Einkommens – und Beschäftigungseffekte sportlicher Großveranstaltungen und Stadionprojekte

Dissertation

zur Erlangung des akademischen Grades

eines Doktors der Wirtschafts- und Sozialwissenschaften

(Dr. rer. pol.)

des Fachbereiches Wirtschaftswissenschaften

der Universität Hamburg

vorgelegt von

Dipl. Kfm. Florian Hagn

aus Saal a.d. Donau

Hamburg, den 19. Juni 2008

Mitglieder der Promotionskommission

Vorsitzender:	Prof. Dr. Peter Stahlecker
Erstgutachter:	Prof. Dr. Wolfgang Maennig
Zweitgutachter:	Prof. Dr. Heiner Hautau

Das wissenschaftliche Gespräch fand am 18. Juni 2008 statt.

Inhaltsverzeichnis

Begründung des thematischen Zusammenhangs der eingereichten Fachartikel

Die im Rahmen dieser kumulativen Promotion eingereichten Fachartikel beschäftigen sich mit der Frage welche ökonomischen Effekte sowohl von großen Sportveranstaltungen als auch von Stadionprojekten auf die jeweils betroffenen Regionen ausgehen.

Diese Frage erlangt insbesondere vor dem Hintergrund Bedeutung, dass die Ausrichtung großer Sportveranstaltungen ebenso wie die Realisation von Stadionprojekten mit hohen Kosten verbunden ist, welche meist – zumindest teilweise – mit öffentlichen Geldern finanziert werden. Sollten sich infolge von Sportgroßveranstaltungen und Stadionprojekten signifikant positive wirtschaftliche Effekte ergeben, so könnte dies Investitionen aus öffentlichen Geldern rechtfertigen. Ist dies hingegen nicht der Fall, muss überlegt werden, ob die Gelder an anderer Stelle möglicherweise sinnvoller investiert wären.

Bezüglich der Frage nach ökonomischen Effekten großer Sportveranstaltungen und Stadionprojekte besteht in der Literatur eine starke Divergenz zwischen den Ergebnissen von im Vorfeld von Sportveranstaltungen oder Stadionprojekten durchgeführten *ex ante* Studien und Arbeiten, die einige Zeit nach der Ausrichtung solcher Events oder nach Fertigstellung von Stadien *ex post* durchgeführt werden. Während so genannte *ex ante* Studien häufig positive wirtschaftliche Effekte infolge großer Sportveranstaltungen oder Stadionprojekte versprechen, kommen *ex post* Studien regelmäßig zu dem Ergebnis, dass daraus keine oder sogar negative Effekte auf die wirtschaftliche Entwicklung in den jeweiligen Regionen resultieren. Allerdings stammen alle bisher zu diesem Thema durchgeführten *ex post* Studien aus dem amerikanischen Raum und behandeln dementsprechend amerikanische Sportveranstaltungen und Stadien. Die im Rahmen der vorliegenden kumulativen Promotion eingereichten Fachartikel sind die ersten Arbeiten, die mögliche wirtschaftliche Effekte von Sportveranstaltungen und Stadionprojekten für den europäischen Raum untersuchen.

In den beiden eingereichten Fachartikeln „Large sport events and unemployment. The case of the 2006 soccer World Cup in Germany“ und „Employment effects of the Football World Cup 1974 in Germany“ wird anhand der in den Jahren 2006 und 1974 in Deutschland ausgerichteten Fußball-Weltmeisterschaften untersucht, welche Beschäftigungseffekte sich infolge derart großer Sportveranstaltungen in den jeweiligen Spielorten ergeben.

Zur Ermittlung der Beschäftigungseffekte werden dabei parallel verschiedene, in US-Studien verwendete Schätzmodelle von Baade und Matheson (2000, 2001, 2003, 2004), Coates und Humphreys (1999, 2000a und b, 2002, 2003a und b) und Hotchkiss, Moore und Zobay (2003) benutzt. Zusätzlich kommt erstmals ein neu entwickeltes Schätzverfahren zur Anwendung, mit dessen Hilfe mögliche Schwächen der etablierten Modelle überwunden werden sollen.

Naturgemäß werden dabei in dem Artikel zur - wenig lang zurückliegenden - Fußball-Weltmeisterschaft 2006 nur kurzfristige Beschäftigungseffekte erfasst, wohingegen es bei der Arbeit zur Weltmeisterschaft 1974 möglich war, sowohl kurzfristige als auch langfristige Beschäftigungseffekte bis zu einer Dauer von 18 Jahren zu untersuchen.

Die beiden weiteren Fachartikel „Income Effects of Large Stadia Projects in Germany“ und „Beschäftigungseffekte großer Stadionprojekte in Deutschland“ erweitern die Arbeiten zu den Beschäftigungseffekten von Sportveranstaltungen, indem hier von großen Stadionprojekten ausgehende Einkommens- und Beschäftigungseffekte untersucht werden. Hierzu wurden die bereits in den beiden Fachartikeln zu den Fußball-Weltmeisterschaften 1974 und 2006 verwendeten Schätzmodelle nach Baade und Matheson (2000, 2001, 2003, 2004), Coates und Humphreys (1999, 2000a und b, 2002, 2003a und b) und Hotchkiss, Moore und Zobay (2003) sowie das neu entwickelte Schätzmodell derartig modifiziert, dass mit ihnen nun mögliche Effekte infolge von Stadionprojekten erfassen werden konnten.[1]

[1] Im Fachartikel „Beschäftigungseffekte großer Stadionprojekte in Deutschland” findet das Schätzmodell nach Baade und Matheson (2000, 2001, 2003, 2004) keine Anwendung, da sich hier nicht interpretierbare Ergebnisse ergaben.

Somit werden anhand der eingereichten Fachartikel die wirtschaftlichen Effekte von Sportgroßveranstaltungen und Stadionprojekten in Deutschland erstmals umfassend untersucht und damit der Bewertung öffentlicher Investitionen für diese Zwecke eine neue Basis gegeben.

Literatur

BAADE, R.A. & MATHESON, V.A. (2000). An Assessment of the Economic Impact of the American Football Championship, the Super Bowl, on Host Communities. *Reflets et Perspectives, 39*(2-3), 35-46.

BAADE, R.A. & MATHESON, V.A. (2001). Home Run or Wild Pitch? Assessing the Economic Impact of Major League Baseball's All-Star Game. *Journal of Sports Economics, 2*, 307-327.

BAADE, R.A. & MATHESON, V.A. (2003). Bidding for the Olympics: Fool's Gold?. In C. BARROS & M. IBRAHIM (Hrsg.), *Transatlantic Sport*. London: Edward Elgar Publishing.

BAADE, R.A. & MATHESON, V.A. (2004). The Quest for the Cup: Assessing the Economic Impact of the World Cup. *Regional Studies*, *38*, 343-354.

COATES, D. & HUMPHREYS, B.R. (1999). The Growth Effects of Sport Franchises, Stadia, and Arenas. *Journal of Policy Analysis and Management, 18*(4), 601-624.

COATES, D. & HUMPHREYS, B.R. (2000a). The Stadium Gambit and Local Economic Development. *Regulation: The Cato Review of Business and Government*, *23*(2), 15-20.

COATES, D. & HUMPHREYS, B.R. (2000b). The Economic Consequences of Professional Sports, Strikes and Lockouts. *Southern Economic Journal, 67*(3), 737-747.

COATES, D. & HUMPHREYS, B.R. (2002). The Economic Impact of Postseason Play in Professional Sports. *Journal of Sports Economics, 3,* 291-299.

COATES, D. & HUMPHREYS, B.R. (2003a). The Effect of Professional Sports on Earnings and Employment in the Services and Retail Sectors in US Cities. *Regional Science and Urban Economics, 33*(2), 175-198.

COATES, D. & HUMPHREYS, B.R. (2003b). Professional Sports Facilities, Franchises and Urban Economic Development. *Public Finance and Management, 3*, 335-357.

HOTCHKISS, J., MOORE, R.E. & ZOBAY, S.M. (2003). Impact of the 1996 Summer Olympic Games on Employment and Wages in Georgia. *Southern Economic Journal, 69*, 691-704.

Large sport events and unemployment. The case of the 2006 soccer World Cup in Germany

Florian Hagn and Wolfgang Maennig

(Accepted for publication in Applied Economics)

Abstract

This study analyses on the basis of a multivariate analysis *ex post* the effects on the jobs market of a soccer World Cup, in this case the 2006 World Cup held in Germany. In addition to three methods already used for other analyses in studies of sporting events, an extended "Difference-in-Difference" estimate is used in order to compare the development of the numbers of unemployed in the 12 World Cup venues with the development of the numbers of unemployed in 63 other German cities. The results demonstrate that in none of the respective match venues did the effect of the sporting event on unemployment differ significantly from zero.

Keywords: Regional economics; sports economics; World Cup; stadium impact.

1 Introduction[1]

Before the 2006 World Cup in Germany a series of analyses was published, according to which the investments of around €6 billion in connection with the World Cup competition and the expenditure of the expected 1–2 million foreign visitors would markedly affect income and employment. The estimates fluctuated between a €2 billion and a €10 billion increase in

[1] We are thankful for the anonymous referees´ valuable comments.

income growth, or up to 10,000 additional jobs (Ahlert 2000; Capital 2006; Deutsche Industrie und Handelskammer 2006; Deutsche Postbank AG 2005a and b, 2006; Kurscheidt 2004). Even in retrospect the soccer World Cup competition was universally felt to be an outstanding and positive event for Germany. However, these perceptions derive from only a few observations *ex post*, that are moreover exclusively descriptive in nature (cf., in particular, Bundesministerium des Innern 2006; Brenke and Wagner 2007).

Multivariate studies are clearly more restrained in their assessment of the effects of major sporting events and also specifically of the soccer World Cup. Baade and Matheson (2004) investigated in a multiple analysis *ex post* the effect on the income of people in the match venues of the soccer World Cup of 1994 in the USA. They concluded that income developed in an equally weak fashion in 9 of the 13 regions of the contest. Overall, the soccer World Cup had a negative effect on the income of the match venue of more than US$9 billion. Szymanski (2002) collected data on the twenty largest economies in terms of current GDP over the past thirty years, many of which have hosted the Olympic Games or the soccer World Cup at least once during that period. Using a simple regression model, he came to the conclusion that the growth of these countries was significantly lower in soccer World Cup years.[2] The results of these two studies of soccer World Cups are in agreement with other econometric studies of various large sporting events or sports venues. The majority of these studies suggest that the sporting events or sports stadia have little or no significant effect on regional wages, income and/or employment (e.g. Baade, 1987; Baade and Dye, 1990; Baade, 1994; Baade and Sanderson, 1997; Baade and Matheson, 2000, 2001, 2003; Carlino and Coulson 2004[3]). A number of works, particularly those of Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b) or Teigland (1999), have even arrived at significant negative effects. To our knowledge, only very few studies have found significant positive effects of

[2] No significant effects at all are registered for the Olympic Games.

[3] Although Carlino and Coulson (2004) reach the conclusion that having a NFL team allows the cities to "enjoy" rents that are 8 percent higher.

sports facilities and sports events *ex post*. Baim (1994) found positive employment effects for Major League baseball and football for 15 cities in the USA. Hotchkiss *et al.* (2003) found significant positive effects on employment in regions of Georgia (USA) affiliated or close to activities of the Atlanta Olympic Games in 1996, but they did not find significant effects on wages.

The present work supplements previous publications in a number of respects. It is the first work that examines the effects of World Cup 2006 in Germany on an *ex post* basis. It is the first multivariate study to examine the employment effects of a major sporting event outside the USA. This is particularly interesting set against the background of the contrasting modes of functioning of the labour markets in the USA and Europe. In addition, it also tests for method sensitivity by running the dataset in parallel with the three methods usually applied in the studies of Baade and Matheson (2000, 2001, 2003, 2004), Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b) and Hotchkiss *et al.* (2003) as well as with a fourth method that attempts to overcome some potential shortcomings associated with the three other methods. Section 2 elaborates on the methods, data and results. Section 3 concludes.

2 Methods, Data and Results

The period of observation in our study comprised 111 months from January 1998 to March 2007.[4] Hence, the period of observation had already begun more than two years before Germany was selected on 6 July 2000 as the venue for the World Cup and it ends with the latest period for which data are available.

We use data regarding the 75 largest urban districts (kreisfreie Städte) in Germany including the 12 match venues of the 2006 soccer World Cup. The selection of the 75 largest urban districts was made according to the criterion of the population in 1999. Match venues of the

[4] For the period before January 1998, data for the numbers of unemployed at the district level were published only quarterly.

2006 soccer World Cup in Germany were the twelve cities Berlin, Dortmund, Frankfurt on the Main, Gelsenkirchen, Hamburg, Hanover, Kaiserslautern, Cologne, Leipzig, Munich, Nuremberg and Stuttgart, whose location in Germany is shown in Figure 1. Berlin, Hamburg, Munich, Hanover, Cologne and Frankfurt on the Main are among Germany's largest cities. In contrast, Kaiserslautern is ranked at only No. 74 in the table of the most populous urban districts. The number of inhabitants of the urban districts in 1999 – the year before Germany was selected to host the World Cup competition – was taken from the comprehensive economic records of the regions (Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder 2005). The shares contributed to the gross value added by the various economic sectors in 1999 were obtained from the comprehensive economic records of the regions (Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder 2005).[5]

Dependent variables are the monthly numbers of the unemployed for the urban districts obtained from the Federal Labour Agency (Bundesagentur für Arbeit 2006, 2007). The development in unemployment in the group of the 12 match venues and the group of the 63 non-venues is compared in Figure 2; the development in unemployment in the match venues and non-venues at first progressed generally in parallel (Figure 2). From about January 2001, unemployment in the match venues rose more strongly than in the non-venues. At the beginning of 2005 the two groups of comparative data again approached each other; however, in July 2005 the jobless figures in the non-venues again fell in comparison with the match venues. In the World Cup year 2006 and the beginning of 2007, the development of unemployment in the match venues and non-venues ran largely parallel, with unemployment in the non-venues falling somewhat more steeply than in the match venues from July 2006.

In order to clarify the extent to which the differences in the development of unemployment figures in the two comparative groups - after controlling for the customary explanatory

[5] The shares contributed to the gross value production in the year 1999 – the year preceding the selection of Germany to host the World Cup – were used, since data in the period are not available for the whole period under consideration but only on a yearly basis.
The excluded industry category is the finance, leasing and venture service.

variables of joblessness - is significantly correlated with the occurrence of the World Cup, we first use the three methods commonly employed in studies in the USA in investigating the economic effects of major sporting events: those of Baade and Matheson (2000, 2001, 2003, 2004), Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b), and Hotchkiss *et al.* (2003).

Hence, according to the method of Baade and Matheson (2000, 2001, 2003, 2004) the following equation is derived:

$$\partial Unemp_{i,t} = \beta_0 + \beta_1 \sum_{i=1}^{n} \partial Unemp_{i,t} / n_t + \beta_2 \partial Unemp_{i,t-1} + \beta_3 \partial Unemp_{i,t-2} + \beta_4 \partial Unemp_{i,t-3} + \beta_5 \ln Pop1999_i + \beta_6 East_i + \beta_7 Trend + \beta_8 DumSeas_t + \beta_9 WC2006_{i,t} + \varepsilon \quad (1)$$

The notation of equation (1) is explained in the appendix. Table 1 shows in column (1) the results of this estimation.[6] The variable $WC2006_{i,t}$, which measures effects on unemployment in the match venue during the course of the World Cup in the months of June and July 2006, does not differ significantly from zero.

The other estimation models used in this paper are special cases of model (2):

$$\ln Unemp_{i,t} = \beta_0 + \beta_1 \ln Pop1999_i + \beta_2 LF1999_i + \beta_3 \Pr od1999_i + \beta_4 HV1999_i + \beta_5 DL1999_i + \beta_6 East_i + \beta_7 Trend + \beta_8 DumSeas_t + \beta_9 WC_i + \beta_{10} Post_t + \beta_{11} PostWC_{i,t} + \beta_{12} TrWC_i + \beta_{13} TrPost_t + \beta_{14} TrPostWC_{i,t} + \varepsilon \quad (2)$$

The notation of equation (2) is explained in the appendix.

The model according to Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b) uses a “Fixed Effects” model, regressing the log unemployment on log population in city i in the

[6] The results of the seasonal dummies are not reported. They are available from the authors on request.

year 1999, city-specific time trends, time-specific dummy variables and a dummy variable for the World Cup 2006 in the months of June and July 2006. Column (2) in Table 1 presents the results of this model. The estimated values of the city-specific time trends and of the time-specific dummy variables are not reported here, although they were in most cases significant.[7] In this model too, the variable $WC2006_{i,t}$ proves to be not significantly different from zero.

Hotchkiss *et al.* (2003) use a standard "Difference-in-Difference" estimate in order to be able to detect changes in a) the intercept, i.e. in the levels of the employment and wages, and b) the slope, i.e. in the growth of the two variables. The "Difference-in-Difference" estimate compares the variable of interest before and after the incidence of a given event in a region with the change in the same variable in another region that was not affected by that event.[8] For this it is assumed that the development in the affected region would have matched the development in the unaffected region if the event had not occurred. The difference between the model of Hotchkiss *et al.* (2003) and the models of Baade and Matheson (2000, 2001, 2003, 2004) and of Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b) is that these last two test solely the effects during the course of the actual event, whereas with the model of Hotchkiss *et al.* (2003) the medium-term effects can also be determined. The model according to Hotchkiss *et al.* (2003) estimates the log unemployment by the shares of gross value added of selected economic sectors, a dummy for match venues of the World Cup 2006, a dummy for period after the World Cup 2006 (1 for period after, 0 for period before the World Cup), and a dummy for match venues and period after the World Cup 2006.

The period from June 2006 is selected as the post-event period ($Post=1$), corresponding to the beginning of the World Cup on 9 June 2006. Column (3) in Table 1 represents the results from the estimation according to Hotchkiss *et al.* (2003) for this follow-up period. The

[7] The results of the evaluation are available from the authors on request.

[8] Frequently, this concerns a political event, such as the introduction of a new law. The classic use of the "Difference-in-Difference" estimate originated with Card and Krueger (1994), who used it to investigate the consequences of minimum wages in two States of the USA.

relevant variable, $PostWC_{i,t}$, is not significant. Therefore the levels of the unemployed in the 12 match venues in the period after the World Cup have not developed significantly differently from those in the other cities in the survey.

To test for an effect on the growth of the numbers of unemployed through the soccer World Cup, we also included, closely following the procedure of Hotchkiss *et al.* (2003) a time trend. Again the relevant variable $TrPostWC_{i,t}$, does not differ significantly from zero (column (4) in table 1). For the period after the World Cup, the match venues show in comparison with the non-venues no trend significantly different from zero in the development of unemployment.

Finally, we extend the standard "Difference-in-Difference" estimates of Hotchkiss *et al.* (2003), in that in our model we simultaneously take into account changes as much in the levels as also in the trends of the dependent variable. In this way we avoid distorted results, for example if an unemployment level in a city lower than before the World Cup is exclusively attributable to an already existing negative trend.[9]

One shortcoming of the estimation models used by Baade and Matheson (2000, 2001, 2003, 2004), Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b), and Hotchkiss *et al.* (2003) which have been discussed so far is that they do not attempt to overcome the problem of serial correlation, which often exists in data with time series dimensions. Since, as shown by Bertrand *et al.* (2004), "Difference-in-Difference" models are frequently subject to serial correlations and also tend to overestimate the significance of the results, in the following we use White coefficient covariance estimators, which are robust with regard to serial correlation. Bertrand *et al.* (2004) recommend this procedure particularly for "Difference-in-Difference" models with a sample in which $N > 50$.

