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For an Olive Wreath? Olympic Games and Anticipation Effects in Macroeconomics

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Abstract: We examine the effects that hosting and bidding for the Olympic Games has on macroeconomic outcomes in a panel of 184 countries spanning the period 1950-2006. Actual hosting of the Games generates positive investment, consumption, and output responses before, during, and after hosting. We detect anticipation effects: (i) bidding for the Olympic Games generates positive investment, consumption, and output responses at the time of the bidding; (ii) bidding for the Games has a transitory level effect. We confirm the presence of legacy effects: hosting the Games has a permanent level effect.

Key Words: Mega Events, Anticipation Effects, Demand Shocks

JEL codes: C21, E62, E65

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1. Introduction

According to Herodotus¹ during Xerxes' early days in Greece when the Olympics were on, Xerxes and Mardonius asked the prize for the Olympic winners to a group of Greek deserters. The answer was "An olive-wreath." Then Tigranes, one of Xerxes's generals, uttered: "Good heavens! Mardonius, what manner of men are these against whom you have brought us to fight – men who contend with one another, not for money, but for honor!"

Contemporary economists have no clear answer on whether the organization of the modern Olympic Games is a matter of honor. Although the acquirement of international prestige is obvious, the economic advantages for hosting the Games are not that clear. The economic benefits of hosting the Games are incredulous to most academics that have conducted independent research on the issue (see, for example Owen (2005)). Only recently, Rose and Spiegel (2011), using a variety of trade models, show that hosting the Olympics has a positive impact on national exports which is statistically robust, permanent, and large. Surprisingly, they also find that unsuccessful bids to host the Olympics have a similar positive impact on exports. Rose and Spiegel (2011) explain this finding by claiming that what actually matters is the signal countries send to international markets when they bid for the Olympics rather than the hosting of the Olympics itself. However, as they also recognize, their explanation cannot fit all aspects of the data. For instance, they cannot explain why open countries should bid to host the Olympics, and why countries bid repeatedly for the organization of such event. Rose and Spiegel (2011) start from the supposition that hosting a mega event provides visibility to a host country and, thus, may stimulate global demand for its exports. The starting point of our research is different. We argue that the bidding for hosting mega events creates anticipation effects for demand changes that stimulate current output, consumption and investment. In other words, the bidding for a mega event is translated to "news" about future investment opportunities and surges in public spending and private agents react to the news signal before the event happens.

In fact, we view the competition for the Olympic Games hosting as a natural experiment to test for anticipation effects in macroeconomic time series. This is because of the special bidding process followed for the hosting of the Olympics: the Olympic bidding process begins with the submission of a city's application to the International Olympic Committee (IOC) by its National Olympic Committee (NOC). In most of the organized Games, the process has consisted of two phases. During the first phase, which starts after the bid submission deadline, approximately seven years before the actual organization of the event, the candidate countries compete for a favorite appraisal from the IOC

1 Herodotus (Book 8, Urania, 26, 1).

Evaluation Commission. In the second phase, a host city is selected four years before the actual organization of the events and the successful bid delegation signs the "Host City Contract" with the IOC, which delegates the responsibilities of the Games organization to the city and respective NOC. The election of the host city is made by the assembled active IOC members each possessing one vote. Members from countries that have a city taking part in the election cannot vote while the city is in the running.

Hence, agents in candidate cities/countries receive signals for possible changes in aggregate demand seven to ten and four years before the actual organization of the Games. The first signal is less informative than the second one. It gives a 25% probability to the bidding country for holding the event in seven years, while the second signal is very informative and delivers news for changes in fiscal policy and demand in the host country in a four year horizon. Hence, we can test whether such news affect economic behavior and explicitly examine the role of expectations in forming macroeconomic outcomes. To the best of our knowledge our study is the first attempt in the literature to investigate directly if agents react in anticipation of future events with macroeconomic data.

Anticipation is a general concept used and applied in various domains. Economists have tried to study the effects of several types of economic news to macroeconomic variables. For example, Frenkel (1981), Engel and Frankel (1984) and Hardouvelis (1987) have looked at the response of interest rates to the news embodied in the weekly money supply announcements. Hardouvelis (1988) and Gürkaynak et al. (2005a and 2005b) examine how exchange and interest rates, and long term forward rates respond primarily to monetary news, but also to unexpected components of variables that reflect the state of the business cycle. Bartolini et al. (2008) explore how the release of new economic data affects asset prices in the stock, bond, and foreign exchange markets.

In macroeconomics it is often argued that changes in expectations are an important driving force of the business cycle. Beaudry and Portier (2006) show that the joint behavior of stock prices and TFP in the US favors a view of business cycles driven largely by a shock that represents news about future technological opportunities which is captured in stock prices. Beaudry and Portier (2007) and Jaimovich and Rebelo (2009) propose models that can explain how macroeconomic variables react to news about future total factor productivity. Ramey (2011) emphasizes the importance of measuring anticipations in fiscal shocks and in a recent working paper, Ramey (2009) constructs series of expected discounted value of government spending changes due to foreign political events by reading periodicals in order to approximate changes in expectations for public spending in defense in the US. However, all the above mentioned studies are based on time series information and do not make use of a clear episode exogenous to the evolution of macroeconomic aggregates that are known in advance

such as the organization of the Olympic Games to measure anticipations in investment decisions and fiscal policy, rendering our analysis unique in the existing literature.

To test for anticipation in the announcement of Olympic “news” we use a quasi-natural experiment approach in a panel of 184 countries spanning the period 1950-2006. To that end, we regress per capita GDP, consumption, investment, government expenditures, the price level and the exchange rate growth rates on an Olympic Games indicator variable. We apply rigorous panel data fixed effects estimation techniques that allow for contemporaneous, future, and lagged effects of the Games.

The Olympic Games are economically beneficial, but not for their legacy effects in the host country, neither for the “honor” they incur. They are beneficial because of the positive effects they induce on expectations of private agents about changes in future demand. The hosting of the Games generates positive investment, consumption, and output responses before, during, and after its realization. Anticipation effects are present in all the variables we consider: GDP growth increases significantly during the previous 5 years before hosting and the peak response occurs when the winner of the bidding is announced, 4 years before the actual hosting of the event. The reason for this significant increase in GDP per capita growth is a significant positive and quantitatively large increase in private investment and consumption. Both variables increase consecutively and significantly 5 years before hosting with the maximum response occurring at the time of the announcement of the Olympic Games winner city. Also, government spending increases 4 years in advance of the actual event. The variable that mostly reflects the anticipatory demand effects of the Games is prices and the exchange rate that react significantly when a country bids for the Olympics reaching their maximum reaction around the time when the announcement of the winner is made.

Anticipation effects justify the increases in output growth of unsuccessful bidders: forward looking investors should boost investment demand in countries that bid for the Olympics since in those countries expected profits increase in the face of anticipated increases in demand. We show that this is the case in the data: we observe significant positive output growth, private investment, and private consumption responses in the bidding countries about seven to ten years before the actual hosting of the Games. Private investment significantly decreases two and three years after the unsuccessful bidding indicating that the investment projects undertaken while bidding are mostly reversible and for that reason the after-effects of bidding for the Olympic Games are significantly negative.

When we turn to the after-effects of hosting the Olympic Games in successful bidders we find that they are of relatively minor importance when compared to the before and contemporaneous effects, justifying findings of previous authors on the negligible economic benefits associated with the

organization of mega events.

Our results survive a series of sensitivity analyses concerning data treatment, sample periods and omitted variables controls. To check further the robustness of our findings we conduct a number of different experiments. First, we compare the organization of the Olympics with other mega events such as the International Expo and the World Cup. Both events confirm the presence of anticipation effects, but their effects are not comparable with the ones of the Olympics. Countries that have hosted International Expos experienced a significant increase in their real per capita GDP growth before the hosting of the event, but this effect was smaller compared to the one generated by the Olympics and not long lasting. The hosting of the World Cup Competition on the other hand generates negative effects on output, consumption and investment growth and only positive effects on government spending growth indicating that markets do not perceive the organization of such an event as a great investment opportunity, but as a means for the government to increase spending that crowds out private demand. We have, also, investigated whether local effects are stronger than country effects by repeating our analysis for regional data in the US. The regional analysis confirms the aggregate findings: hosting the Olympics generates positive output growth effects before, on impact, and after the event. Finally, stock price data confirm the presence of anticipatory effects. The stock price index increases significantly eight and nine years before the hosting of the Games in both hosting and bidding countries and the magnitude of the anticipatory increase in stock prices is comparable in the two group of countries.

The paper is organized as follows. The next section describes the data and the estimation methodology. In section 3 we present the main results. Section 4 examines the sensitivity of the results to changes in the econometric model and the natural experiment performed. The last section concludes.

