The impact of the FIFA World Cup 2010 on unemployment in South Africa

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Abstract: Using a difference-in-difference technique this study examines the unemployment effects of the FIFA World Cup in the host municipalities of South Africa. It is the first multivariate analysis of the unemployment effects of a FIFA World Cup in a developing country. The results demonstrate that hosting the FIFA World Cup increased unemployment by 6.6% in host municipalities relative to other municipalities. Therefore, this study enlarges the list for ex post studies that are not able to find positive significant results on mega-events.

Keywords: Unemployment, Sport Economics, Infrastructure, Regional Economics

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1. Introduction

In the past decades the world has become more globalized. This has changed the rules that govern the world's economies, connecting national, regional and local economies more than ever before (ILO, 2008). Globalization implies changes, opportunities and threats and not everybody has the same capacity or resources to make the world equal. Instead of governing from central state institutes, the strategy focuses on decentralization, planning for local economic development (LED) (Rogerson & Rogerson, 2010). The current phase of LED aims at "providing a competitive local business environment, encouraging and supporting networking and collaboration between businesses and public/private and community partnerships, facilitating workforce development and education, focusing inward investment to support cluster growth and supporting quality of life improvements" (Ruecker & Trah, 2007:13).

LED planning in South Africa mainly concentrates on poverty mitigation with a pro-poor strategy on the one hand and a pro-growth strategy on the other (Rogerson & Rogerson, 2010). The pro-growth strategy initiative wants to create and strengthen local competitiveness by encouraging local entrepreneurialism and strengthening city assets and capabilities as centers of production or consumption or knowledge based information processing activities. The search for competitiveness has been closely linked with the eager to become a city with a world-city status, especially for Cape Town and Johannesburg. Furthermore much attention was directed at the tourism's potential as new driver for LED due the post-apartheid circumstances in South Africa. This led to bidding and hosting mega-events such as the Rugby World Cup, Cricket World Cup, FIFA World Cup and the Summer Olympics in order to develop urban tourism (Rogerson & Visser, 2007).

Mega events are short-term events with long-term consequences for cities that host them. These consequences are usually though in terms of their tourism and economic impact (Hall, 1992; Getz, 1997). The Fédération Internationale de Football Association (FIFA) owns the right to host the World Cup once every four years. Instead of hosting the event themselves, they sell the right to host the event to countries that are willing to construct and maintain sport, media, logistical and other infrastructure. The FIFA World Cup is usually held in countries with a rich football tradition and an established football infrastructure. FIFA began designating host countries outside Europe and Latin America in order to promote football all over the world. This new strategy led to the first FIFA World Cup ever hosted on African soil.

Special attention has been given to the FIFA world cup 2010 and its economic benefits since South Africa is a developing country with significant poverty among its population.

Even though the main purpose of a host nation is to serve the event's location, Hiller (2006) argues that there is much more at stake. Cities are undergoing a massive transformation in order to attract new sources of funding and employment creation, as well as to improve the built environment for its own sake or changing the image of a city. The globalization of the economy caused greater intercity competition in which cities seek a competitive edge. With the economy more globalized, mega-events have become a tool to strive to greater economic development due this urban boosterism (Smyth, 1994). Cape Town's 2004 Olympic bid is unique in that it is designed to contribute to the upliftment of the previously disadvantaged under apartheid (Hiller, 1998). In order to do so Cape Town wanted to locate training facilities in disadvantaged areas and use these as a kick-start initiative for community revitalization, policies for job training, reconfiguration of the transportation system in those areas (Hiller, 2000).

The development agenda is the key feature for South Africa's mega-event strategy (Pillay & Bass, 2008). The vision of South Africa includes that poverty and unemployment is halved in 2014 (Gonzalez, 2007:2). South Africa believes the FIFA World Cup 2010 is a vehicle for fast-tracking development towards achieving this vision. Therefore this study investigates if the FIFA World Cup 2010 influences the labor market. It supplements previous studies in that it is the first multivariate study that examines the employment effects of a major sporting event, previously in Europe and the United States, in a developing country. This is interesting because of the differences in unemployment and infrastructure between developing and developed countries. Developed countries are more likely to possess a well developed infrastructure system required for a mega-event, in contrary to developing countries who invest massive amounts in infrastructure in order to host the mega-event. This in turn creates jobs, whereas the opportunity costs of labor is close to zero if a country faces underemployment (Matheson & Baade, 2004). Furthermore South Africa is different than previous World Cup hosts in that it uses the mega-event as a vehicle for fast-tracking development.

This study provides an interesting outlook for the FIFA World Cup 2014 in Brazil. Brazil and South Africa face economic similarities when looking at income inequality, income per capita PPP, urban violence and both have a large informal market (de Melo, 2011). However, the

striking difference is seen in the unemployment with an unemployment rate of 7.3% for Brazil and 25% for South Africa in 2008. Furthermore, they differ widely in their expenses for the FIFA World Cup. The costs for the FIFA World Cup 2014 in Brazil are estimated to be US$13 billion, whereas the total costs for the FIFA World Cup 2010 in South Africa amounted to US$3.9 billion (Matheson, 2012). The next section focuses on the literature on mega-events. Section three elaborates on the method and data. The results are elaborated in section four. Section five discusses. Section six concludes.

2. Literature overview

Mega-events are short-term events with a fixed duration. The literature agrees that hosting a mega-event is not just about sports, but also has a political and economic agenda (Espy, 1979; Roche, 1994; Hiller, 1998; Preuss, 2000: Andranovich, Burbank & Heying, 2001). Sport booster Preuss (2000) states that hosting a mega-event provides a unique opportunity for the host country to put the country on the map, showcase the region, promote the political system, create new trading partners, attract investment, boost tourism, create jobs and business opportunities, urban renewal, including housing and infrastructure and to build a legacy of sports infrastructure.

