The measurement of crowding-out at the FIFA Football World Cup in South Africa 2010

Abstract

Foreign visitor’s expenditures constituted the largest part of the economic impact of the FIFA Football WC in SA 2010. Due to limited air transport capacity and increased accommodation prices, substantial crowding-out effects may have occurred. However, the supply constraints during the WC have not only created crowding-out but also significant time switching effects which are difficult but important to distinguish from crowding-out effects. Therefore firstly the theory of crowding-out in economic impact measurements and a literature review will be presented. Secondly the technical problem of assessing crowding-out effects and the importance of the quality of data is discussed. To determine crowding out data collected “bottom-up” (surveys) have to be used as well as data from “top-down” (aggregated statistics). Finally formulae to calculate the crowding-out effect by using data from a mixed “bottom-up” and “top-down” approach will be provided.
# Table of Content

1 Introduction ............................................................................................................................... 3

2 Crowding-out ............................................................................................................................. 4

3 Literature Review ....................................................................................................................... 9

4 The Measurement Problem ..................................................................................................... 11

5 The Calculation of crowding-out .............................................................................................. 14

6 Conclusion ................................................................................................................................ 21

Acknowledgement ....................................................................................................................... 23

References ................................................................................................................................... 23
1 Introduction

South Africa has the second highest uneven distribution of family income worldwide (CIA, 2010). Therefore the great public subsidies provided to stage the FIFA Football World Cup 2010 that can be seen as critical investment (Du Plessis and Venter, 2010: 7). However, in case the World Cup could have been used to stimulate economic activity, in particular through increased tourism, the football investment would for example benefit those working in the tourism service sector. Irrespective of alternative investments it is an insightful study to evaluate whether the tourism sector benefited from the FIFA World Cup in 2010.

So far, studies on the economic impact of the World Cup have shown substantial differences and provoked a lively debate on ex-ante and ex-post estimations of the economic effects. In particular, those driven from tourism need to be mentioned because they are much more difficult to measure than expenditures for infrastructural investments or the expenditures of the local organising committee. Studies found economic effects from the World Cup varying from 0.1% to 1.5% of South Africa’s GDP (Du Plessis and Venter, 2010: 20; Polity, 2010; Saayman and Rossouw, 2008: 8; Swinnen and Vandemoortele, 2008: 4; Grant Thornton, 2004; Grant Thornton, 2003).

These large differences reveal the great uncertainty on the potential for long-run positive economic effects of the 2010 World Cup which is also based on the fact that supporting statistical evidence cannot be found. When looking into economic impact methodology many obstacles, different frameworks and a great complexity explains such different outcomes. For example, the Union Bank of Switzerland estimates tourism revenues for the whole year 2010 at 0.54% of the GDP while Du Plessis and Venter (2010: 20) only consider the period of the World Cup with 0.1% of the GDP.

This paper will focus on the methodology to better calculate a tourism impact from a mega sport event. In particular the methodology to consider re-distributions and crowding-out effects are explained.
2 Crowding-out

The difficulty in precisely calculating an economic impact lies in its complexity. Following Keynes neo-classical model of economics and looking only at tangible and direct economic effects driven from the World Cup in 2010, the central observation must work towards whether fresh resources were entering South Africa or not.

Therefore it is most important to determine a) the welfare function, b) a particular region and c) a time frame for each study. These three settings define what financial streams have to be considered for an economic impact. All direct financial streams are easy to measure – however, it becomes difficult when crowding-out has to be taken into account. Crowding-out is any reduction in private consumption that occurs because of an increased demand based on the staging of the event, here in particular the football tourists’ demand (Fig. 1).

![Price Crowding-out](Image)

**Fig. 1: Price Crowding-out**

The figure illustrates that the increase in demand would have led to increase of income by delta $Y$. Due to limited capacities the prices raise and “crowd-out” a part of the expected income $Y$. 