[9] Galster et al. (2004) use a similar extended "Difference-in-Difference" estimate in order to investigate the effects on housing prices of accommodation for the disabled.

Column (5) in table 1 shows the results of our model on the basis of Bertrand et al.. The values of the independent variables used have the expected sign and turn out to be almost without exception significant. The value of the variable $Post_t$, differing significantly and positively from zero, indicates that in the whole sample in the period after the World Cup there is a significantly higher level of unemployment than in the period before the competition. The significantly negative value of the variable $TrPost_t$ shows for the whole sample a significant negative trend in the numbers of the unemployed in the period after the World Cup, in comparison with the period before the competition. Relevant for possible employment effects of the World Cup in the match venues are the two variables $PostWC_{i,t}$ und $TrPostWC_{i,t}$. These two variables have proved not to differ significantly from zero. Hence, neither the levels nor the trends of the unemployment figures in the period after the soccer World Cup relative to the period before the competition have developed significantly differently in the match venues from those of the unemployment figures in the non-venues. Therefore, an effect of the World Cup on employment in the 12 match venues can not be demonstrated.

3 Conlusion, and economic and political implications

Our study has demonstrated that the 2006 World Cup could not influence unemployment in the 12 match venues to an extent that was significantly different from its pattern in the non-venues.

Our results not only correspond with those of Baade and Matheson (2004), which were unable to prove any income effects significantly different from zero in the host cities of the 1994 Football World Cup in the USA; they also correspond with almost all *ex post* multivariate income and employment analyses of major sporting events and venues which, with the

exception of Hotchkiss *et al*. (2003) for the 1996 Olympic Summer Games in Atlanta and Jasmand/ Maennig (forthcoming) for the 1972 Olympic Summer Games in Munich show no income and/or employment effects that are significantly positively different from zero.

We nevertheless hesitate to share the concern expressed both implicitly and explicitly in many of the comparable sports economy studies that the positive effects of the sporting events claimed by many sports protagonists are not true and that (bids to host) major sporting events are inefficient from an economic point of view, for three reasons. Firstly, other effects such as the feelgood benefit for the population and/or difficult to quantify image effects may be sufficiently important to justify major sporting events and/or subsidies for them via public funds. In both of the above-mentioned fields of possible effects, sporting economic empiricism is still in its infancy.[10]

Secondly, the treatment group in the selected form of municipality areas might be too large and too highly aggregated to statistically prove significant effects. Studies on the effects of major sports venues on property values in surrounding areas indicate a maximum affect area of around 3,000 metres (Tu 2005; Ahlfeldt and Maennig 2007).

Thirdly, the employment effects claimed by the sports protagonists, which are usually based on corresponding ex-ante impact studies, cannot strictly speaking be rejected by testing for significant differences from zero. Their rejection would be possible if the postulated values were tested directly. However, this would not be regularly successful in the relevant studies because the effects claimed are so close to zero (Baade and Matheson 2006).[11] To illustrate this: the value of 0.001967 for *PostWC* in column (5) of Table 1, with a standard deviation of 0.029605 is usually interpreted to mean that there are no effects on unemployment. Sports protagonists can argue that with the existing estimates a reduction of unemployment of up to

[10] For the measurement of the experiential benefit of the Olympic Games in London 2012 cf. Atkinson *et al.* (2006), for the measurement of the willingness to pay for the Soccer World Cup 2006 (before and after the event cf. Heyne *et al.* (2007).

[11] Baade and Matheson (2006) test hypotheses against both a zero impact and against the impact claimed by sports boosters. They are able to reject any boosters' claims of economic impact from the game of greater than $300 million at a 5% significance level.

around (0.001967 - 2 * 0.029605=) -0.057243 cannot be refuted. This would nevertheless correspond, ceteris paribus, to a decrease of 3.460 unemployed persons in the average unemployment levels in the host cities in the period between June 2006 and March 2007.

References

Ahlert, G. (2000) The economic effects of the Soccer World Cup 2006 in Germany with regard to different financing, *Economic System Research*, **13**(1), S. 109-127.

Ahlfeldt, G., W. Maennig (2007) Impact of Sports Arenas on Land Values: Evidence from Berlin. Working Paper, Hamburg University.

Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (2005) *Bruttoinlandsprodukt, Bruttowertschöpfung in den kreisfreien Städten und Landkreisen Deutschlands 1992 und 1994 bis 2003, Reihe 2 Kreisergebnisse Band 1,* http://www.statistik.baden-wuerttemberg.de/Arbeitskreis_VGR/ergebnisse.asp#BIP_K on 18.11.2006

Atkinson, G., Mourato, S. and Szymanski, S. (2006) Quantifying the "un-quantifiable": Valuing the intangible impacts of hosting the Summer Olympic Games, London, unpublished manuscript London School of Economics and Imperial College London.

Baade, R.A. (1987) Is there an economic rationale for subsidizing sport stadiums?, Heartland Policy Study No. 13.

Baade, R.A. (1994) Stadiums, professional sports, and economic development: Assessing the reality, Heartland Policy Study No. 62.

Baade, R.A. and Dye, R. (1990) The impact of stadiums and professional sports on metropolitan area development, *Development Growth and Change*, **21**(2), 1-14.

Baade, R.A. and Matheson, V.A. (2000) An assessment of the economic impact of the American Football Championship, the Super Bowl, on host communities, *Reflets et Perspectives,* **39**, Number 2-3, 35-46.

Baade, R.A. and Matheson, V.A. (2001) Home run or wild pitch? Assessing the economic impact of Major League Baseball's All-Star Game, *Journal of Sports Economics*, **2**, 307-327.

Baade, R.A. and Matheson, V.A. (2003) Bidding for the Olympics: Fool's gold?, in *Transatlantic Sport* (Eds.) C. Barros, M. Ibrahim and S. Szymanski, London, Edward Elgar Publishing, 127-151.

Baade, R.A. and Matheson, V.A. (2004) The quest for the cup: Assessing the economic impact of the World Cup, *Regional Studies,* **38**, 343-354.

Baade, R.A. and Matheson, V.A. (2006) Padding Required: Assessing the Economic Impact of the Super Bowl, *European Sports Management Quarterly*, **6**(4), 353-374.

Baade, R.A. and Sanderson, R.A. (1997) The employment effect of teams and sports facilities in *Sports, Jobs, and Taxes. The Economic Impact of Sports Teams and Stadiums* (Eds.) R.G. Noll and A. Zimbalist, Washington D.C., 92-118.

Baim, D.V. (1994) *The Sports Stadium as a Municipal Investment*, Westport (Conn.) and London.

Bertrand M., Duflo E. and Mullainathan S. (2004) How much should we trust in differences-in-differences estimates? NBER Working Paper 8841, http://www.nber.org/papers/w8841 on 11.09.2006.

Brenke K., and Wagner G.G. (2007) Zum volkswirtschaftlichen Wert der Fussball-Weltmeisterschaft 2006 in Deutschland. DIW Berlin Research Notes 19.

Bundesagentur für Arbeit (2006) *Zeitreihe Arbeitslose und Quoten nach Kreisen ab 1985*, http://www.pub.arbeitsamt.de/hst/services/statistik/detail/z.html on 10.11.2006.

Bundesagentur für Arbeit (2007) *Arbeitslose nach Kreisen*, http://www.pub.arbeitsamt.de/hst/services/statistik/detail/a.html on 20.03.2007.

Bundesministerium des Innern (2006) *Die Welt war zu Gast bei Freunden. Bilanz der Bundesregierung zur FIFA Fußball-Weltmeisterschaft 2006*, Berlin, 2006.

Capital (2006) *Exklusiv-Analyse: Der ökonomische Effekt der Fußballweltmeisterschaft*, http://www.capital.de/unternehmen/100002059.html on 19.11.2006.

Card D. and Krueger A.B. (1994) Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania, *American Economic Review*, **84** (4), S. 772-793.

Carlino, G. and Coulson, N.E. (2004) Compensating differentials and the social benefits of the NFL, *Journal of Urban Economics*, **56**, 25-50.

Coates, D. and Humphreys, B.R. (1999) The growth effects of sport franchises, stadia, and arenas, *Journal of Policy Analysis and Management*, **18**, No. 4, 601-624.

Coates, D. and Humphreys, B.R. (2000a) The stadium gambit and local economic development, *Regulation: The Cato Review of Business and Government*, **23**(2), 15-20.

Coates, D. and Humphreys, B.R. (2000b) The economic consequences of professional sports, strikes and lockouts, *Southern Economic Journal*, **67**(3), 737-747.

Coates, D. and Humphreys, B.R. (2002) The economic impact of postseason play in professional sports, *Journal of Sports Economics*, Bd. 3, 291-299.

Coates, D. and Humphreys, B.R. (2003a) The effect of professional sports on earnings and employment in the services and retail sectors in US cities, *Regional Science and Urban Economics*, **33**(2), 175-198.

Coates, D. and Humphreys, B.R. (2003b) Professional sports facilities, franchises and urban economic development, *Public Finance and Management,* **3**, 335-357.

Deutsche Industrie- und Handelskammer (2006) *Fußball-WM 2006, Auswirkungen auf die Unternehmen*, http://www.dihk.de/index.html?/inhalt/themen/branchen/tourismus/fussball/wirtschaft.html, on 21.11.2006.

Deutsche Postbank AG (2005a) *FIFA Fussball-Weltmeisterschaft 2006™ – Deutsche Wirtschaft steht als Gewinner bereits fest,* http://www.postbank.de/Datei/RSpezialFebruar05.pdf on 18.11.2006.

Deutsche Postbank AG (2005b) *FIFA Fussball-Weltmeisterschaft 2006™ – Signifikante Arbeitsplatz und Beschäftigungszuwächse in einzelnen Branchen,* http://www.postbank.de/Datei/RSpezialJuli05.pdf on 18.11.2006.

Deutsche Postbank AG (2006) *FIFA Fussball-Weltmeisterschaft 2006™ - Kleine und „ärmere" Austragungsorte profitieren am meisten,* http://www.postbank.de/Datei/RSpezialJanuar06.pdf on 18.11.2006.

Galster, G., Tatian, P. and Pettit, K. (2004) Supportive housing and neighborhood property value externalities, *Land Economics*, **80**(1), 33-54.

Heyne, M., Maennig, W. and Suessmuth, B. (2007) Experience goods and biases in CVM – The case of Soccer WC 2006. Unpublished Paper Bremen University, University of Technology Munich and Hamburg University.

Hotchkiss, J., Moore, R.E., and Zobay S.M. (2003) Impact of the 1996 Summer Olympic Games on employment and wages in Georgia, *Southern Economic Journal*, **69**, 691-704.

Jasmand, St., Maennig, W. (2007) Regional Income and Employment Effects of the 1972 Munich Olympic Summer Games, forthcoming in: *Regional Studies.*

Kurscheidt, M. (2004) Erfassung und Bewertung der wirtschaftlichen Effekte der Fussball-WM 2006, Unabhängiges wissenschaftliches Gutachten für wegweiser GmbH, Berlin.

Szymanski, S. (2002) The economic Impact of the World Cup, *World Economics,* **3**(1), 169-177.

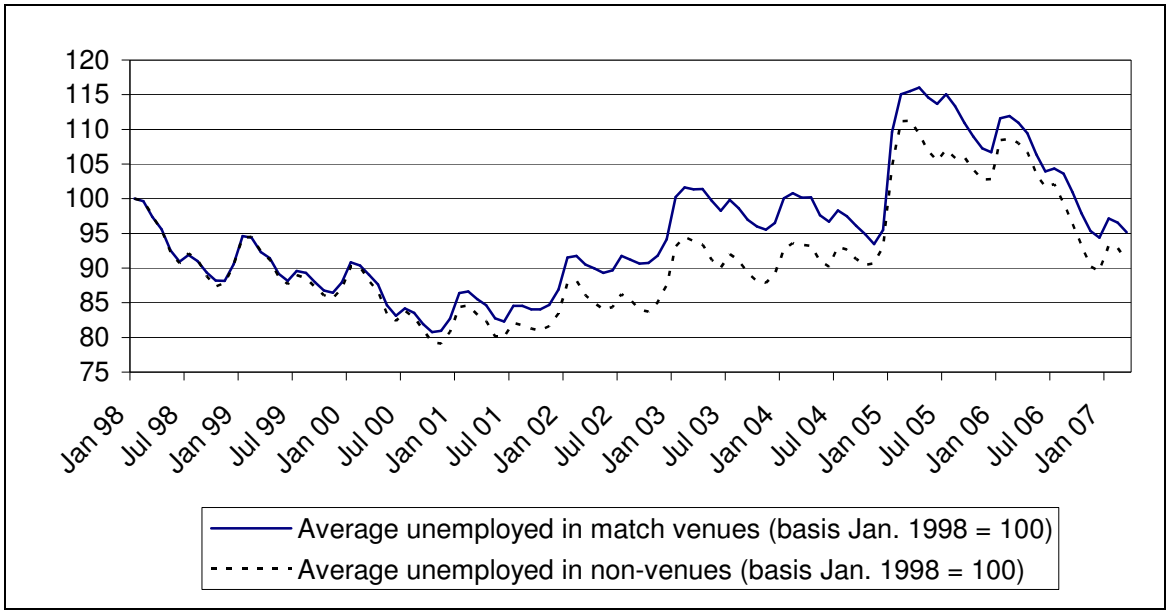
Teigland, J. (1999) Mega-events and impacts on tourism: The predictions and realities of the Lillehammer Olympics, *Impact Assessment and Project Appraisal*, **17**, 305-317.

Tu, C. (2005) How does a new sport stadium affect housing values? The case of FedEx Field, *Land Economics*, **81**(3), 379-395.

Appendix

Figure 1: 12 Match venues for the 2006 soccer World Cup

Figure 2: Comparison of the jobless figures in the match venues and non-venues, monthly averages; (1998 = 100)



Data source: Federal labour agency (Bundesagentur für Arbeit 2006, 2007a).

Table 1: Results of estimations

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	$\partial Unemp_{i,t}$	$\ln Unemp_{i,t}$	$\ln Unemp_{i,t}$	$\ln Unemp_{i,t}$	$\ln Unemp_{i,t}$
C	-0.545333 (0.449554)	-2.893523** (0.069527)	-5.725571** (0.106001)	-5.785100** (0.102529)	-5.559757** (0.706835)
$\sum_{i=1}^{n} \partial Unemp_{i,t} / n_t$	0.984198** (0.020724)				
$\partial Unemp_{i,t-1}$	0.070232** (0.010390)				
$\partial Unemp_{i,t-2}$	-0.066135** (0.010199)				
$\partial Unemp_{i,t-3}$	-0.029246** (0.010009)				
$\ln Pop1999_i$	0.036357 (0.034036)	1.009341** (0.005372)	1.114090** (0.006182)	1.112397** (0.005764)	1.118913** (0.042448)
$LF1999_i$			9.210087** (1.506866)	9.521020** (1.479889)	17.69763 (12.26226)
$\Pr od1999_i$			1.351303** (0.057822)	1.345903** (0.056771)	1.165561** (0.357648)
$HV1999_i$			2.176097** (0.102999)	2.165001** (0.101086)	2.521375** (0.632940)
$DL1999_i$			2.742939** (0.074783)	2.736931** (0.073364)	1.065683 (0.561188)
$East_i$	-0.089776 (0.067240)				0.569676** (0.059449)
$Trend$	0.000264 (0.000807)			0.001809** (0.000108)	0.001669** (0.000214)
$WC2006_{i,t}$	**-0.523758** **(0.454969)**	**0.027841** **(0.039916)**			
WC_i			0.018728 (0.011107)		-0.029539 (0.088953)
$Post_t$			0.051208** (0.011678)		0.077428** (0.013079)
$PostWC_{i,t}$			**0.031908** **(0.028774)**		**0.001967** **(0.029605)**
$TrWC_i$				0.000459** (0.000168)	0.000663 (0.000480)
$TrPost_t$				-0.011736** (0.002042)	-0.021646** (0.001229)
$TrPostWC_{i,t}$				**0.000277** **(0.004875)**	**-0.001254** **(0.002139)**
Adjusted R-squared	0.579986	0.952688	0.884910	0.888998	0.934962

* bzw. ** = significant on 5%- or. 1%-confidence level

Notations

Equation (1)

$\partial Unemp_{i,t}$	percentage change in the unemployment in city i at time *t*,
$\sum_{i=1}^{n} \partial Unemp_{i,t} / n_t$	average percentage change in unemployment in the sample at time *t*,
$\partial Unemp_{i,t-1}$	percentage change in unemployment in city i at time *t*–1,
$\partial Unemp_{i,t-2}$	percentage change in unemployment in city i at time *t*–2,
$\partial Unemp_{i,t-3}$	percentage change in unemployment in city i at time *t*–3,
$\ln Pop1999_i$	log population in city i in the year 1999,
$East_i$	dummy for urban districts in the region of the former East Germany,
Trend	time trend,
$DumSeas_t$	dummies for the month of February to December ,
$WC2006_{i,t}$	dummy for the World Cup 2006 in the months of June and July 2006 in match venues,
ε	disturbance variable.

Equation (2)

$\ln Unemp_{i,t}$	log unemployment in city i at time *t*,
$\ln Pop1999_i$	log population in city i in the year 1999,
$LF1999_i$	share of gross value added of the agriculture, forestry and fisheries sector in city i in the year 1999,
$\Pr od1999_i$	share of gross value added of the manufactoring industry sector in city i in the year 1999,

$HV1999_i$	share of gross value added of the trade, hospitality industry and traffic sector in city i in the year 1999,
$DL1999_i$	share of gross value added of the public and private service industry sector in city i in the year 1999,
$East_i$	dummy for urban districts in the region of the former East Germany,
$Trend$	time trend,
$DumSeas_t$	dummies for the month of February to December,
WC_i	dummy for match venues of the World Cup 2006 (1 for match venue, 0 if not a match venue),
$Post_t$	dummy for period after the World Cup 2006 (1 for period after, 0 for period before the World Cup),
$PostWC_{i,t}$	dummy for match venues and period after the World Cup 2006, (1 if match venue and period after the World Cup, otherwise 0),
$TrWC_i$	trend variable for match venues of the World Cup 2006 (1 if match venue and 1st phase of the period under consideration, 2 if match venue and 2nd phase of the period, etc., otherwise 0),
$TrPost_t$	trend variable for period after the World Cup 2006 (1 if 1st phase after the World Cup, 2 if 2nd phase, etc. otherwise 0),
$TrPostWC_{i,t}$	trend variable for match venues and period after the World Cup 2006 (1 if match venue and 1st phase after the World Cup, 2 if match venue and 2nd phase after the World Cup, etc., otherwise 0),
ε	disturbance variable.

Employment effects of the Football World Cup 1974 in Germany

Florian Hagn and Wolfgang Maennig

(Accepted for publication in Labour Economics)

Abstract

This study demonstrates that the Football World Cup 1974 in Germany was not able to generate any medium to long-term employment effects that were significantly different from zero. It is the first work to examine the employment effects of Football World Cup tournaments. It is also the first work to undertake a multivariate analysis of the employment effects of a major sporting event outside of the USA. In addition, this study does not arbitrarily determine the time period for the potential positive effects of a major sporting event but instead examines several alternative periods. Furthermore, the study tests for method sensitivity by analysing the data set in parallel with the approaches used in the studies of sporting events in the USA as well as in a fourth modifying estimation approach. In contrast to the conclusions reached in comparable studies, the results are not regarded as a clear refutation of the positive effects of major sporting events.

Keywords: Regional economics; sports economics; Soccer World Cup; stadium impact.

