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# **Evaluating the Economic Impact of the 2010 FIFA World Cup™ from a Financial Investment point of view.**

**Snyman Ohlhoff**

Lecturer: Department of Tourism and  
Events Management

Cape Peninsula University of  
Technology

# Introduction

Title of presentation is perhaps not completely accurate. The concept, as was perhaps clarified in the abstract, is to consider the 2010 FIFA World Cup™ specific investments and projected 2010 FIFA World Cup specific income, as well as the time value of money to determine whether or not the investment decision would yield a positive net present value.

It has however proved problematic to obtain the required data to complete these calculations. Further research in terms of appropriate methods to estimate the figures required is essential since the theoretical basis for estimations used here have not been examined.

This presentation has therefore become more of a “work in progress” than the final product.

# 2010 Economic impact studies

Most evaluations of the economic impact of the 2010 FIFA World Cup™ (Bohlman & Van Heerden, 2005; Meannig & Du Plessis, 2007; Campbell & Phago, 2008; Grant Thornton, 2008; Mabugu & Mohamed, 2008; Saayman & Rossouw, 2008) refer to results of sophisticated econometric models and focus on traditional macroeconomic indicators, such as overall impact on the GDP, employment, etc.

Most predict a positive outlook, however with reservations and caution.

Meannig & Du Plessis (2007:583) specifically refer to the fact that few *ex post* studies report significant positive economic impacts.

# Overview of some figures

	2008 Update	2007 Update	Bid Book
	Total Direct Spend	Total Direct Spend	Total Direct Spend
	Rm	Rm	Rm
Ticket sales	6 000	4 600	4 660
Other event expenditure	132	93	76
Spectator trip expenditure	8 163	6 894	4 466
Team trip expenditure	176	161	161
Press & VIP trip spend	440	391	290
Sponsorship and rights spend	756	756	756
Infrastructure & stadium spend	17 400	17 400	2 304
<b>TOTAL SPEND</b>	<b>33 068</b>	<b>30 356</b>	<b>12 713</b>
GDP Contribution	55 714	51 144	21 419
Employment Generated	415 400	381 327	159 697
Tax income to government	19 390	17 800	7 245

Source: Grant Thornton. 2008. *The Business of 2010, How the Numbers Add Up*. Media Briefing, 21 November 2008.

# The difference in approach

As mentioned above, the suggested overall impact on South Africa's GDP according to the latest estimates is in the order of R55,7bn (Grant Thornton, 2008).

Of course this includes the approximately R17,4bn in infrastructure and stadium investment directly related to the World Cup (Grant Thornton, 2008), which the government is making.

The question is, how much is the government earning for the direct investment in direct returns?

To illustrate the difference in approach in a humorous way, consider the following.

# Economics vs. Financial Management

An economist and a financial manager are walking along a large puddle. They get across a frog jumping on the mud. The economist says to his colleague: 'If you eat the frog I'll give you \$20,000!'

The accountant checks his budget and figures out he's better off eating it, so he does and collects money.

Continuing along the same puddle they almost step into yet another frog. The financial manager says to the economist: 'Now, if you eat this frog I'll give you \$20,000.'

After evaluating the proposal the economist eats the frog and gets the money.

They go on. The financial manager starts thinking: 'Listen, we both have the same amount of money we had before, but we both ate frogs. I don't see us being better off.'

The economist: 'Well, that's true, but you overlooked the fact that we've been just involved in \$40,000 of trade.'

(Adapted from Stiver, n.d.)

# Discounted Cash Flow Theory

Can be traced back as far as the Old Balylonian period of 1800 – 1600 B.C. (Parker, 1968: 58-71, as cited by Schrieves & Wachowicz, 2001:33).

Leonardo Fibonacci, well known for the so-called Fibonacci sequence or numbers, helped to introduce the calculation of interest (along with Arabic numerals) to Europe in his book the *Liber Abaci* (1202)(Gies, 2008).

More modern works with additional conceptual insights include Fisher (1930, as cited by Schrieves & Wachowicz, 2001:33) and Hirshlerter (1958, 1970, as cited by Schrieves & Wachowicz, 2001:33).