Figure 2 illustrates on the left the importance of the defined region. Consumption of football tourists is indicated by stream 1 and 2. Both create a positive impact for the city. In case the region is defined as being the state, only stream 1 and 3 create the impact while stream 2 has to be considered as re-distribution. If the World Cup is the reason for others leaving the region (residents of the city), one has to deduct the crowded-out consumption which is illustrated by stream 4 and 5. A state perspective would have to deduct streams 4 and 6 while stream 5 is a “re-distribution”. Another case of crowding-out is stream 8. In this case persons intended to visit the city but did not come due to the World Cup.

On the right figure 2 illustrates the consideration of time. For simplification only the city perspective is taken and all other times (pre and post event) are in one box. Visitors’ consumption can also be time switched. Stream 7 shows the consumption during the event but taken from another time period (so-called “Time switchers”). Stream 8 is split into two parts. 8a represents visitors’ consumption who wanted to visit the city during event time but postponed their trip (so-called “Pre /Post Switchers”). Really crowded-out are only those who totally cancelled their visit of the event city (8b).

For the methodology to detect crowding-out, not only the above mentioned groups have to be considered but several more. To identify all football visitors bringing exogenous money to South Africa, their individual intention of the visit must be considered. Therefore the concept integrates a behavioural act as a central element in an economic model. In other words, the consideration of a particular stream of money as crating the impact is not as simple as explained
in Fig. 2. The reflection whether consumption will have to be integrated in the calculation or not depends on the persons travel movement combined with the importance the World Cup had for the decision to travel. For simplicity we will focus on South Africa as region.

Fig. 3: Movements of event-affected persons during the World Cup 2010
Source: modified from Preuss (2005: 288)

“Extentioners” (A), “Event visitors” (B) and “Home stayers” (C) are World Cup visitors with exogenous consumption which creates the core primary impact. The “Home stayers” (C) are a typical example for “import substitution” (Cobb and Weinberg, 1993) because these South Africans spent their holiday budget in SA and not outside the country.

While A, B and C add money to the South African economy, two groups of event-affected persons reduce this impact because they are crowded-out (“Cancellers” (E1) and “Runaways” (D)). The methodological challenge is to distinguish these two groups from those visitors who just time switched their visit to South Africa. For example, residents avoiding the World Cup are not necessarily “Runaways” (D). They can also be “Changers” (F) which are persons time switching their holiday trip from another time of the year to the period of the World Cup. While
“Runaways” have to be considered as crowded-out, the “Changers” do not spend more money outside South Africa than they would have done anyway. The similar situation can be seen towards “Cancellers” (E1) and “Pre /Post Switchers” (E2). “Cancellers” (E1) will not visit South Africa at another time but “Pre /Post Switchers” (E2) just postponed their visit to the country.

For the calculation of the economic impact both groups “Changers” (F) and “Pre /Post Switchers” (E2) must not be considered due to time-shifting of their consumption. “Runaways” (D) have to be considered, which can e.g. be done by a survey after the World Cup (bottom-up approach) or through statistics on persons leaving the country (top-down approach). The identification of “Cancellers” (E1) will be the focus of this paper and can only be identified through ex-post trend calculations (see also Preuss et al., 2010).

Figure 3 shows three other groups, the “Casuals” (G), “Time switchers” (H) and “Citizens” (K). All of them would have spent their money in South Africa even without the World Cup and therefore are rather neutral in their contribution to the economic impact. However, all of them presumably have spent more money than on “normal holidays” without attending the World Cup.

Table 1 provides evidence that the different groups mentioned above really exist and are not marginal.