1 Introduction[1]

Measured in terms of television and stadium spectators, the Football World Cup, together with the Olympic Games, represents the largest sporting event of our time. Every four years

[1] We thank an anonymous referee for his/ her valuable comments.

numerous nations apply to host the event, hoping as they do for positive political, psychological, sociological, cultural and economic effects (cf. Ritchie and Yangzhou, 1987 for the Olympic Games). The last-mentioned economic advantages appear to be particularly tangible in the form of income and employment effects and for this reason often form the focus of the applicants' argumentation. Ex-ante studies on the World Cup that examine this kind of effect can be found in Goodman and Stern (1994); Rahmann et al. (1997); Ahlert (2000); Khoza (2000) or Grant et al. (2003).

An ex-post study of the income and employment data of a Football World Cup on an econometric basis has so far only been undertaken by Baade and Matheson, 2004. In order to test the effects of the 1994 World Cup held in the USA, they use data on 73 metropolitan areas representing the largest MSAs in the US by population over the time period 1970-2000 to estimate income growth for host cities for each year from 1970 to 2000. The predicted income growth is then compared to the actual income growth that each MSA experienced in 1994. They also take into account both those trends and developments that affected all host cities equally, as well as developments specific to individual cities. They come to the conclusion that the actual growth for 1994 in most host cities diverges negatively from the growth thus modelled. 9 of the 13 host cities suffered declines in growth. Overall the 13 locations suffered losses on balance of over US$ 9 billion.[2] This kind of pessimism is in evidence not only for the Football World Cup, but by and large in many multivariate econometric studies relating to other major sporting events or venues. The majority of these studies suggest that the sporting events or sports stadia have little or no significant impact on regional income and/or employment (e.g. Baade, 1987; Baade and Dye, 1990; Baade, 1994;

[2] On ex-post World Cup analyses on the basis of questionnaires cf. Kim and Patrick (2005) who analyse Seoul residents´ perceptions on impacts of the 2002 World Cup. They find that three months after the event, "World Cup fever became diluted" (p. 37). Kim, Gursoy and Lee (2006) also arrive at unsatisfactory perceived economic results for Korea 2002, but by contrast to satisfactory cultural results. Stadium costs, which were perceived as high, are explained via social exchange theory in connection with the economic benefits, perceived as unsatisfactory. Szymanski (2002) collects data on the twenty largest economies measured by current GDP over the last thirty years, many of which have hosted the Olympic Games or the World Cup at least once during that period. Using a simple regression he comes to the conclusion that the growth of these countries was significantly lower in the years where they organised World Cups or Olympic Games.

Baade and Sanderson, 1997; Baade and Matheson, 2000, 2001, 2002). A number of works, particularly those of Coates and Humphreys (1999, 2000a and b, 2002, 2003a and b) or Teigland (1999), even arrive at significant negative effects. Reasons for the divergence between *ex ante* claims and *ex post* economic impacts are explored in Crompton (1995), Kesenne (1999), and Matheson (2006).

To our knowledge, only very few studies find significant positive effects of sport facilities and sport events *ex post*. Baim (1994) finds positive employment effects for Major League Baseball and Football for 15 cities in the USA. Kang and Perdue (1994) use a simple regression to find that the Olympic Games of Seoul 1988 led to 1 million additional arrivals and US$ 1.3 billion additional income from tourism in Korea. Hotchkiss et al. (2003) find significant positive employment effects on regions in Georgia (USA) affiliated or close to Olympic activities of the Atlanta Olympic Games in 1996, but they did not find significant wage effects. Tu (2005) finds significant positive effects of the FedEx Field (Washington) on real estate prices in its neighbourhood as do Ahlfeldt and Maennig (2007) for the "Olympic Arenas" on land values in Berlin. Carlino and Coulson (2004) examine the 60 largest MSAs in the USA and find that having a NFL team makes the cities "enjoy" rents which are 8 percent higher[3] – but wages which are not higher.[4] Finally, Jasmand and Maennig (in press)

[3] Many non-economists would interpret such rents as a case against sports. By contrast, Carlino and Coulson used the economist's idea of compensating differentials to interpret their findings as an argument for Major League Sports: the NFL presence makes the cities so much more attractive that the inhabitants are ready to pay higher rents (without having higher incomes). Taking the criteria of compensating differentials to the extreme, some of the "negative" findings of e.g. Coates and Humphreys could be interpreted as positive. And, even more embarrassingly, the mentioned "positive" effects on income etc. could also be interpreted as negative.

[4] In addition to econometric analysis with "realised data", studies have also been undertaken on the perceived benefits. Studies that examine the effects on an ex-post basis after the conclusion of the World Cup are rarer. Kim and Patrick (2005) analyse Seoul residents' perceptions on impacts of the 2002 World Cup. Using a factor analysis, they found that residents positively perceived the impacts on the factors "tourism resource development and urban revitalisation", "image enhancement and consolidation", "economic benefits", and interest in foreign countries or their cultures". They also found a negative perception on "disorder and conflict", "traffic problem and congestion", and "negative economic perception", whereby the authors attribute the latter to the concerns about public costs for the investment or future utilization of the ten new soccer stadia after the World Cup. They found that females, especially housewives, generally had a more positive perception. They also found that the perception may vary over time. Three months after the event, "World Cup fever became diluted" (p. 37). Kim, Gursoy and Lee (2006) also arrive at unsatisfactory perceived economic results, but by contrast to satisfactory cultural results. Stadium costs, which were perceived as high, are explained via social exchange theory in connection with the economic benefits, perceived as unsatisfactory.

show that the 1972 Olympic Games in Germany, its sport facilities and the activities in these facilities significantly affected incomes (but not employment) in the host regions.

The present work supplements previous publications in a number of respects. It is the first work that examines the long-term employment effects of World Cup tournaments on a multivariate basis. It is the first multivariate work that examines the employment effects of a major sporting event outside of the USA. This is particularly interesting set against the background of the different modes of functioning of the labour markets in the USA and Europe. It is also the first work which does not determine the time frame for the potential positive effects of a major sporting event in a more or less arbitrary fashion, but which instead examines several alternative periods. In addition it also tests for method sensitivity by running the dataset for the economic effects of major sporting events in parallel with the three methods usually applied in the studies of Baade and Matheson, Coates and Humphreys and Hotchkiss et al. (2003) as well as with a fourth method which attempts to overcome some potential shortcomings associated with the three studies. Section 2 elaborates on the data, section 3 presents methods and results, and section 4 concludes.

2 Data

We examine the employment effects of the 1974 Football World Cup on the 9 host cities (Berlin, Dortmund, Düsseldorf, Frankfurt am Main, Gelsenkirchen, Hamburg, Hannover, Munich and Stuttgart). The analytical framework for the study comprises the data of the 75 most densely populated municipalities in Germany in the year 1974, which also includes all the host cities. The maximum period of observation stretches from 1961 to 1988. By beginning the observation period in 1961 we use the longest pre-event period of time available. No adequate disaggregated data is available for the time before this date. Due to German reunification, the maximum period of observation ends in 1988 in order to avoid

structural breaks and distortions resulting from the reunification process (Buettner and Rincke, 2004).

Data on the number of people employed at NUTS3 level for the years 1961 and 1970 was published in the workplace census of the Statistisches Bundesamt (*Federal Statistical Office* various years). For the period 1976 to 1988 the data was taken from Bade (1997). The employment figures for the missing years were calculated by interpolating the regional share of employment and multiplying these by the corresponding national numbers, as Bade (1991) does, for example.[5]

Up to 1970 the population figures for the municipalities are taken from the publications of the Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (*Macroeconomic Accounting Working Group of the Federal States* various years a). From 1977 to 1988 the population figures are taken from the EUROSTAT database. For the years in between, the population figures were interpolated in proportion to the development of the population in Germany as a whole.

The relative incomes of the municipalities with regard to the corresponding national value were also taken from Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (various years a and b), which published the gross domestic product once in 1961 and every two years from 1964 onwards. From 1976 it also published the gross value added of the municipalities and rural districts. Given that in the year 1976 both the gross domestic product and the gross value added of the municipalities and rural districts were published, it was possible to ensure that these two values did not differ significantly from each other.

The share of gross value added of the economic sectors agriculture and manufacturing, as well as the sectors trade and transport in the municipalities, are taken from Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (various years a and b), where they were published once only in the year 1961 and every two years from the year 1964. The shares of

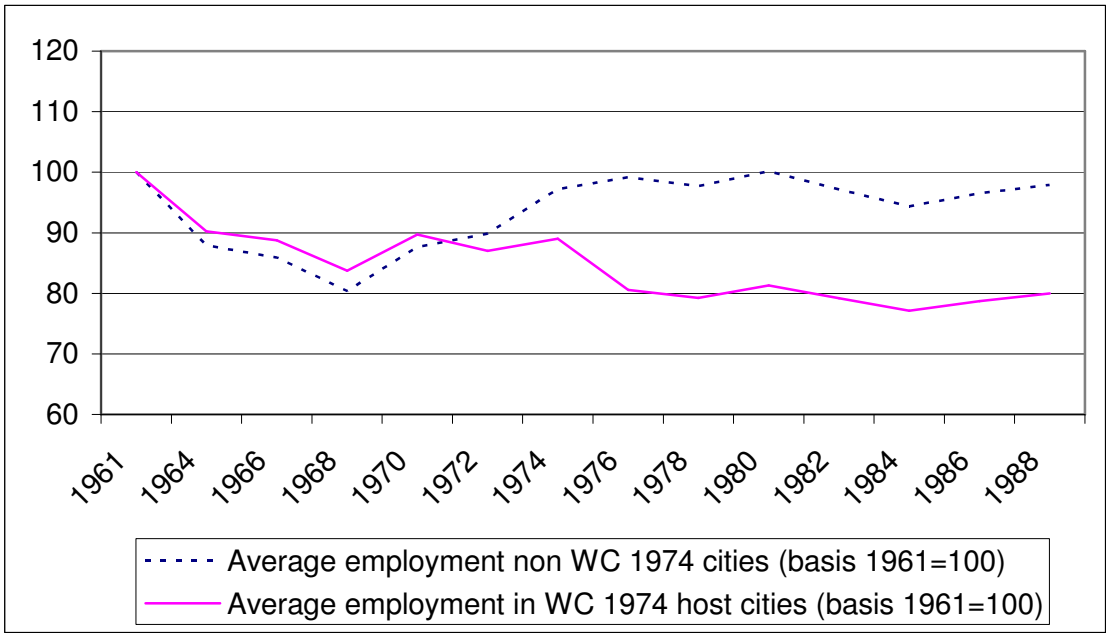
[5] Effects in the year of the 1974 World Cup can only be recorded 'smoothed'. However, from 1976 onwards 'unsmoothed' data are available, so that potential medium- and long-term effects can be recorded.

the economic sectors agriculture and manufacturing were aggregated because the data for the individual sectors were not published continually.

3 Methods and Results

As an initial look at the possible employment effects of the 1974 World Cup, Illustration 1 contrasts the progression of average employment in the host cities with employment in the other cities over the observation period.

Illustration 1: Comparison of employment development in the host cities and non-host cities



Data source: Statistisches Bundesamt (various years), Bade (1997), authors' own illustration.

Illustration 1 shows that the development of employment in the two groups progressed largely equally at the beginning. From 1970 however, employment in the host cities dropped below that of the non-host cities. From 1976 onwards the employment in the two groups runs largely parallel again. The question as to whether - whilst controlling for other exogenous influences

- the differences in employment development in the two groups are significantly related to the hosting of the 1974 World Cup will be examined below.

In a first step employment in the municipalities is modelled in accordance with the above-mentioned studies by Baade and Matheson in order to estimate the short-term employment effects:

$$\begin{aligned}\partial E_{i,t} = {} & \beta_0 + \beta_1 \sum_{i=1}^{n} \partial E_{i,t} \Big/ n_t + \beta_2 \partial E_{i,t-1} + \beta_3 \partial E_{i,t-2} + \beta_4 \partial E_{i,t-3} + \beta_5 \ln Pop_{i,t} + \beta_6 Y_{i,t} + \beta_7 Oil_t \\ & + \beta_8 NRW_i + \beta_9 BAY_i + \beta_{10} NDS_i + \beta_{11} HE_i + \beta_{12} SH_i + \beta_{13} BW_i + \beta_{14} HH_i + \beta_{15} BR_i + \beta_{16} BE_i \\ & + \beta_{17} RP_i + \beta_{18} T + \beta_{19} WM_{i,t} + \varepsilon\end{aligned} \tag{1}$$

with:

$\partial E_{i,t}$ = percentage change in the employment in city i at time t,

$\sum_{i=1}^{n} \partial E_{i,t} \Big/ n_t$ = average percentage change in employment in the sample at time t,

$\partial E_{i,t-1}$ = percentage change in employment in city i at time t-1,

$\partial E_{i,t-2}$ = percentage change in employment in city i at time t-2,

$\partial E_{i,t-3}$ = percentage change in employment in city i at time t-3,

$\ln Pop_{i,t}$ = log population in city i at time t,

$Y_{i,t}$ = relative income share of city i to national income as a percentage of the average for all cities in the sample at time t,

Oil_t = dummy for the oil crisis in the years 1974 and 1982,

NRW_i = dummy for the state of North Rhine-Westphalia,

BAY_i = dummy for the state of Bavaria,

NDS_i = dummy for the state of Lower Saxony,

HE_i = dummy for the state of Hesse,

SH_i = dummy for the state of Schleswig-Holstein,

BW_i = dummy for the state of Baden-Württemberg,

HH_i = dummy for the state of Hamburg,

BR_i = dummy for the state of Bremen,

BE_i = dummy for the state of Berlin,

RP_i = dummy for the state of Rhineland-Palatinate,

T = time trend,

$WM_{i,t}$ = dummy for the 1974 World Cup in the host cities,

ε = disturbance variable.

Table 1 shows the results of the estimate in column (1). The dummy variables for the individual states are not significant in any of the cases. They were nevertheless left in the model, in accordance with Baade and Matheson.[6] The variable $WM_{i,t}$, which measures the employment effects of the 1974 World Cup in the host cities, is shown to be not significantly different from zero.

In accordance with Coates and Humphreys, the effects of the 1974 World Cup are estimated in a second step in a "fixed effects" model.

(2) $\ln E_{i,t} = \beta x_{i,t} + \gamma WM_{i,t} + \mu_{i,t}$ whereby, $\mu_{i,t} = e_{i,t} + v_i$

[6] The state of Saarland functions as an omitted reference state for the dummy variables for the individual states.

with:

$\ln E_{i,t}$ = log employment in city i at time t,

$x_{i,t}$ = variable vector with log population in city i at time t, city-specific time trends and year-specific dummy variables,

$\mu_{i,t}$ = disturbance variable.

The difference between this model and that of Baade and Matheson is that the latter uses the average change in employment in the entire sample and the deviation of independent variables from the average in the sample in order to take into account general trends that affected all the cities equally. The model by Coates and Humphreys by contrast represents a "fixed effects" model which uses year dummy variables to register effects acting equally on all cities and city-specific time trends to register specific developments in individual cities.

Column (2) of Table 1 does not report the estimated values of the city-specific time trends and the year-specific dummy variables, although they prove to be significant in most cases.[7] In this estimation model too, the variable $WM_{i,t}$ is also seen to be not significantly different from zero.

In a third step the approach taken by Hotchkiss et al. (2003) for the 1996 Olympic Summer Games in Atlanta is used, which applies a standard "difference in difference" approach to register changes a) in the "intercept", i.e. the employment and wage levels and b) in the "slope", i.e. the growth of the two variables. The difference in difference approach compares the variables of interest before and after the occurrence of a specific event[8] in a region in which the variables changed with another region unaffected by the event. The approach

[7] Complete estimation results can be provided by the authors on request.

[8] This often relates to political events, such as the introduction of new laws. The classical application of the difference in difference approach originates from Card and Krueger (1994) who used it to examine the effects of minimum wages in two US-American states.

assumes that the development in the unaffected region would correspond to that in the affected region if the event had not happened. In contrast to the difference in difference approach, both Baade and Matheson and Coates and Humphreys simultaneously compare the development in the year of the World Cup in the host cities with the development in non-host cities as well as with the development in host cities in all the non-World Cup years (both before and after the World Cup). The essential difference between the approach developed by Hotchkiss et al. (2003) and the work of Baade and Matheson and Coates and Humphreys is that the latter test exclusively for short-term effects in the year of the tournament itself, where as the approach by Hotchkiss et al. (2003) also tests for long-term effects.

For the 1974 Football World Cup in Germany, the model by Hotchkiss et al. (2003) has the following form for employment effects in the levels:

$$(3)\quad \ln E_{i,t} = \beta_0 + \beta_1 LP_{i,t} + \beta_2 HV_{i,t} + \beta_3 \ln Pop1965_i + \beta_4 WM_i + \beta_5 POST_t + \beta_6 WM_i * POST_t + \varepsilon$$

with:

$LP_{i,t}$ = share of gross value added of agriculture and manufacturing in city i at time t,

$HV_{i,t}$ = share of gross value added of trade and transport in city i at time t,

$\ln Pop1965_i$ = log population in city i in the year 1965,

WM_i = dummy variable for the cities hosting the 1974 World Cup,

$POST_t$ = dummy for the period after the World Cup (post-event period),

ε = disturbance variable.

The variables $LP_{i,t}$, $HV_{i,t}$ and $\ln Pop1965_i$ are used to take into account observable differences between cities in the sample. $POST_t$ is a dummy variable for the period following the hosting of the World Cup. Analogously to the method used by Hotchkiss et al. (2003), the model is estimated with various assumptions about the post-event period beginning in the years between 1970 and 1978. The best result (largest F statistic) was achieved for a post-event period beginning in 1974. Column (3) in Table 1 represents the corresponding estimate results. The relevant variable $WM_i * POST_t$ is significantly negative. This indicates that the employment levels in the 9 host cities did develop significantly negative in comparison with the other cities in the sample.

To test for an effect of the 1974 World Cup on employment growth equation (4) is estimated in accordance with Hotchkiss et al. (2003) :

$$(4)\quad \begin{aligned}\ln E_{i,t} = {} & \alpha_0 + \alpha_1 LP_{i,t} + \alpha_2 HV_{i,t} + \alpha_3 \ln Pop1965_i + \alpha_4 T + \alpha_5 T * WM_i + \\ & \alpha_6 T * POST_t + \alpha_7 T * WM_i * POST_t + \varepsilon\end{aligned}$$

Once again the model was tested for different years in which the post-event period began. With this model the best fit (largest F statistic) was for the starting year 1972. However, for the purpose of comparability of the results with the other models Table 1 once again only shows the results for the post-event period from 1974. Column (4) in Table 1 shows that the relevant variable $t * WM_i * POST_t$ is significantly negative – the World Cup host cities demonstrate a significantly negative employment trend in comparison with the other, non-host cities.[9]

[9] For the post-event period from 1972 the variable $t * WM_i * POST_t$ also proves to be significantly negative (Coefficient: -0.027264**, Std. Error: 0.007142).

However, Bertrand et al. (2004) point out that difference in difference models tend to overestimate the significance of the results. In another research context,[10] Galster et al. (2004) also argue that a standard difference in difference approach can supply distorted results. For example, a city employment level which is different to the period before the World Cup can be due to the continuation of a previously existing positive trend. Accordingly in the following the estimations detailed above are extended to account for changes in both the levels and the trends. Moreover, this extended model also includes dummy variables for the various states in the Federal Republic of Germany as additional spatial control variables, so that different developments in the country's various regions can be taken into account.[11]

To account for potential effects that already occurred in the preparatory phase before the actual hosting of the World Cup in the year 1974 due to investments in stadia and infrastructure we estimate the model for the start of the post-event period between 1970 and 1978. This means that potentially delayed effects that only arose some time after the World Cup can also be registered.

By examining all the alternative assumptions on the duration of the post-event period between at least 2 and a maximum of 18 years (for the longest post-event period 1970-1988), our model, in contrast to previous models, is able to simultaneously register both the short-term and long-term employment effects of the 1974 World Cup.