2. Data and Estimation

We obtain data on the bidding and hosting countries of the Olympic Games from www.olympic.org. We consider both winter and summer Games to increase the number of observations in the sample. Our data on real per capita GDP, private consumption, private investment, government expenditures, the consumer price level, and the nominal exchange rate are from the Penn World Tables (Heston et al., 2009). Data Appendix Table 1 provides a list of the bidding and hosting countries and Data Appendix Table 2 provides some summary statistics on the macroeconomic outcome variables.

We consider the bidding and hosting of the Olympic Games as natural experiments in the sense that their hosting is exogenous to current output and investment growth. Of course, the Olympic Games are different in nature than natural disasters such as earthquakes or floods. However, due to the

particularity of the bidding process (that takes place many years in advance before the actual hosting of the Games) the incidence of the Olympic Games represents an event that is exogenous to the current state of the economy.

We use the following econometric model to estimate the contemporaneous, future, and lagged effects of the Games:

$$(1) \quad Y_{i,t} = a_0 Host_{i,t} + A(L)Host_{i,t} + B(F)Host_{i,t} + c_0 Bid_{i,t} + C(L)Bid_{i,t} + D(F)Bid_{i,t} + \alpha_i + \beta_t + e_{i,t}$$

where $Host_{i,t}$ is an indicator variable that is unity in country i and year t if the country hosted in year t the Olympic Games. $Bid_{i,t}$ is an indicator variable that is unity in country i and year t if the country was bidding to host the Olympic Games that were held in year t . Because bidding to host the Olympic Games takes place about seven to ten years before the actual hosting of the Games, we include up to ten leads of the bidding and hosting country indicator variable on the right-hand side of the estimating equation, such that $B(F) = b_1F + b_2F^2 + \dots + b_{10}F^{10}$ and $D(F) = d_1F + d_2F^2 + \dots + d_{10}F^{10}$. The coefficients in the polynomial $B(F)$ and $D(F)$ hence capture the before-effects of the hosting and the bidding for the Olympic Games. Similarly, we examine the after-effects of the Olympic Games by including up to ten lags on the right-hand side of the estimating equation, such that $A(L) = a_1L + a_2L^2 + \dots + a_{10}L^{10}$ and $C(L) = c_1L + c_2L^2 + \dots + c_{10}L^{10}$. The contemporaneous effects of the Olympic Games for the bidding and hosting countries are in turn captured by the coefficients a_0 and c_0 . We examine whether bidding and hosting the Olympics has long-run (i.e. permanent) effects on the outcome variables $Y_{i,t}$ by testing whether the sum of the estimated coefficients on the contemporaneous, after and before effects is significantly different from zero.

Note that as control variables in equation (1) we have included country fixed effects α_i and year fixed effects β_t . The country fixed effects are an important control variable because they account for time-invariant country specific unobservables that may affect the likelihood of hosting and bidding for the Olympic Games and the outcome variable of interest $Y_{i,t}$. Hence, any fixed factors such as climate, continent, or language are controlled for with the inclusion of the country fixed effects. The year fixed effects are important because they account for year-specific common factors, such as for example the world business cycle. Because we control for both country and year fixed effects our estimated slope coefficients can be interpreted as a result of a difference-in-difference estimation.

Our outcome variables of interest – real per capita GDP, consumption, investment, government expenditures, the price level, and the exchange rate – are highly persistent (see Data Appendix Table 2). We therefore include these variables in first-differences in the estimating equation. We account for serial correlation in the error term $e_{c,t}$ by using Huber-robust standard errors that are clustered at the country level.

3. Main Results

3.1. The Hosting Country

Table 1 reports our estimates of the contemporaneous and before-effects of hosting the Olympic Games. Column (1) shows that countries which hosted the Olympic Games experienced a significant increase in their real per capita GDP growth up to five years before the organization of the actual event. The peak effect occurs about four years prior to hosting. Note that this is the time when the uncertainty is resolved and competing countries learn with probability one whether the event will actually materialize in their territory. The estimated coefficient implies that at peak real per capita GDP growth increases by up to three percentage points. In the year when the Olympic Games are hosted GDP per capita growth is also significantly higher (relative to periods when the Olympics are not hosted) by around 1.8 percentage points.

Column (2) of Table 1 shows that the reason for this significant increase in GDP per capita growth is a significant positive and quantitatively large increase in private investment. The peak investment effect coincides with the peak output effect and the time of the announcement of the Olympic bids winner. Investment responses are still significantly different from zero at the time of the actual hosting of the Games. Columns (3) and (4) show that also private consumption and government expenditures significantly increase before the conduct of the Games and they react more strongly to the news when these become certain four years before the actual event.

We also find a significant positive effect of the hosting of the Olympic Games on the consumer price index and the nominal exchange rate. The estimates in columns (5) and (6) of Table 1 show that there is already a significant positive response in consumer prices and the exchange rate about 7 years before the actual hosting of the Olympic Games.² And, the peak response occurs at about five years before the actual hosting of the Games. Hence, while both prices and quantities react positively to the positive exogenous demand shock, the timing is such that the change in prices occurs before the change in quantities.

Table 2 examines whether hosting the Olympic Games has significant ex post growth effects. Columns (1) and (3) show that the effects on output and consumption are positive up to six years after the hosting of the Olympic Games. After six years the growth responses turn negative in sign, but they are statistically insignificant. For private investment, the lagged effects of the Olympic Games are negative in sign already one year after the actual hosting of the Games. Statistically they are insignificant at the 95 percent level. Also, for government expenditures, the consumer price index, and

² Note that the nominal exchange rate is defined as the ratio of home to US currency, so that an increase in the nominal exchange rate represents a depreciation of the home currency.

the nominal exchange rate the after-effects of hosting the Olympics are quantitatively small and statistically insignificant. Table 2 therefore shows that the after-effects of hosting the Games are of relatively minor importance when compared to the before and contemporaneous effects.

The results in Table 2 might justify the findings of many academics (see Owen (2005)) that support that the economic benefits of organizing mega events such as the Olympic Games are quantitatively and economically small. Our analysis stresses that the benefits from organizing such events are non tangible, in the sense that they do not primarily concern the contemporaneous and after effects of the hosting. Similarly with Rose and Spiegel (2011) we point to positive effects that have to do with the signal the Olympics carry with them. For Rose and Spiegel (2011) the Olympics carry a signal of trade liberalization; we show that there is more than that in this story: the news about increased investment opportunities that the organization of the Olympics implies create quantitatively significant anticipation effects. To the best of our knowledge we are the first to bring such evidence in light using macroeconomic time series.

3.2. The Bidding Countries

If anticipation effects are present before the announcement of the Olympic Games country winner, such anticipation effects should also arise in the other bidding countries. Our estimation framework allows us to analyze the growth effects of bidding for the Olympic Games. During the 1950-2006, the bidding for the Olympic Games took place about seven to ten years before the actual hosting.³ If our theory is correct, from an investor's point of view there is an expected increase in profits because in expectation output demand will be higher. It therefore makes sense, for reasonable parameter values of risk aversion, adjustment costs, and forward looking behavior to prop up investment in the country that bids for the Olympic Games.

Table 3 shows that indeed output growth, private investment, and private consumption significantly increase during the period that countries bid for the Olympics. In particular, Table 3 shows that there is a significant positive output growth, private investment, and private consumption response in the bidding countries about seven to ten years before the actual hosting of the Games. Private investment responds first, while output and consumption react with one period lag relative to investment to the bidding news.

Differently from the case of the winners, we observe no significant response in government expenditures. This seems to indicate that governments react to the news about the organization of the

³ See e.g. http://en.wikipedia.org/wiki/Bids_for_Olympic_Games

Games once such news become certain. In Table 1 we have seen that governments reacted to the news only during the period when the winner of the bidding is announced. The fact that the governments of the bidders do not react to the bidding news indicates that governments in our sample typically do not spend resources on the organization of the Games unless they know with certainty that their investment projects will serve some certain scope.

Table 3 provides us with another interesting piece of information: in the bidding countries (that did not win the hosting of the Olympic Games) private investment decreases after the announcement of the host winner and significantly so two and three years after this announcement. Hence, while during the time of the bidding private investment significantly increases, these investment projects are reversed once it becomes clear that the country is not going to host the Games. This unwinding of investment projects is also resonated by the estimates in Table 4 that show that the after-effects of bidding for the Olympic Games are negative, and for some lags statistically significant. This evidence suggests that most of the investment initiated with the possibly good news generated by the participation of a country to the bidding for the Olympics is reversible investment. Moreover, the time pattern confirms the presence of significant capital adjustment costs that deter the quick adjustment of investment projects to the revelation of the uncertainty.