<table>
<thead>
<tr>
<th>Tab. 1: Movements of event-affected persons of different mega events in per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Football WC 2006 (region Germany)</td>
</tr>
<tr>
<td>“Citizens”</td>
</tr>
<tr>
<td>“Home stayers”</td>
</tr>
<tr>
<td>“Changers”</td>
</tr>
<tr>
<td>“Event tourists”</td>
</tr>
<tr>
<td>“Casuals”</td>
</tr>
<tr>
<td>“Time switchers”</td>
</tr>
</tbody>
</table>
Sample: n= 4,355 8,093 763 798

Sources: Preuss et al., 2009; Preuss et al., 2010

The FIFA World Cup must be the reason for crowding-out visitors or residents. Crowding-out can occur due to real or perceived limited accommodation, transportation (in particular air fare to South Africa) or other factors such as crime rate, overcrowded city centres or tourism attractions. In other words crowding-out is not limited to increased prices. A deterrent (effect) for non-football tourists can be based on perceptions relating to limited hotel rooms and high hotel prices, drinking behaviour, fan violence and hooliganism, and peak use of public goods such as highways (Du Plessis and Maennig, 2010: 16; Loots, 2006; Baade and Matheson, 2004: 19; Crompton, 1999).

Further it is important to consider who gets crowded-out. In case “football tourists” do not come to the World Cup because tickets are limited or too expensive, only persons get crowded-out who otherwise would not have travelled to South Africa. Therefore this group (8b in figure 2) has not been considered in an economic impact calculation. A consideration of crowding-out persons is only crucial for non-World Cup tourists.

Crowding-out has to be distinguished from re-distributions. Re-distributions occur by spending money not in a way planned but at another time (“Time switchers” or “Pre /Post Switcher”) and/or in another branch. For example some tourists of South Africa may have avoided visiting World Cup cities but have spent their budget in other cities within South Africa. The central question is whether the money is spent in the same branch but at another location and/or time or in another branch. If so the question is whether or not this other branch has a greater added value (e.g. high wage share or labour insensitivity). A greater added value benefits all citizens working in the tourism industry. In reality positive and negative re-distributions can be expected and therefore they may balance off.

The change of consumption behaviour, a so-called re-allocation of expenditures, is also important for the South Africans. On the one hand they may spend temporarily less due to watching TV at home (“Couch-potato Effect”). On the other hand they may spend more based on attending public viewings or enjoying football in stadia or pubs. Finally, the question is
whether the propensity to save has changed and whether the World Cup expenditures are in another branch the forgone alternative spending. It is suggested to treat this issue also as neutral (see Ahlert, 2006: 13; Szymanski, 2002: 172).

To sum up event tourism crowding-out effect, a definition is: Crowding-out occurs only to non-event related persons that are not able or willing to switch the time or space of their visit at the event destination due to real or perceived capacity constraints caused by the World Cup.

3 Literature Review

There is a growing amount of international literature on economic impacts of major sport events. Most of the scholarly works on football tournaments include methodological aspects on how the visitors’ impact is being considered (Preuss et al., 2009; Allmers and Maennig, 2009; Du Plessis and Maennig, 2008; Ahlert, 2006; Kurscheidt, 2006; Oldenboom, 2006; Baade and Matheson, 2004; Szymanski, 2002; Coates and Humphreys, 2000; Preuss, 1998).

In particular, Getz (1994), Crompton (1995) and Késenne (1999) write about the overall evaluation problems. Norman et al. (2002) brought up several shortcomings on the evaluation of tourism impacts. According to them there often is a confusion of economic impacts with benefits to different stakeholders and an appropriate impact region missing to differentiate “new dollars” from outside the area from local spending. This paper will address to it later with a focus on crowding-out.

The existing literature shows that one of the main hurdles in determining the economic impact of the FIFA Football World Cup is a lack of knowledge on consumption patterns of visitors and the number of persons that are visiting (or not visiting) South Africa. It is surprising that the calculation of a potential economic impact on South Africa has created a lot of research activity over the past 7 years.
Tab. 2: Economic impact studies on the FIFA Football World Cup in South Africa 2010