Together with the extensions described above our model has the following form:

$$\begin{aligned}\ln E_{i,t} &= \beta_0 + \beta_1 WM_i + \beta_2 Post_t + \beta_3 PostWM_{i,t} + \beta_4 TrWM_i + \beta_5 TrPost_t + \beta_6 TrPostWM_{i,t} \\ &+ \beta_7 T + \beta_8 LP_{i,t} + \beta_9 HV_{i,t} + \beta_{10} \ln Pop_{i,t} + \beta_{11} Y_{i,t} + \beta_{12} NRW_i + \beta_{13} BAY_i + \beta_{14} NDS_i + \\ &\beta_{15} HE_i + \beta_{16} SH_i + \beta_{17} BW_i + \beta_{18} HH_i + \beta_{19} BR_i + \beta_{20} BE_i + \beta_{21} RP_i + \varepsilon. \end{aligned} \quad (5)$$

[10] They examined the effect of residential homes for disabled people on property prices in the neighbourhood.
[11] Here too, the Saarland serves as an omitted reference state for the dummy variables.

with:

$PostWM_{i,t}$ = post-event dummy variable for the cities hosting the 1974 World Cup (1 if host city and period after the World Cup, otherwise 0),

$TrWM_i$ = trend variable for the cities hosting the 1974 World Cup (1 if host city and 1st period of the observation period, 2 if host city and 2nd period of the observation period, etc., otherwise 0),

$TrPost_t$ = trend variable for the period after the World Cup (1 if 1st period after the World Cup, 2 if 2nd period after the World Cup etc., otherwise 0),

$TrPostWM_{i,t}$ = post-event trend variable for 1974 World Cup host cities (1 if host city and 1st period after the World Cup, 2 if host city and 2nd period after the World Cup etc., otherwise 0),

$\ln Pop_{i,t}$ = log population in city i at time t,

$Y_{i,t}$ = income share of city i at time t,

Column (5) of Table 1 lists the results in an exemplary way for the post-event period 1974-1988. Most variables prove to be significant at the 5% or 1% level and have the expected signs. The coefficient of WM_i is significantly negative, indicating that the World Cup host cities display a lower level of employment across the period 1961 until 1988 in comparison with the non-host cities. By contrast, the variable $PostWM_{i,t}$ which is relevant for the World Cup related effects in the employment levels is not significant. The variable for World Cup related effects in the employment trends $TrPostWM_{i,t}$ is also not significant.

For the other post-event periods examined, the results of the variables relevant for World Cup related employment effects, $PostWM_{i,t}$ and $TrPostWM_{i,t}$, are listed in Tables 2-6. The two variables prove to be significantly different from zero in none of the post-event periods we

examined. Thus the hypothesis that neither short-term nor long-term employment effects resulted from the hosting of the 1974 Football World Cup cannot be rejected.

Table 1: Estimates of equations (1) to (5), post-event period 1974 – 1988

Equation	(1)	(2)	(3)	(4)	(5)
Dependent Variable	$\partial E_{i,t}$	$\ln E_{i,t}$	$\ln E_{i,t}$	$\ln E_{i,t}$	$\ln E_{i,t}$
C	-2.683946 (3.919387)	-0.919290** (0.127336)	0.085829 (0.193566)	0.072946 (0.191430)	-0.554523* (0.226352)
$\sum_{i=1}^{n} \partial E_{i,t} / n_t$	0.982464** (0.032637)				
$\partial E_{i,t-1}$	0.106701** (0.017933)				
$\partial E_{i,t-2}$	0.109341** (0.023900)				
$\partial E_{i,t-3}$	0.031218 (0.019455)				
$\ln Pop_{i,t}$ or $\ln Pop1965_i$	0.165848 (0.312611)	1.023616** (0.010462)	0.925694** (0.015441)	0.942906** (0.014599)	0.952801** (0.017631)
$LP_{i,t}$			0.000404 (0.000900)	-0.000382 (0.000941)	0.004725** (0.000626)
$HV_{i,t}$			-0.001550 (0.002186)	-0.004000 (0.002242)	0.005243** (0.001570)
$Y_{i,t}$	-0.002178 (0.002217)				16.14821** (2.050756)
Oil_t	-0.581866* (0.276831)				
NRW_i	0.939786 (1.038396)				-0.168654** (0.057786)
BAY_i	1.649544 (1.085243)				0.129417* (0.060153)
NDS_i	1.168423 (1.079738)				0.049360 (0.060225)
HE_i	1.016793 (1.102596)				0.174150** (0.061385)
SH_i	0.606405 (1.113731)				-0.072287 (0.062114)
BW_i	1.301372 (1.078571)				0.212988** (0.059935)

HH_i	1.282819 (1.565882)				-0.524655** (0.091281)
BR_i	0.599471 (1.175127)				-0.122954 (0.066457)
BE_i	0.206476 (1.415940)				-0.443290** (0.079612)
RP_i	1.554397 (1.103832)				0.075215 (0.061260)
T_t	-0.008571 (0.016654)			-0.013560** (0.003392)	-0.017104** (0.002439)
WM_i			0.222968** (0.047549)		-0.118500* (0.056526)
$POST_t$			0.091251** (0.024312)		0.115107** (0.023177)
$WM_i * POST_t$ or $PostWM_{i,t}$			**-0.198408** (0.052804)**		**-0.045967 (0.064632)**
$T * WM_i$ or $TrWM_i$				0.021121** (0.005848)	0.013185* (0.006715)
$T * POST_t$ or $TrPost_t$				0.012301** (0.002545)	0.021396** (0.002922)
$T * WM_i * POST_t$ or $TrPostWM_{i,t}$				**-0.021648** (0.005646)**	**-0.015136 (0.008184)**
$WM_{i,t}$	**-1.537287 (0.964414)**	**0.050199 (0.048046)**			
Adj. R^2	0.645874	0.975136	0.891956	0.891894	0.958337

*or, respectively ** = significant at the 5% or 1% level

Table 2: Results of employment effects from the 1974 World Cup, post-event period from 1970

Period to	Adj. R^2	Variable	Coefficient (Std. Error)
1972	0.958308	$PostWM_{i,t}$	-0.037439 (0.117977)
		$TrPostWM_{i,t}$	0.028583 (0.046747)
1974	0.957073	$PostWM_{i,t}$	0.010220 (0.099297)
		$TrPostWM_{i,t}$	-0.000198 (0.025923)
1976	0.958451	$PostWM_{i,t}$	0.044195 (0.088056)
		$TrPostWM_{i,t}$	-0.015167 (0.018558)
1978	0.958974	$PostWM_{i,t}$	0.050022 (0.081676)
		$TrPostWM_{i,t}$	-0.017222 (0.015446)
1980	0.959253	$PostWM_{i,t}$	0.041197 (0.077417)
		$TrPostWM_{i,t}$	-0.014936 (0.013901)
1982	0.959383	$PostWM_{i,t}$	0.035864 (0.074344)
		$TrPostWM_{i,t}$	-0.013668 (0.013048)
1984	0.959417	$PostWM_{i,t}$	0.032779 (0.072017)
		$TrPostWM_{i,t}$	-0.013013 (0.012537)
1986	0.959436	$PostWM_{i,t}$	0.033656 (0.070178)
		$TrPostWM_{i,t}$	-0.013190 (0.012207)
1988	0.959277	$PostWM_{i,t}$	0.035661 (0.068813)
		$TrPostWM_{i,t}$	-0.013528 (0.012003)

*or, respectively ** = significant at the 5% or 1% level

Table 3: Results of employment effects from the 1974 World Cup, post-event period from 1972

Period to	Adj. R^2	Variable	Coefficient (Std. Error)
1974	0.955852	$PostWM_{i,t}$	0.080795 (0.117635)
		$TrPostWM_{i,t}$	-0.026977 (0.047020)
1976	0.957079	$PostWM_{i,t}$	0.089852 (0.094718)
		$TrPostWM_{i,t}$	-0.033487 (0.024350)
1978	0.957631	$PostWM_{i,t}$	0.074238 (0.084277)
		$TrPostWM_{i,t}$	-0.026859 (0.016695)
1980	0.958009	$PostWM_{i,t}$	0.051945 (0.077959)
		$TrPostWM_{i,t}$	-0.019418 (0.013251)
1982	0.958198	$PostWM_{i,t}$	0.039718 (0.073676)
		$TrPostWM_{i,t}$	-0.015959 (0.011479)
1984	0.958286	$PostWM_{i,t}$	0.032536 (0.070549)
		$TrPostWM_{i,t}$	-0.014224 (0.010479)
1986	0.958378	$PostWM_{i,t}$	0.030851 (0.068121)
		$TrPostWM_{i,t}$	-0.013903 (0.009869)
1988	0.958291	$PostWM_{i,t}$	0.030943 (0.066308)
		$TrPostWM_{i,t}$	-0.013944 (0.009493)

*or, respectively ** = significant at the 5% or 1% level

Table 4: Results of employment effects from the 1974 World Cup, post-event period from 1974

Period to	Adj. R^2	Variable	Coefficient (Std. Error)
1976	0.957058	$PostWM_{i,t}$	0.007645 (0.112761)
		$TrPostWM_{i,t}$	-0.041720 (0.045727)
1978	0.957729	$PostWM_{i,t}$	-0.016915 (0.090715)
		$TrPostWM_{i,t}$	-0.027305 (0.023289)
1980	0.957981	$PostWM_{i,t}$	-0.040220 (0.080626)
		$TrPostWM_{i,t}$	-0.017560 (0.015539)
1982	0.958238	$PostWM_{i,t}$	-0.048632 (0.074354)
		$TrPostWM_{i,t}$	-0.014739 (0.011910)
1984	0.958412	$PostWM_{i,t}$	-0.051806 (0.070032)
		$TrPostWM_{i,t}$	-0.013874 (0.009972)
1986	0.958461	$PostWM_{i,t}$	-0.049513 (0.066919)
		$TrPostWM_{i,t}$	-0.014436 (0.008856)
1988	0.958337	$PostWM_{i,t}$	-0.045967 (0.064632)
		$TrPostWM_{i,t}$	-0.015136 (0.008184)

*or, respectively ** = significant at the 5% or 1% level

Table 5: Results of employment effects from the 1974 World Cup, post-event period from 1976

Period to	Adj. R^2	Variable	Coefficient (Std. Error)
1978	0.955812	$PostWM_{i,t}$	-0.086321 (0.112568)
		$TrPostWM_{i,t}$	-0.011314 (0.045983)
1980	0.956334	$PostWM_{i,t}$	-0.096280 (0.090127)
		$TrPostWM_{i,t}$	-0.005000 (0.023234)
1982	0.956689	$PostWM_{i,t}$	-0.093436 (0.079541)
		$TrPostWM_{i,t}$	-0.006164 (0.015172)
1984	0.956930	$PostWM_{i,t}$	-0.089199 (0.073049)
		$TrPostWM_{i,t}$	-0.007613 (0.011332)
1986	0.957080	$PostWM_{i,t}$	-0.081023 (0.068611)
		$TrPostWM_{i,t}$	-0.009845 (0.009237)
1988	0.957072	$PostWM_{i,t}$	-0.073202 (0.065424)
		$TrPostWM_{i,t}$	-0.011573 (0.008007)

*or, respectively ** = significant at the 5% or 1% level

Table 6: Results of employment effects from the 1974 World Cup, post-event period from 1978

Period to	Adj. R^2	Variable	Coefficient (Std. Error)
1980	0.955848	$PostWM_{i,t}$	-0.080934 (0.110582)
		$TrPostWM_{i,t}$	0.004984 (0.045560)
1982	0.956198	$PostWM_{i,t}$	-0.071209 (0.088237)
		$TrPostWM_{i,t}$	-0.001125 (0.022892)
1984	0.956476	$PostWM_{i,t}$	-0.065185 (0.077679)
		$TrPostWM_{i,t}$	-0.003965 (0.014781)
1986	0.956649	$PostWM_{i,t}$	-0.055861 (0.071243)
		$TrPostWM_{i,t}$	-0.007132 (0.010870)
1988	0.956672	$PostWM_{i,t}$	-0.048050 (0.066868)
		$TrPostWM_{i,t}$	-0.009196 (0.008705)

*or, respectively ** = significant at the 5% or 1% level

In order to exclude the possibility that our results might be misleading - in as much as although the host cities did not develop in a significantly different way from the non-host cities, Germany as a whole (within the territory of the Federal Republic of the time) might nevertheless have experienced positive employment effects, perhaps due to spill-over effects from the World Cup on non-host cities - employment in the Federal Republic of Germany was used as a dependent variable in a regression for the years 1961 to 1988. The independent variables were the lagged employment, the real gross domestic product, the real wage levels[12], a dummy for the oil crises in 1974 and 1982, a time trend and a dummy for the World Cup in 1974. Data on employment figures, gross domestic product and wages for the entire

[12] Here we used the average gross monthly wage of workers in manufacturing industry.

observation period from 1960 to 1990 were taken from the data provided by the Statistisches Bundesamt (2007a, 2007b, 2007c).[13] The variable for employment effects of the World Cup, $WM74_t$ proved to be not significantly different from zero.[14]

4 Conclusions and economic policy implications

Our estimates on the basis of four different estimation approaches come to the conclusion that the 1974 Football World Cup held in Germany was not able, neither in the short nor in the long term, to generate employment effects in the host cities that were significantly positively different from zero. The study and its results are unique to the extent that for the first time, employment effects of a Football World Cup or a major sporting event outside of the USA have been examined in a multivariate study. Nevertheless the results are in line with the evidence from studies of sport events. Our results not only correspond with those of Baade and Matheson (2004), which were unable to prove any income effects significantly different from zero in the host cities of the 1994 Football World Cup in the USA; they also correspond with almost all ex post multivariate income and employment analyses of major sporting events and venues which, with the exception of Hotchkiss et al. (2003) for the 1996 Olympic Summer Games in Atlanta, show no income and/or employment effects that are significantly positively different from zero.

We nevertheless hesitate to share the concern expressed both implicitly and explicitly in many of the comparable sports economy studies that the positive effects of the sporting events claimed by many sports protagonists are not true and that (bids to host) major sporting events are inefficient from an economic point of view, for three reasons. Firstly, other effects such as the feelgood benefit for the population and/or difficult to quantify image effects may be

[13] The gross domestic product and the wages were adjusted for price using the cost of living index for 4-person households of blue-collar workers and medium-earning white-collar workers (basis 1995=100) (Statistisches Bundesamt (2007d).

[14] Details of the estimate are available from the authors on request.

sufficiently important to justify major sporting events and/or subsidies for them via public funds. In both of the above-mentioned fields of possible effects, sporting economic empiricism is still in its infancy.[15]

Secondly, the treatment group in the selected form of municipality areas might be too large and too highly aggregated to statistically prove significant effects. Studies on the effects of major sports venues on property values in surrounding areas indicate a maximum affect area of around 3,000 metres (Tu, 2005).

Thirdly, the employment effects claimed by the sports protagonists, which are usually based on corresponding ex-ante impact studies, cannot strictly speaking be rejected by testing for significant differences from zero. Their rejection would be possible if the postulated values were tested directly. However, this would not be regularly successful in the relevant studies because the effects claimed are so close to zero (Baade and Matheson 2006).[16] To illustrate this: the value of -0.045 for $PostWM_{i,t}$ in Table 1, with a standard deviation of 0.0646 is usually interpreted to mean that there are no positive employment results. Sports protagonists can argue that with the existing estimates positive employment effects of up to around (-0.045 + 2 * 0.0646=) 0.0842 cannot be refuted. This would nevertheless correspond, ceteris paribus, to an employment impulse of an increase of 40,923 jobs in the average employment levels in the host cities in the period between 1974 and 1988.

[15] For the measurement of the experiential benefit of the Olympic Games in London 2012 cf. Atkinson et al. (2006); for the measurement of the willingness to pay for the Soccer World Cup 2006 (before and after the event) cf. Heyne et al. (2007).

[16] Baade and Matheson (2006) test hypotheses both against a zero impact and against the impact claimed by sports promoters. They are able to reject at a 5% significance level any promoters' claims of an economic impact of more than $300 million from the game.

Literature

Ahlert G. The Economic Effects of the Soccer World Cup 2006 in Germany with Regard to Different Financing. Economic System Research 2000;13(1); 109-127.

Ahlfeldt, G., Maennig, W. (2007). Impact of Sports Arenas on Land Values: Evidence from Berlin. Working Paper, Hamburg University, Department Economics and Business.

Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder. Bruttoinlandsprodukt und Bruttowertschöpfung der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland (*Gross domestic product and gross value added of the municipalities and rural districts in the Federal Republic of Germany*). Stuttgart; 1976.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder. Bruttoinlandsprodukt der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland (*Gross domestic product of the municipalities and rural districts in the Federal Republic of Germany*). Stuttgart; various years, a.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder. Bruttowertschöpfung der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland (*Gross value added of the municipalities and rural districts in the Federal Republic of Germany*). Stuttgart; various years, b.

Atkinson G, Mourato S, Szymanski S. Quantifying the "un-quantifiable": Valuing the intangible Impacts of Hosting the Summer Olympic Games. London. Unpublished manuscript London School of Economics and Imperial College London 2006.

Baade RA. Is There an Economic Rationale for Subsidizing Sports Stadiums? Heartland Policy Study 1987;No.13.

Baade RA. Stadiums, Professional Sports, and Economic Development: Assessing the Reality. The Heartland Institute Policy Study 1994;62.

Baade RA, Dye R. The Impact of Stadiums and Professional Sports on Metropolitan Area Development. Development Growth and Change 1990;Spring 21(2); 1-14.

Baade RA, Matheson VA. An Assessment of the Economic Impact of the American Football Championship, the Super Bowl, on Host Communities. Reflets et Perspectives 2000;39, Number 2-3; 35-46.

Baade RA, Matheson VA. Home Run or Wild Pitch? Assessing the Economic Impact of Major League Baseball's All-Star Game. Journal of Sports Economics 2001;2; 307-327.

Baade RA, Matheson VA 2002. Bidding for the Olympics: Fool's Gold? In: Barros C, Ibrahim M (Eds), Transatlantic Sport. London; 2002. p. 127-151.

Baade RA, Matheson VA. The Quest for the Cup: Assessing the Economic Impact of the World Cup. Regional Studies 2004;38; 343-354.

Baade RA, Matheson VA. Padding Required: Assessing the Economic Impact of the Super Bowl. European Sports Management Quarterly 2006;Vol 6:4; 353-374.

Baade RA, Sanderson RA 1997. The Employment Effect of Teams and Sports Facilities. In: Noll RG, Zimbalist A (Eds), Sports, Jobs, and Taxes. The Economic Impact of Sports Teams and Stadiums. Washington D.C.; 1997. p. 92-118.

Bade FJ. Regionale Beschäftigungsprognose 1995 (*Regional employment forecast 1995*). Bonn; 1991.

Bade FJ. Sozialversicherungspflichtig Beschäftigte (*Employed persons with mandatory social insurance*). Dortmund; 1997.

Baim DV. The Sports Stadium as a Municipal Investment. Westport (Conn.): Greenwood Press; 1994.

Bertrand M, Duflo E, Mullainathan S. How Much Should We Trust in Difference-in-Difference Estimates? NBER Working Paper 2004;No.8841; http://www.nber.org/papers/w8841 on 11.09.2006.

Buettner T, Rincke J. Labour Market Effects of Economic Integration – The Impact of Re-Unification in German Border Regions. CESifo Working Paper 2004;No.1179.

Card D, Krueger AB. Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania. American Economic Review 1994;84(4); 772-793.

Carlino G, Coulson NE. Compensating Differentials and the social benefits of the NFL. Journal of Urban Economics 2004;56; 25-50.