3.3 Legacy Effects

Olympic Games are often associated with a long-term legacy effect. According to the supporters of the Games infrastructure investments lead to improvements in overall production conditions for domestic and foreign enterprises, making investment more attractive and increasing GDP per capita in the long run. We can examine whether the hosting and bidding for the Olympic Games had a long-run effect on the level of GDP per capita and the other outcome variables of interest. We do this by summing up the estimated coefficients, and test whether their sum is significantly different from zero.

Panel A of Table 5 shows that for the hosting countries the sum of the estimated coefficients for the GDP per capita, private consumption, and private investment response are positive and significantly different from zero at the 90 percent level. For the hosting countries the Olympic Games were hence associated with permanently higher levels of GDP per capita, private investment, and private consumption. On the other hand, Panel B of Table 5 shows that for the bidding countries there were no long-run effects. The sum of the estimated coefficients is quantitatively small and statistically it is not significant at any of the conventional confidence levels. In Panel C we test for a significant difference between the long-run effects of the Olympic Games in the host countries and the bidding countries. Our

main finding is that for GDP per capita, private investment, and private consumption we can reject with over 95 percent confidence that the long-run effects are the same in the host and the bidding countries. Table 6 also shows that these results continue to hold when controlling on the right-hand side of the estimating equation for lags and leads of the dependent variable. In sum, we therefore find that there are significant long-run effects on the level of GDP per capita, consumption, and investment in the countries that hosted the Olympics while in the countries that bid for the Olympics the effects were only of transitory nature.

Our findings, thus, explain the urge of modern cities for winning the organization of the Olympic Games and their repeated attempts to win the Olympic bid. The benefits even for bidding for the Olympics in terms of output and investment, although short-lived are significant. As for the gains of actually winning the bid we find that they are significant and are maximized when the announcement of the winner of the bid is made. Hence, we can justify the absence of evidence for positive effects of hosting the Games, since none of the previous studies in the literature has considered the positive effects that anticipation induces on macroeconomic outcomes.

In the next section we discuss the sensitivity of our results to modifications in the assumptions and the nature of the experiment.

4. Sensitivity Analysis

4.1 The Nature of the Experiment

We started by assuming that the hosting/bidding for the Olympics is a natural experiment. An important issue in our empirical analysis is whether such event can be thought of as randomly assigned across country-years. If this assignment is indeed random, then we have a natural experiment in hand to examine the causal effects that an exogenous anticipated demand shock has on the macroeconomy.

The International Olympic Committee (IOC) which is responsible for making the decision of which country will host the Olympic Games states that: "only rich countries have the means to make a good return on such a large investment [the Olympic Games]." In the cross-section of countries, the random assignment assumption is indeed questionable since only countries which are sufficiently developed have the capacity of hosting the Games. However, note that in our estimation framework this concern does not apply because all our regressions control for country fixed effects. In fact, when we run regression (1) excluding developing countries the results we obtain are very similar.

Another way to check the randomness of the assignment is to examine whether within-country changes in GDP per capita growth are significantly related to the likelihood of hosting or bidding for

the Olympic Games. We do this by estimating a conditional logit fixed effects model that has as the dependent variable the hosting and bidding country indicator variable and as the explanatory variable current and lagged within-country changes in GDP per capita growth. The results presented in Table 7 indicate that the within-country changes in GDP per capita growth do not significantly predict the hosting or bidding for the Olympic Games. In addition, since the hosting and bidding for the Olympic Games is associated with positive demand effects reverse causality bias implies that the logit estimates are upward biased. That is, the logit estimates are likely to constitute an upper bound for the true average effect that GDP per capita growth has on the likelihood of hosting or bidding for the Games. Since the estimated coefficients on GDP per capita growth are positive but statistically insignificant, the conditional logit estimates provide reassuring evidence that it is unlikely that there are systematic positive reverse effects of GDP per capita growth on the likelihood of hosting or bidding for the Olympic Games.

As a further identification check, we test whether the ex ante coefficients for the hosting and bidding countries are identical. The p-values on the null hypothesis that the coefficients are identical are reported in Table 8. For the bidding countries, there is a positive expected demand effect at the time of the bidding. But, once the host country is announced the effect in the host country should be larger than the effect in the bidding country. This is indeed what the p-values in Table 8 show. The coefficients that reflect the effect of the Olympic Games on output growth, investment, and private consumption two to five years before the actual taking place of the Games are significantly larger in the host countries than in the bidding countries. From a theoretical point of view, these significant differences are in line with the predictions from forward looking macro-models. From an econometric point of view, they show that our results go through when we use the plausibly random decision of the Olympic committee of selecting the host country to identify the economic effects of hosting the Olympic Games.

Finally, note that the timing in regression (1) implies that shifting the time-series of the contemporaneous effect 8 years forward captures the actual bidding for the Olympic Games. This means that in order for there to be a reverse causality problem regarding the contemporaneous effects of hosting the Olympic Games the bidding in $t-8$ must systematically be a function of growth in period t . For this to be true two conditions need to be fulfilled: (i) that countries very accurately forecast growth eight years ahead, and (ii) that countries base their bidding decisions on these future growth forecasts. We believe that both conditions are unlikely to be fulfilled in reality; and indeed the insignificant logit fixed effects estimates in Table 7 resonate this.

4.2 Cross-Country Parameter Heterogeneity

In Section 3 we found that the announcement of the Olympic Games winner generates positive investment, private and government consumption and output responses. An interesting question that we can examine with our panel data approach is whether the marginal effect of hosting the Olympic Games varies across countries as a function of government size, trade openness, political institutions, or geography. These variables have been found to be significant determinants of economic growth in the cross-section of countries and it is therefore interesting to examine with our panel data approach whether these variables also induce significant heterogeneity in the marginal effect that hosting the Olympic Games has on output growth.

Table 9 presents the results from an interaction model where the marginal effect of the Olympic Games is allowed to vary across countries. With the exception of political corruption we find that the interaction estimates are statistically insignificant. Since we do not have a precise theory to guide us on the sign or the significance of the interactions it is hard to elaborate on these results. Nevertheless, the significant negative interaction between the hosting of the Olympic Games and cross-country differences in political corruption appears coherent since in countries with high levels of corruption the uncertainty regarding the future effects of the Olympics on private demand might discourage investors from reacting positively to the Olympic news. Along these lines, in the political economy literature, Shleifer and Vishny (1993) and Bardhan (1997), among others, point to significant economic costs associated with excessive political corruption.

4.3 Other Mega-Events

4.3.1 International/World Expositions

An event very similar to the organization of the Olympics is the hosting of International Expositions. Although the character of the two events is very different the structure followed for competing for winning the hosting of the events is similar. The government of the country wishing to organize an Expo submits its candidacy application to the Bureau International des Expositions (BIE). In the case of World Expos, the candidacy application must be submitted a maximum of nine years and a minimum of six years before the proposed opening date of the exhibition. In the case of International Expos, the candidacy application must be submitted a maximum of six years and a minimum of five years before the proposed opening date of the exhibition. Beginning on the date that the first candidacy application is submitted to the BIE, any other government wishing to organize an exhibition for the same year has six months to submit its own candidacy application to the BIE. At the end of the six-month period the

competition between the bidding countries begins. During the bidding phase, candidate countries carry out international campaigns to gain support for the project and develop their proposed themes in order to raise international interest around the proposed Expos. International symposiums, forums, and other activities are organized by the candidates to this end. At the end of the bidding phase, a vote by secret ballot takes place at a BIE General Assembly to grant the right to host an Expo to a government for the chosen city and date. The voting takes place approximately four years before the actual organization of the event and winners have to receive the majority of the votes.

In Tables 10 and 11 we present the before, the contemporaneous, and the after effects of hosting International Expositions. In contrast to the Olympic Games, competition for hosting the International Expo is limited. For that reason we can only report estimates of the effects of the actual hosting of the International Expo. Consistent with our results for the Olympic Games, Table 10 shows that countries which hosted the International Expo experienced a significant increase in GDP per capita growth, consumption, and investment well before the actual taking place of the Expo. The patterns are somewhat different. GDP growth increases significantly in the hosting countries nine and six years before the actual organization of the event, while investment increases significantly on the tenth and third year and consumption the sixth year before the hosting. Prices react significantly nine years ahead of hosting and exchange rates display no significant anticipatory movements.

In contrast with the organization of Olympics the organization of international expositions seems to have no long lived effects. Table 11 shows that the after effects of the Expo are mostly insignificant and turn significantly negative five years after hosting. In Table 12 we formally check whether the effects of hosting the Olympics are different from the effects of hosting the International Expo by including both International Expos and the Olympic hosting indicator variable in the distributed lag model and then test the null hypothesis that the estimated coefficients are the same. Panel A reports the results on the null hypothesis that the before effects of hosting International Expos are the same as the before effects of hosting the Olympics; Panel B reports the results on the null hypothesis that the contemporaneous effects of hosting the International Expo is the same as the contemporaneous effects of hosting the Olympics; and Panel C reports the results on the null hypothesis that the after effects of hosting the International Expo are the same as the after effects of hosting the Olympics. With the exception of the contemporaneous effect on private consumption, we cannot reject in any of these cases that the effects of hosting the Olympics are different from the effects of hosting International Expositions.