<table>
<thead>
<tr>
<th>Year of publication</th>
<th>Author</th>
<th>Type of analysis</th>
<th>GDP calculation</th>
<th>impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Grant Thornton</td>
<td>Tourism &amp; Construction</td>
<td></td>
<td>1.2%</td>
</tr>
<tr>
<td>2004</td>
<td>Grant Thornton</td>
<td>Tourism &amp; Construction</td>
<td></td>
<td>1.5%</td>
</tr>
<tr>
<td>2008</td>
<td>Saayman and Rossouw</td>
<td>Tourism only</td>
<td>0.29-0.48%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>Union Bank of Switzerland</td>
<td>Tourism only</td>
<td>0.54%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>Du Plessis and Venter</td>
<td>Net exports (tourism)</td>
<td></td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Particular literature on “crowding-out” effects related to mega event impact measurement is not available. However, many authors mention the difficulty but also the importance to consider crowding-out. Porter (1999) warned that

“crowding out and price increases by input suppliers in response to higher levels of demand and the tendency of suppliers to lower prices to stimulate sales when demand is weak lead to overestimates of net new sales due to the event.”

Therefore impact studies are constantly criticised whenever crowding-out is not considered (Barclay, 2009; Matheson, 2006; Lee and Taylor, 2005; Matheson and Baade, 2004). Concerning impact studies on South Africa’s World Cup, crowding-out

“was not taken into consideration by any of the other research studies conducted for the 2010 SWC. The literature review also indicated clearly the necessity of taking into account the great number of factors which influence the number of visitors that attend the event, and thus also the magnitude of spending” Saayman and Rossouw (2008: 11)

This paper will provide a methodology of how to consider both the number of visitors and their magnitude of spending.
4 The Measurement Problem

Fig. 4 provides a scheme showing the basic considerations to calculate the economic impact of visitors on the World Cup.

During the time of the World Cup many people have visited South Africa “without” any relation to the World Cup (e.g. business travellers, persons visiting their families, safari tourists). But there are also a number of persons affected by the World Cup. Taken from Figure 3 these can be “Cancellers”, “Pre /Post Switchers”, “Casuals”, “Time switchers”, “Football visitors” and “Extentioners” as well as affected residents which are “Home stayers”, “Runaways” and “Changers”. The challenge on methodology is to determine the number of visitors of each group and also their magnitude of spending.

- “Football visitors” and “Extentioners”: These visitors add their full consumption to the impact.
• **“Cancellers”**: This share of visitors reduces the number of persons being in South Africa with a subtraction of a “normal tourist consumption pattern”.

• **“Pre /Post Switchers”**: These visitors will come to South Africa at another time. The loss of consumption during the World Cup will be just temporally shifted to another period.

• **“Casuals”**: This share of visitors is consuming in South Africa irrespectively of the World Cup. Due to increased prices, they may even contribute to the economic impact.

• **“Time switchers”**: These visitors increase the demand during the World Cup without affecting the impact substantially because they would have come to South Africa anyway.

The consumption of the persons who are not in South Africa during the World Cup (“Cancellers”, “Pre /Post Switchers”, see right bar in Fig. 2) is most probably overcompensated by the sum of the consumption of “Football visitors”, “Casuals” and “Time switchers”.

At a first glance, it seems feasible to calculate the number of tourists visiting South Africa because of the World Cup from “top down” by using available statistics on tourism arrival or overnight stays. These figures compared to trend and seasonal adjusted figures from previous years theoretically provide an estimation of the net number of World Cup visitors or overnight stays. However, this simple way of determining the World Cup visitors has four serious shortcomings.