Coates D, Humphreys BR. The Growth Effects of Sport Franchises, Stadia, and Arenas. Journal of Policy Analysis and Management 1999;18, No.4; 601-624.

Coates D, Humphreys BR. The Stadium Gambit and Local Economic Development. Regulation: The Cato Review of Business and Government 2000a;23(2); 15-20.

Coates D, Humphreys BR. The Economic Consequences of Professional Sports, Strikes and Lockouts. Southern Economic Journal 2000b;67(3); 737-747.

Coates D, Humphreys BR. The Economic Impact of Postseason Play in Professional Sports. Journal of Sports Economics 2002;3; 291-299.

Coates D, Humphreys BR. The Effect of Professional Sports on Earnings and Employment in the Services and Retail Sectors in US Cities. Regional Science and Urban Economics 2003a;33(2); 175-198.

Coates D, Humphreys BR. Professional Sports Facilities, Franchises and Urban Economic Development. Public Finance and Management 2003b;3; 335-357.

Crompton JL. Economic Impact Analysis of Sports Facilities and Events: Eleven Sources of Misapplication. Journal of Sports Management 1995;9(January); 14-35.

EUROSTAT. New Cronos Data Base. Luxembourg; 2001.

Galster G, Tatian P, Pettit K. Supportive Housing and Neighborhood Property Value Externalities. Land Economics 2004;80(1); 33-54.

Goodman R, Stern R. Chicago Hosts Opening Game of World Cup. Illinois Parks and Recreation 1994;25, No.3.

Grant T, Kessel, Feinstein. Economic Impact of the SA 2010 FIFA World Cup, Executive Summary 2003. http://www.polity.org.za/pdf/WorldCup2010.pdf on 17.10.2006.

M. Heyne, W. Maennig, B. Suessmuth (2007), Experience goods and biases in CVM – The case of Soccer WC 2006. Working Paper Hamburg, Department Economics and Business.

Hotchkiss J, Moore RE, et al.. Impact of the 1996 Summer Olympic Games on Employment and Wages in Georgia. Southern Economic Journal 2003;69; 691-704.

Jasmand S., Maennig W. Regional Income and Employment Effects of the 1972 Munich Olympic Summer Games, in press: Regional Studies

Kang YS, Perdue R 1994. Long-term impacts of a mega-event on international tourism to the host country: a conceptual model and the case of the 1988 Seoul Olympics. In: Uysal M (Eds), Global Tourism Behaviour. New York; 1994. p. 205-255.

Kesenne S 1999. Miscalculations and Misinterpretations in Economic Impact Analysis. In: Jeanreaud C (Eds), The Economic Impact of Sports Events. Neuchatel; 1999. p. 29-40.

Khoza I. World Cup Bid Speech, South African Football Association 2000; http://www.safa.org.za/html/bid_news.html on 2.7.2002.

Kim HJ, Gursoy D, et al.. The impact of the 2002 World Cup on South Korea: Comparison of pre- and post-games. Journal of Tourism Management 2006;27; 86-96.

Kim SS, Patrick JF. Residents´ perceptions on impacts of the FIFA 2002 World Cup: the case of Seoul as a host city. Tourism Management 2005;26; 25-38.

Matheson VA. Mega-Events: The effect of the world`s biggest sporting events on local, regional, and national economies. IASE working paper 2006;06-22.

Rahmann B, et al.. Sozio-ökonomische Analyse der Fußball-Weltmeisterschaft 2006 in Deutschland (*Socio-economic analysis of the Football World Cup 2006 in Germany*). Paderborn; 1997.

Ritchie JRB, Yangzhou J. The Role and Impact of Mega-Events and Attractions on National and Regional Tourism: A Conceptual and Methodological Overview. Paper for 37th AIST Congress, Association Internationale d'Experts Scientifiques du Tourisme, August, Calgary ; 1987.

Statistisches Bundesamt. Fachserie C, Arbeitsstättenzählung (*Thematic Series C, Workplace census*). Stuttgart et al.; various years.

Statistisches Bundesamt. Erwerbspersonen und Erwerbstätige nach Geschlecht (*Employed and self-employed persons according to sex*). 2007a; http://www.destatis.de/indicators/d/lrerw01ad.htm on 27.01.2007.

Statistisches Bundesamt. Bruttoinlandsprodukt, Bruttonationaleinkommen, Volkseinkommen (*Gross domestic product, gross national income, national income*). 2007b; http://www.destatis.de/themen/d/thm_volksw.php on 27.01.2007.

Statistisches Bundesamt. Durchschnittliche Bruttomonatsverdienste der Arbeiter/-innen im Produzierenden Gewerbe (*Average gross monthly earnings of workers in manufacturing industry*). 2007c; http://www.destatis.de/indicators/d/lrver03ad.htm on 27.01.2007.

Statistische Bundesamt. Preisindizes für die Lebenshaltung und Index der Einzelhandelspreise (*Price indices for the cost of living and index of retail trade prices*). 2007d; http://www.destatis.de/themen/d/thm_preise.php on 27.01.2007.

Szymanski S. The economic Impact of the World Cup. World Economics 2002;3(1); 169-177.

Teigland J. Mega-Events and Impacts on Tourism: The Predictions and Realities of the Lillehammer Olympics. Impact assessment and project appraisal 1999;17; 305-317.

Tu CC. How does a new sport stadium affect housing values? The case of FedEx Field. Land Economics 2005;81(3); 379-39.

Income Effects of Large Stadia Projects in Germany

Florian Hagn

(Accepted for publication in Sportonomics)

Abstract

This study analyses on the basis of a multivariate analysis *ex post* income effects of the largest stadia projects in West Germany in the period 1961–2004. It is the first study on stadia outside the USA that examines *ex post* the economic effects of stadia on a multivariate basis. In addition to methods usually applied in studies in the USA concerning economic effects of stadia and sporting events, an extended "difference-in-difference" estimate is used in order to compare income in cities with stadia projects and income in cities without stadia projects. The results point to the potentially positive income effects of such stadia projects.

Keywords: Income; regional economics; sports economics; stadium impact; sports events.

1 Introduction[1]

The allocation of the 2006 FIFA World Cup initiated a stadia project boom in Germany. With the objective of being appointed as one of the venues for the World Cup, the stadia in several German cities were renovated, expanded or newly equipped. These stadia projects were partially financed by public funds.[2] Likewise, for the 1974 FIFA World Cup in Germany, public investments were made in the stadia (273 Mio. DM). However, the present situation of

[1] The author thanks an anonymous referee for his/her valuable comments.

[2] For the 12 venues for the Soccer World Cup 2006 a total of 1.401 Mio. € was invested. These costs were carried by the federal government (247.1 Mio. €), states (85.5 Mio. €), cities (208.6 Mio. €), clubs (437.1 Mio. €) and other investors (421.7 Mio. €) (cf. FIFA, 2004).

the town councils has changed considerably from that in the 1970s (Dietl and Pauli, 1999, p. 12). On the one hand, due to higher demands for comfort and equipment, the building outlay of modern stadia has increased many times over. Today a single project like the renovation of the Olympic Stadium in Berlin costs much more than the total investments into the stadia on the occasion of the FIFA World Cup in 1974. On the other hand, as many town councils already have a budget deficit, the financing of stadia projects by public funds necessarily affects the economy in other parts of the community or leads to tax increases. In view of this different situation, it is questionable whether or not public funding of expensive stadia projects and the consequent public subsidy for soccer teams are economically justified. The people who advocate the stadia projects regularly claim, in order to legitimise the high costs of building and modernisation, that the soccer stadia and their home teams strongly boost the economy in the respective cities and regions. The studies by Schröder (1987), Hamm (1996), Willms and Fischer (2001), and Friedrich (2001) are examples of *ex ante* studies that pledge positive economic consequences resulting from such stadia projects.

In contrast, *ex post* studies are usually more restrained in their assessment of the effects of stadia and sporting events. The majority of these studies suggest that stadia and sporting events have little or no significant effect on regional income or employment (Baade, 1987; Baade and Dye, 1990; Baade, 1994; Baade and Sanderson, 1997; Baade and Matheson, 2000, 2001, 2003). A number of works, particularly those of Baade and Mathson (2004), Coates and Humphreys (1999; 2000a,b; 2002; 2003a,b) or Teigland (1999) have even concluded that they have significant negative effects.

Only very few studies find significant positive effects of sport facilities and sport events *ex post*. Baim (1994) has found positive employment effects from the presence of major league baseball and football teams for 15 cities in the USA. Kang and Perdue (1994) used a simple regression to find that the Olympic Games of Seoul 1988 led to 1 million additional arrivals and US$ 1.3 billion additional income from tourism in Korea. Hotchkiss *et al.* (2003) have

found significant positive employment effects on regions in Georgia (USA) affiliated or close to the Olympic activities of the Atlanta Olympic Games in 1996, but they did not find significant wage effects. Tu (2005) has found significant positive effects of the FedEx Field (Washington) on real estate prices in its neighbourhood as have Ahlfeldt and Maennig (2007a,b) for the "Olympic Arenas" on land values in Berlin. Carlino and Coulson (2004) have examined the 60 largest MSAs in the USA and have found that having a NFL-team makes the cities "enjoy" rents which are 8 percent higher, but wages which are not higher.[3]

The present work supplements previous publications in a number of respects. It is the first work that examines the effects of sports stadia in Germany on an *ex post* basis. It is the first multivariate study to examine the income effects of stadia outside the USA. It also tests for method sensitivity by running the dataset in parallel with the methods usually used by Coates and Humphreys (1999; 2000a,b; 2002; 2003a,b) and Hotchkiss *et al.* (2003) as well as an additional method that so far has not been used in conjunction with the economic effects of sports stadia and sports events.

Section 2 elaborates on the data; section 3 describes the methods and results. Section 4 draws conclusions.

2 Data

This study analyses the income effects of the 30 largest stadia projects (see Table 1) in West Germany in the period 1961–2004. It uses data for all German urban districts for the years 1961–2004.

[3] Many non-economists would interpret such rents as a case against sports. By contrast, Carlino and Coulson used the economist's idea of compensating differentials to interpret their findings as an argument for major league sports: the NFL presence makes the cities so much more attractive that the inhabitants are ready to pay higher rents (without having higher incomes). Taking the criteria of compensating differentials to the extreme, some of the "negative" findings of, for instance Coates and Humphreys could be interpreted as positive. And, even more embarrassingly, the "positive" effects on income etc. could also be interpreted as negative.

The income data of the German urban districts were taken from "Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder" (various years a and b), which published the gross domestic product (GDP) once in 1961 and every two years from 1964 onwards. From 1978 onwards, only the gross value added (GVA) has been published. Using the corresponding national values, all income data have been converted into GDP and GVA shares for the German urban districts to avoid structural breaks arising from the changes in the calculation methods of the data. Given that in 1976 both the GDP and the GVA of the urban districts were published, it was possible to ensure that these two values did not differ significantly from each other. From 1998 onwards, data on the GVA were taken from "Arbeitskreis Volkwirtschaftliche Gesamtrechnung der Länder" (2007). It should be noted that the dependent variable income is not wage income, but includes company profits, which is important when interpreting the results derived in later stages.

The data on the number of people employed at NUTS3 level for the years 1961 and 1970 were taken from the workplace census of the Statistisches Bundesamt (various years). For the period 1977–1992, the data were taken from Bade (1997, 2006). The employment figures for the missing years were calculated by interpolating the regional share of employment and multiplying these by the corresponding national numbers (see Bade, 1991). From 1993 onwards the data were taken from Bundesagentur für Arbeit (2007).

Up to 1970 the population figures for the urban districts are taken from the publications of the Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (various years a). From 1978 to 2004 the population figures are taken from the EUROSTAT database (EUROSTAT, 2001). For the intervening years, the population figures were interpolated in proportion to the development of the population in Germany as a whole.

The share of GVA of the agricultural and manufacturing sectors, as well as the sectors for trade and transport in the urban districts, are taken from Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (various years a and b), where they were published once in 1961

and every two years from 1964 onwards. From 1998 onwards, the data were published by Arbeitskreis Volkwirtschaftliche Gesamtrechnung der Länder (2007). The shares of the agricultural and manufacturing sectors were aggregated because the data for the individual sectors were not published continually.

Table 1: Stadia projects

City	Stadium	Year opened	Cost	Project
Düsseldorf	Rheinstadion	1972	53.64 Mio. DM	Modification
München	Olympiastadion	1972	135–137 Mio. DM	New
Gelsenkirchen	Parkstadion	1973	56–62 Mio. DM	New
Stuttgart	Neckarstadion	1973	23 Mio. DM	Modification
Berlin	Olympiastadion	1974	27 Mio. DM	Modification
Dortmund	Westfalenstadion	1974	31.1 Mio. DM	New
Frankfurt	Waldstadion	1974	28.3 Mio. DM	Modification
Hamburg	Volksparkstadion	1974	15 Mio. DM	Modification
Hannover	Niedersachsenstadion	1974	26 Mio. DM	Modification
Köln	Müngersdorfer Stadion	1975	44.5 Mio. DM	New
Bochum	Ruhrstadion	1979	26 Mio. DM	New
Nürnberg	Frankenstadion	1991	68.1 Mio. DM	Modification
Karlsruhe	Wildparkstadion	1993	45 Mil. DM	Modification
Stuttgart	Gottlieb-Daimler-Stadion	1993	53.5 Mio. DM	Modification
Wuppertal	Wuppertaler Stadion am Zoo	1993	30 Mio. DM	Modification
Kaiserslautern	Fritz-Walter-Stadion	1994	63 Mio. DM	Modification
Mannheim	Carl-Benz-Stadion	1994	28 Mio. DM	New
Braunschweig	Eintracht-Stadion	1995	25 Mio. DM	Modification
Dortmund	Westfalenstadion	1996	60 Mio. DM	Modification
Dortmund	Westfalenstadion	1998	45 Mio. DM	Modification
Hamburg	AOL-Arena	2000	97 Mio. €	New
Gelsenkirchen	Arena auf Schalke	2001	183–192 Mio. €	New
Stuttgart	Gottlieb-Daimler-Stadion	2001	51.6 Mio. €	Modification
Bremen	Weserstadion	2002	13 Mio. €	Modification
Wolfsburg	Volkswagen-Arena	2002	53 Mio. €	New
Dortmund	Westfalenstadion	2003	31–36 Mio. €	Modification
Berlin	Olympiastadion	2004	242 Mio. €	Modification
Düsseldorf	LTU-Arena	2004	218 Mio. €	New
Köln	RheinEnergieStadion	2004	119.5 Mio. €	New
Mönchengladbach	Stadion im Borussia Park	2004	86.9 Mio. €	New

Source: FIFA (2004), Pauli (2001), Skrentny (2001).

3 Methods and results

In a first step the possible income effects of stadia projects in Germany are estimated in accordance with the studies by Coates and Humphreys (1999; 2000a,b; 2002; 2003a,b) by using a "fixed effects" model.

$$(1)\quad Y_{i,t} = \beta x_{i,t} + \gamma PStad10_{i,t} + \varepsilon \qquad \varepsilon = e_{i,t} + v_i$$

where

$Y_{i,t}$ = income in city *i* at time *t*,

$x_{i,t}$ = variable vector with log population in city *i* at time *t*, city-specific time trends and year-specific dummy variables,

$PStad10_{i,t}$ = dummy variable for the 10-year period after the opening or the re-opening of a stadium,

ε = disturbance variable.

This model uses year dummy variables to register effects acting equally on all cities and city-specific time trends to register specific developments in individual cities. Possible income effects of stadia projects are captured by the dummy $PStad10_{i,t}$, which equals 1 for the 10-year period following the opening of a stadium.[4]

Table 2 shows the results of the estimate in column (1). The estimated values of the city-specific time trends and the year-specific dummy variables are not reported, although they

[4] Coates and Humphreys (1999; 2000a,b; 2002; 2003a,b) use such a dummy variable for the 10-year period after the opening of a stadia. Baade and Sanderson (1997) also assume that the "novelty effect" of stadia on the local economy lasts for 10 years.

have proved to be significant in most cases.[5] The stadia-variable $PStad10_{i,t}$ is significantly positive with a value of 0.191817. This means that for the 10-year period after the opening of stadia, positive income effects of 0.19 percentage points can be expected.

In a second step the approach taken by Hotchkiss *et al.* (2003) for the 1996 Olympic Summer Games in Atlanta is used, which applies a standard difference-in-difference approach to register changes: a) in the "intercept", i.e. the employment and wage levels; and b) in the "slope", i.e. the growth of the two variables. The difference-in-difference approach compares the variables of interest before and after the occurrence of a specific event in a region in which the variables changed with another region unaffected by the event.[6] The approach assumes that the development in the unaffected region would correspond to that in the affected region if the event had not happened.

The essential difference between this approach and the model of Coates and Humphreys is that the latter test exclusively for effects in the 10-year period after the opening of a stadia, whereas the model of Hotchkiss *et al*. (2003) also tests for long-term effects that last until the end of the observation period.[7] To estimate the income effects of realised stadia projects in Germany the model by Hotchkiss *et al*. (2003) has the following form:

$$(2)\quad Y_{i,t} = \beta_0 + \beta_1 \ln AvPop_i + \beta_2 LP_{i,t} + \beta_3 HV_{i,t} + \beta_4 RU_t + \beta_5 Stad_i + \beta_6 PStad_{i,t} + \varepsilon$$

where

$\ln AvPop_{i,t}$ = log of the average population in city *i* during the observation period,

[5] Complete estimation results can be provided by the author on request.

[6] This often relates to political events, such as the introduction of new laws. The classical application of the difference-in-difference approach originates from Card and Krueger (1994) who used it to examine the effects of minimum wages in two states of the USA.

[7] Where an existing stadium has been replaced by a new stadium during the observation period, the old stadium has only been included for as long as it was in use.

$LP_{i,t}$ = share of GVA of agriculture and manufacturing in city *i* at time *t*,

$HV_{i,t}$ = share of GVA of trade and transport in city *i* at time *t*,

RU_t = dummy for the re-unification of Germany after 1990,

$Stad_i$ = dummy for cities with stadia projects during the observation period,

$PStad_{i,t}$ = dummy for cities with stadia projects and the period after the opening or re-opening of a stadium.

The variables $LP_{i,t}$, $HV_{i,t}$ and $\ln AvPop_{i,t}$ are used to take observable differences between the cities in the sample into account. The variable RU_t is a dummy variable with the value 1 for the year 1990 and later. It is used to account for structural breaks caused by the re-unification of Germany. Column (2) in Table 2 represents the corresponding estimate results. The relevant variable $PStad_{i,t}$ turns out to be significant positive with the value 0.242566. According to this, cities with stadia projects have income shares that are approx. 0.24 percentage points higher than the income shares of cities without stadia projects for the time period after the opening of the stadia projects.

To test for the effects of stadia projects on income growth, equation (3) is estimated in accordance with Hotchkiss *et al*. (2003).

$$(3)\quad Y_{i,t} = \beta_0 + \beta_1 \ln AvPop_i + \beta_2 LP_{i,t} + \beta_3 HV_{i,t} + \beta_4 RU_t + \beta_5 Tr_t + \beta_6 TrStad_i + \beta_7 TrPStad_{i,t} + \varepsilon$$

where

$TrStad_i$ = time trend for cities with stadia projects during the observation period,

$TrPStad_{i,t}$ = time trend for cities with stadia projects and the period after the opening or re-opening of a stadium.

Column (3) in Table 2 shows that the relevant variable $TrPStad_{i,t}$ is significant positive with a value of 0.018785. Income shares grow by approx. 0.019 percentage points faster in cities with stadia projects than in cities without stadia projects.