4.3.2 The World Cup

Apart from the Olympics another mega athletic event is the FIFA World Cup. The two events share a lot of similarities: the World Cup takes place every four years, the competing countries make their bids approximately six to eight years before hosting and the winner of the bids is announced four years before the actual organization of the event. Using the same methodology we have used for the case of the Olympics we can examine whether the organization of the FIFA World Cup entails similar anticipatory and ex post effects as the organization of the Olympics.⁴ Two observations are in place before presenting our results. First, the number of realized events when considering the World Cup is much smaller than the number of events when considering the Olympics, or International expositions. Fourteen editions of the FIFA World Cup have been held during our sample period. This might raise a problem in our estimation since it reduces the variance of the explanatory variable. Second, competition to host the World Cup is limited in the sense that very often there were just two (or even one country) countries competing for the hosting of the event. For example, Switzerland in 1954, Sweden in 1958, Germany in 1974, Argentina in 1978, Colombia in 1986, and Brazil in 2014 had no competitors bidding for the organization of the Cup. This lack of competition might affect our results and especially our estimates of anticipatory effects of bidding countries since in the case of the World Cup the number of these observations is very small.

We present the results of the anticipatory effects of hosting the World Cup in Table 13. Similarly with the Olympics, the organization of the World Cup entails anticipatory actions from the part of both the private and the public sectors, but contrary to the Olympics these anticipatory effects are significantly negative in their majority. The ex ante effects on output, investment and consumption growth are negative. Output growth is reduced significantly three and one year before the event, while investment growth is significantly and substantially negative one year before hosting. The estimates in Table 13 indicate that investment growth decreases by 7.6 percentage points one year before the undertaking of the event while output's maximal negative response is 1.7 percentage points. Private consumption growth is also decreasing in face of the hosting of the Cup, and its fall seems to be correlated with the behavior of government consumption. Government consumption increases significantly ten years before hosting and continues to increase significantly up to six years before the Cup is hosted. Comparing the numbers in Table 1 with those of Table 13, we see that the ex ante surge in public demand in the two events is not comparable. Government spending increases by a maximum of 1.8 percentage points in the case of the Olympics 3 years before the organization of the event, while

4 Including both the World Cup and the Olympic indicators in the same regression changes results little since the two events are mostly uncorrelated. We do not present the results of this regression here for economy of space.

government spending increases between 2.6 and 3.5 points ten to six years before the Cup is materialized. This surge in public consumption seems to crowd out private consumption and significantly so, five years before the World Cup. The effects of the government's expansion are reflected in the price of the exchange rate, while no significant effects on prices are detected.

The after effects of the World Cup are not that inauspicious. They are insignificant for almost all variables but output and investment growth. Output growth decreases significantly by 2.1 percentage points in countries that have hosted the Cup relative to countries that they haven't. At the same time investment growth is reduced in these countries by 7.8 percentage points.

When we turn to the effects of bidding for the World Cup the before effects are also negative but much smaller in size and relatively less significant. Output and investment growth reduce significantly during the bidding period, but this fall is not combined by an anticipatory surge in government consumption. The after effects are also negative but relatively smaller in size and not as significant as the after effects of the hosting countries.

All in all, besides the differences in the sign of the responses the evidence for the World Cup also suggests the presence of anticipatory behavior from part of both the private and the public sector. It seems that the hosting of the World Cup is not viewed in advance as an overall positive (private) investment opportunity, but as an occasion for the government to spend money with no positive returns for the private sector and this perception is verified even after the organization of the Cup.

4.5 Regional Data

In the empirical models we have considered so far we have only used national data to evaluate the effects of the Olympics in the country hosting or bidding for the event. Some of the countries in our sample are quite large and the organization of a mega-event in one region can have positive spillover effects to other regions in that country. Hence, our results reflect country-wide average effects. To examine also regional effects of hosting the Olympics we turn to regional data for total real gross per capita state product for the US from the Bureau of Economic Analysis.⁵ The USA has hosted 5 Olympic Games in our sample: the 1960 Winter Olympics in Squaw Valley in California, the 1980 Winter Olympics in Lake Placid in New York, the 1984 Summer Olympics in Los Angeles in California, the 1996 Summer Olympics in Atlanta, the capital of the State of Georgia and the 2002 Winter Olympics in

5 Ideally, we would like to perform the same exercise for European regional data for gross domestic product, but, such data are only available since 1995. Data prior to 1995 exist for some regions in Europe. However, in a communication we had with the Eurostat we have been informed that the regulation on national accounts has changed meaning that most of the data that Eurostat might have on regional GDP is not comparable prior to 95.

Salt Lake City, the capital of Utah.

We repeat our exercise in regression (1) by substituting countries for US states. The results are presented in Tables 17-18. According to Panel A of Table 17, hosting the Olympic Games generates increases in GSP growth three years before the actual hosting of the event. GSP growth also increases significantly the year before the winner's announcement and decreases the year after the negative news are divulged in unsuccessful bidders, thus confirming the effects of anticipation in the regional data (see Panel B of Table 17). The after effects of hosting the Olympics are also considerable and last up to three years after the organization of the event. At the peak, US states that organized the Olympics saw their gross state product increase by more than 3.2 percentage points relative to states that did not undertake the organization of these events. In sum, besides the shorter sample, the regional data confirm the findings of the baseline analysis. The macroeconomy reacts in anticipation to news shocks about changes in future demand, such as the organization of the Olympics.

4.6 Anticipation and Stock prices

Many economists have shown that stock price movements reflect the market's expectation of future developments in the economy (see e.g. Fama (1990) and Schwert (1990)). Given the nature of our exercise and its conclusions it is only natural to ask whether the anticipatory effects for the organization of the Olympic Games are reflected in the movements of the stock market. Using the IFS data on stock price indices for 30 countries in our sample between 1970 and 2006, we can test whether the Olympic bid has significant anticipatory effects on the evolution of stock prices of the hosting and bidding countries. We present the results of this regression in Table 19. The analysis of stock price data confirms our previous findings. The before effects of the Olympics on stock prices are positive and significant nine and eight years before the hosting of the events for both successful and unsuccessful bidders. The maximal responses of stock prices occur eight years before the organization of the Olympics in both groups of countries and the magnitude of the effect is comparable between groups. Relative to our previous findings, we are unable to detect significant positive effects on stock prices from the announcement of the bidding winner four years before the organization of the event. Stock prices move in the correct direction, in that the stock price index increases for the winner and decreases for the loser of the bid, however, both effects are not statistically significant. Finally, the contemporaneous effect of hosting the Games on stock prices is positive and significant indicating that markets perceive the organization of the event as a positive indicator of future profits.

5. Conclusions

Starting from Pigou (1926) and Keynes (1936) until the recent work of Beaudry and Portier (2006, 2007) and Jaimovich and Rebelo (2009), economists have stressed the importance of expectations in determining the evolution of aggregate series. However, no empirical work exists that quantifies such effects and no studies have shown so far how the uncertainty about news affects aggregate macroeconomic outcomes in macroeconomic data. Most of the existing evidence for the presence of anticipation in macroeconomics is indirect. Anticipation effects present serious challenges to empirical research of the effects that economic policy has on the economy. Recent studies on the identification of fiscal shocks have shown that anticipation effects might be crucial for determining the effects of such shocks in the macroeconomy (see e.g. Ramey (2011) or Mertens and Ravn (2010)).

By treating the hosting and bidding for the Olympic Games as a natural experiment we are able to quantify the effects of anticipatory behavior in macroeconomic aggregates. We find that such effects are economically important and statistically significant and they increase when the probability of the realization gets close to one. When we use the hosting of International Expos as a natural experiment, results are similar. The news about increases in future demand in both cases makes output and investment surge several years in advance of the actual event. Conversely, when we use the bidding and hosting for the World Cup as our experiment the sign of the anticipatory estimates is reversed. Agents do react in advance to the organization of the World Cup, but their reactions take the opposite direction and except from government spending all components of private demand decrease with the announcement of the hosting of the Cup.

Many studies have claimed that the economic advantages of hosting the Olympics are insignificant. Our results indicate that once one controls for the role of anticipation the impact of the Olympic Games on growth becomes statistically significant and economically important. We conclude that the hosting of the Olympic Games involves more benefits than an “olive wreath.” Our results justify the insistence of countries for undertaking the organization of the Games.