Mega-events are associated with enormous preparations and operational efforts (Matheson & Baade, 2004). For example, the government spent R4.5billion on Cape Town Stadium alone for the 2010 World Cup (Schoonbee & Brummer, 2010). To get the public's approval and justify these expenditures ex ante impact studies are generated (Matheson & Baade, 2004). These impact studies are often generated by the advocates of the event and claim economic windfalls. In the case of South Africa World Cup 2010, the organizers built on the cost benefit analysis estimated by Grant Thornton in 2003 (Feinstein, 2003). It estimated an economic impact of R21.3 billion, 159,000 additional jobs and an additional tax income of R7.2 billion. In 2009 Grant Thornton increased her estimates to an economic impact of R55.7 billion, 415,000 additional jobs and an additional tax income of R19.3 billion (Saunders, 2010). More than 480.000 tourists were expected to visit South Africa, crowding out only 20% of the normal tourists.

The Human Science Research Council (HSRC) performed surveys about the perceptions towards the FIFA World Cup 2010 (Pillay, 2007). HSRC showed that in 2005 the respondents think the FIFA World Cup will be beneficial for their lives in terms of creating jobs and business opportunities, although almost equally divided on whether the effects would be short term or lasting. In 2007 the respondents continued to be positive towards the FIFA World Cup. However, the perceptions regarding economic and employment benefits dropped from 62% to 51%. Although this slight decline, the perceptions were still in favor for hosting the FIFA World Cup influenced due ex ante studies. But the ex ante studies might not give the real picture.

Scholars have criticized the ex ante studies that claim that mega-events provide a substantial boost into the host economy. Several researchers have estimated ex post the impact of mega-

events on the host economy. Ex post econometric studies of FIFA World Cups reveals concerns to be less optimistic. The FIFA World Cup 1994 would have a cumulative positive impact of US$ 4 billion on the host cities ex ante. However Baade and Matheson (2004) didn't find any short-term economic benefits. Instead they found that the economies of the host cities in 1994 experienced a shortfall of US$ 4 billion in economic growth compared to what normally was expected for those economies. Hagn and Maennig (2009) analyzed the labor market in Germany of the 75 largest cities and concluded no significant difference in the host cities relative to the other cities for the FIFA World Cup 2006. Hagn and Maennig (2008) ex post study showed that the FIFA World Cup 1974 in Germany did not have short-term nor long-term effects on the labor market. Szymanski (2002) conducted a research on the 20 largest economies in the last 30 years and concluded that countries experienced significant lower economic growth in the years they hosted the FIFA World Cup. These findings are not specific related to the FIFA World Cup but also for mega-events in general (Matheson, 2006).

There are only a few ex post mega-event studies that showed significant positive results. Hotchkiss, Moore and Zobay (2003) find positive significant employment effects for the Atlanta Olympics 1996 that contributed 293.000 jobs in that area. Kang and Perdue (1994) estimated that the Seoul Olympics 1988 contributed to one million additional foreign visitors and led to US$ 1.3 billion additional income due to tourism in Korea. Still the picture dominates that ex ante studies routinely overestimate or exaggerate the benefits of mega-events by up to a factor of ten (Matheson, 2006).

Ex ante studies face theoretical and practical deficiencies, even if they are done in careful way (Matheson, 2006). Matheson and Baade (2004) argue that the benefits related to mega-events are exaggerated for at least three reasons. The first reason relates to the increase in direct expenditure attributable to the event. Matheson and Baade (2004) argue the importance of a net measurement instead of gross. The gross measurement fails to account for the decreased spending attributable to the event, also named the substitution effect. That is, the money spent on the event by local residents that otherwise was spent in the local economy.

The second shortcoming is the crowding out effect (Matheson & Baade, 2004). A mega-event can attract one million sport visitors, but can displace an equal number of regular visitors that would visit the country if the event didn't take place. Reasons for avoidance can be the massive crowds, congestion and the high prices associated with the event (Matheson, 2006). Thus the gross measurement induces economic impact with information on spending for those

included, but fails to account spending of those crowded out with the lack of information on the spending of those not (Matheson & Baade, 2004). Therefore the gross measurement can have a huge economic impact, while the net impact of the event can be negligible.

The last reason Matheson and Baade (2004) give for an exaggerated economic impact is the multiplier. The multiplier captures the additional rounds of spending due the increased incomes that are a result of additional spending which should result in more direct spending. The ex ante studies predict the economic impact based on estimates of the number of visitors, their expected stay and the amount of money they daily spend (Matheson, 2006). Researchers then apply the multiplier on the direct economic impact to include the indirect economic impact. If errors are made in estimating the direct economic impact, these will be heightened in calculating the indirect spending due the multiplier. To have a precise multiplier analysis one has to use multipliers that fit according to mega-events, including any leakages from the circular flow of payments. Matheson and Baade (2004) argue that ex ante studies do not account for full employment and ownership structure. If a host economy is near full employment, the labor essential for the event has to come from other areas where unemployment exists. If this is the case, the multiplier has to be corrected for this leakage of income and additional spending. If the occupancy rates of hotels are higher than normal during the event it is crucial to know whether the hotels are national or international owned. The earnings that remain in the community depend on the ownership structure. Matheson and Baade (2004) provide an example in which an international circus is totally self-sustaining, thus has a multiplier of zero. Money spend on the circus will not result in a benefit for the community. Thus when an event visitor spends 100 euro's on the circus and 100 euro's for lodging in the host community will result in a 100 euro benefit for the community. Whereas a regular visitor will spend 100 euro's on local activities and 100 euro's on lodging will result in a 200 euro benefit for the community. Matheson and Baade (2004) believe it is reasonable that mega-events have a lower multiplier than the multiplier for spending on local entertainment because mega-events usually go along with athletes and/or entertainers that must be imported from countries all over the world that participate in the event.