Finally the standard difference-in-difference estimate of Hotchkiss *et al.* (2003) is extended by taking into account simultaneous changes in the levels as well as in the trends of the dependent variable. In this way distorted results, e.g. when an income share that is higher after the opening of a stadia project is exclusively attributable to an existing positive trend, are avoided.[8]

This extended model also includes dummy variables for the various states in the Federal Republic of Germany as additional spatial control variables, so that different developments in the country's various regions can be taken into account.[9]

Since, as shown by Bertrand *et al.* (2004), difference-in-difference models are frequently subject to serial correlations and also tend to overestimate the significance of the results, we use in the following White coefficient covariance estimators, which are robust with regard to serial correlation. Bertrand *et al.* (2004) have recommended this procedure particularly for difference-in-difference models with a sample in which $N > 50$.

Together with the extensions described above our model has the following form:

[8] Galster *et al.* (2004) use a similar extended difference-in-difference estimate in order to investigate the effects on housing prices of accommodation for the disabled.

[9] The state of Bavaria functions as an omitted reference state for the dummy variables for the individual states.

$$Y_{i,t} = \beta_0 + \beta_1 \ln Pop_{i,t} + \beta_2 LP_{i,t} + \beta_3 HV_{i,t} + \beta_4 \ln Emp_{i,t} + \beta_5 RU_t + \beta_6 Tr_t + \beta_7 NRW_i +$$
$$(4)\ \beta_8 NDS_i + \beta_9 HE_i + \beta_{10} SH_i + \beta_{11} BW_i + \beta_{12} HH_i + \beta_{13} BR_i + \beta_{14} BE_i + \beta_{15} RP_i + \beta_{16} SA_i +$$
$$\beta_{17} Stad_i + \beta_{18} PStad_{i,t} + \beta_{19} TrStad_i + \beta_{20} TrPStad_{i,t} + \varepsilon$$

where

$\ln Pop_{i,t}$ = log population in city *i* at time *t*,

$\ln Emp_{i,t}$ = log employment in city *i* at time *t*,

NRW_i = dummy for the state of North Rhine-Westphalia,

NDS_i = dummy for the state of Lower Saxony,

HE_i = dummy for the state of Hesse,

SH_i = dummy for the state of Schleswig-Holstein,

BW_i = dummy for the state of Baden-Württemberg,

HH_i = dummy for the state of Hamburg,

BR_i = dummy for the state of Bremen,

BE_i = dummy for the state of Berlin,

RP_i = dummy for the state of Rhineland-Palatinate,

SA_i = dummy fort the state of Saarland.

Table 2 shows the results of this estimate in column (4). The variable $PStad_{i,t}$ which measures the effects of stadia on the levels of income shares, is shown to not be significantly different from zero. The variable $TrPStad_{i,t}$ which is relevant for the effects on income growth is again significant positive with a value of 0.021580. This result confirms the results of model (3) on the basis of Hotchkiss *et al*. (2003).

Table 2: Estimates of equations (1)–(4)

Equation	(1)	(2)	(3)	(4)
Dependent variable	$\ln Emp_{i,t}$	$\ln Emp_{i,t}$	$\ln Emp_{i,t}$	$\ln Emp_{i,t}$
	Coefficient (Std. error)	Coefficient (Std. error)	Coefficient (Std. error)	Coefficient (Std. error)
C	-6.363384** (0.126480)	-5.038013** (0.178448)	-5.587323** (0.175545)	-3.663889** (0.690385)
$\ln Pop_{i,t}$ or $\ln AvPop_i$	0.595871** (0.010954)	0.462880** (0.013464)	0.548526** (0.011947)	0.061024 (0.149600)
$LP_{i,t}$		-0.002702** (0.000940)	-0.004869** (0.001115)	-0.006288** (0.002084)
$HV_{i,t}$		0.009104** (0.002048)	0.003152 (0.002391)	-0.008215 (0.004619)
$\ln Emp_{i,t}$				0.375612** (0.108337)
Oil_t				-0.050053** (0.012965)
RU_t		-0.161669** (0.027028)	0.006356 (0.040482)	0.006145 (0.022492)
Tr_t			-0.011800** (0.001765)	-0.009351** (0.002713)
NRW_i				-0.285738 (0.167475)
NDS_i				-0.287097* (0.122238)
HE_i				-0.153135 (0.188111)
SH_i				-0.283365* (0.131174)
BW_i				-0.201783 (0.147775)
HH_i				2.466653** (0.276668)
BR_i				-0.239115 (0.131926)
BE_i				1.730257** (0.428914)
RP_i				-0.111686 (0.093421)
SA_i				-0.333880* (0.161454)
$Stad_i$		0.438274** (0.036241)		0.525155** (0.126543)
$PStad_{i,t}$		**0.242566** (0.043692)**		**0.054866 (0.095755)**
$TrStad_i$			0.008069** (0.001320)	-0.009887* (0.004177)

$TrPStad_{i,t}$			**0.018785** (0.003025)**	**0.021580* (0.008572)**
$PStad10_{i,t}$	**0.191817** (0.031689)**			
Adj. R-squared	0.884664	0.657458	0.645044	0.890828

* or, respectively ** = significant at the 5% or 1% level

4 Conclusions

The estimates, on the basis of four different estimation approaches, show that stadia projects can generate positive income effects that are significantly different from zero. All four estimates concluded that stadia projects generate positive income effects in the 10-year period after their opening as well as in the longer term. The estimated significant effects are between 0.19 and 0.24 percentage points for the levels of income shares and between 0.019 and 0.022 percentage points for the growth of income shares. In view of an average income share of cities with stadia projects of 1.624%, these are respectable results.

The present work supplements previous publications, by being the first study that examines the economic effects of stadia projects outside the USA on a multivariate basis. The results are in contrast to those of many studies in the USA which often find no (Baade, 1987; Baade and Dye, 1990; Baade, 1994; Baade and Sanderson, 1997; Baade and Matheson, 2000, 2001, 2003) or even negative effects from sports stadia and teams.

However, the results of this study correspond with Tu (2005) for the FedEX Field in Washington and especially Ahlfeldt and Maennig (2007a,b) who found positive effects on real estate prices in their neighbourhoods for three arenas in Germany.

References

Ahlfeldt, G. and Maennig, W. (2007a) 'The Role of Architecture on Urban Revitalisation: The Case of "Olympic Arenas" in Berlin-Prenzlauer Berg', Working Paper Hamburg University Nr. 01/2007.

Ahlfeldt, G. and Maennig, W. (2007b) 'The Impact of Sports Arenas on Land Values: Evidence from Berlin', Working Paper Hamburg University Nr. 03/2007.

Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (1976) *Bruttoinlandsprodukt und Bruttowertschöpfung der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland*. Stuttgart.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (2007) 'Bruttoinlandsprodukt, Bruttowertschöpfung in den kreisfreien Städten und Landkreisen Deutschlands 1992 und 1994 bis 2004, Ergebnisse der Revision 2005', http://www.vgrdl.de/Arbeitskreis_VGR/ergebnisse.asp#BIP_K, Zugriff 12.05.2007.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (div. Jg., a) *Bruttoinlandsprodukt der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland*. Stuttgart.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (div. Jg., b) *Bruttowertschöpfung der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland*. Stuttgart.

Atkinson, G., Mourato, S. and Szymanski, S. (2006) 'Quantifying the "un-quantifiable": Valuing the intangible Impacts of Hosting the Summer Olympic Games', unpublished manuscript London School of Economics and Imperial College London.

Baade, R.A. (1987) 'Is There an Economic Rationale for Subsidizing Sports Stadiums?', *Heartland Policy Study* No.13.

Baade, R.A. (1994) 'Stadiums, Professional Sports, and Economic Development: Assessing the Reality', *Heartland Institute Policy Study* No.62.

Baade, R.A. (1996) 'Professional Sports as Catalysts for Metropolitan Economic Development', *Journal of Urban Affairs* 18(1): 1-17.

Baade, R.A. and Dye, R. (1990) 'The Impact of Stadiums and Professional Sports on Metropolitan Area Development', *Development Growth and Change* 21(2): 1-14.

Baade, R.A. and Matheson, V.A. (2000) 'An Assessment of the Economic Impact of the American Football Championship, the Super Bowl, on Host Communities', *Reflets et Perspectives* 39(2-3): 35-46.

Baade, R.A. and Matheson, V.A. (2001) 'Home Run or Wild Pitch? Assessing the Economic Impact of Major League Baseball's All-Star Game', *Journal of Sports Economics* 2: 307-27.

Baade, R.A. and Matheson, V.A. (2003) 'Bidding for the Olympics: Fool's Gold?' in Barros, C., Ibrahim, M. (ed.) *Transatlantic Sport*, pp.127-51. London: Edward Elgar Publishing.

Baade, R.A. and Matheson, V.A. (2004) 'The Quest for the Cup: Assessing the Economic Impact of the World Cup', *Regional Studies* 38: 343-54.

Baade, R.A. and Sanderson, R.A. (1997) 'The Employment Effect of Teams and Sports Facilities' in Noll, R.G., Zimbalist, A. (ed.) *Sports, Jobs, and Taxes. The Economic Impact of Sports Teams and Stadiums*, pp. 92-118. Washington D.C.: Brookings Institution Press.

Bade, F.-J. (1991) *Regionale Beschäftigungsprognose 1995*. Bonn.

Bade, F.-J. (1997) *Sozialversicherungspflichtig Beschäftigte*. Dortmund.

Bade, F.-J. (2006) 'Sozialversicherungspflichtig Beschäftigte in den deutschen Kreisen und kreisfreien Städten für die Jahre 1986-1996', E-Mail vom 23.4.2006.

Baim, D.V. (1994) *The Sports Stadium as a Municipal Investment.* Westport (Conn.) and London: Greenwood Press.

Bertrand, M., Duflo, E. and Mullainathan, S. (2004) 'How Much Should We Trust in Difference-in-Difference Estimates?', NBER Working Paper 8841.

Card, D. and Krueger, A.B. (1994) 'Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania', *American Economic Review* 84 (4): 772-93.

Carlino, G.A. and Coulson, N.E. (2004) 'Compensating Differentials and the Social Benefits of the NFL', *Journal of Urban Economics* 56: 25-50.

Coates, D. and Humphreys, B.R. (1999) 'The Growth Effects of Sport Franchises, Stadia, and Arenas', *Journal of Policy Analysis and Management* 18(4): 601-24.

Coates, D. and Humphreys, B.R. (2000a) 'The Stadium Gambit and Local Economic Development', *Regulation: The Cato Review of Business and Government* 23(2): 15-20.

Coates, D. and Humphreys, B.R. (2000b) 'The Economic Consequences of Professional Sports, Strikes and Lockouts', *Southern Economic Journal* 67(3): 737-47.

Coates, D. and Humphreys, B.R. (2002) 'The Economic Impact of Postseason Play in Professional Sports', *Journal of Sports Economics* 3: 291-99.

Coates, D. and Humphreys, B.R. (2003a) 'The Effect of Professional Sports on Earnings and Employment in the Services and Retail Sectors in US Cities', *Regional Science and Urban Economics* 33(2): 175-98.

Coates, D. and Humphreys, B.R. (2003b) 'Professional Sports Facilities, Franchises and Urban Economic Development', *Public Finance and Management* 3: 335-57.

Dietl, H.M. and Pauli, M. (1999) 'Wirtschaftliche Auswirkungen öffentlich finanzierter Stadionprojekte', Arbeitspapiere des Fachbereichs Wirtschaftswissenschaften, Universität Paderborn, Neue Reihe Nr. 61.

EUROSTAT (2001) *New Cronos Data Base*. Luxembourg: Statistical Office of the European Communities.

FIFA (2004) 'Auf nach Deutschland', http://www.ok2006.de/stadien/index.html, Zugriff am 12.05.2004.

Friedrich, P. (2001) 'Forschungsbericht: Effekte des neuen Fußballstadions München', Industrie und Handelskammer für München und Oberbayern, http://www.unibw-muenchen.de/campus/WOW/v1062/Stadiongutachten.pdf, Zugriff am 03.05.2005.

Galster, G., Tatian, P. and Pettit, K. (2004) 'Supportive Housing and Neighborhood Property Value Externalities', *Land Economics* 80(1): 33-54.

Hamm, R. (1996) 'Die wirtschaftliche Bedeutung des Vereins „VFL Borussia Mönchengladbach" für die Stadt Mönchengladbach', *IHK-Schriftenreihe* 27/1996.

Heyne, M., Maennig, W. and Suessmuth, B. (2007) 'Mega-sporting Events as Experience Goods', Working Paper Hamburg University Nr. 05/2007.

Hotchkiss, J., Moore, R.E. and Zobay, S.M. (2003) 'Impact of the 1996 Summer Olympic Games on Employment and Wages in Georgia', *Southern Economic Journal* 69: 691-704.

Kang, Y.S. and Perdue, R. (1994) 'Long-term impacts of a mega-event on international tourism to the host country: a conceptual model and the case of the 1988 Seoul Olympics', in Uysal M. (ed.) *Global Tourism Behaviour*, pp. 205-255. New York: International Business Press.

Pauli, M. (2001) *Stadionfinanzierung im deutschen Profifußball: eine institutionenökonomisch fundierte modelltheoretische Untersuchung*. Paderborn.

Schröder, R. (1987) 'Regionalwirtschaftliche Auswirkungen einer Modernisierung des Weserstadions', *Bremer Zeitschrift für Wirtschaftspolitik* 10: 11.

Skrentny, W. (2001) *Das große Buch der deutschen Fußball-Stadien*. Göttingen: Verlag die Werkstatt.

Statistik der Bundesagentur für Arbeit (2007) 'Beschäftigte nach Kreisen', http://www.pub.arbeitsamt.de/hst/services/statistik/detail/b.html, Zugriff am 13.5.2007.

Statistisches Bundesamt (div. Jg.) *Fachserie C, Arbeitsstättenzählung*. Stuttgart et al.

Teigland, J. (1999) 'Mega-Events and Impacts on Tourism: The Predictions and Realities of the Lillehammer Olympics', *Impact assessment and project appraisal* 17: 305-17.

Tu, C.H. (2005) 'How Does a New Sports Stadium Affect Real Estate Values? The Case of FedEx Field', *Land Economics* 81(3): 379-95.

Willms, W. and Fischer, A. (2001) *Bundesliga-Fußball als Standortfaktor – Analyse der regionalwirtschaftlichen Bedeutung des SV Werder Bremen mit einem Stadien-Benchmark*. Bremen.

Beschäftigungseffekte großer Stadionprojekte in Deutschland

Florian Hagn

(eingereicht bei „Sportwissenschaft“)

Zusammenfassung

Diese Studie untersucht *ex post* die Beschäftigungseffekte der im Zeitraum von 1961 bis 2004 in Westdeutschland durchgeführten großen Stadionprojekte. Sie ist die erste Studie die wirtschaftliche Effekte von Stadien außerhalb den USA auf Basis einer multivariaten Analyse *ex-post* untersucht. Zusätzlich zu den drei üblicherweise in Studien zu wirtschaftlichen Effekten von Sportstadien und Sportevents verwendeten Methoden, wird ein erweiterter „Difference-in-Difference“-Ansatz genutzt, um die Beschäftigung in Städten mit großen Stadionprojekten mit der Beschäftigung in Städten ohne Stadienprojekte zu vergleichen. Die Ergebnisse zeigen, dass von großen Stadienprojekten keine signifikant von Null verschiedene Beschäftigungseffekte ausgehen. Im Gegensatz zu vergleichbaren Studien werden die Ergebnisse aber nicht als klare Widerlegung positiver Effekte von Stadien gesehen.

Keywords: Regionalökonomie; Sportökonomie; Stadioneffekte; Sportveranstaltungen.

1 Einleitung

Die Vergabe der Fußball-Weltmeisterschaft 2006 löste in Deutschland einen Boom an Stadienprojekten aus. Mit dem Ziel sich als Spielorte der Weltmeisterschaft zu qualifizieren wurden in zahlreichen deutschen Städten Stadien modernisiert, erweitert oder neu errichtet, wobei die Finanzierung dieser Stadienprojekte zumindest teilweise durch öffentliche Gelder

erfolgte.[1] Ebenso wurden bereits anlässlich der Fußballweltmeisterschaft 1974 in Deutschland öffentliche Investitionen in Höhe von 273 Millionen DM in Stadien getätigt. Im Gegensatz zu den 70er Jahren hat sich die heutige Situation der Kommunen jedoch wesentlich verändert (DIETL & PAULI, 1999, S. 12). Zum einen sind die Baukosten moderner Stadien, aufgrund höherer Anforderungen an Komfort und Ausstattung, um ein Vielfaches gestiegen. Heute verschlingen bereits einzelne Stadionprojekte wie der Umbau des Berliner Olympiastadions deutlich mehr Geld als alle öffentlichen Stadioninvestitionen anlässlich der Weltmeisterschaft 1974 zusammen (vgl. Tabelle 1). Zum anderen ist die Haushaltssituation vieler Kommunen extrem angespannt, so dass die Finanzierung von Stadionprojekten mit öffentlichen Geldern zwangsläufig zu Einsparungen in anderen kommunalen Bereichen oder Steuererhöhungen führt.

Angesichts dieser veränderten Situation stellt sich die Frage, ob öffentliche Investitionen in teure Stadionprojekte und die daraus resultierende indirekte Subventionierung von Bundesligavereinen ökonomisch gerechtfertigt ist.

Zur Legitimation hoher öffentlicher Ausgaben für Stadionbauten und -modernisierungen wird von Stadionbefürwortern regelmäßig behauptet, Fußballstadien und die darin beheimateten Bundesligavereine seien kräftige Motoren für die wirtschaftliche Entwicklung der jeweiligen Städte und Regionen. Beispiele für *ex ante* Studien, die positive wirtschaftliche Effekte infolge von Stadionprojekten versprechen stammen von SCHRÖDER (1987), HAMM (1996), WILLMS & FISCHER (2001) oder FRIEDRICH (2001).

Diesen Studien gegenüber stehen *ex post* Arbeiten, die größtenteils nur sehr kleine oder keine signifikanten Effekte von Sportstadien oder Sportevents auf das regionale Einkommen oder die Beschäftigung feststellen können (z.B. BAADE, 1987; BAADE & DYE, 1990; BAADE, 1994; BAADE & SANDERSON, 1997; BAADE & MATHESON, 2000, 2001, 2003). Einige

[1] Ingesamt wurden in den 12 Spielorten der Fußball-Weltmeisterschaft 2006 1.401 Mio. € in Stadien investiert. Diese Kosten wurden getragen durch den Bund (247,1 Mio. €), Länder (85,5 Mio. €), Städte (208,6 Mio. €), Betreiber (437,1 Mio. €) und sonstige Investoren (421,7 Mio. €) (vgl. FIFA, 2004).

Arbeiten, insbesondere die von BAADE & MATHESON (2004), COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) oder TEIGLAND (1999) kommen sogar zu signifikant negativen wirtschaftlichen Effekten.

Nur sehr wenige Studien finden *ex post* signifikant positive Effekte von Stadien, Teams und Sportevents. BAIM (1994) kommt zu positiven Beschäftigungseffekten durch Major League Baseball-Teams in 15 Städten in den USA. KANG & PERDUE (1994) kommen mit einer einfachen Regression zu dem Ergebnis, dass die Olympischen Spiele in Seoul 1988 zu 1 Millionen zusätzlichen Besuchern und zu 1,3 Milliarden US$ zusätzlichem Einkommen aus dem Tourismus in Korea führten. HOTCHKISS, MOORE & ZOBAY (2003) finden signifikant positive Beschäftigungseffekte für Regionen in Georgia (USA), die Wettkampforte der Olympischen Spiele in Atlanta 1996 waren oder sich in der Nähe von Wettkampforten befanden. Sie finden jedoch keine signifikanten Effekte auf die Löhne in diesen Regionen. TU (2005) findet signifikant positive Effekte des FedEx Field (Washington) auf die Grundstückspreise in dessen Nachbarschaft, ebenso wie AHLFELDT & MAENNIG (2007a, b) für drei Sportarenen in Berlin. CARLINO & COULSON (2004) untersuchen die 60 größten Städte (MSAs) in den USA und kommen zu dem Ergebnis, dass die Existenz eines NFL-Teams zu 8% höheren Mieten aber zu keinen höheren Löhnen führt.[2]

Die folgende Arbeit erweitert die beschriebenen bisherigen Studien in mehreren Aspekten. Sie ist die erste Arbeit, die die Effekte von Stadionprojekten in Deutschland *ex post* schätzt. Sie ist zudem die erste multivariate Studie, die Beschäftigungseffekte von Stadionprojekten außerhalb der USA untersucht. Dies ist insbesondere vor dem Hintergrund der unterschiedlichen Funktionsweise des Arbeitsmarkts in den USA und Europa interessant.