The first shortcoming outlines the number of event visitors including arrivals long before and departures far after the 30 days of the World Cup. A share of all visitors to South Africa may be too small as it can be seen in aggregated national statistics. In particular time switching behaviour of those avoiding the World Cup can result in shifts up to one year. Therefore time shifting cannot be distinguished from crowding-out. Anecdotal evidence is the immense time shifting behaviour of Greeks and Turks during the World Cup in Germany 2006. Both national teams did not qualify for the World Cup but count among nations with many migrants to Germany. During the World Cup period, 26.5% less Greeks and 18.6% less Turks stayed overnight in Germany, however, over the year the total number increased by 8.8% (Greeks) and 1.1% (Turks) relating to 2005 (DZT 2007, 13).
Secondly, the preciseness of available statistics is not often given, for example many statistics are only available for a quarterly period or they do not distinguish between foreign visitors and nationals (e.g. accommodation statistics). Furthermore statistics on tourism arrival do not consider the fact of extended visits or may not consider visitors coming by car from neighbouring countries. Additionally the fact that “Home stayers” do not leave the country and therefore not return to South Africa either decreases the number of arrivals. The use of statistics of “tourism accommodation” could be better. However, these statistics only consider visitors staying in registered accommodations. “Home stayers” and foreign visitors renting flats, staying in caravans or with friends and family are not registered. On the other side nationals staying in hotels are registered. For example in Germany, 31% of all overseas tourists attending the World Cup in 2006 did not stay in registered accommodations (Preuss et al., 2009: 121) and would have been disregarded by using these statistics. At the EURO 2008 in Austria even more visitors did not stay in official accommodations (70.7% of all stadium visitors) (Preuss et al., 2010: 77). Therefore a use of statistics on “tourist traffic revenues” would be better. However, if available, these statistics will finally not be precise enough because several tourism expenditures cannot be considered.

A third major shortcoming is that “top down” cannot give certainty on the number of overnight stays that would have been booked in South Africa without the World Cup being staged. A particular difficulty for an estimation of the number of visitors that would have come even without the World Cup is any serious (global) intervention such as the worldwide financial crisis in 2009 which probably affected the tourism behaviour. A simple comparison to previous years would wrongly count the lower number of tourists as being crowded-out by the World Cup. The fourth shortcoming is that no statistics can consider the magnitude of spending. According to empirical findings, event visitors (“Football tourists”, “Casuals”, “Time switchers”) consume more than “ordinary tourists” (Preuss et al., 2010; Lee and Taylor, 2005; Solberg et al., 2002). Furthermore “Home stayers”, who signify import substitution, are not taken into account in the impact. For example, even if the number of crowded-out persons equals those coming by virtue of the World Cup, there can be a very positive impact due to higher spending and a longer duration of stay.
All studies on the 2010 FIFA (Football) World Cup South Africa mentioned above are based on “top-down” approaches and therefore grounded on much estimation due to non-precise statistics. This is the reason why one should tackle the problem by using a “bottom-up approach” which means measuring the primary tourism impact on its actual origin. In doing so, a complex and costly empirical research has to be conducted to measure the gross number of visitors and the share of those staying in statistically registered accommodations, their number of overnight stays, their motivation for the visit (Fig. 3) and finally their individual consumption pattern.

However, the “bottom up approach” also has shortcomings. Field research can neither detect “Cancellers” (E1) and “Pre /Post Switchers” (E2) nor “Runaways” (D). Therefore, some statistical data (“top-down”) are needed, which are quite reliable because the information wanted is limited to the number of “overnight stays” of foreign tourists in South Africa on a monthly basis. All further necessary data can be taken from the bottom-up empirical data.

5 The calculation of crowding-out

A trend calculation is needed to determine the number of foreign crowded-out World Cup visitors’ overnight stays in South Africa during June and July 2010 (curve a, Fig. 5).
Curve b represents the real measured number of overnight stays from foreign visitors during the World Cup. For simplicity reasons a linear trend is used. The fact that a slightly higher number of overnight stays can be expected for the period after winning the bid is ignored for trend calculation. This is a conservative approach because later the quantity of overnight stays will be slightly underestimated.