As such it is entrenched in accounting and business theory.

The concept of the use of capital budgeting techniques by government and non-profit organisations is not unique and has received some attention in the literature (Chan, 2004; Phillips, 2003).

# Variables & Formula

Discounted cash flow (DCF) valuation compares a series of cash flows over multiple periods to calculate a present value (in most cases referred to as net present value) by discounting the future cash flows by a given discount rate to an equivalent present value . It is often used to compare two alternative investment options.

The basic formula (Carmicheal & Balabat, 2008:86) is as follows:

Let  $X$  be the cash flows for periods  $i= 1,2,3,\dots,n$  and let  $r$  be the discount rate. The present value for an  $n$ -period investment  $PV_n$  is given by

$$PV_n = \sum_{i=0}^n \left[ \frac{X_i}{(1+r)^i} \right]$$

Investments that result in a positive (or the highest in comparison to other options) Net Present Value (NPV) are considered to be investments that should be made.



# Challenges

Some of the periods have already elapsed (if the bid year is the starting point)  
- subsequently some of the cash flows (outflows) have already occurred.

Another question is the time horizon.

Bid was in 2005

Projected additional tourist arrival projections extend only to 2015

Isolating investments and revenues which will be received by government as a result of the World Cup is a major challenge.

Most available estimates (Meannig & Du Plessis, 2007; Grant Thornton, 2008) only provide single figures or percentage increases (Mabugu & Mohamed, 2008) and do not indicate how outflows and inflows are spread over periods.

# Deciding on a starting point

Should calculation start from 2005?

Current figure for investments of stadium and infrastructure related directly to 2010: R17,4bn (Grant Thornton, 2008)

Bid book amount: ± R2.3bn (Grant Thornton, 2008).

Clearly it was grossly underestimated at the time.

Should we (unfairly) use the benefit of hindsight ?

Perhaps a practical solution is to treat the investments already made as a lump sum and take 2009 as period 0. A “retroactive” calculation will however also be done.

# Finding the data – Discount Rate

For capital investment decisions and valuations in business, this is a rate which is chosen somewhat arbitrarily. However, in practice a rate equal to or greater than the company's weighted average cost of capital (WACC) is used. If the perceived risk of insufficient returns is increased, then the rate used would normally be higher than the WACC to create a "hurdle rate" to compensate for the risk.

In this case the South African government is the investor. What rate of return would the government expect?

Perhaps the the South African Reserve Bank's (SARB) the repurchase rate (currently 7%)(SARB, 2009) could be used as a proxy.

SARB repurchase rate in 2005 also 7% (SARB 2009), so whether the starting point is now or back in 2005/2006, the rate at both points in time is the same.

# Finding the Data – Capital Invested

According to the accounting and consulting firm Grant Thornton(2008), the total infrastructure and stadium spend amounts to R17,4bn.

Of course this has been/will be made over a period starting in 2006, so its should not really be seen as a lump sum investment.

Apportioning it to each year in retrospect could be problematic. If one consults the division of revenue bills for the relevant years, the amount budgeted is actually higher than the aforementioned R17,4bn at  $\pm$  R22,9bn (see Appendix A for annual amounts).

# Finding the Data - Revenue

Government revenue is of course received in the form of taxes.

Grant Thornton (2008), estimates that the government will receive an additional amount of R19 390m in taxes as a result of the country hosting the 2010 FIFA World Cup. It is however not clear over what period these taxes will be collected.

If this amount is to be received in 2010 alone, it will of course mean that this exercise is actually irrelevant since the investment amount of R17,4bn is less than the tax income of R19,4bn and we are “in the money” to the tune of  $\pm$ R2bn. Even if we were to discount the R19,4bn back to 2009 (assuming it is collected in 2010, using 7% as the discount rate, the present value is given as:  
$$PV = X [1/(1+r)] = R19,4bn[1/(1+0.07)] = R18.13bn,$$
 a positive difference of  $\pm$  R1.27bn, i.e. a positive NPV.

