due to perceptions relating to limited hotel rooms and high hotel prices, rowdy behavior of football fans, and peak use of public goods such as highways and sidewalks may be substantial if the Cup matches take place over a period of weeks as opposed to days. For example, the high negative impact for New York may be attributable to the fact that the World Cup matches diverted convention activity from New York for a period of three and a half weeks rather than just the seven days on which matches were scheduled. Furthermore, the net effect on the New York economy of the conventions or other tourists who went elsewhere would depend on the details relating to the spending patterns of soccer fans versus those of the lost visitors and convention

attendees. Third, the spending of residents of the host city may be altered to the detriment of the city's economy. Residents may not frequent areas in which the event occurs or the fans stay. Fourth, if the games are televised, some fans may stay inside to view the games rather than going out as they normally might.

Table 4 provides estimates on the probabilities that the Cup will induce various levels of economic impact. As the estimates recorded in Table 4 indicate, the analysis suggests that it was far more likely that the event imparted a negative economic impact than of it benefiting the host communities. Gains of the magnitude indicated by promoters of the World Cup in Japan and South Korea are highly remote. Indeed, the first anecdotal evidence of the economic impact of the World Cup on South Korea and Japan indicates that the true impact will be far below that predicted prior to the tournament. While the number of European visitors to South Korea was higher than normal, this increase was offset by a similar sized decrease in the usual tourists from Japan. The total number of foreign visitors to South Korea during the World Cup in 2002 was estimated at 460,000, a figure identical to the number of foreign visitors during the same period in the previous year (Golovnina, 2002). The substitution and crowding out effects appear to be quite obvious. "Consumer goods such as TVs and sporting goods sold well, while some casinos and hotels had drop-offs as regular customers and business travelers avoided World Cup hassles." (USA Today, 2002)

VI. CONCLUSIONS AND POLICY IMPLICATIONS

Cities vigorously compete to host sports mega-events because they perceive that doing so will enhance their image and stimulate their economies. International sporting events require substantial expenditures on infrastructure and security and critically depend, therefore, on public subsidization. The

ability of event promoters to secure public funds often depends on convincing a sometimes-skeptical public that hosting the event generates economic profit. A motive for exaggerating the impact of a mega-event clearly exists, and that explains the purpose for this assessment of the impact of the 1994 World Cup Soccer tournament hosted by the United States. With over 3.5 million fans attending games during the tournament, far and away the most in the event's history, the 1994 World Cup was clearly an enormous popular success, and it left event organizers with large profits. The economic success of the tournament for host cities, however, is far less clear. The evidence suggests that a $4 billion economic impact for the United States projected by Cup boosters probably did not materialize. On the contrary, the evidence indicates a far greater likelihood that the World Cup had an overall negative impact on the average host city and the U.S. economy overall. Theoretically, the World Cup induced reductions in spending that more than offset the gains in spending attributable to the Cup in 1994. Cities would be well advised to more thoroughly evaluate booster promises of a financial windfall from hosting a sports mega-event such as the World Cup before committing substantial public resources to such an event.

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TABLE 1

Regression results for Equation 1. (t-stats in parentheses)

MSA	Cons.	Avg.	Y_{t-1}	Income	Wages	Taxes	Time	Oil	Fit
Bergen-Passaic*	-3.574 (-2.55)	1.085 (10.98)	-.1939 (-2.25)	-.1903 (-2.08)	-	-.2767 (-2.26)	.0021 (2.78)	-	Adj. R^2 = .8330 SEE = 1.029%
Boston*	-1.778 (-0.81)	1.045 (11.31)	-	-.4185 (-3.12)	-	-.2407 (-3.07)	.0012 (1.13)	-	Adj. R^2 = .8289 SEE = 0.962%
Chicago	.3438 (4.94)	.9614 (12.00)	-	-.0732 (-1.13)	.0682 (1.33)	-.3484 (-4.90)	-	-	Adj. R^2 = .8954 SEE = 0.796%
Dallas*	-2.449 (-2.68)	.9804 (8.47)	-	-	-	-.2798 (-3.34)	.0014 (2.81)	-.0151 (-1.79)	Adj. R^2 = .7730 SEE = 1.158%
Detroit	8.683 (4.78)	1.216 (6.99)	.2563 (3.44)	-0.776 (-5.65)	.4023 (3.01)	-.3529 (-5.29)	-.0041 (-4.54)	-	Adj. R^2 = .9110 SEE = 1.091%
Fort Worth	-1.284 (-1.84)	1.021 (7.45)	.2751 (2.49)	0.0887 (1.19)	-	-	.0006 (1.80)	0.0221 (4.39)	Adj. R^2 = .6957 SEE = 1.300%
Los Angeles*	10.810 (2.55)	1.032 (8.67)	-.5301 (-2.54)	-.0715 (-0.78)	-	-	-.0052 (-2.54)	-	Adj. R^2 = .7831 SEE = 1.247%
New York City*	-7.601 (-4.88)	1.018 (8.07)	-.2488 (-2.39)	-.4206 (-3.69)	.2648 (1.87)	-	-	-	Adj. R^2 = .7374 SEE = 1.265%
Newark	-2.659 (-6.39)	1.058 (11.26)	-	-0.2223 (-2.56)	-.3630 (-3.64)	-.1411 (-1.88)	.0021 (6.31)	-	Adj. R^2 = .8581 SEE = 0.905%
Orlando*	-0.001 (-0.16)	1.401 (9.50)	.1650 (1.88)	-	-	-	-	-	Adj. R^2 = .7638 SEE = 1.533%
San Francisco	-0.486 (-5.27)	.8528 (5.40)	-	.3384 (5.29)	-	-	-	-	Adj. R^2 = .6691 SEE = 1.714%
San Jose	-0.647 (-4.14)	.6904 (2.86)	-	.3538 (4.82)	-	-.2327 (2.90)	-	-	Adj. R^2 = .5610 SEE = 2.513%
Wash., D.C.*	-1.401 (-1.00)	.6534 (6.11)	-	-	-.1111 (-1.90)	-.0495 (1.41)	.0007 (1.04)	-	Adj. R^2 = .7244 SEE = 0.958%