[2] Nicht-Ökonomen würden dieses Ergebnis vielleicht als Argument gegen Sportteams und Stadien sehen. CARLINO & COULSON (2004) hingegen nutzen die ökonomische Theorie der kompensierenden Differenzen, um ihre Ergebnisse als Argument für professionelle Sportteams zu interpretieren: Die Existenz eines NFL-Teams macht die Stadt für die Bewohner so viel attraktiver, dass sie bereit sind höhere Mieten zu bezahlen (auch ohne höhere Löhne zu erhalten). Angesichts dieser Argumentation könnten auch einige der beschriebenen „negativen" Ergebnisse, z.B. von COATES & HUMPHREYS als positiv interpretiert werden. Oder sogar, noch extremer, die erwähnten „positiven" Effekte auf Einkommen etc. könnten als negativ ausgelegt werden.

Zusätzlich testet die Arbeit auf Methodensensitivität, indem derselbe Datensatz gleichzeitig mit den drei, üblicherweise in den Studien von BAADE & MATHESON (2000, 2001, 2003, 2004), COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) und HOTCHKISS, MOORE & ZOBAY (2003) verwendeten Methoden und einer zusätzlichen Methode, die bisher noch nicht im Zusammenhang mit Sportstadien verwendet wurde, geschätzt wird.

Im Folgenden beschreibt Kapitel 2 die verwendeten Daten, Kapitel 3 stellt die Methodik und Ergebnisse dar und Kapitel 4 fasst zusammen.

2 Daten

Diese Studie untersucht die Beschäftigungseffekte der 30 größten Stadienprojekte (vgl. Tabelle 1), die in den Jahren 1961 bis 2004 in Westdeutschland durchgeführt wurden. Der Untersuchungsrahmen umfasst dabei Daten aller kreisfreien Städte Westdeutschlands für den Zeitraum 1961 bis 2004.

Daten über die Beschäftigten in den kreisfreien Städten wurden für die Jahre 1961 und 1970 der Arbeitsstättenzählung des Statistischen Bundesamtes (div. Jg.) entnommen. Für die Jahre 1977 bis 1992 stammen die Daten aus den Veröffentlichungen von BADE (1997, 2006). Die Beschäftigtenzahlen der dazwischen liegenden Jahre wurden gemäß BADE (1991) durch Interpolation der Beschäftigten in den kreisfreien Städten mit den Beschäftigten auf Bundesebene berechnet. Ab 1993 stammen die Daten aus Statistik der Bundesagentur für Arbeit (2007).

Einwohnerzahlen der kreisfreien Städte stammen bis 1970 aus den Veröffentlichungen des Arbeitkreis Volkswirtschaftliche Gesamtrechnung der Länder (div. Jg. a). Von 1978 bis 2004 stammen die Einwohnerzahlen aus der EUROSTAT-Datenbank. Für die dazwischen

liegenden Jahre wurde die Einwohnerzahl in Proportion zur Entwicklung der Einwohnerzahl der Bundesrepublik interpoliert.

Einkommensanteile der untersuchten kreisfreien Städte am entsprechenden Bundes-Wert wurden ebenfalls der Serie Volkswirtschaftliche Gesamtrechnung der Länder (1976, div. Jg. a und b) entnommen. Dort wurden für das Jahr 1961 und ab 1964 alle zwei Jahre zunächst das Bruttoinlandsprodukt und ab 1976 die Bruttowertschöpfung der kreisfreien Städte veröffentlicht. Da für das Jahr 1976 sowohl das Bruttoinlandsprodukt, als auch die Bruttowertschöpfung veröffentlicht wurden, konnte sichergestellt werden, dass die Anteile dieser beiden Werte am Anteil des Bundes nicht signifikant voneinander abweichen. Ab 1998 stammen die Daten zur Bruttowertschöpfung aus dem Online Angebot des Arbeitskreises Volkswirtschaftliche Gesamtrechnung der Länder (2007).

Bruttowertschöpfungsanteile der Wirtschaftsbereiche Landwirtschaft und produzierendes Gewerbe sowie des Wirtschaftsbereichs Handel und Verkehr in den kreisfreien Städten stammen zunächst aus Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (div. Jg. a und b), wo sie im Jahr 1961 und ab dem Jahr 1964 alle zwei Jahre veröffentlicht wurden. Ab 1998 stammen die Daten erneut aus dem Online Angebot des Arbeitskreises Volkswirtschaftliche Gesamtrechnung (2007). Die Anteile der Wirtschaftsbereiche Landwirtschaft und des produzierenden Gewerbes mussten zusammengefasst werden, da die Anteile der beiden einzelnen Wirtschaftsbereiche nicht durchgehend veröffentlicht wurden.

Tabelle 1: Stadionprojekte

Stadt	Stadion	Eröffnung	Kosten	Art
Düsseldorf	Rheinstadion	1972	53,64 Mio. DM	Umbau
München	Olympiastadion	1972	135-137 Mio. DM	Neubau
Gelsenkirchen	Parkstadion	1973	56-62 Mio. DM	Neubau
Stuttgart	Neckarstadion	1973	23 Mio. DM	Umbau
Berlin	Olympiastadion	1974	27 Mio. DM	Umbau
Dortmund	Westfalenstadion	1974	31,1 Mio. DM	Neubau

Frankfurt	Waldstadion	1974	28,3 Mio. DM	Umbau
Hamburg	Volksparkstadion	1974	15 Mio. DM	Umbau
Hannover	Niedersachsenstadion	1974	26 Mio. DM	Umbau
Köln	Müngersdorfer Stadion	1975	44,5 Mio. DM	Neubau
Bochum	Ruhrstadion	1979	26 Mio. DM	Neubau
Nürnberg	Frankenstadion	1991	68,1 Mio. DM	Umbau
Karlsruhe	Wildparkstadion	1993	45 Mil. DM	Umbau
Stuttgart	Gottlieb-Daimler-Stadion	1993	53,5 Mio. DM	Umbau
Wuppertal	Wuppertaler Stadion am Zoo	1993	30 Mio. DM	Umbau
Kaiserslautern	Fritz-Walter-Stadion	1994	63 Mio. DM	Umbau
Mannheim	Carl-Benz-Stadion	1994	28 Mio. DM	Neubau
Braunschweig	Eintracht-Stadion	1995	25 Mio. DM	Umbau
Dortmund	Westfalenstadion	1996	60 Mio. DM	Umbau
Dortmund	Westfalenstadion	1998	45 Mio. DM	Umbau
Hamburg	AOL-Arena	2000	97 Mio. €	Neubau
Gelsenkirchen	Arena auf Schalke	2001	183-192 Mio. €	Neubau
Stuttgart	Gottlieb-Daimler-Stadion	2001	51,6 Mio. €	Umbau
Bremen	Weserstadion	2002	13 Mio. €	Umbau
Wolfsburg	Volkswagen-Arena	2002	53 Mio. €	Neubau
Dortmund	Westfalenstadion	2003	31-36 Mio. €	Umbau
Berlin	Olympiastadion	2004	242 Mio. €	Umbau
Düsseldorf	LTU-Arena	2004	218 Mio. €	Neubau
Köln	RheinEnergieStadion	2004	119,5 Mio. €	Neubau
Mönchengladbach	Stadion im Borussia Park	2004	86,9 Mio. €	Neubau

Quelle: FIFA (2004), PAULI (2001), SKRENTNY (2001).

3 Methodik und Ergebnisse

In einem ersten Schritt werden mögliche Beschäftigungseffekte von Stadionprojekten in Deutschland mit einem Schätzansatz in Anlehnung an die Modelle von BAADE & MATHESON (2000, 2001, 2003, 2004) untersucht. Dieser Ansatz hat folgende Form:

$$\partial Emp_{i,t} = \beta_0 + \beta_1 \sum_{i=1}^{n} \partial Emp_{i,t} / n_t + \beta_2 \partial Emp_{i,t-1} + \beta_3 \partial Emp_{i,t-2} + \beta_4 \partial Emp_{i,t-3} +$$

$$(1)\ \beta_5 \ln Pop_{i,t} + \beta_6 Y_{i,t} + \beta_7 Oil_t + \beta_8 RU_t + \beta_9 Tr_t + \beta_{10} NRW_i + \beta_{11} NDS_i + \beta_{12} HE_i +$$

$$\beta_{13} SH_i + \beta_{14} BW_i + \beta_{15} HH_i + \beta_{16} BR_i + \beta_{17} BE_i + \beta_{18} RP_i + \beta_{19} SA_i + \beta_{20} PStad10_{i,t} + \varepsilon$$

mit:

$\partial Emp_{i,t}$ =Veränderung der Beschäftigung in Stadt i zum Zeitpunkt t,

$\sum_{i=1}^{n} \partial Emp_{i,t} / n_t$ =Durchschnittliche Veränderung der Beschäftigung im gesamten Sample zum Zeitpunkt t,

$\partial Emp_{i,t-1}$ =Veränderung der Beschäftigung in Stadt i zum Zeitpunkt t-1,

$\partial Emp_{i,t-2}$ =Veränderung der Beschäftigung in Stadt i zum Zeitpunkt t-2,

$\partial Emp_{i,t-3}$ =Veränderung der Beschäftigung in Stadt i zum Zeitpunkt t-3,

$\ln Pop_{i,t}$ =Log Bevölkerung in Stadt i zum Zeitpunkt t,

$Y_{i,t}$ =Einkommensanteil der Stadt i als Anteil vom durchschnittlichem Einkommensanteil im Sample zum Zeitpunkt t,

Oil_t =Dummy für die Ölkrise in den Jahren 1974 und 1982,

RU_t =Dummy für die deutsche Wiedervereinigung ab 1990,

Tr_t =Time Trend,

NRW_i =Dummy für das Bundesland Nordrhein-Westfalen,

NDS_i =Dummy für das Bundesland Niedersachsen,

HE_i =Dummy für das Bundesland Hessen,

SH_i =Dummy für das Bundesland Schleswig-Holstein,

BW_i =Dummy für das Bundesland Baden-Württemberg,

HH_i =Dummy für das Bundesland Hamburg,

BR_i =Dummy für das Bundesland Bremen,

BE_i =Dummy für das Bundesland Berlin,

RP_i =Dummy für das Bundesland Rheinland-Pfalz,

SA_i =Dummy für das Bundesland Saarland,

$PStad10_{i,t}$ =Dummy für den 10-Jahreszeitraum nach Fertigstellung eines Stadionprojekts,

ε =Störgröße.

BAADE & MATHESON (2000, 2001, 2003, 2004) verwenden den beschriebenen Ansatz um Einkommens- und Beschäftigungseffekte unterschiedlicher Sport-Events im Jahr der Ausrichtung zu untersuchen. Um mit dem Ansatz Effekte von Stadionprojekten erfassen zu können wurde die Dummyvariable $PStad10_{i,t}$ integriert, die für einen Zeitraum von 10 Jahren nach Fertigstellung eines Stadionprojekts den Wert 1 annimmt.[3] Die Variablen Oil_t bzw. RU_t sind Dummyvariablen für die Ölkrise bzw. die deutsche Wiedervereinigung, die für die Jahre 1974 und 1982 bzw. ab 1990 den Wert 1 annehmen. Dummyvariablen für die verschiedenen Bundesländer der Bundesrepublik Deutschland dienen als räumliche Kontrollvariablen um unterschiedliche Entwicklungen in den verschiedenen Regionen Deutschlands zu berücksichtigten.[4] Tabelle 2 zeigt in Spalte (1) die Ergebnisse für dieses Modell. Die Stadionvariable $PStad10_{i,t}$ erweist sich als nicht signifikant von Null verschieden. Demnach ergaben sich im 10-Jahreszeitraum nach Fertigstellung der untersuchten Stadionprojekte in den jeweiligen Städten keine signifikanten Effekte auf die Beschäftigung.

[3] COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) verwenden einen solchen 10-Jahresdummy für den Zeitraum nach Fertigstellung eines Stadionprojekts. Auch BAADE & SANDERSON (1997) gehen von einem „Neuigkeitseffekt“ von 10 Jahren aus.

[4] Bayern ist dabei das ausgelassene Referenz-Bundesland.

In Anlehnung an COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) werden die Beschäftigungseffekte von Stadionprojekten als Nächstes mit einem „Fixed Effects“ Modell geschätzt:

$$(2)\ \ln Emp_{i,t} = \beta x_{i,t} + \gamma PStad10_{i,t} + \varepsilon \qquad \text{wobei, } \varepsilon = e_{i,t} + v_i$$

mit:

$\ln Emp_{i,t}$ = Log Beschäftigte in Stadt i zum Zeitpunkt t,

$x_{i,t}$ =Variablenvektor mit Log Bevölkerung in Stadt i zum Zeitpunkt t, stadt-spezifischen Time Trends und jahres-spezifischen Dummyvariablen.

Der Unterschied dieses Modells gegenüber dem Modell von BAADE & MATHESON (2000, 2001, 2003, 2004) besteht darin, dass letztere die durchschnittliche Veränderung der Beschäftigung im gesamten Sample und die Abweichung unabhängiger Variablen vom Durchschnitt im Sample verwenden um allgemeine Trends und Entwicklungen zu erfassen, von denen alle Städte gleichermaßen betroffen waren. Das Modell von COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) stellt dagegen ein „Fixed Effects“ Modell dar, das Jahres-Dummyvariablen verwendet um Effekte zu erfassen, von denen alle Städte gleichermaßen betroffen waren und spezifische Entwicklungen in den einzelnen Städten durch stadt-spezifische Time Trends berücksichtigt.

In Spalte (2) der Tabelle 2 sind die Ergebnisse dieses Modells dargestellt. Die Schätzwerte der stadt-spezifischen Time Trends und der jahres-spezifischen Dummyvariablen sind hier nicht berichtetet, obwohl sie sich in fast allen Fällen als signifikant erweisen.[5] Auch in diesem

[5] Die kompletten Schätzergebnisse werden auf Anfrage vom Autor bereitgestellt.

Schätzmodell stellt sich die Stadionvariable $PStad10_{i,t}$ als nicht signifikant von Null verschieden heraus.

In einem dritten Schritt wird das Modell von HOTCHKISS, MOORE & ZOBAY (2003) benutzt, die einen Standard-„Difference-in-Difference"-Ansatz verwenden, um Veränderungen im a) „intercept", also den Levels der Beschäftigung und der Löhne und b) im „slope", also dem Wachstum der beiden Variablen erfassen zu können. Der „Difference-in-Difference"-Ansatz vergleicht die interessierende Variable vor und nach dem Eintritt eines bestimmten Ereignisses[6] in einer Region mit der Veränderung derselben Variable in einer anderen Region, die von dem Ereignis nicht betroffen war. Dabei wird angenommen, dass die Entwicklung in der nicht betroffenen Region derjenigen Entwicklung in der betroffenen Region entspräche, wenn das Ereignis nicht eingetreten wäre. Der wesentliche Unterschied dieses Ansatzes gegenüber den beiden Modellen von BAADE & MATHESON (2000, 2001, 2003, 2004) bzw. COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) besteht darin, dass nicht auf Effekte innerhalb eines 10-Jahreszeitraums nach Fertigstellung eines Stadionprojekts kontrolliert wird, sondern hier längerfristige Effekte bis zum Ende des Beobachtungszeitraums erfasst werden.[7] Angewandt auf die in Deutschland realisierten Stadionprojekte hat das Modell von HOTCHKISS, MOORE & ZOBAY (2003) für Beschäftigungseffekte in den Levels die Form:

$$(3)\quad \ln Emp_{i,t} = \beta_0 + \beta_1 \ln AvPop_i + \beta_2 LP_{i,t} + \beta_3 HV_{i,t} + \beta_4 RU_t + \beta_5 Stad_i + \beta_6 PStad_{i,t} + \varepsilon$$

[6] Häufig handelt es sich dabei um ein politisches Ereignis, wie die Einführung eines neuen Gesetzes. Die klassische Anwendung des „Difference-in-Difference"-Ansatzes stammt von CARD & KRUEGER (1994), die damit die Auswirkungen von Mindestlöhnen in zwei amerikanischen Bundesstaaten untersuchten.

[7] In Fällen, bei denen innerhalb des Beobachtungszeitraums ein Stadion durch ein neues Stadion ersetzt wurde, wird das alte Stadion nur solange berücksichtigt, wie es in Betrieb war.

mit:

$\ln AvPop_{i,t}$ =Log der durchschnittlichen Bevölkerung in Stadt i über den gesamten Beobachtungszeitraum,

$LP_{i,t}$ =Anteil der Wirtschaftsbereiche Landwirtschaft und produzierendes Gewerbe an der Bruttowertschöpfung in Stadt i zum Zeitpunkt t,

$HV_{i,t}$ =Anteil des Wirtschaftsbereichs Handel und Verkehr an der Bruttowertschöpfung in Stadt i zum Zeitpunkt t,

$Stad_i$ =Dummy für Städte mit einem Stadionprojekt innerhalb des Beobachtungszeitraums,

$PStad_{i,t}$ =Dummy für Städte mit einem Stadionprojekt für den Zeitraum nach Fertigstellung des Stadionprojekts.

Mit den Variablen $LP_{i,t}$, $HV_{i,t}$ und $\ln AvPop_{i,t}$ werden beobachtbare strukturelle Unterschiede zwischen den Städten im Sample berücksichtigt. Spalte (3) in Tabelle 2 stellt die Schätzergebnisse dar. Die für Beschäftigungseffekte von Stadionprojekten relevante Variable $PStad_{i,t}$ erweist sich als nicht signifikant von Null verschieden. Durch die Stadionprojekte ergaben sich in den jeweiligen Städten also keine signifikanten langfristigen Beschäftigungseffekte.

Zum Test von Effekten auf das Wachstum der Beschäftigung infolge der Stadionprojekte wird in Anlehnung an HOTCHKISS, MOORE & ZOBAY (2003) Gleichung (4) geschätzt.

$$\ln Emp_{i,t} = \beta_0 + \beta_1 \ln AvPop_i + \beta_2 LP_{i,t} + \beta_3 HV_{i,t} + \beta_4 RU_t + \beta_5 Tr_t + \beta_6 TrStad_i + \beta_7 TrPStad_{i,t} + \varepsilon \quad (4)$$

mit:

$TrStad_i$ =Time Trend für Städte mit einem Stadionprojekt innerhalb des Beobachtungszeitraums,

$TrPStad_{i,t}$ =Time Trend für Städte mit einem Stadionprojekt für den Zeitraum nach Fertigstellung des Stadionprojekts.

Spalte (4) in Tabelle 2 zeigt, dass auch hier die für stadienbedingte Effekte auf das Beschäftigungswachstum relevante Variable $TrPStad_{i,t}$ nicht signifikant von Null verschieden ist. Demnach ergaben sich durch Stadienprojekte auch keine Effekte auf das Wachstum der Beschäftigung in den betroffenen Städten.