Matheson (2006) and Owen (2006) acknowledge that mega-events stimulate the economy. Mega-events require infrastructure and therefore jobs are created. The problem is that the jobs created are often short-term and low paid. Matheson (2006) argues that although the expenditure on the construction for sport infrastructure will definitely stimulate the local economy, the opportunity cost of capital has to be taken into account. He states that the public

money spent on sport infrastructure and event related operations may have to come from somewhere else. This can be by cuts in other government services, expansion of government borrowing or an increase in taxation. All of this will produce a drag on the economy, as employment benefits related to the event will be offset be employment losses due the higher taxes or spending cuts in other government services (Matheson, 2006). He further argues that if materials, labor or technology has to be obtained outside the local economy, this results in an outflow of money from of the local economy. Baade & Sanderson (1997) argue that sports only stimulate economic performance if it attracts money from outside the local economy or keep money inside the local economy that previously was spend outside the local economy. Owen (2006) considers the alternative uses of the money spend. Alternative uses can be on hospitals, education or letting taxpayers keep their money. According to Owen (2006) the alternative uses would spread the spending over a much wider range of sectors in the economy, which is beneficial for a wider range of people instead of a small particular area.

The above sketched picture is not so optimistic. However there are reasons that ratify a mega-event. Sport boosters often claim, besides the economic boost during the event, civic pride or national exposure as primary benefits of mega-events. Civic pride brings intangible psychological value to the countries hosting the event (Matheson, 2006). The problem with this variable is that it is hard to measure. Baade (1996), Coates & Humphreys (1999) and Porter (1999) tried to measure the effect by looking at the presence of new sport facilities, franchises or events, but didn't find correlation between these features and economic growth in the hosting country. However Coates & Humphreys (1999) did find an increase in per capita incomes in the cities that win the Super Bowl, indicating that civic pride indeed brings benefits for the economy of the winning city by making labor more productive. Recently Süssmuth, Heyne & Maennig (2010) ex post captured civic pride based on a contingent valuation method a willingness to pay of around 830 million for the World Cup 2006 in Germany, making the FIFA World Cup 2006 one of the greatest and economically most important events in Germany (Meannig, 2007).

The other major player of the intangible benefits is the national and international exposure due to mega-events (Matheson, 2006). The rationale behind this is that sport fans that joined the mega-event enjoyed their visit and will return in the future to the host country, raising the tourist revenues of that country. The tourist revenues can also increase due to the television viewers that decide to make a trip to the destination based on what they have seen during the mega-event. Furthermore corporate visitors may relocate their business to that country. To

summarize, hosting a mega-event will raise the perception of a country as world class and as a travel destination. Allmers and Maennig (2009) show a clear rise in the international perception of Germany due the FIFA World Cup 2006 with the Anholt Nation Brand Index (NBI). In 2005 the international perceptions about Germans were considered hard and cold, whereas in 2006 all the NBI indicators were improved. However there is little empirical research that made connections between mega-events and future tourism demand.

Ex post studies that analyze the economic effects of a major sport-event so far have focused on developed countries. Baade and Matheson (2000, 2001, 2002, 2004), Coates and Humphreys (1999, 2000, 2001, 2002, 2003a, b) and Hotchkiss et al. (2003) concentrated on the United States. Whereas, Hagn and Maennig (2007, 2009) due to different labor markets between the United States and Europe have focuses on Germany. South Africa is a developing country with an unemployment level of 24.7% in 2010 (World Bank).

Hosting a mega-event can have different consequences for a developing country compared to a developed country (Matheson & Baade, 2004). The FIFA World cup requires 8 to 10 stadiums with a capacity of 40.000 to 60.000 seats. Therefore the cost on infrastructure for developing countries hosting the world cup is likely to be much higher. As a result the opportunity costs might also be higher due the higher expenses and best alternative public projects for the society in developing countries. Developing countries are also likely to attract fewer fans to mega-events. Local residents may be reluctant to buy a ticket, as prices are too high and foreign visitors might stay away as they have worries about the crime and the quality of accommodation. Lastly, sports and entertainment are considered a luxury good. Therefore the demand and the usage of sport infrastructure in the aftermath of a mega-event will likely be lower in a developing country.

On the contrary, being a developing country can also be beneficial for hosting mega-events. Developing countries have relative low wages which lower the operating and infrastructure costs. Although low wages reduce the ability of a host city to charge high prices for local residents, it does not limit the ability to charge high prices for foreign visitors (Matheson & Baade, 2004). Another factor is the underemployment in developing countries. With underemployment the opportunity costs of labor equals to almost zero and discourages labor migration (Matheson & Baade, 2004). Therefore, the chances that the money earned associated with the mega-event will stay within the host-city will increase. Furthermore mega-

events often also spur spending on non-sport infrastructure that may stimulate economic development.

Hiller (1998) argues the impact of an event can no longer be understood in terms of the event itself, as the decision to host a mega-event is a political one made by community elites which are in power and seldom made as a result of democratic decision making. Therefore Hiller (1998) provided a framework for a more comprehensive analytical model to assess the impact of mega-events. His political economy model views mega-events not as unique occurrences, but as a chain of relationship expressed in backward, parallel and forward linkages. Backward linkages have a causal relationship to the event and refer to the background objectives that provide the rationale to support the event. Parallel linkages are the side effects of the mega-event, such as air pollution and the increase in prices during the course of the event. The forward linkages are based on the event itself as the cause of effect. This analysis gets a longitudinal dimension because the event can be categorized into the pre-event, event and post-event period. Where the pre-event period is highlighted by backward linkages, the event itself isolates the short-term from the long-term impacts and the post-event highlights not only the permanent effect but also the adaption to changed conditions caused by the event.