Without the World Cup being staged it is guesstimated that the South African tourism industry would have continued with tourism advertisement efforts as before. By using trend calculation based on the tourism development before the World Cup, the opportunity costs of “not advertising” as before due to the World Cup are considered. Curve c (Fig. 5) represents the number of overnight stays of foreigners without anyone coming due to the World Cup. The opportunity costs are considered by not taking the difference between the trend curve a and the number of overnight stays without World Cup tourists (curve c) into the impact calculation ($\Delta c$). The gross nominal number of World Cup tourists’ overnight stays – measured bottom-up – is shown as $\Delta c'$ (curve b – curve c) which must be reduced by the number of nights replacing those not coming to South Africa (crowded-out and Pre/Post Switchers) ($\Delta c$) (curve a – curve c). This results in a net increase of overnight stays of foreign visitors (curve b – curve a).
However, this is a simplified description because “Time switchers” (H) and “Casuals” (G) are not included yet. The model in Figure 6 displays the different time switching groups.

Fig. 6: Schematic illustration of overnight stays including time switching

Figure 6 is based on figure 5, whereas curve a is still the trend adjusted expectation of overnight stays of foreign visitors (simplified in flat and linear) if the World Cup would not have taken place but all tourism activities, crises and upswings would have continued as it was in the past. Curve b is still the real number of overnight stays as shown in the official statistics. In other words, the difference between curve a and curve b (area V) is the net increased overnight stays due to the World Cup.

An important premise made in this model is that only those crowded-out persons (“Avoider” (E); fig. 3) who would have stayed in official accommodation can be considered.

For simplicity reasons the constellation of figure 6 is chosen to have curve b above curve a, which represents a case of net gain of overnight stays of foreign visitors despite crowding-out and time switching.

One limitation of the model is that the crowding-out of overnight stays is fully calculated in while the time switching effect is only considered for the period right before and after the...
World Cup (area I and II). It is most probable that many persons will postpone their vacation to South Africa not only for one or two months but by one year. For example the hunting season or school vacation is limited to a particular time of the year and cannot be postponed to another period, but to another year. This effect can be compensated by adding in a (small) percentage of overnight stays for the time switching to periods before and after the already considered pre- and post-event period. This will later be considered as “correction 1” (corr1). It is also possible that “Time switchers” (H) overcompensate “Pre /Post Switchers” (E2). In that case corr1 is negative.

Curve d is hypothetical and illustrates the overnight stays of foreign visitors in South Africa without any football tourists but with all time switching taking place due to the World Cup. It can be seen that “Pre /Post Switchers” (E2) reduce the number of overnight stays during the World Cup period (area III) but increase the pre- and post-World Cup (areas I and II), whereas III equals I plus II. Area V above area I and II represents the number of overnight stays of foreign visitors who come because of the World Cup but who are not time switching (e.g. persons being in training camps, visiting football conferences, FIFA inspection visits, consultants to organising committees). This number of overnight stays will later be considered as “correction 2” (corr2).

The main message of figure 6 is the visualisation of those foreign visitors’ overnight stays that are really crowded-out (area IV; “Cancellers” (E1)). The following steps explain how to calculate the number of overnight stays from group E1 starting from bottom-up field research (step 1-4) and using top-down “accommodation data” from official statistics (step 5-6).

1) Field research to evaluate all foreign visitors to the FIFA Football World Cup 2010, their intention to visit (see fig.3), their consumption pattern, the type of accommodation they used, their duration of stay (see Preuss et al., 2009 for methodology)

2) Substraction of all foreign “day tourists”, which is presumingly very low for South Africa, but high for Germany 2006

3) Transformation of “visitor days” in South Africa into overnight stays (e.g. 2 days = 1 night)
4) Subtraction of those who did not stay in statistically counted accommodation (e.g. family, friends, “camping outside official caravan parks”, renting a private flat, overnight stays in trains, cars, at airports etc.)

At this point the gross number of overnight stays of all foreign visitors to the Football World Cup (groups A, B and H, in Fig.3) calculated bottom-up is known.

5) Calculation from statistics of “overnight stays”, which are above the trend, including the period of pre- and post-World Cup only considering foreign visitors to South Africa (area V, including corr2)

6) Increase/decrease of the number of overnight stays by a small percentage (corr1) to cover those time switching for more than the considered pre-/post period

At this point the gross number of visitors above/below trend is known including the long-term time switchers.