However, if the total impact on the GDP is R55,7bn (Grant Thornton, 2008)(not stated over what period), it is inconceivable that the taxes in 2010 would be close to 35 % of that (R19.4bn/R55,7bn = 0.3483).

# Another approximation of revenue (1)

Mabugu & Mohamed (2008) found that tax revenues to central government would increase by 1.13% as a result of the 2010 WC. They did however not state over which period and the base year used in the model was 2004.

The 2010 FIFA World Cup is primarily a tourism event in terms of its impacts (Grant Thornton, 2008).

According to South African Tourism (2009), tourism's contribution to the GDP (direct & indirect) in 2008 was 8.5% with 9,5m tourist arrivals.

According to the South African Revenue Services (SARS, 2008), it collected R644bn in taxes.

# Another approximation of revenue (2)

Assuming that tourism's contribution in terms of direct and indirect taxes is in proportion to tourism's GDP contribution, then  $\pm$  R 55m of taxes (8.5% of the total collected) was received as a result of 9.5m tourists visiting South Africa in 2008, i.e. an average of  $\pm$  R5707 per tourist.

The current Headline Consumer Price Index annual inflation rate is 5.9% (SARB, 2009).

If the number of tourists arrivals follow the projected numbers, and the tax rates remain the same, then the taxes collected should increase proportionate to the increase in number of tourist arrivals, adjusted for inflation at the above rate.

# Projected Tourist Arrivals

<b>Growth No World Cup</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	
Overseas	5.0%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	5.5%	
Africa land	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	10.5%	
Africa Air	12.2%	10.0%	10.0%	8.0%	8.0%	7.5%	7.0%	5.0%	
<b>Growth With World Cup</b>									
Overseas	5.3%	6.0%	19.7%	-3.1%	7.5%	6.5%	6.0%	5.8%	
Africa land	10.5%	10.5%	10.9%	10.3%	10.5%	10.5%	10.5%	10.5%	
Africa Air	12.6%	10.6%	15.8%	7.7%	10.5%	9.2%	7.8%	5.5%	
<b>Total Additional Arrivals</b>									<b>Total</b>
Overseas	6 500	18 858	363 895	135 581	198 038	238 930	267 071	291 760	<b>1 520 631</b>
Africa land	1 700	4 879	38 391	22 007	28 317	34 291	39 891	45 080	<b>214 556</b>
Africa Air	2 000	5 700	43 270	44 732	68 310	88 433	102 624	112 755	<b>467 824</b>
<b>Total</b>	<b>10 200</b>	<b>29 436</b>	<b>445 555</b>	<b>202 319</b>	<b>294 665</b>	<b>361 654</b>	<b>409 586</b>	<b>449 595</b>	<b>2 203 010</b>

Source: Grant Thornton. 2008. *The Business of 2010, How the Numbers Add Up*. Media Briefing, 21 November 2008



# Revenue Calculations

	2010	2011	2012	2013	2014	2015
Additional tourists (Grant Thornton, 2008)	445 555	202 319	294 665	361 654	409 586	449 595
Estimated Tax receipts (direct & indirect) per tourist in Rand ~	9 281*	6 778 §	7 178	7 602	8 040	8 525
Estimated TOTAL Additional tax receipts - Rm ~	4 135	1 371	2 115	2 749	3 297	3 832

\* Adjusted from R5707 (2008 estimate) for inflation at 5.9 % (for 2 years) to the amount of R6 044 and further adjusted by a factor of 1.45 based on the assumption that World Cup tourists spend more and this will also lead to a proportionately higher tax revenue per tourist.

§ Based on a 2010 estimate before it is adjusted for higher spending of World Cup tourists.

~ Source: Author's calculations.

# Assumptions for these calculations

1. That tax collection is highly efficient.
2. That one could calculate tourism's tax contribution by apportioning a part of the taxes collected in a particular year in accordance to the stated contribution to the GDP of the tourism sector.
3. That one could divide this by the number of tourist arrivals in the particular year (2008 used as base year) to calculate an average contribution to taxes per tourist.
4. That multiplying this amount by the number of additional tourist arrivals projected (based on Grant Thornton projections, 2008) as a result of 2010 provides a reasonable estimate of the tourism related tax receipts that can be expected.