To make a FIFA World Cup developmental for the host country, Hiller (2000) argues that can only be achieved if there is a deliberate will in making them so. In previous FIFA World Cups the sport venues were not built with the aim to stimulate the economy trough urban development, but rather to maximize the profit margins of the professional clubs (Allmers & Maennig, 2009). The FIFA World Cup 2010 lies in line with the Cape Town Olympic bid as it has the goal to provide as catalyst for improving the life conditions of the disadvantaged and restructure the apartheid city with new functional linkages (Pillay & Bass, 2008). The strategy for poverty reduction centers on black economic empowerment initiatives due to job creation, transport integration and township regeneration. Key elements achieving this are to construct facilities in disadvantaged areas with the notion that facilities development stimulates further initiatives, the enhancement of disadvantaged communities' sport programmes, job creation, provision of affordable housing, small business support, provision of an integrated transport system and community consultation (Pillay & Bass, 2008:339). Furthermore the architectural plans for the FIFA World Cup differ from the functional stadium projects of former World Cups (Maennig & Schwarthoff, 2006). Stadiums are designed as an iconic building which is embedded in the design of the urban area to induce positive urban economic effects (Allmers & Maennig, 2009). Allmers & Maennig (2009) also

note the importance of the international image gain. Crime is in South Africa is a big issue for tourists (Maennig & Maennig, 2002). Therefore the effect of attracting future tourists and external investors might be stronger for South Africa than former FIFA World Cup hosts, when hosted successfully.

Still Pillay and Bass (2008) remain cynical because of the results from previous mega-events. They also take into account the unintended consequences that the FIFA World Cup 2010 could bring. Facilities in disadvantaged areas could alter the value of property in that particular area and therefore change the characteristics of the area. The upward movement of the property market would not be beneficial for the urban poor. The expectations of Pillay and Bass (2008) are that employment in host cities will rise in the construction phase and the FIFA World Cup itself and will attract rural migrants. As a consequence the unemployment is expected to swell in the post FIFA World Cup area, as job creation is often temporary they claim. Still they acknowledge that mega-events can become a symbol of economic growth trough inward investment and job creation (Pillay & Bass, 2008).

Ex post analysis on the FIFA World Cup 2010 are rather limited. Du Plesis and Maennig (2011) examine the effect on international tourism and awareness for South Africa. They found an additional net increase in overseas tourism of approximately 118.000 persons during the FIFA World Cup compared with the year before. This is again significant lower than the effects claimed ex ante. They argue the crowding out effect with prices three times the normal levels as possible motive for the disappointed results. Du Plesis and Maennig (2011) use Google hits and Facebook members per group to measure the awareness of a country and show a 60% increase in the former and the latter increased with 170% during the FIFA World Cup period. However the biggest increase was in the FIFA World Cup itself, suggesting that only a part of the awareness might be directed towards the host country. George and Swart (2012) investigated the perceptions of overseas tourists with a questionnaire on crime safety and future travel intentions. Their research shows positive perceptions of South Africa, as 92% of the 398 respondents were likely to recommend South Africa as a tourist destination and 71% did not witness any crime. Furthermore, Knott, Fyall and Jones (2012) show that 74% of the first time visitors during the World Cup 2010 changed their perceptions positively towards South Africa. However, George and Swart (2012) are aware of the special policy circumstances during the FIFA World Cup 2010 period and acknowledge that the perceptions of the tourists can differ in the post FIFA World Cup 2010 period under normal policy conditions.

News 24 (2010) reported a shortfall of the FIFA World Cup 2010 of R27 billion. During the tournament itself businesses in South Africa reported a booming trade, increased hotel and car bookings and sales since the start of the tournament. Visa reported an increase of 54% in credit card spending by foreigners compared to the same period previous year. Analysts estimated that the foreign spending shall lead up to R13 billion into the local economy. However, this amount is not even close to the government spending of roughly R40 billion on new stadia and upgrading infrastructure. Tayob (2012) is also skeptical, when she looks at the FIFA World Cup 2010 in a millennial capitalism perspective, in which states, due to the globalizing world economy, are increasingly subjected to the demands of global capital, foreign investment and nation building. She saw the government and the event organizers promote the FIFA World Cup 2010 by means of nation-building and economic prosperity, indicating the tournament as vehicle for a real change in the country's history and inducing public support. Both the parties were proponents of hope and agreed to massive sacrificial expenditures for the tournament, expenditures which were beneficial for large corporations and privileged parties in the construction sector. To complete the millennial capitalism characteristics, she saw the event excluding the claims and circumstances of the people in the lowest place of the social ladder.

3. Method and data

This research examines the employment effects of the FIFA World Cup 2010 on the host cities in South Africa. The method is based on Hagn and Maennig's (2009) multivariate study. In their quest to assess to unemployment effects of the FIFA World Cup 2006 in Germany, they compared the differences in unemployment between the host cities and non host cities in a sample of the 75 largest cities in terms of their population prior to the event. To capture to which extent the development of unemployment between the two groups differ, Hagn and Maennig (2009) use models applied by Baade and Matheson (2000, 2001, 2002, 2004), Coates and Humphreys (1999, 2000, 2001, 2002, 2003a, b) and Hotchkiss et al. (2003) and add their own model to test for method sensitivity. The first two methods test for employment effects during the course of the World Cup and monthly data is required. Therefore this research focuses on Hotchkiss's et al. (2003) difference-in-difference method plus the application of Hagn and Maennig (2009).