Comparing the empirically measured adjusted number of overnight stays (after step 4) with the statistically available adjusted number of overnight stays (after step 7), the crowding-out effect becomes visible. The “dent” (area V in fig. 6) can only be as large as curve b allows because this is the official statistical data. If there are more “Time switchers” (H) and “Football tourists” (A, B) than fit between curve a and curve b we can identify the number of overnight stays missing due to the groups not coming to South Africa because of the World Cup (E1 and E2).

Figure 7 will display the calculation once more including the different consumption patterns (column 5) which is necessary for impact calculation.
Fig. 7: Schematic visualisation of gross and net effects for economic impact calculation during the World Cup

Figure 7 has to be read from left to right and is based on abbreviations used in figure 6 and figure 3. The trend adjusted curve is again curve a and the nominal number of foreign visitor’s overnight stays (from official statistics) is curve b. The following explains column 1-5 and is related to foreign visitors only:

1. Shows the number of overnight stays in case no Football World Cup would have been staged based on trend calculation from previous periods.
2. Shows the number of overnight stays of those who did not come to South Africa during the period of the World Cup including “Pre /Post Switchers” (E1 and E2).
3. Shows the absolute number of overnight stays during the World Cup period, however, corrected by a percentage to cover the “Time switchers” for more than the considered pre-/post period (corr1). This correction 1 is for simplicity reasons compensated by those who

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shows the number of overnight stays in case no Football World Cup would have been staged based on trend calculation from previous periods.</td>
</tr>
<tr>
<td>2</td>
<td>Shows the number of overnight stays of those who did not come to South Africa during the period of the World Cup including “Pre /Post Switchers” (E1 and E2).</td>
</tr>
<tr>
<td>3</td>
<td>Shows the absolute number of overnight stays during the World Cup period, however, corrected by a percentage to cover the “Time switchers” for more than the considered pre-/post period (corr1). This correction 1 is for simplicity reasons compensated by those who</td>
</tr>
<tr>
<td>4</td>
<td>WC visitors</td>
</tr>
<tr>
<td>5</td>
<td>Δ consumption (difference consumption A, B &amp; H &gt; normal consumption E1 &amp; E2) net effect</td>
</tr>
</tbody>
</table>
came in pre-/post periods due to the World Cup (corr2). The “Pre /Post Switchers” (E2) are factored in by number because column 3 represents the World Cup and the pre-/post period. Here, area III is equal to area I and II (see Fig. 6).

The lowest part include persons without World Cup relation (business travellers, normal tourists). Above are the “Casuals” (G) being in South Africa anyhow but attending matches. Above these are groups A, B, H and E2 replacing the crowded-out overnight stays (E1).

4. Shows the gross number of overnight stays.
5. Explains the consumption pattern that needs to be considered for the impact calculation. Whereas for all crowded-out nights (E1) and “Pre /Post Switchers” nights (E2) the difference of consumption between “normal tourist” and “World Cup tourist” has to be considered as well as the full consumption pattern above curve a.

To calculate the crowding-out effect double counting has to be avoided. The following equation helps to calculate the effect, whereas the abbreviations for the visitor groups A, B, H, E1 and E2 stem from Fig. 3.

\[ \Delta\text{(pre/post)} = \text{number of overnight stays of foreign visitors between curve a and curve b for the period pre- and post-World Cup} \]

\[ \text{Corr1} = \text{all overnight stays of foreign “Pre /Post Switchers” before and after the period under consideration} \]

\[ \text{Corr2} = \text{additional overnight stays of foreign visitors before and after the event due to the World Cup who are not time switching} \]

\[ \Delta\text{(WC)} = \text{number of overnight stays between curve a and curve b for the time of the World Cup} \]

\[ \text{E2} = \Delta\text{(pre/post)} + H + \text{Corr1} - \text{Corr2} \quad (1) \]

\[ \text{E1} = A + B + H + \text{Corr1} - (\Delta\text{(WC)} + \Delta\text{(pre/post)} + H + \text{Corr1} - \text{Corr2}) \quad (2) \]

\[ \text{E1} = A + B - \Delta\text{(WC)} - \Delta\text{(pre/post)} + \text{Corr2} \quad (3) \]
It is important to interpret whether

\[ A + B - \Delta(WC) - \Delta(pre/post) + Corr2 < 0 \]  \hspace{1cm} (4)

or

\[ A + B - \Delta(WC) - \Delta(pre/post) + Corr2 > 0 \]  \hspace{1cm} (5)