# Assumptions for these calculations

5. That World Cup tourists' spending would be higher - almost 1,5 times on certain elements based on figures quoted by Grant Thornton (2008) and 1.8 times according to Lee & Taylor (2005, as cited in Saayman & Rossouw, 2008) than normal tourists and hence the figure for that year has to be upwardly adjusted.
6. That all additional tourist arrivals in 2010 are related to the World Cup and hence that all tourists in 2010 will also spend more as per the above assumption.
7. That the inflation rate will remain at the same level over the period.
8. The tax rates will remain the same over the period.

# Notes to the revenue calculations

What has not been taken into account is the additional taxes generated by the increase in the construction industry due to the increased infrastructure and stadium building work, so the revenues are most likely understated.

It would be quite difficult to isolate the tax revenues which result because of the additional construction work. A possible method is briefly described in Appendix B.

Government has however budgeted in excess of R400bn for infrastructure improvements since 2006 and only a small portion of this is directly related to 2010, so it may be quite difficult to isolate taxes received as a result of only the amounts invested in infrastructure and stadium projects specifically related to 2010.

# Results using different figures

## Starting point 2009

Using the Grant Thornton Figures, treating the investment amount (R17.4bn) as a lump sum in 2009, assuming tax revenue (R19.39bn) is collected in 2010 alone, but discounted to 2009 (discount rate 7%):

NPV = R1.23bn (see above)

With the higher investment amounts calculated from the Division of Revenue Bills (R22,9bn) and the R19,4bn revenue, discounted from 2010 to 2009, the NPV is negative, - R4.8bn (see Appendix C for calculation).

Using R17,4bn as investment figure as a lump sum in 2009 and the calculated revenues from 2010 onwards with a 7% as discount rate:

NPV  $\approx$  -R3.6bn (see Appendix D for all figures)

# Results using different figures

## Starting point 2006

Using the amounts budgeted in the Division of Revenue Bills apportioned to each year (total R22.9bn) from 2006 and calculating a net cash flow for each year period using the aforementioned revenues from 2010 onwards:

NPV  $\approx$  - R7.95bn (see Appendix E for all figures)

## Notes:

The value of the stadiums at the end of the period (terminal value) had not been taken into account. They would of course not be obsolete by 2015, but it may also prove problematic to estimate their value at that time.

The calculations only considered only one income stream, i.e. additional tax receipts due to increased tourist arrivals. Amongst other possible income streams, the stadiums may also produce revenue in other ways over that period.

# Concluding remarks and recommendations for further research (1)

The above analysis was really a simple application of one particular DCF method and the validity and reliability of at least some of the data used is uncertain.

Due to time constraints, a payback period analysis and other return on investment (ROI) methods had not been applied.

The results are of course purely of academic interest since South Africa is committed to hosting the 2010 FIFA World Cup™ and the decision cannot be reversed.

Opportunity costs have not been accounted for and if one considers the fact that South Africa is a developing economy and there are many other sectors (e.g. primary health care, education, etc) which could benefit from government investment, and perhaps other ways of stimulating the economy, it should be factored in somehow.

# Concluding remarks and recommendations for further research (2)

This approach may prove more useful in a pre-bid situation for prospective host countries to evaluate the attractiveness of hosting for the FIFA World Cup™.

Future studies could focus on isolating direct investments and revenues related to Mega Events, such as the FIFA World Cup™.

Given the uncertainty related to financial data relating to the World Cup, and the variety of different formats and approaches in estimating amounts, future research could also consider adapting a probabilistic discounted cash flow model, as proposed by Carmichael and Balabat (2008). Especially as the body of knowledge regarding financial variables surrounding mega events is likely to grow, it may be possible to estimate probabilities based on historic data which could lead to accurate projections.