The difference-in-difference method is used to determine whether the variable of interest, in this case unemployment, changes more for one group after an event than the other group under observation. The basic idea is to add dummy variables to an OLS regression for whether the time period is pre or post event, whether the group under observation is affected or not and an interaction of the two indicators. To examine difference-in-difference in the intercept, the model takes the following form:

$$\begin{aligned}\ln Unemp_{i,t} = {} & \beta_0 + \beta_1 \ln Pop2003_i + \beta_2 LF2003_i + \beta_3 HV2003_i + \beta_4 MI2003_i \\ & + \beta_5 DL2003_i + \beta_6 Prod2003_i + \beta_7 WC_i + \beta_8 Post_t + \beta_9 PostWC_{i,t} \\ & + \varepsilon \end{aligned} \quad (1)$$

with:

$\ln Unemp_{i,t}$ log unemployment in municipality *i* at time *t*,

$\ln Pop2003_i$ log population in municipality *i* at in the year 2003,

$LF2003_i$ share of gross value added of the agriculture, hunting, forestry, logging and fisheries sector in municipality *i* in the year 2003,

$HV2003_i$ share of gross value added of the trade, hospitality industry and traffic sector in municipality *i* in the year 2003,

$MI2003_i$ share of gross value added of the mining industry sector in municipality *i* in the year 2003,

$DL2003_i$ share of gross value added of the community service industry sector in municipality *i* in the year 2003,

$Prod2003_i$ share of gross value added of the manufacturing industry sector in municipality *i* in the year 2003,

WC_i dummy for match venues of the World Cup 2010 (1 for match venue, 0 if not a match venue),

$Post_t$ dummy for period after the World Cup 2010 (1 for period after, 0 for period before the World Cup) and

$PostWC_{i,t}$ dummy for match venues and period after the World Cup 2010 (1 if match venue and period after the World Cup, otherwise 0).

In this framework, the variables $\ln Pop2003_i$, $LF2003_i$, $HV2003_i$, $MI2003_i$, $DL2003_i$ and $Prod2003_i$ control for observable differences between the host municipalities and non host municipalities that might entangle the analysis. The location of the FIFA World Cup 2010 impact is controlled for by the dummy variable WC_i and the time dummy variable $Post_i$ controls for whether the event had taken place or not. The variable of interest $PostWC_{i,t}$ measures the unemployment in the host municipalities, post-FIFA World Cup 2010 relative to pre-FIFA World Cup 2010 compared to the unemployment in the non host municipalities, post- relative to pre-FIFA World Cup 2010, the control group.

To test whether the growth rate at which unemployment has changed post- relative to pre-FIFA World Cup 2010 is different for host municipalities compared to non host municipalities, the following specification is modified in accordance with Hotchkiss et al. (2003):

$$\begin{aligned}\ln Unemp_{i,t} = {} & \beta_0 + \beta_1 \ln Pop2003_i + \beta_2 LF2003_i + \beta_3 HV2003_i + \beta_4 MI2003_i \\ & + \beta_5 DL2003_i + \beta_6 Prod2003_i + \beta_7 Trend + \beta_8 TrWC_i + \beta_9 TrPost_t \\ & + \beta_{10} TrPostWC_{i,t} \\ & + \varepsilon \end{aligned} \quad (2)$$

with:

Trend time trend,

$TrWC_i$ trend variable for match venues of the World Cup 2010 (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 2010 (1 if 1st phase after the World Cup, 2 if 2nd phase, etc.., otherwise 0) and

$TrPostWC_{i,t}$ trend variable for match venues and period after the World Cup 2010 (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).

Again the variables $\ln Pop2003_i$, $LF2003_i$, $HV2003_i$, $MI2003_i$, $DL2003_i$ and $Prod2003_i$ are used to take into account observable differences between municipalities and time period and location are controlled by $TrPost_t$ and $TrWC_i$ variables indicating whether the FIFA World Cup 2010 had taken place or not and whether the municipality is a host venue or not. The difference with model (1) is that model (2) allows the impact of time and location to show up through the change in the *Trend*. The variable $TrPostWC_{i,t}$, the variable of interest, captures the differences between the host municipalities and non host municipalities and their change in the slope post- versus pre-FIFA World Cup 2010 time period.

Hagn and Maennig (2009) extend the difference in difference approaches of Hotchkiss et al. (2003) by combining both approaches into one model. This way they take the changes as well as for the trends of the dependent variable into account. Hereby they avoid distorted results, as the lower growth after the world cup can be caused by an already existing negative trend.

$$\begin{aligned}\ln Unemp_{i,t} = {} & \beta_0 + \beta_1 \ln Pop2003_i + \beta_2 LF2003_i + \beta_3 HV2003_i + \beta_4 MI2003_i \\ & + \beta_5 DL2003_i + \beta_6 Prod2003_i + \beta_7 WC_i + \beta_8 Post_t + \beta_9 PostWC_{i,t} \\ & + \beta_{10} Trend + \beta_{11} TrWC_i + \beta_{12} TrPost_t + \beta_{13} TrPostWC_{i,t} + \varepsilon \qquad (3)\end{aligned}$$

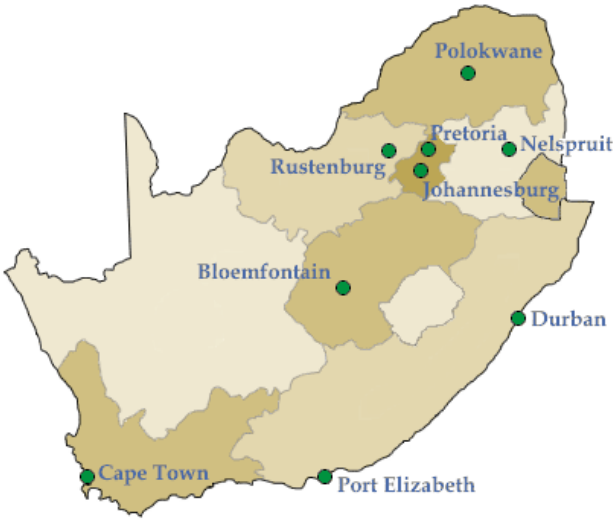
The variables $PostWC_{i,t}$ and $TrPostWC_{i,t}$ examine the potential unemployment effects of the FIFA World Cup in the match venues.