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Table 1. The Contemporaneous and Before-Effects of Hosting the Olympics

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
HostingCountry	0.018** (0.007)	0.034** (0.017)	0.015** (0.006)	0.019* (0.010)	0.023 (0.019)	-0.089* (0.051)
F.HostingCountry	0.007 (0.006)	0.002 (0.022)	0.009* (0.005)	0.016 (0.014)	-0.002 (0.018)	-0.047 (0.057)
F2.HostingCountry	0.013** (0.007)	0.026 (0.020)	0.017** (0.008)	0.019* (0.011)	-0.001 (0.030)	-0.058 (0.065)
F3.HostingCountry	0.019*** (0.004)	0.048*** (0.015)	0.020*** (0.006)	0.004 (0.012)	0.022 (0.014)	-0.110* (0.059)
F4.HostingCountry	0.029*** (0.007)	0.064*** (0.016)	0.022*** (0.008)	0.018*** (0.007)	0.016 (0.012)	-0.094** (0.043)
F5.HostingCountry	0.020** (0.008)	0.061** (0.028)	0.021** (0.009)	0.002 (0.017)	0.052** (0.026)	-0.110** (0.047)
F6.HostingCountry	0.005 (0.008)	0.019 (0.026)	0.003 (0.010)	0.010 (0.011)	0.049** (0.023)	-0.085** (0.036)
F7.HostingCountry	0.003 (0.005)	0.014 (0.019)	0.001 (0.004)	-0.003 (0.009)	0.033* (0.019)	-0.055* (0.029)
F8.HostingCountry	0.007 (0.010)	0.014 (0.029)	0.006 (0.009)	0.016 (0.012)	-0.012 (0.013)	-0.015 (0.035)
F9.HostingCountry	0.006 (0.005)	0.010 (0.013)	0.009* (0.005)	0.006 (0.008)	-0.015 (0.021)	-0.005 (0.037)
F10.HostingCountry	0.008 (0.008)	0.026 (0.023)	0.001 (0.005)	0.006 (0.007)	-0.023* (0.014)	0.016 (0.026)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 2. The After-Effects of Hosting the Olympics

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
L.HostingCountry	0.003 (0.007)	-0.016 (0.021)	0.009 (0.009)	0.017 (0.015)	0.014 (0.022)	-0.056 (0.041)
L2.HostingCountry	0.001 (0.008)	-0.024 (0.016)	0.008 (0.008)	0.006 (0.010)	-0.009 (0.015)	-0.026 (0.051)
L3.HostingCountry	0.011 (0.007)	0.006 (0.020)	0.007 (0.006)	0.018 (0.013)	0.014 (0.020)	-0.043 (0.048)
L4.HostingCountry	0.002 (0.005)	-0.008 (0.013)	0.001 (0.007)	0.006 (0.009)	-0.000 (0.013)	-0.049 (0.042)
L5.HostingCountry	0.008 (0.006)	-0.011 (0.022)	0.010 (0.007)	0.005 (0.009)	-0.000 (0.021)	-0.046 (0.059)
L6.HostingCountry	0.016*** (0.006)	0.017 (0.016)	0.016** (0.007)	0.003 (0.012)	-0.009 (0.017)	-0.015 (0.044)
L7.HostingCountry	-0.010 (0.017)	-0.020 (0.027)	-0.008 (0.019)	-0.012 (0.018)	0.012 (0.025)	-0.064 (0.066)
L8.HostingCountry	-0.008 (0.011)	-0.027 (0.026)	-0.004 (0.009)	-0.008 (0.011)	-0.007 (0.012)	0.079 (0.083)
L9.HostingCountry	-0.005 (0.008)	-0.013 (0.014)	-0.006 (0.009)	-0.008 (0.010)	-0.009 (0.020)	0.200 (0.196)
L10.HostingCountry	-0.008 (0.007)	-0.032* (0.018)	0.000 (0.006)	-0.009 (0.008)	-0.011 (0.019)	-0.046 (0.054)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 3. The Contemporaneous and Before-Effects of Bidding for the Olympics

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
BiddingCountry	0.002 (0.004)	0.010 (0.012)	0.007 (0.004)	-0.003 (0.008)	0.024 (0.016)	-0.036 (0.025)
F.BiddingCountry	-0.004 (0.005)	-0.076* (0.045)	-0.010 (0.006)	0.043 (0.040)	-0.038 (0.029)	0.054 (0.064)
F2.BiddingCountry	-0.008 (0.007)	-0.031** (0.013)	-0.000 (0.004)	-0.003 (0.006)	-0.006 (0.016)	-0.008 (0.034)
F3.BiddingCountry	0.001 (0.004)	-0.036 (0.036)	-0.007 (0.007)	0.036 (0.040)	-0.050 (0.037)	0.031 (0.060)
F4.BiddingCountry	0.002 (0.003)	-0.000 (0.011)	0.002 (0.005)	0.001 (0.005)	-0.026 (0.025)	0.007 (0.033)
F5.BiddingCountry	-0.008 (0.005)	-0.004 (0.019)	-0.004 (0.005)	-0.012 (0.018)	0.021 (0.017)	-0.049* (0.029)
F6.BiddingCountry	0.001 (0.006)	-0.007 (0.020)	0.003 (0.005)	0.005 (0.007)	0.028* (0.016)	-0.056 (0.035)
F7.BiddingCountry	0.008** (0.004)	0.028** (0.012)	0.015*** (0.005)	-0.006 (0.015)	0.024* (0.013)	-0.070** (0.035)
F8.BiddingCountry	0.008*** (0.003)	0.038*** (0.012)	0.007* (0.004)	0.006 (0.005)	0.021 (0.015)	-0.080* (0.041)
F9.BiddingCountry	0.011** (0.004)	0.046** (0.018)	0.007* (0.004)	0.007 (0.007)	0.004 (0.016)	-0.047 (0.042)
F10.BiddingCountry	0.008 (0.006)	0.047** (0.018)	0.008 (0.006)	0.004 (0.006)	0.006 (0.013)	-0.030 (0.027)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 4. The After-Effects of Bidding for the Olympics

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
L.BiddingCountry	0.004 (0.004)	0.040* (0.022)	0.005 (0.005)	-0.019 (0.021)	0.002 (0.029)	0.002 (0.024)
L2.BiddingCountry	0.000 (0.005)	-0.004 (0.029)	-0.002 (0.005)	-0.010 (0.013)	0.006 (0.012)	0.007 (0.041)
L3.BiddingCountry	-0.000 (0.004)	0.034 (0.027)	-0.002 (0.004)	-0.020 (0.017)	0.030 (0.023)	-0.032 (0.041)
L4.BiddingCountry	-0.011 (0.007)	-0.033 (0.026)	-0.012** (0.005)	-0.014 (0.009)	0.002 (0.012)	0.020 (0.047)
L5.BiddingCountry	-0.009** (0.004)	-0.039*** (0.013)	-0.008* (0.004)	0.001 (0.006)	-0.011 (0.016)	0.007 (0.047)
L6.BiddingCountry	-0.007 (0.004)	-0.025* (0.014)	-0.004 (0.004)	-0.001 (0.007)	-0.038*** (0.013)	0.012 (0.038)
L7.BiddingCountry	-0.006 (0.004)	-0.023 (0.018)	-0.006 (0.006)	-0.010** (0.004)	-0.042 (0.045)	0.072* (0.040)
L8.BiddingCountry	0.001 (0.005)	-0.001 (0.012)	-0.001 (0.005)	-0.000 (0.006)	-0.002 (0.015)	0.040** (0.017)
L9.BiddingCountry	0.001 (0.006)	-0.007 (0.019)	-0.005 (0.005)	-0.003 (0.004)	-0.008 (0.018)	0.027 (0.020)
L10.BiddingCountry	-0.005 (0.006)	-0.018 (0.017)	-0.007 (0.006)	-0.003 (0.004)	0.010 (0.018)	0.024 (0.030)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 5. Long-Run Effects of the Olympics

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
Panel A: Hosting Country						
Sum of coefficients: L10.HostingCountry to F.10HostingCountry	0.145* (1.84)	0.192* (1.70)	0.157** (2.00)	0.132 (1.14)	0.137 (1.02)	-0.723 (-0.98)
Panel B: Bidding Country						
Sum of coefficients: L10.BiddingCountry to F.10BiddingCountry	-0.011 (-0.35)	-0.062 (-0.74)	-0.015 (-0.48)	-0.002 (-0.06)	-0.044 (-0.81)	-0.108 (-0.25)
Panel C: Difference Between Hosting Country and Bidding Country						
Difference Between Panel A and Panel B	0.156** (2.27)	0.253** (2.30)	0.172** (2.44)	0.132 (1.32)	0.182 (1.41)	-0.614 (-0.89)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. t-values (reported in parentheses) are based on Huber robust standard errors clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 6. The Long-Run Effects of the Olympics
(Robustness to Controlling for Lags and Leads of the Dependent Variable)