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

World Cup Contribution to Local Economies

City	Income (000s)	Predicted Growth	Actual Growth	Difference	Standardized Residual	Income Gains Losses (000s)
Bergen-Passaic	$41,602,614	1.416%	1.783%	0.367%	0.357	$152,756
Boston	$155,681,683	2.459%	2.556%	0.097%	0.101	$151,408
Chicago	$207,969,580	2.141%	2.619%	0.477%	0.600	$992,690
Dallas	$74,674,916	3.972%	4.414%	0.442%	0.382	$330,298
Detroit	$110,678,737	4.424%	4.376%	-0.048%	-0.044	-$52,877
Fort Worth	$32,274,643	3.103%	2.524%	-0.579%	-0.445	-$186,785
Los Angeles	$207,226,229	0.815%	-0.893%	-1.708%	-1.370	-$3,540,122
New York	$252,696,356	1.799%	0.414%	-1.385%	-1.095	-$3,500,223
Newark	$57,500,474	1.344%	0.211%	-1.133%	-1.251	-$651,283
Orlando	$28,099,680	4.175%	2.896%	-1.279%	-0.834	-$359,341
San Francisco	$57,231,558	3.030%	1.182%	-1.848%	-1.078	-$1,057,513
San Jose	$46,593,920	3.694%	2.091%	-1.603%	-0.638	-$746,952
Washington, D.C.	$137,623,711	2.882%	2.306%	-0.576%	-0.601	-$792,794
Average		**2.712%**	**2.037%**	**-0.68%**	**-0.457**	**-$712,365**
					t_{n-1} = -1.649	**Total -$9,260,739**

TABLE 3

World Cup Contribution to Local Economies including Booster's Predictions

City	Predicted World Boost (000s)	Predicted World Cup Growth	Predicted Model Growth	Total Predicted Growth	Actual Growth	Diff.	Standard Residual
Bergen-Passaic	$179,487	0.431%	1.416%	1.847%	1.783%	-0.062%	-0.062
Boston	$461,538	0.296%	2.459%	2.755%	2.556%	-0.207%	-0.207
Chicago	$384,615	0.185%	2.141%	2.326%	2.619%	0.292%	0.367
Dallas	$230,769	0.309%	3.972%	4.281%	4.414%	0.133%	0.115
Detroit	$307,692	0.278%	4.424%	4.702%	4.376%	-0.326%	-0.299
Fort Worth	$230,769	0.715%	3.103%	3.818%	2.524%	-1.294%	-0.995
Los Angeles	$615,385	0.297%	0.815%	1.112%	-0.893%	-2.005%	-1.608
New York	$179,487	0.071%	1.799%	1.870%	0.414%	-1.456%	-1.151
Newark	$179,487	0.312%	1.344%	1.656%	0.211%	-1.445%	-1.596
Orlando	$384,615	1.369%	4.175%	5.544%	2.896%	-2.648%	-1.727
San Francisco	$230,769	0.403%	3.030%	3.433%	1.182%	-2.251%	-1.314
San Jose	$230,769	0.495%	3.694%	4.190%	2.091%	-2.098%	-0.835
Washington, D.C.	$384,615	0.279%	2.882%	3.161%	2.306%	-0.856%	-0.893
Average	**$307,692 Total = $4,000,000**	**0.419%**	**2.712%**	**3.130%**	**2.037%**	**-1.094%**	**-0.785** $t_{n-1} = 2.83$

TABLE 4

Probabilities for Various Levels of Economic Impact Induced by the World Cup

Economic Impact	Probability of such an impact or greater having occurred
$25 billion	0.00%
$4 billion	0.76%
$3.498 billion	1.00%
$3 billion	1.31%
$2 billion	2.26%
$1 billion	3.82%
$475 million	5.00%
$0	6.33%
-$5.520 billion	50.00%
negative	93.67%

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 "Oil Bust" dummy variable was included for cities highly dependent on oil revenues such as Dallas and Fort Worth. For Forth 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 Dallas, the variable was set at a

value of 1 for the bust years 1985-1988.

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.