The period of observation begins in 2003, which is the year before the announcement that South Africa was selected to host the FIFA World Cup 2010 and ends in 2011, the latest period with data available. The data is received from IHS Global Insight South Africa. Global

Insight is a consultancy that specializes in economic analyses and forecasting with data from Standard & Poor's Data Resources International and WEFA.

The data being used looks at the 75 largest municipalities in South Africa. The selection is made by taking the largest 75 municipalities in terms of their number of inhabitants in 2003. Host cities for the FIFA World Cup 2010 include Johannesburg, Cape Town, Durban, Pretoria, Port Elizabeth, Polokwane, Nelspruit, Bloemfontein and Rustenburg. Their location is shown in Figure 1.

Fig. 1: Nine host cities for the FIFA World Cup 2010



The largest municipalities among the host cities include Johannesburg, Durban, Cape Town, Pretoria and Port Elizabeth, all with a population above a million inhabitants. On the contrary, Rustenburg is the smallest host city and is ranked 17th in the table of most populous municipalities in 2003.

The variables that control for differences between municipalities in the sample are shown in table 1. The characteristics are shown for the year 2003, in accordance with Hagn and Maennig (2009), which is the year before the announcement that South Africa will host the FIFA World Cup 2010.

Table 1: The control variables

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
ln*Pop*2003$_i$	75	12.652	0.738	11.913	15.034
*LF*2003$_i$	75	0.057	0.058	0.002	0.322
*HV*2003$_i$	75	0.303	0.115	0.079	0.669

$MI2003_i$	75	0.082	0.147	0.000	0.676
$DL2003_i$	75	0.328	0.159	0.054	0.680
$Prod2003_i$	75	0.121	0.124	0.014	0.513

Source: IHS Global Insight South Africa

The natural logarithm of population, $\ln Pop2003_i$, measures the total inhabitants per municipality in 2003. The largest municipality in 2003 counts 3.383.138 inhabitants, whereas the smallest municipality counts 149.227 inhabitants. The sum of the share of gross added per sectors accounts for 89.1% on average of the total gross value added in the municipalities in 2003. The community service industry sector has added the largest share of gross value in 2003 with an average share of 32.8%. The agriculture, hunting, forestry, logging and fisheries sector accounts for the lowest share of gross value added in 2003 with an average of 5.7%. The mining sector has the widest divergence in share of gross value added in a municipality in 2003, with a minimum of zero value added and a maximum of 67.6 % gross value added.

The characteristics of the created dummy variables that indicate the host municipalities and post-FIFA World Cup 2010 period are summarized in table 2.

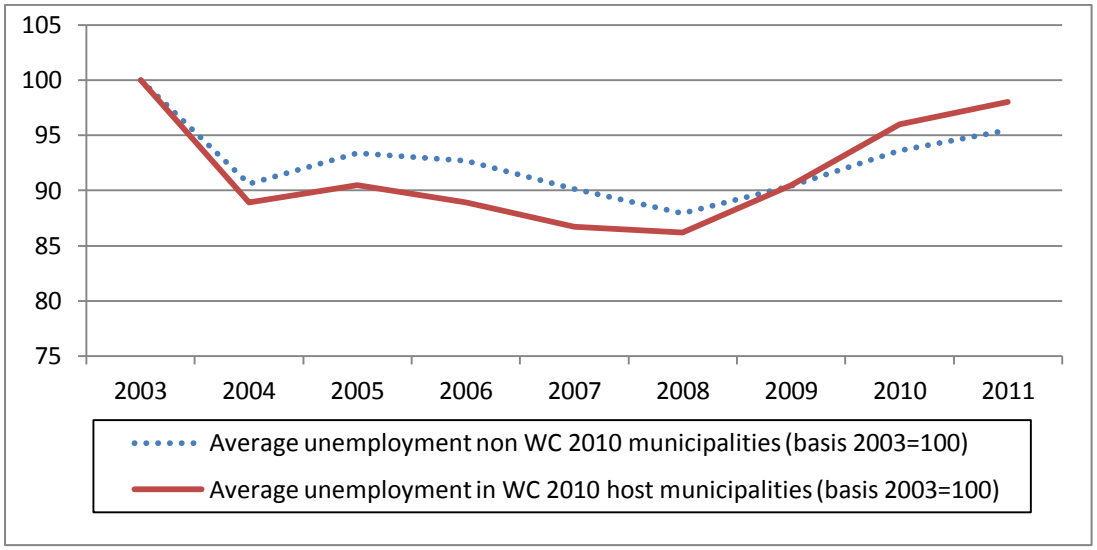
Table 2: The dummy variables

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
WC_i	675	0.120	0.325	0	1
$Post_t$	675	0.222	0.416	0	1
$PostWC_{i,t}$	675	0.027	0.161	0	1
$TrWC_i$	675	0.600	1.856	0	9
$TrPost_t$	675	0.333	0.667	0	2
$TrPostWC_{i,t}$	675	0.040	0.255	0	2

Table 2 shows that 12% of all observations are host municipalities, whereas 2.7% of all observations correspond to host municipalities in the post-FIFA World Cup 2010 period.

The unemployment and population figures are yearly numbers for the municipalities. The development of the unemployment and population in the nine host municipalities is compared to the development of the non host municipalities in figure 2 below.

Fig. 2: Comparison of the unemployment figures in the host municipalities and non host municipalities of the FIFA World Cup 2010 South Africa



Source: IHS Global Insight South Africa

Figure 2 illustrates that the development in the two groups show largely the same trend for unemployment. In the beginning the unemployment in host municipalities drops below the unemployment of the non host municipalities onwards until 2009. However from 2008 onwards the unemployment in the host municipalities rose more strongly than in the non host municipalities, resulting in higher unemployment numbers from 2009 onwards. The characteristics of the dependent variable are summarized in table 3.

Table 3: The dependent variable

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
$\ln Unemp_{i,t}$	675	9.907	1.160	6.417	13.127

Source: IHS Global Insight South Africa

The average unemployment per municipality corresponds to 20.070 persons with a minimum of 612 persons and a maximum of 502.323 persons unemployed.