**Thank you for your attention**

**Questions?**



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# Appendix A

## Amounts allocated specifically for 2010 Infrastructure and Stadiums in the Division of Revenue Bills

Year	Amount assigned in different years (Rm)	Total for year (Rm)	Source
2006	600	600	(South Africa, 2006:25)
2007	2 700 + 1 174	3 874	(South Africa, 2007:131-132)
2008	3 800 + 3 170 + 2 900	9 870	(South Africa, 2007:131) (South Africa, 2008:129)
2009	1 300 + 2 325 + 2 900 + 1661	8 186	(South Africa, 2007:131-132) (South Africa, 2008:129) (South Africa, 2009:155)
2010	100 + 302	402	(South Africa, 2008:129) (South Africa, 2009:155)
<b>TOTAL</b>		<b>22 932</b>	

# Appendix B

Suggested method for estimating construction sector tax revenues related to specific 2010 projects:

Since most of the investments have been made already and the taxes had been collected since 2006, one could perhaps identify the large (listed) construction companies, review their financial reports for 2006 to 2009 to identify, if possible, what portion of their revenue is due to 2010 contracts and then estimate how much they would pay in terms of company tax. Similarly, their salary expenses could also be used to estimate how much personal income tax employees of these companies would pay. If one can then relate that to the investments, one could possibly, in same way as the above calculations had been done, estimate the additional taxes in proportion to the investment per year.

# Appendix C

		2009	2010
		Rm	Rm
Cash Inflow			19 390
Cash Outflow		-22 932	-402
Net cashflow		-22 932	18 988
Discount Rate	7%		
Net Present Value (Rm)	-4 847		

Calculated on Microsoft® Excel ® spreadsheet using the 'NPV' function.



# Appendix D

2008 Tourism GDP Contribution	8.50%								
TOTAL TAX Collections by SARS, 2008 (Rand)	644,032,431,000								
8.5% of total tax collections (Rand)	54,742,756,635								
Number of tourist arrivals in 2008 (Rand)	9591828								
Estimated per tourist tax revenue '08 (Rand)	5,707								
Estimated per tourist tax revenue '09 ('08* 1.059)(Rand)	6,044								
Estimated per tourist tax revenue '10 infl. only ('09*1.059)(Rand)	6,401	Required as base for 2011 projection							
Estimated per tourist tax revenue '10 ((09 x 1.059)x1.45)(Rand)	9,281								
Estimated per tourist tax revenue '11 (09 * 1.509)(Rand)	6,778								
Year	2008	2009	2010	2011	2012	2013	2014	2015	
Per Tourist Tax Revenue (Rand)	5,707	6,044	9,281	6,778	7,178	7,602	8,050	8,525	
Total according to number of additional tourists (Rand)	58,213,733	177,909,867	4,135,104,838	1,371,354,799	2,115,132,970	2,749,149,477	3,297,206,482	3,832,820,442	
Discount Rate	7%								
Investment (Rand)	- 17,400,000,000								
NPV (Rand)	-3,608,897,372.86								

Calculated on Microsoft® Excel® spreadsheet using the 'NPV' function.

# Appendix E

Year		2006	2007	2008	2009	2010
<b>Cash Inflow (+) ~</b>						R 4,135,104,838
<b>Cash Outflow (-) *</b>		-R 600,000,000	-R 3,807,000,000	-R 9,870,000,000	-R 8,186,000,000	-R 402,000,000
<b>Net Cash Flow per Year</b>		-R 600,000,000	-R 3,807,000,000	-R 9,870,000,000	-R 8,186,000,000	R 3,733,104,838
Year		2011	2012	2013	2014	2015
<b>Cash Inflow (+) ~</b>		R 1,371,354,799	R 2,115,132,970	R 2,749,149,477	R 3,297,206,482	R 3,832,820,442
<b>Cash Outflow (-) *</b>						
<b>Net Cash Flow per Year</b>		R 1,371,354,799	R 2,115,132,970	R 2,749,149,477	R 3,297,206,482	R 3,832,820,442
<b>Discount Rate</b>	7%					
<b>NPV</b>	R -7,953,303,4334					

~ - see Annexure A for calculations

\* see above for amounts taken from Division of Revenue Bills

Calculated on Microsoft® Excel ® spreadsheet using the 'NPV' function.