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
Panel A: Hosting Country						
Sum of coefficients:	0.305***	0.866***	0.487**	0.457*	0.184	-0.244
L10.HostingCountry to F10.HostingCountry	(3.09)	(3.32)	(3.50)	(1.65)	(0.89)	(-1.08)
Panel B: Bidding Country						
Sum of coefficients:	0.009	0.012	0.018	-0.002	-0.054	-0.080
L10.BiddingCountry to F10.BiddingCountry	(0.31)	(0.11)	(0.35)	(-0.02)	(-0.45)	(-0.76)
Panel C. Difference Between Hosting Country and Bidding Country						
Difference Between Panel A and Panel B	0.297***	0.855**	0.469***	0.459*	0.238	-0.164
	(3.21)	(3.22)	(3.46)	(1.77)	(1.12)	(-0.81)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. t-values (reported in parentheses) are based on Huber robust standard errors clustered at the country level. Additional control variables (not reported) are lags and leads up to ten years of the dependent variable. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 7. The Effects of GDP Growth on the Likelihood of Hosting and Bidding for the Olympic Games

	Pr(Olympic Host)	Pr(Olympic Bidder)
$\Delta\text{Log}(\text{GDP})$	0.678 (13.790)	6.399 (7.658)
L. $\Delta\text{Log}(\text{GDP})$	8.084 (13.908)	-4.763 (7.373)
L2. $\Delta\text{Log}(\text{GDP})$	10.452 (12.322)	-2.370 (6.342)
L3. $\Delta\text{Log}(\text{GDP})$	8.827 (16.702)	5.976 (7.610)
L4. $\Delta\text{Log}(\text{GDP})$	27.118 (17.016)	0.392 (6.977)
L5. $\Delta\text{Log}(\text{GDP})$	8.883 (12.490)	-8.937 (6.444)
L6. $\Delta\text{Log}(\text{GDP})$	-1.820 (10.527)	-5.124 (5.840)
L7. $\Delta\text{Log}(\text{GDP})$	-9.207 (12.971)	3.930 (6.859)
L8. $\Delta\text{Log}(\text{GDP})$	-3.384 (9.892)	5.433 (7.414)
L9. $\Delta\text{Log}(\text{GDP})$	-4.981 (12.401)	4.977 (7.081)
L10. $\Delta\text{Log}(\text{GDP})$	1.489 (11.305)	6.770 (5.800)
Country Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Observations	6064	6064
Number of Countries	184	184

Note: The method of estimation is maximum likelihood. Coefficients are obtained from a conditional logit fixed effects regression. The dependent variable in column (1) is an indicator variable that is unity if the country hosted the Olympic Games. The dependent variable in column (2) is an indicator variable that is unity if the country bid to host the Olympic Games. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 8. Test of Difference between Bidding and Hosting Countries

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
BiddingCountry-HostingCountry	0.05**	0.21	0.26	0.11	0.94	0.26
F.BiddingCountry-F.HostingCountry	0.13	0.07*	0.02**	0.51	0.25	0.22
F2.BiddingCountry-F2.HostingCountry	0.02**	0.01***	0.05**	0.08*	0.88	0.49
F3.BiddingCountry-F3.HostingCountry	0.00***	0.03**	0.00***	0.48	0.05**	0.10*
F4.BiddingCountry-F4.HostingCountry	0.00***	0.00***	0.02**	0.01***	0.12	0.03**
F5.BiddingCountry-F5.HostingCountry	0.00***	0.05**	0.01***	0.30	0.36	0.14
F6.BiddingCountry-F6.HostingCountry	0.69	0.42	0.97	0.59	0.38	0.48
F7.BiddingCountry-F7.HostingCountry	0.30	0.53	0.01***	0.81	0.68	0.71
F8.BiddingCountry-F8.HostingCountry	0.85	0.43	0.86	0.29	0.04**	0.21
F9.BiddingCountry-F9.HostingCountry	0.31	0.08*	0.78	0.87	0.31	0.36
F10.BiddingCountry-F10.HostingCountry	0.98	0.41	0.32	0.83	0.09*	0.21
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The table shows the p-values on the null-hypothesis that the estimated coefficients, reported in Tables 1 and 3, are equal to zero. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 9. Cross-Country Parameter Heterogeneity

	$\Delta\text{Log}(\text{GDP})$					
Sum of coefficients:	0.222***	0.180***	0.187***	0.214***	0.159**	0.149**
L10.HostingCountry to F.10Hosting Country	(3.17)	(2.87)	(3.18)	(3.84)	(2.11)	(2.00)
Interaction with: Average (EXP+IMP)/GDP	-0.010 (-1.57)					
Interaction with: Average GOV/GDP		-0.052 (-0.65)				
Interaction with: Average GDP Per Capita			0.003 (0.12)			
Interaction with: Average Corruption Score				-0.110** (-2.02)		
Interaction with: Average Polity Score					0.002 (0.05)	
Interaction with: North America Indicator						0.088 (0.71)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. t-values (reported in parentheses) are based on Huber robust standard errors clustered at the country level.
 *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 10. The Contemporaneous and Before-Effects of the International Expo

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
EXPO	0.002 (0.007)	-0.051 (0.045)	-0.004 (0.005)	0.097 (0.071)	-0.037 (0.047)	0.029 (0.055)
F.EXPO	0.001 (0.006)	0.013 (0.017)	0.004 (0.006)	0.010 (0.009)	-0.009 (0.013)	0.008 (0.027)
F2.EXPO	0.008 (0.008)	0.014 (0.022)	0.007 (0.008)	0.015 (0.011)	0.013 (0.016)	-0.026 (0.038)
F3.EXPO	0.015* (0.009)	0.042** (0.019)	0.009 (0.006)	0.020 (0.019)	-0.016 (0.016)	-0.006 (0.035)
F4.EXPO	-0.000 (0.009)	-0.008 (0.034)	-0.002 (0.010)	-0.011 (0.018)	0.019 (0.018)	-0.077 (0.067)
F5.EXPO	0.014 (0.009)	0.046 (0.031)	0.004 (0.009)	0.007 (0.014)	0.051 (0.040)	-0.072 (0.070)
F6.EXPO	0.018** (0.008)	0.029 (0.019)	0.018** (0.008)	0.006 (0.016)	0.014 (0.026)	-0.066 (0.053)
F7.EXPO	0.003 (0.009)	-0.003 (0.027)	0.002 (0.007)	0.008 (0.009)	-0.001 (0.017)	-0.023 (0.033)
F8.EXPO	0.005 (0.009)	0.012 (0.025)	0.005 (0.009)	0.008 (0.015)	-0.025 (0.021)	0.001 (0.039)
F9.EXPO	0.014*** (0.005)	0.028 (0.017)	0.007 (0.005)	0.011 (0.011)	-0.027* (0.015)	0.009 (0.051)
F10.EXPO	0.015 (0.010)	0.058* (0.031)	0.011 (0.008)	-0.018 (0.016)	-0.008 (0.015)	-0.027 (0.042)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 11. The After-Effects of the International Expo

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
L.EXPO	-0.006 (0.008)	-0.018 (0.015)	0.003 (0.007)	0.011 (0.008)	0.032 (0.029)	-0.069 (0.046)
L2.EXPO	0.005 (0.005)	-0.006 (0.018)	0.014** (0.006)	-0.004 (0.010)	0.027 (0.018)	-0.073 (0.048)
L3.EXPO	0.008 (0.007)	0.010 (0.015)	0.003 (0.008)	0.007 (0.007)	0.010 (0.012)	-0.027 (0.024)
L4.EXPO	-0.011 (0.007)	0.025 (0.044)	-0.008 (0.007)	-0.014 (0.016)	-0.003 (0.032)	0.004 (0.044)
L5.EXPO	-0.021* (0.011)	-0.070* (0.037)	-0.012* (0.006)	-0.016 (0.020)	-0.083* (0.045)	0.109 (0.076)
L6.EXPO	0.000 (0.009)	-0.068 (0.042)	-0.013 (0.013)	0.066 (0.054)	-0.057 (0.046)	0.201 (0.194)
L7.EXPO	0.001 (0.008)	0.000 (0.024)	0.003 (0.010)	0.003 (0.006)	0.021 (0.020)	-0.027 (0.021)
L8.EXPO	-0.008 (0.008)	-0.023 (0.022)	0.004 (0.006)	-0.015 (0.015)	0.046** (0.023)	-0.068** (0.031)
L9.EXPO	-0.006 (0.006)	-0.026 (0.022)	-0.001 (0.005)	-0.001 (0.007)	-0.057 (0.046)	0.052 (0.061)
L10.EXPO	0.004 (0.007)	-0.029 (0.030)	-0.008 (0.010)	0.063 (0.060)	-0.059 (0.043)	0.098 (0.092)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 12. Test of Difference in the Effects of the Expo and the Olympics