In case equation 4 is given, the number of nights from foreign World Cup visitors and “Time switchers” (H) does not compensate the number of overnight stays from “Pre /Post Switchers” (E2). Thus curve b must be below curve a. Otherwise the trend was not estimated right or other interventions increased the number of overnight stays. This does not necessarily mean that there was no crowding-out but it was probably low.

In case equation 5 is given, the number of overnight stays represents the number of crowded-out overnight stays. For further calculation, this number multiplied by the consumption pattern of “normal tourists” must be subtracted from the calculation of the overall primary impact.

6 Conclusion

Even though many academic scholars claim that crowding-out has to be considered in impact calculations, there was no methodology available to factor these effects in. This fact has constantly awakens concern and critique on each impact study conducted on mega sport events. Criticisers often even estimate crowding-out to be almost equal to the number of foreign visitors coming to an event. However, the simple formulated criticism frequently disregards four facts:

1. Crowding-out is limited to those persons who entirely give up their serious intention to visit the country only due to the World Cup. Criticisers disregard the group of “Pre /Post Switchers” which is potentially a huge group because the motivation to visit South Africa has probably not changed due to the World Cup. Only the (expected) limited capacities and price conditions in South Africa made them not doing their trip. Furthermore the
successfully staged World Cup 2010 probably even increases the wish to visit the country at another time.

2. The foreign visitors crowded-out and “Pre /Post Switchers” would have had a “normal” tourist consumption pattern. Even in case the statistics would not show an increase in the number of overnight stays, the consumption of World Cup tourists is often greater than that of “normal” tourists. Therefore a positive primary impact of the World Cup is still given.

3. All calculations on potential crowding-out must be limited to foreign visitors’ overnight stays. National tourists shift in consumption and/or travel behaviour only results in different induced effects due to the stimulation of other industries earning the money.

4. The top-down data must be given for overnight stays of foreign visitors only. The number of incoming tourists which is often used does not consider different travel behaviour of World Cup visitors (duration of stay in comparison to “normal tourists”).

This research is limited to calculation on those who stay in officially registered accommodation as well as of those crowded-out from official accommodation. A weakness of the calculation is the difficult prognosis of the foreign overnight stays that would have been made in South Africa without the World Cup. In particular the trend prediction cannot consider so called “wild card interventions” such as the worldwide financial crisis in 2009 and its effect on South African’s tourism industry. Each wrongly calculated trend will affect the calculation of the World Cup impact. However, this aspect has to be taken seriously. An impact calculation is more precise the smaller the region under consideration (better state than country) and the shorter the periods before and after the event (defining the “Pre /Post Switchers”). On the contrary, this increases the need of higher corrections (corr1 and corr2).

The strength of this methodology contributes a mix of bottom-up field research with some reliable official statistics that enables to evaluate crowded-out visitors without counting time switchers. Furthermore opportunity costs are considered.

The methodology introduced focuses solely on the calculation of the primary impact of foreign visitors on the South African economy during the World Cup period and the direct pre-/post period. Legacy effects on long-term tourism are not included (Solberg and Preuss, 2007; Preuss,
However, the same methodology can be used for the calculation of crowding-out of infrastructure investment.

**Acknowledgement**

I thank Dr. M. Kurscheidt (German Sport University Cologne) for the many fruitful discussions and his good remarks he has made over years concerning our common interest in increasing the quality of impact measurements of major sporting events.

**References**