Im nächsten Schritt wird der Standard-„Difference-in-Differnce"-Ansatzes wie ihn HOTCHKISS, MOORE & ZOBAY (2003) verwenden, erweitert, indem nun gleichzeitig Veränderungen sowohl in den Levels als auch in den Trends der abhängigen Variable berücksichtigt werden. So vermeidet dieses fünfte Modell verzerrte Ergebnisse, beispielsweise wenn eine höhere Beschäftigung nach Fertigstellung eines Stadionprojekts in einer Stadt ausschließlich in einem bereits zuvor bestehenden positiven Trend begründet ist.[8]
Da wie BERTRAND, DUFLO & MULLAINATHAN (2004) zeigen, „Difference-in-Difference"-Modelle häufig serieller Korrelation unterliegen und dazu neigen die Signifikanz der Ergebnisse zu überschätzen, werden im Folgenden zudem White Coefficient Covariance Schätzer verwendet, die robust gegenüber serieller Korrelation sind. BERTRAND, DUFLO & MULLAINATHAN (2004) empfehlen dieses Vorgehen insbesondere für „Difference-in-Difference"-Modelle mit Sample bei denen N > 50.
Mit den beschriebenen Erweiterungen hat das Modell folgende Form:

[8] GALSTER, TATIAN & PETTIT (2004) verwenden einen ähnlichen erweiterten „Difference-in-Difference"-Ansatz um die Effekte von Wohneinrichtungen für Behinderte auf die Immobilienpreise zu untersuchen.

$$\ln Emp_{i,t} = \beta_0 + \beta_1 \ln Pop_{i,t} + \beta_2 LP_{i,t} + \beta_3 HV_{i,t} + \beta_4 Y_{i,t} + \beta_5 RU_t + \beta_6 Tr_t +$$
$$(5)\ \beta_7 NRW_i + \beta_8 NDS_i + \beta_9 HE_i + \beta_{10} SH_i + \beta_{11} BW_i + \beta_{12} HH_i + \beta_{13} BR_i + \beta_{14} BE_i +$$
$$\beta_{15} RP_i + \beta_{16} SA_i + \beta_{17} Stad_i + \beta_{18} PStad_{i,t} + \beta_{19} TrStad_i + \beta_{20} TrPStad_{i,t} + \varepsilon$$

mit:

$Y_{i,t}$ =Einkommensanteil der Stadt i zum Zeitpunkt t,

Spalte (5) in Tabelle 2 zeigt die Ergebnisse für dieses Modell. Die meisten Variablen erweisen sich als signifikant mit den erwarteten Vorzeichen. Die Variable $PStad_{i,t}$, welche Auskunft gibt über mögliche stadienbedingte Effekte auf die Beschäftigungslevel erweist sich jedoch als nicht signifikant verschieden von Null. Auch die Variable $TrPStad_{i,t}$ für mögliche Effekte auf das Beschäftigungswachstum ist nicht signifikant. Somit ist auch nach diesem Modell von keinen Effekten, weder in den Levels noch in den Trends der Beschäftigung, aufgrund von Stadionprojekten auszugehen.

Tabelle 2: Ergebnisse der Modelle (1-5)

Gleichung	(1)	(2)	(3)	(4)	(5)
Abhängige Variable	$\partial Emp_{i,t}$	$\ln Emp_{i,t}$	$\ln Emp_{i,t}$	$\ln Emp_{i,t}$	$\ln Emp_{i,t}$
	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)
C	0.844542 (1.356994)	-0.550177** (0.061266)	-0.301508** (0.088649)	-0.708815** (0.086680)	-0.820247** (0.305828)
$\sum_{i=1}^{n} \partial Emp_{i,t} / n_t$	0.965084** (0.020842)				
$\partial Emp_{i,t-1}$	0.093687** (0.012621)				
$\partial Emp_{i,t-2}$	0.112145** (0.015824)				
$\partial Emp_{i,t-3}$	0.011539 (0.013760)				
$\ln Pop_{i,t}$ bzw. $\ln AvPop_i$	-0.019385 (0.128029)	0.993564** (0.005306)	0.948301** (0.006689)	0.977872** (0.005899)	0.972894** (0.026908)

$LP_{i,t}$			0.001242** (0.000467)	0.002222** (0.000551)	0.005592** (0.001693)
$HV_{i,t}$			0.000450 (0.001017)	0.001861 (0.001181)	0.005940* (0.002800)
$Y_{i,t}$	-0.000215 (0.000824)				16.60547** (5.923790)
Oil_t	-0.647969** (0.195720)				
RU_t	-0.092214 (0.219110)		0.064548** (0.013427)	0.043732* (0.019989)	0.061468** (0.013054)
Tr_t	-0.001105 (0.010054)			0.001034 (0.000871)	0.001501 (0.001547)
NRW_i	-0.724898** (0.197324)				-0.316576** (0.055686)
NDS_i	-0.536074* (0.212239)				-0.133682 (0.068638)
HE_i	-0.695113** (0.262292)				0.043783 (0.063568)
SH_i	-0.923524** (0.298010)				-0.195111** (0.048429)
BW_i	-0.219601 (0.226796)				0.046094 (0.050811)
HH_i	-0.652614 (0.677779)				-0.701394** (0.201887)
BR_i	-1.002915* (0.406623)				-0.272137** (0.045723)
BE_i	-1.684185* (0.690142)				-0.727408** (0.184995)
RP_i	-0.467076* (0.183533)				-0.118179* (0.051546)
SA_i	-1.252958* (0.587485)				-0.063847 (0.133572)
$Stad_i$			0.140048** (0.018004)		-0.013438 (0.055519)
$PStad_{i,t}$			**-0.011086 (0.021705)**		**-0.014561 (0.030745)**
$TrStad_i$				0.000926 (0.000652)	0.000106 (0.001600)
$TrPStad_{i,t}$				**0.002408 (0.001493)**	**-0.000761 (0.002559)**
$PStad10_{i,t}$	**-0.261216 (0.241835)**	**0.011187 (0.015350)**			
Adj. R-squared	0.667981	0.985404	0.948294	0.947066	0.970260

* bzw. ** = signifikant auf dem 5%- bzw. 1%-Niveau

4 Fazit und wirtschaftspolitische Implikationen

Die hier durchgeführten Schätzungen auf Basis von fünf verschiedenen Modellen führen zu dem Ergebnis, dass Stadionprojekte nicht in der Lage sind Beschäftigungseffekte zu generieren, die signifikant von Null verschieden sind.

Die vorliegende Studie ist dahingehend einzigartig, dass sie als erste die wirtschaftlichen Effekte von Stadionprojekten außerhalb der USA multivariat untersucht. Das Ergebnis bestätigt jedoch die Ergebnisse der bisherigen Studien zu Stadionprojekten für den amerikanischen Raum insbesondere von BAADE (1987, 1994, 1996), BAADE & DYE (1990), BAADE & SANDERSON (1997) sowie COATES & HUMPHREYS (1999, 2000a und b, 2002, 2003a und b) die ebenfalls keine signifikanten positiven Effekte von Stadionprojekten aufdecken konnten und in einigen wenigen Fällen sogar negative Effekte feststellten.

Dennoch zögert diese Studie aus mehreren Gründen die in vielen vergleichbaren sportökonomischen Arbeiten im- und explizit geäußerte Sorge, die von Sportprotagonisten behaupteten positiven Effekte von Stadien und Sportveranstaltungen würden nicht stimmen und die öffentliche Finanzierung von Stadien wäre somit ungerechtfertigt, zu teilen.

Zum einen mögen andere Effekte wie beispielsweise der Erlebnisnutzen für die Bevölkerung und/ oder schwer messbare Imageeffekte hinreichend wichtig sein, um Sportstadien und deren Mitfinanzierung durch öffentliche Gelder zu rechtfertigen. In beiden Bereichen möglicher Effekte steckt die Empirie jedoch noch in ihren Anfängen.[9]

Zweitens mag die „treatment group“ in der gewählten Form von kreisfreien Städten zu groß gewählt sein, um signifikante Effekte statistisch nachweisen zu können. Untersuchungen zu den Wirkungen großer Sportstätten auf die Bodenwerte der umliegenden Gebiete indizieren

[9] Zur Messung des Erlebnisnutzens der Olympischen Spiele in London 2012 vgl. ATKINSON, MOURATO & SZYMANSKI (2006) und HEYNE, MAENNIG & SUESSMUTH (2007) für die Fußball Weltmeisterschaft 2006.

einen maximalen Wirkungsbereich von rd. 3000 Metern (TU, 2005; AHLFELDT & MAENNIG, 2007a, b).

Drittens können die von Sportprotagonisten behaupteten, meist auf entsprechende ex-ante impact-Studien gestützten Einkommens- und Beschäftigungseffekte streng genommen nicht widerlegt werden, indem auf signifikante Unterschiede von Null getestet wird. Ihre Widerlegung wäre möglich, wenn die postulierten Zahlenwerte direkt getestet werden. Dies gelänge durch die entsprechenden Studien jedoch regelmäßig nicht, weil die behaupteten Effekte so dicht bei Null liegen. Zur Verdeutlichung: Der Wert in Höhe von -0,014561 für $PStad_{i,t}$ in Spalte (5) der Tabelle 2 wird bei einer Standardabweichung von 0,030745 meist so interpretiert, dass es keine positiven Beschäftigungsergebnisse gibt. Sportprotagonisten können argumentieren, dass mit den vorliegenden Berechnungen positive Beschäftigungseffekte von bis zu (-0,014561 + 2 * 0,030745=) 0,046929 nicht widerlegt werden können. Dies entspräche, ceteris paribus, immerhin einem Beschäftigungsimpuls von 14.144 Jobs um die sich die durchschnittliche Beschäftigung in den Städten mit Stadionprojekten nach Fertigstellung der Projekte erhöht hat.

Literaturverzeichnis

AHLFELDT, G. & MAENNIG, W. (2007a). *The Role of Architecture on Urban Revitalisation: The Case of "Olympic Arenas" in Berlin-Prenzlauer Berg*. Working Paper Hamburg University Nr. 01/2007.

AHLFELDT, G. & MAENNIG, W. (2007b). *The Impact of Sports Arenas on Land Values: Evidence from Berlin*. Working Paper Hamburg University Nr. 03/2007.

Arbeitskreis Volkswirtschaftliche Gesamtrechnung der Länder (1976). *Bruttoinlandsprodukt und Bruttowertschöpfung der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland*. Stuttgart.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (2007). *Bruttoinlandsprodukt, Bruttowertschöpfung in den kreisfreien Städten und Landkreisen Deutschlands 1992 und 1994 bis 2004, Ergebnisse der Revision 2005,* Zugriff am 12. Mai 2007 unter http://www.vgrdl.de/Arbeitskreis_VGR/ergebnisse.asp#BIP_K.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (div. Jg. a). *Bruttoinlandsprodukt der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland*. Stuttgart.

Arbeitskreis Volkswirtschaftliche Gesamtrechnungen der Länder (div. Jg. b). *Bruttowertschöpfung der kreisfreien Städte und Landkreise in der Bundesrepublik Deutschland*. Stuttgart.

ATKINSON, G., MOURATO, S. & SZYMANSKI, S. (2006). *Quantifying the "un-quantifiable": Valuing the intangible Impacts of Hosting the Summer Olympic Games*, unpublished manuscript London School of Economics and Imperial College London.

BAADE, R.A. (1987). *Is There an Economic Rationale for Subsidizing Sports Stadiums?*. Heartland Policy Study No.13.

BAADE, R.A. (1994). *Stadiums, Professional Sports, and Economic Development: Assessing the Reality*. Heartland Policy Study No. 62.

BAADE, R.A. (1996). Professional Sports as Catalysts for Metropolitan Economic Development. *Journal of Urban Affairs, 18*(1), 1-17.

BAADE, R.A. & DYE, R. (1990). The Impact of Stadiums and Professional Sports on Metropolitan Area Development. *Development Growth and Change, 21*(2), 1-14.

BAADE, R.A. & MATHESON, V.A. (2000). An Assessment of the Economic Impact of the American Football Championship, the Super Bowl, on Host Communities. *Reflets et Perspectives, 39*(2-3), 35-46.

BAADE, R.A. & MATHESON, V.A. (2001). Home Run or Wild Pitch? Assessing the Economic Impact of Major League Baseball's All-Star Game. *Journal of Sports Economics, 2*, 307-327.

BAADE, R.A. & MATHESON, V.A. (2003). Bidding for the Olympics: Fool's Gold?. In C. BARROS & M. IBRAHIM (Hrsg.), *Transatlantic Sport*. London: Edward Elgar Publishing.

BAADE, R.A. & MATHESON, V.A. (2004). The Quest for the Cup: Assessing the Economic Impact of the World Cup. *Regional Studies*, *38*, 343-354.

BAADE, R.A. & SANDERSON, R.A. (1997). The Employment Effect of Teams and Sports Facilities. In R.G. Noll & A. Zimbalist (Hrsg.), *Sports, Jobs, and Taxes. The Economic Impact of Sports Teams and Stadiums.* Washington D.C.: Brookings Institution Press.

BADE, F.-J. (1991). *Regionale Beschäftigungsprognose 1995*. Bonn.

BADE, F.-J. (1997). *Sozialversicherungspflichtig Beschäftigte*. Dortmund.

BADE, F.-J. (2006). *Sozialversicherungspflichtig Beschäftigte in den deutschen Kreisen und kreisfreien Städten für die Jahre 1986-1996*, als E-Mail empfangen am 23. April 2006.

BAIM, D.V. (1994). *The Sports Stadium as a Municipal Investment.* Westport (Conn.) and London: Greenwood Press.

BERTRAND, M., DUFLO, E. & MULLAINATHAN, S. (2004). *How Much Should We Trust in Difference-in-Difference Estimates?.* NBER Working Paper 8841.

CARD, D. & KRUEGER, A.B. (1994). Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania. *American Economic Review, 84*(4), 772-793.

CARLINO, G.A. & COULSON, N.E. (2004). Compensating Differentials and the Social Benefits of the NFL. *Journal of Urban Economics, 56*, 25-50.

COATES, D. & HUMPHREYS, B.R. (1999). The Growth Effects of Sport Franchises, Stadia, and Arenas. *Journal of Policy Analysis and Management, 18*(4), 601-624.

COATES, D. & HUMPHREYS, B.R. (2000a). The Stadium Gambit and Local Economic Development. *Regulation: The Cato Review of Business and Government*, *23*(2), 15-20.

COATES, D. & HUMPHREYS, B.R. (2000b). The Economic Consequences of Professional Sports, Strikes and Lockouts. *Southern Economic Journal, 67*(3), 737-747.

COATES, D. & HUMPHREYS, B.R. (2002). The Economic Impact of Postseason Play in Professional Sports. *Journal of Sports Economics, 3,* 291-299.

COATES, D. & HUMPHREYS, B.R. (2003a). The Effect of Professional Sports on Earnings and Employment in the Services and Retail Sectors in US Cities. *Regional Science and Urban Economics, 33*(2), 175-198.

COATES, D. & HUMPHREYS, B.R. (2003b). Professional Sports Facilities, Franchises and Urban Economic Development. *Public Finance and Management, 3*, 335-357.

DIETL, H.M. & Pauli, M. (1999). *Wirtschaftliche Auswirkungen öffentlich finanzierter Stadionprojekte*. Arbeitspapiere des Fachbereichs Wirtschaftswissenschaften Universität Paderborn, Neue Reihe Nr. 61.

EUROSTAT (2001). *New Cronos Data Base*. Luxembourg: Statistical Office of the European Communities.

FIFA (2004). *Auf nach Deutschland*. Zugriff am 12. Mai 2004 unter http://www.ok2006.de/stadien/index.html.

FRIEDRICH, P. (2001). Forschungsbericht: Effekte des neuen Fußballstadions München, Zugriff am 3. Mai 2005 unter http://www.unibw-muenchen.de/campus/WOW/v1062/Stadiongutachten.pdf.

GALSTER, G., TATIAN, P. & PETTIT, K. (2004). Supportive Housing and Neighborhood Property Value Externalities. *Land Economics, 80*(1), 33-54.

HAMM, R. (1996). *Die wirtschaftliche Bedeutung des Vereins „VFL Borussia Mönchengladbach" für die Stadt Mönchengladbach*. IHK-Schriftenreihe 27/1996.

HEYNE, M., MAENNIG, W. & SUESSMUTH, B. (2007). *Mega-sporting Events as Experience Goods*. Working Paper Hamburg University Nr. 05/2007.

HOTCHKISS, J., MOORE, R.E. & ZOBAY, S.M. (2003). Impact of the 1996 Summer Olympic Games on Employment and Wages in Georgia. *Southern Economic Journal, 69*, 691-704.

KANG, Y.S. & PERDUE, R. (1994). Long-term impacts of a mega-event on international tourism to the host country: a conceptual model and the case of the 1988 Seoul Olympics. In M. Uysal (Hrsg.), *Global Tourism Behaviour*. New York: International Business Press.

PAULI, M. (2001). *Stadionfinanzierung im deutschen Profifußball: eine institutionenökonomisch fundierte modelltheoretische Untersuchung*. Dissertation, Paderborn.

SCHRÖDER, R. (1987). Regionalwirtschaftliche Auswirkungen einer Modernisierung des Weserstadions. *Bremer Zeitschrift für Wirtschaftspolitik, 10*, 11.

SKRENTNY, W. (2001). *Das große Buch der deutschen Fußball-Stadien*. Göttingen: Verlag die Werkstatt.

Statistik der Bundesagentur für Arbeit (2007). *Beschäftigte nach Kreisen*. Zugriff am 13. Mai 2007 unter http://www.pub.arbeitsamt.de/hst/services/statistik/detail/b.html.

Statistisches Bundesamt (div. Jg.). *Fachserie C, Arbeitsstättenzählung*. Stuttgart et al.

TEIGLAND, J. (1999). Mega-Events and Impacts on Tourism: The Predictions and Realities of the Lillehammer Olympics. *Impact Assessment and Project Appraisal, 17*, 305-317.

TU, C.H. (2005). How Does a New Sports Stadium Affect Real Estate Values? The Case of FedEx Field. *Land Economics, 81*(3), 379-395.

WILLMS, W. & FISCHER, A. (2001). *Bundesliga-Fußball als Standortfaktor – Analyse der regionalwirtschaftlichen Bedeutung des SV Werder Bremen mit einem Stadien-Benchmark*. Bremen.

Lebenslauf

Persönliche Daten

Name:	Hagn
Vorname:	Florian
Titel:	Diplom-Kaufmann
Wohnort:	Friedhofstr. 3, 93342 Saal a.d. Donau
Geburtstag:	13. Februar 1979
Geburtsort:	Kelheim
Nationalität:	Deutsch
Familienstand:	ledig

Schulausbildung

1985-1989:	Grundschule Saal a.d. Donau
1989-1998:	Johannes-Nepomuk-Gymnasium der Benediktiner in Rohr

Wehrdienst

7/1998 – 4/1999:	Skizug 4./Gebirgspionierbataillon 8 in Brannenburg

Hochschulausbildung

4/1999 – 12/2003:	Studium der Betriebswirtschaftslehre an der Universität Regensburg	
	Schwerpunkte:	Betriebswirtschaftliche Steuerlehre
		Financial Accounting and Auditing
	Diplomarbeit:	Die Besteuerung von Berufssportlern

seit 2004:	externer Doktorand am Institut für Außenhandel und Wirtschaftsintegration der Universität Hamburg

Berufserfahrung

8/2002 – 10/2002:	Praktikum bei Rödl & Partner GmbH, Wirtschaftsprüfungsgesellschaft
seit 5/2004:	Tätigkeit als Steuerberatungsassistent in der Steuerberatungskanzlei Danzer, Hagn & Kollegen