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
Panel A: Test of Difference Before Effects						
H0: Effects are the same (p-value)	0.896	0.536	0.653	0.748	0.380	0.531
Panel B: Test of Difference Contemporaneous Effect						
H0: Effects are the same (p-value)	0.215	0.144	0.041**	0.193	0.229	0.180
Panel C: Test of Difference After Effects						
H0: Effects are the same (p-value)	0.353	0.340	0.386	0.312	0.414	0.656
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. t-values (reported in parentheses) are based on Huber robust standard errors clustered at the country level. Panel A reports the p-value on the null hypothesis that the sum of the t+1 to t+10 effects of hosting the Olympics are the same as the sum of the t+1 to t+10 effects of hosting the Expo. Panel B reports the p-value on the null hypothesis that the contemporaneous effect of hosting the Olympics is the same as the contemporaneous effect of hosting the Expo. Panel C reports the p-value on the null hypothesis that the sum of the t-1 to t-10 effects of hosting the Olympics are the same as the sum of the t-1 to t-10 effects of hosting the Expo. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 13. The Contemporaneous and Before-Effects of Hosting the World Cup

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
Worldc	-0.026** (0.012)	-0.041 (0.045)	-0.041* (0.022)	0.009 (0.010)	0.018 (0.044)	0.033 (0.110)
F.WorldCup	-0.017** (0.008)	-0.076** (0.031)	0.004 (0.019)	-0.002 (0.013)	-0.003 (0.028)	0.043 (0.097)
F2.WorldCup	0.002 (0.010)	0.040 (0.029)	-0.005 (0.014)	0.013 (0.008)	0.003 (0.027)	0.095 (0.132)
F3.WorldCup	-0.017*** (0.007)	-0.035 (0.027)	-0.014** (0.007)	-0.002 (0.011)	-0.066 (0.086)	0.145 (0.148)
F4.WorldCup	-0.012 (0.010)	-0.031 (0.031)	-0.010 (0.010)	0.011 (0.013)	-0.074 (0.072)	0.008 (0.087)
F5.WorldCup	-0.009 (0.012)	-0.029 (0.032)	-0.018** (0.008)	0.012 (0.008)	-0.019 (0.058)	-0.047 (0.051)
F6.WorldCup	0.008 (0.016)	0.024 (0.030)	-0.001 (0.012)	0.026** (0.013)	0.063 (0.077)	-0.113 (0.126)
F7.WorldCup	-0.002 (0.014)	-0.011 (0.030)	-0.001 (0.013)	0.031*** (0.009)	-0.010 (0.023)	-0.030 (0.051)
F8.WorldCup	-0.003 (0.009)	-0.010 (0.018)	-0.001 (0.010)	0.031*** (0.010)	0.010 (0.023)	-0.194** (0.096)
F9.WorldCup	-0.010 (0.009)	-0.038 (0.023)	-0.005 (0.009)	0.004 (0.012)	0.004 (0.027)	-0.159* (0.095)
F10.WorldCup	0.002 (0.010)	-0.008 (0.035)	0.011 (0.010)	0.035*** (0.012)	-0.004 (0.015)	-0.143** (0.070)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 14. The After-Effects of Hosting the World Cup

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
L.WorldCup	-0.005 (0.007)	0.013 (0.016)	-0.010 (0.012)	0.005 (0.015)	0.006 (0.031)	0.054 (0.052)
L2.WorldCup	-0.004 (0.009)	-0.012 (0.047)	0.017 (0.016)	-0.001 (0.014)	-0.008 (0.028)	0.023 (0.064)
L3.WorldCup	-0.021* (0.012)	-0.078*** (0.030)	-0.014 (0.016)	0.003 (0.015)	-0.027 (0.033)	-0.017 (0.041)
L4.WorldCup	0.001 (0.009)	-0.059 (0.060)	0.031 (0.033)	-0.008 (0.015)	-0.047 (0.080)	0.062 (0.125)
L5.WorldCup	0.007 (0.008)	0.036* (0.019)	-0.010 (0.011)	0.018 (0.013)	0.037 (0.025)	0.034 (0.089)
L6.WorldCup	-0.005 (0.009)	-0.002 (0.024)	-0.001 (0.008)	0.001 (0.011)	0.021 (0.018)	0.079 (0.121)
L7.WorldCup	-0.010 (0.012)	-0.029 (0.036)	-0.021 (0.023)	0.025 (0.017)	-0.055 (0.034)	0.231 (0.223)
L8.WorldCup	-0.008 (0.010)	-0.015 (0.029)	0.007 (0.018)	-0.008 (0.013)	0.016 (0.026)	-0.127* (0.074)
L9.WorldCup	-0.007 (0.010)	-0.052 (0.045)	-0.006 (0.015)	0.017 (0.013)	-0.022 (0.032)	0.055 (0.068)
L10.WorldCup	-0.007 (0.012)	-0.031 (0.055)	-0.002 (0.011)	0.008 (0.014)	0.012 (0.057)	0.071 (0.102)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 15. The Contemporaneous and Before-Effects of Bidding for the World Cup

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
WorldCupBid	0.003 (0.010)	-0.015 (0.024)	0.010 (0.015)	-0.010 (0.009)	0.031 (0.025)	0.170 (0.228)
F.WorldCupBid	0.002 (0.008)	0.003 (0.030)	0.010 (0.013)	0.003 (0.012)	0.008 (0.026)	0.109 (0.229)
F2.WorldCupBid	0.006 (0.009)	0.048 (0.030)	0.002 (0.007)	-0.006 (0.013)	0.020 (0.023)	0.062 (0.186)
F3.WorldCupBid	-0.003 (0.010)	0.009 (0.035)	0.005 (0.009)	0.007 (0.007)	0.022 (0.018)	-0.057 (0.065)
F4.WorldCupBid	-0.007 (0.009)	-0.017 (0.026)	-0.013 (0.015)	0.021 (0.029)	0.040** (0.020)	-0.115* (0.061)
F5.WorldCupBid	0.008 (0.012)	0.029 (0.022)	0.006 (0.013)	-0.029 (0.023)	0.020 (0.040)	0.048 (0.121)
F6.WorldCupBid	-0.001 (0.008)	0.006 (0.025)	-0.013* (0.007)	0.019* (0.011)	0.012 (0.039)	-0.006 (0.121)
F7.WorldCupBid	-0.026** (0.012)	-0.091* (0.049)	-0.019 (0.013)	0.004 (0.008)	-0.072* (0.037)	0.061 (0.059)
F8.WorldCupBid	0.008 (0.007)	0.009 (0.027)	0.014 (0.009)	-0.005 (0.012)	0.006 (0.018)	-0.076 (0.065)
F9.WorldCupBid	-0.008 (0.006)	-0.015 (0.025)	-0.011 (0.007)	0.007 (0.008)	0.011 (0.023)	-0.075 (0.099)
F10.WorldCupBid	0.004 (0.008)	0.002 (0.023)	0.002 (0.008)	-0.004 (0.007)	0.018 (0.029)	-0.102 (0.071)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 16. The After-Effects of Bidding for the World Cup

	$\Delta\text{Log}(\text{GDP})$	$\Delta\text{Log}(\text{Private Investment})$	$\Delta\text{Log}(\text{Private Consumption})$	$\Delta\text{Log}(\text{Government Expenditure})$	$\Delta\text{Log}(\text{Price Level})$	$\Delta\text{Log}(\text{Exchange Rate})$
L.WorldCupBid	-0.002 (0.020)	0.034 (0.045)	-0.016 (0.016)	-0.020* (0.011)	-0.008 (0.041)	-0.124 (0.079)
L2.WorldCupBid	-0.010 (0.014)	-0.014 (0.029)	0.012* (0.006)	-0.020 (0.013)	-0.141 (0.191)	0.123 (0.285)
L3.WorldCupBid	0.000 (0.010)	-0.024 (0.024)	0.012 (0.012)	0.010 (0.010)	0.118 (0.120)	-0.099 (0.099)
L4.WorldCupBid	-0.014 (0.010)	-0.085*** (0.033)	0.004 (0.009)	-0.004 (0.015)	0.064 (0.099)	-0.144 (0.124)
L5.WorldCupBid	-0.018** (0.008)	-0.049** (0.025)	-0.022** (0.009)	0.004 (0.010)	-0.041 (0.088)	-0.002 (0.103)
L6.WorldCupBid	-0.004 (0.007)	-0.002 (0.020)	-0.015 (0.012)	0.008 (0.010)	0.062 (0.040)	-0.128 (0.148)
L7.WorldCupBid	0.013 (0.008)	0.074** (0.036)	-0.009 (0.009)	-0.005 (0.009)	-0.012 (0.017)	-0.020 (0.073)
L8.WorldCupBid	-0.006 (0.014)	-0.042 (0.038)	0.005 (0.019)	-0.009 (0.010)	-0.052 (0.042)	-0.019 (0.114)
L9.WorldCupBid	-0.001 (0.013)	-0.016 (0.022)	0.010 (0.017)	-0.003 (0.017)	0.019 (0.046)	-0.000 (0.148)
L10.WorldCupBid	-0.016 (0.012)	-0.010 (0.025)	-0.012 (0.017)	-0.011 (0.014)	0.135 (0.085)	-0.077 (0.142)
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5469	5469	5469	5469	5469	5469
Number of Countries	184	184	184	184	184	184

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.