4. Results

Table 4 contains the results from estimating equation (1), (2) and (3). Hotchkiss et al. (2003) estimated the model with various assumptions about the post-event period. In line with Hotchkiss et al. (2003) and Hagn and Maennig (2009) the equations are estimated with a post-event period including the tournament itself. Therefore the equations are estimated with $Post_t$ starting in 2010. All the equations are estimated with Newey-West robust standard errors to correct for heteroskedasticity and autocorrelation.

Table 4: Results of estimations, post-event period from 2010

	(1)	(2)	(3)
Dependent variable	ln*Unemp*$_{i,t}$	ln*Unemp*$_{i,t}$	ln*Unemp*$_{i,t}$
ln*Pop*2003$_i$	1.279	1.230	1.279
	(11.83)**	(12.35)**	(11.79)**
*LF*2003$_i$	-3.728	-3.780	-3.728
	(2.14)*	(2.17)*	(2.13)*
*HV*2003$_i$	-1.326	-1.360	-1.326
	(1.58)	(1.63)	(1.58)
*MI*2003$_i$	-1.428	-1.431	-1.428
	(2.01)*	(1.99)*	(2.00)*
*DL*2003$_i$	-2.371	-2.321	-2.371
	(3.29)**	(3.25)**	(3.28)**
*Prod*2003$_i$	-1.182	-1.120	-1.182
	(1.69)	(1.61)	(1.68)
WC$_i$	-0.531		-0.558
	(2.88)**		(2.82)**
Post$_t$	-0.087		0.015
	(3.33)**		(1.95)
PostWC$_{i,t}$	**0.107**		**0.066**
	(1.42)		**(2.41)***
Trend		-0.010	-0.022
		(1.85)	(6.13)**
TrWC$_i$		-0.087	0.007
		(2.86)**	(0.64)
TrPost$_t$		-0.019	-0.002
		(1.40)	(0.37)
TrPostWC$_{i,t}$		**0.245**	**0.007**
		(3.28)**	**(0.39)**
Constant	-4.537	-3.911	-4.450
	(2.67)**	(2.42)*	(2.61)*
Observations	675	675	675
R-squared	0.79	0.78	0.79

Robust t statistics in parentheses
* significant at 5%; ** significant at 1%
Bold coefficients are for variable of interest to test for unemployment effects of the FIFA World Cup South Africa.

Table 4 shows over the period 2003 to 2011, that the higher the shares in the agriculture, hunting, forestry, logging and fisheries sector, the community service industry sector and the mining industry sector in 2003, the lower the level and growth rate of unemployment for the municipality in all three the equations. However the shares in the trade, hospitality industry and traffic sector and the manufacturing sector did not differ significantly from zero. Larger population in 2003 translates itself into a higher level and growth rate of unemployment for the municipality. Furthermore the negative significant value of the variables WC_i and $TrWC_i$, indicate that over the whole period of observation the host municipalities experience lower levels and growth rates of unemployment relative to non host municipalities.

Column (1) of table 1 represents the first equation. The relevant variable $PostWC_{i,\,t}$ is not significant. This indicates that unemployment levels in the 9 host municipalities did not differ significantly within the observation period from those other municipalities in the aftermath of the FIFA World Cup relative to before. The significant negative value of the variable $Post_t$ shows for the whole sample a lower significant level of the unemployed after the FIFA World Cup compared to pre-FIFA World Cup period, a decrease of 8.7%.

The growth of the numbers unemployed through the FIFA World Cup, estimated by equation (2), is shown in column (2). The relevant variable $TrPostWC_{i,\,t}$ is significantly positive at a 1% level. In other words, the host municipalities show in comparison with the non host municipalities a positive significant trend in the development of unemployment for the period after the FIFA World Cup relative to before, corresponding with 24.5%.

Equation (3) that takes into account both the changes in the levels and trends of unemployment corresponds to column (3). The variables of interest are $TrPostWC_{i,\,t}$ and $PostWC_{i,\,t}$. The variable $TrPostWC_{i,\,t}$ does not differ significantly from zero, indicating that for the period after the FIFA World Cup, the hosting municipalities show in comparison with the non host municipalities no trend differing significantly from zero in the growth rate of unemployment. However the variable $PostWC_{i,\,t}$ is significant and positive. This indicates that, while controlling for the growth rate of unemployment, the levels of unemployment in the period after the FIFA World Cup relative to the period before have developed significantly more with 6.6 % in host municipalities compared to the levels of unemployment in the non host municipalities. Furthermore, the negative and significant value of the time trend variable indicates a 2.2% downward slope in unemployment over the entire sample.

The results show that if we take the whole period of observation into consideration the host municipalities are relative better off with lower levels and growth rates of unemployment. However, this changes in the aftermath of the FIFA World Cup. The levels and growth rates of unemployment increase compared to non host municipalities. Therefore, an effect of the FIFA World Cup on unemployment in the nine host municipalities can be demonstrated, although it is negative.

5. Discussion

Previous ex post difference-in-difference studies on mega-events include Hotchkiss et al. (2002) and Hagn and Maennig (2007, 2009). The shortest post period of observations is eight months, starting from July 2006 to January 2007 for the FIFA World Cup 2006 in Germany (Hagn & Maennig, 2009). The post period of this research is two years, including 2010 until 2011. Although this post period is longer, it still has fewer observations. This due to the yearly compared to Hagn and Maennig's (2009) monthly observations. Larger shares of observations lead to smaller variances of estimators. This in turn creates more efficient estimators.

The model controls for city specific characteristics such as the population levels and the gross value added per sector in 2003. The gross value added is the output at market prices minus the intermediate consumption at purchaser prices. The model does not take into account for differences in wages between municipalities. Higher wages make labor more expensive and will lower the demand for labor ceteris paribus. Furthermore, Pillay and Bass (2008) expect after the FIFA World Cup 2010 a swell in unemployment due to the short-term created jobs and the attraction of rural migrants into the host municipalities. The model does not take into account for migration between municipalities. Future research can apply a modified model of Hagn and Maennig (2009) accustomed to population figures, in order to examine whether the rise in unemployment is explained by migration into the host municipalities. Higher population in host municipalities, when controlling for the growth rate, after the World Cup relative to before compared to the other municipalities could indicate migration into the host municipalities. The model also does not take into account for the effects of the financial crisis that could have had an effect on the gross value added per sector in municipalities and therefore unemployment.

The period of observation of this study ends in 2011. Therefore the long-run benefits of the FIFA World Cup 2010 are excluded. Matheson (2012) argues that only the creation of non-sport related infrastructure can economically justify hosting a mega-event. However he acknowledges the high costs of this investment, including the unproductive investments in the sport infrastructure and tournament operations. South Africa's total costs amount to US$3.9 billion, with US$1.3 billion invested in sport infrastructure. Chandra and Thompson (2000) show positive effects of general infrastructure by looking at highways in non metropolitan counties in the US. At the age of four the highway has positive impacts on the retail sales in

the highway county, whereas at the age of thirteen it positively affects the earnings in the highway county. Matheson (2012) is more skeptical and gives no guarantee that general infrastructure will provide net positive returns for municipalities involved. Still, the impact of the general infrastructure investments related to the FIFA World Cup 2010 could pay off in the future. Therefore, I recommend to resume this study in the future with a longer post-FIFA World Cup period.

6. Conclusion

This study and their corresponding results complements Hotchkiss et al. (2003) and Hagn and Maennig (2009) and are unique to the extent that for the first time unemployment effects of a mega-event in a developing country are being examined in a multivariate study. The study corresponds to most ex post studies in that it is unable to show significantly positive effects that are different from zero. However, the results for South Africa differ from Hotchkiss et al. (2003) and Hagn and Maennig (2009) because, using the difference-in-difference methodology, this study has demonstrated a negative employment impact for the host municipalities. The municipalities that hosted the FIFA World Cup showed over the whole period of observation a decrease of 55.8% in levels and an 8.7% decrease in their growth rate of unemployment relative to the other municipalities. This percentage translates itself in 24.761 persons less unemployed in host municipalities over the entire observation period, based on the average unemployment level across all 75 municipalities in the entire period. However this changes remarkably in the post-FIFA World Cup period. Not only did the rate of unemployment growth turned positive with an increase 24.5% in host municipalities relative to non host municipalities in the aftermath of the FIFA World Cup, but, after controlling for the growth rate, the host municipalities also exhibit a rise in the level of unemployment as well. The 6.6% increase in the unemployed corresponds to 2.898 people more unemployed in the host municipalities in the aftermath of the FIFA World Cup, based on the average unemployment level across all 75 municipalities prior to the FIFA World Cup.

The results correspond with Pillay and Bass (2008) expectations that unemployment in host cities will decline in the construction phase and the FIFA World Cup itself and will attract rural migrants and, as a consequence, the unemployment is expected to swell in the post FIFA World Cup area, as job creation is often temporary. The lower levels of unemployment in the host municipalities might be attributed due to the construction phase related jobs prior to the FIFA World Cup. The rise in the unemployment levels of the host municipalities might be attributed due short-term created jobs and the inflow of rural migrants. However, if this rise in the unemployed is explained due to short-term FIFA World Cup related jobs and the inflow of rural migrants due the event cannot be examined in this study.

I nevertheless share the concern of positive claims by sport boosters do not hold and are maybe even worse for developing countries. One can argue that due to the negative results in employment the Matheson and Baade's (2004) cases against a developing country hosting

mega-events weights higher than the cases in favor of hosting a mega-event. This is in line with Owen (2006) and Matheson (2006) who argue the opportunity costs of sport infrastructure. The alternative uses would spread the spending over a much wider range of sectors in the economy, which is beneficial for a wider range of people instead of a small particular area. This might be of greater concern for developing countries, especially if the money spent has to come from somewhere else in the government budget. My share of concern becomes even bigger, because of the deliberate will of South Africa in making the FIFA World Cup beneficial for the previously disadvantaged (Pillay & Bass, 2008) . Due to the deliberate will in making the FIFA World Cup successful for the previously disadvantaged and the rise in unemployment in the host municipalities, I can only argue that the FIFA's World Cup opportunity costs for South Africa might be too high.

Host cities in developing countries have to be cautious in attempting to host a mega-event, if the picture for the FIFA World Cup 2010 in South Africa holds universally for developing countries. The strategy to broadcast your municipality all over the world and hoping for better economic times do not hold on in the short-run and medium-run. This research provides a not so rosy outlook for Brazil. Brazil has in contrast to South Africa an unemployment rate of only 7.3%. However, this indicates that the opportunity costs for labor in Brazil is higher compared to countries experiencing underemployment, where the opportunity costs for labor is almost equal to zero. Furthermore, the chance that workers have to come from outside the local economy becomes higher when unemployment is lower. If this is the case it will result in an outflow of money out of the local economy. These factors already do not have an advantage for the host municipalities in Brazil compared to the hosts in South Africa. The other factor of my concern is the amount of money Brazil is going to invest. The total costs of the FIFA World Cup 2010 amounts to US$3.9 billion. The amount for the sport infrastructure in Brazil corresponds to US$3.68 billion, whereas the total costs are estimated on US$13 billion (Matheson, 2012). This amount is notably higher and entails higher opportunity costs for the FIFA World Cup 2014 in Brazil. The host municipalities in South Africa can only hope for the investments made related to the FIFA World Cup will pay off in the future. Whereas the host municipalities in Brazil can better pray for infrastructure investments to pay off in the future.

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