Table 17. The Contemporaneous and Before-Effects of Hosting and Bidding for the Olympics
(US Regional Data 1963-2008)

Panel A: Hosting Country	$\Delta\text{Log}(\text{GSP})$	Panel B: Bidding Country	$\Delta\text{Log}(\text{GSP})$
HostingState	0.023*** (0.006)	BiddingState	-0.020 (0.019)
F.HostingState	0.016** (0.009)	F.BiddingState	-0.049** (0.022)
F2.HostingState	0.012** (0.006)	F2.BiddingState	0.027** (0.011)
F3.HostingState	0.007 (0.007)	F3.BiddingState	-0.031 (0.026)
F4.HostingState	-0.008 (0.011)	F4.BiddingState	-0.015*** (0.006)
F5.HostingState	0.002 (0.007)	F5.BiddingState	0.030*** (0.008)
F6.HostingState	0.002 (0.007)	F6.BiddingState	-0.092 (0.053)
F7.HostingState	-0.011 (0.014)	F7.BiddingState	0.021 (0.018)
F8.HostingState	-0.011 (0.006)	F8.BiddingState	-0.098 (0.057)
F9.HostingState	-0.018 (0.015)	F9.BiddingState	-0.056 (0.032)
F10.HostingState	0.005 (0.024)	F10.BiddingState	-0.017 (0.010)
State Fixed Effects	Yes	State Fixed Effects	Yes
Year Fixed Effects	Yes	Year Fixed Effects	Yes
Observations	2295	Observations	2295
Number of States	51	Number of States	51

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. **Significantly different from zero at 95 percent confidence, *** 99 percent confidence.

Table 18. The After-Effects of Hosting and Bidding for the Olympics
(US Regional Data 1963-2008)

Panel A: Hosting Country	$\Delta\text{Log}(\text{GSP})$	Panel B: Bidding Country	$\Delta\text{log}(\text{GSP})$
L.HostingState	0.006 (0.005)	L.BiddingState	0.015 (0.011)
L2.HostingState	0.032*** (0.010)	L2.BiddingState	-0.021** (0.008)
L3.HostingState	0.018** (0.008)	L3.BiddingState	0.003 (0.011)
L4.HostingState	0.005 (0.005)	L4.BiddingState	-0.014 (0.029)
L5.HostingState	0.004 (0.005)	L5.BiddingState	-0.012 (0.008)
L6.HostingState	0.009 (0.013)	L6.BiddingState	-0.018 (0.021)
L7.HostingState	-0.011 (0.009)	L7.BiddingState	-0.012 (0.016)
L8.HostingState	-0.006 (0.012)	L8.BiddingState	0.019 (0.012)
L9.HostingState	-0.004 (0.014)	L9.BiddingState	0.002 (0.016)
L10.HostingState	-0.001 (0.014)	L10.BiddingState	0.006 (0.004)
State Fixed Effects	Yes	State Fixed Effects	Yes
Year Fixed Effects	Yes	Year Fixed Effects	Yes
Observations	2295	Observations	2295
Number of States	51	Number of States	51

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. **Significantly different from zero at 95 percent confidence, *** 99 percent confidence.

Table 19. The Contemporaneous and Before-Effects on Stock Prices of Hosting and Bidding for the Olympics

Panel A: Hosting Countries	$\Delta\log(\text{Stock Price Index})$	Panel B: Bidding Countries	$\Delta\log(\text{Stock Price Index})$
HostingState	0.103* (0.053)	BiddingState	-0.010 (0.045)
F.HostingState	-0.057 (0.064)	F.BiddingState	0.012 (0.043)
F2.HostingState	-0.060 (0.054)	F2.BiddingState	0.086* (0.044)
F3.HostingState	0.078 (0.047)	F3.BiddingState	-0.006 (0.051)
F4.HostingState	0.035 (0.059)	F4.BiddingState	-0.012 (0.029)
F5.HostingState	0.005 (0.076)	F5.BiddingState	-0.062 (0.047)
F6.HostingState	-0.009 (0.052)	F6.BiddingState	0.007 (0.057)
F7.HostingState	0.082 (0.070)	F7.BiddingState	0.021 (0.036)
F8.HostingState	0.088* (0.050)	F8.BiddingState	0.077** (0.028)
F9.HostingState	0.073* (0.044)	F9.BiddingState	0.025 (0.038)
F10.HostingState	-0.027 (0.082)	F10.BiddingState	0.013 (0.026)
Country Fixed Effects	Yes	Country Fixed Effects	Yes
Year Fixed Effects	Yes	Year Fixed Effects	Yes
Observations	631	Observations	631

Note: The method of estimation is least squares. Huber robust standard errors (reported in parentheses) are clustered at the country level. *Significantly different from zero at 90 percent confidence, **Significantly different from zero at 95 percent confidence, *** 99 percent confidence.

Data Appendix Table 1: List of Bidding and Hosting Countries

Bidding Country	Year	Bidding Country	Year	Hosting Country	Year
Argentina	1956	Mexico	1956	Australia	1956
Argentina	1968	Mexico	1960	Australia	2000
Argentina	2004	Netherlands	1952	Austria	1964
Australia	1992	Netherlands	1992	Austria	1976
Australia	1996	Norway	1968	Bosnia and Herzegovina	1984
Australia	2006	Norway	1992	Canada	1976
Austria	1960	Poland	2006	Canada	1988
Austria	1964	Russia	1976	Finland	1952
Belgium	1960	Serbia and Montenegro	1992	France	1968
Belgium	1964	Serbia and Montenegro	1996	France	1992
Bulgaria	1992	Slovak Republic	2006	Germany	1972
Bulgaria	1994	South Africa	2004	Greece	2004
Canada	1956	Spain	1972	Italy	1956
Canada	1964	Spain	1998	Italy	1960
Canada	1968	Sweden	1964	Italy	2006
Canada	1976	Sweden	1968	Japan	1964
Canada	1996	Sweden	1972	Japan	1972
Canada	2002	Sweden	1984	Japan	1998
China	2000	Sweden	1988	Korea, Republic of	1988
Finland	1976	Sweden	1992	Mexico	1968
Finland	2006	Sweden	1994	Norway	1952
France	1968	Sweden	1998	Norway	1994
France	1992	Sweden	2002	Russia	1980
Germany	1960	Sweden	2004	Spain	1992
Germany	1992	Switzerland	1976	United States	1960
Germany	2000	Switzerland	2002	United States	1980
Greece	1996	Switzerland	2006	United States	1984
Hungary	1960	Turkey	2000	United States	1996
Italy	1952	United Kingdom	1992	United States	2002
Italy	1988	United Kingdom	1996		
Italy	1992	United Kingdom	2000		
Italy	1998	United States	1960		
Italy	2004	United States	1964		
Japan	1960	United States	1980		
Japan	1968	United States	1992		
Japan	1984	United States	1994		
Japan	1988	United States	1998		

Data Appendix Table 2. Summary Statistics

	Mean	Standard Deviation	AR(1) Coef. Least-Squares	AR(1) Coef. SYS-GMM	AR(1) Coef. Mean-Group
Log(GDP)	8.46	1.12	0.97	1.03	0.92
Log(Private Investment)	11.29	1.58	0.89	0.93	0.85
Log(Private Consumption)	12.57	0.98	0.94	0.98	0.89
Log(Government Expenditure)	11.23	1.17	0.93	0.95	0.88
Log(Price Level)	3.89	0.55	0.84	0.86	0.85
Log(Exchange Rate)	0.81	4.87	0.97	0.94	0.98

Note: Column (1) reports the sample mean; column (2) reports the sample standard deviation; columns (3)-(5) report the AR(1) coefficient. In column (3) the estimated AR(1) coefficient is based on panel fixed effects least squares estimation; column (4) system-GMM estimation (Blundell and Bond, 1998); column (5) mean-group estimation (Pesaran and Smith, 1995).