Movies and holidays: The empirical relationship between movies and tourism

Mitchell, Heather; Stewart, Mark

https://researchrepository.rmit.edu.au/esploro/outputs/9921858016901341/filesAndLinks?institution=61RMIT_INST&index=null

Mitchell, H., & Stewart, M. (2012). Movies and holidays: The empirical relationship between movies and tourism. *Applied Economics Letters*, 19(15), 1437–1440. <https://doi.org/10.1080/13504851.2011.631888>
Document Version: Submitted Version

Published Version: <https://doi.org/10.1080/13504851.2011.631888>

Thank you for downloading this document from the RMIT Research Repository.

The RMIT Research Repository is an open access database showcasing the research outputs of RMIT University researchers.

RMIT Research Repository: <http://researchbank.rmit.edu.au/>

Citation:

Mitchell, H and Stewart, M 2012, 'Movies and holidays: The empirical relationship between movies and tourism', *Applied Economics Letters*, vol. 19, no. 15, pp. 1437-1440.

See this record in the RMIT Research Repository at:

<http://researchbank.rmit.edu.au/view/rmit:16319>

Version: Submitted Version

Copyright Statement: © 2012 Taylor and Francis Group, LLC

Link to Published Version:

<http://dx.doi.org/10.1080/13504851.2011.631888>

PLEASE DO NOT REMOVE THIS PAGE

Movies and Holidays

Journal:	<i>Applied Economics</i>
Manuscript ID:	Draft
Journal Selection:	Applied Economics Letters incorporating Applied Financial Economics Letters
Date Submitted by the Author:	n/a
Complete List of Authors:	Mitchell, Heather; RMIT University, School of Economics, Finance and Marketing Stewart, Mark; RMIT, Economics & Finance
JEL Code:	C22 - Time-Series Models < C2 - Econometric Methods: Single Equation Models < C - Mathematical and Quantitative Methods, L82 - Entertainment; Media (Arts, Broadcasting, Publishing, etc.) < L8 - Industry Studies: Services < L - Industrial Organization, L83 - Sports Gambling Recreation Tourism < L8 - Industry Studies: Services < L - Industrial Organization
Keywords:	Time Series Models, Films, Entertainment, Tourism

SCHOLARONE™
Manuscripts

Movies and Holidays
The empirical relationship between movies and tourism

Heather Mitchell & Mark Stewart
September 2011

Governments around the world believe tourism will increase if locations within their nations are featured in films. Money and other inducements are often offered to movie makers to encourage them to shoot within a particular constituency. This paper finds a positive and statistically significant relationship between successful films and tourism.

Mark F. Stewart (corresponding author)
School of Economics, Finance and Marketing,
RMIT University
City Campus.
239 Bourke Street,
Melbourne Victoria 3000.
AUSTRALIA
Telephone +61 3 9925 5879
Facsimile +61 3 9925 5986
Email: mark.stewart@rmit.edu.au

Heather Mitchell
School of Economics, Finance and Marketing,
RMIT University
Telephone +61 3 9925 5876
Email: heather.mitchell@rmit.edu.au

Movies and Holidays

The empirical relationship between movies and tourism

I. Introduction

New Zealanders took pride and gained a heightened national profile with the filming of the *Lord of the Rings* trilogy in their country. When they were planning to film the follow-up movie *The Hobbit*, Warner Brothers pressured the New Zealand government to change their employment act and provide a package of around \$25 million worth of tax breaks to bring the filming to the country (Clark, 2010). This is just one example of how a government's inducements can convince movie makers to showcase their particular nation. This investment is often justified as leading to increased tourism. This paper endeavours to answer the question: Are these inducements worthwhile?

Although studies have documented increases in tourism to locations featured in movies and television (e.g., Riley and Doren 1993; Riley *et al.*, 1998; Dore and Crouch, 2003; and Kim *et al.*, 2009), the question of whether this represents an increase in overall tourism, or merely a diversion from other destinations within the same country, has not been adequately addressed. To investigate this, we examined changes in overseas tourist numbers to Australia following the *Mad Max* and *Crocodile Dundee* franchises, and New Zealand following the *Lord of the Rings* trilogy. We also consider the available tourist-related data on Kazakhstan before and after the *Borat* movie.

II. The Data

We chose Australia and New Zealand because they are both distant from overseas locations and require a deliberate decision to visit. These sites also have reliable monthly data over an extended period, which is assisted by having no land borders. Figure 1 shows the logged values of tourists in

these two countries¹. The US release date of the first of each movie series has also been shown on the Figure.

Figure 1: Tourist Arrivals

Both series show a general upward trend, with strong seasonal effects evident in the Australian series. The dramatic drop for Australia in 2003 corresponds to the Severe Acute Respiratory Syndrome (SARS) epidemic. We fit a linear trend (Tr) to the logged data to estimate the growth rate with the trend set to zero at the release date of the first movie in a series. Monthly seasonal dummy variables are included where required, as well as dummy variables to measure the impact of SARS. Where sufficient data is available, the estimation periods begin five years before the release of the first movie in the franchise and end five years after the release of each movie in the series². As the third *Crocodile Dundee* movie was screened 13 years after the second, it is analyzed separately. An additive dummy variable (DA) starting at the film's US release date is included to detect an overall increase, and a multiplicative dummy using the time trend is used to measure any change in growth rates.

¹ NZ_TOURISTS and ARRIVALS_AUS are defined in Table 1.
² The five year period is chosen as Riley *et al* (1998) find that increases to featured locations generally decline after this time.

$$\log(Tour_t) = \alpha_0 + \beta_1 Tr + \beta_2 DA_t + \beta_3 TrDA_t + \alpha_2 D_2 + \dots + \alpha_{12} D_{12} + \beta_4 S_1 + \dots + \beta_6 S_3 \quad (1)$$

where *Tour* is the measure of tourist numbers given in Table 1, $D_2 \dots D_{12}$ are monthly seasonal dummy variables and $S_1 \dots S_3$ model the effect of SARS. Newey-West HAC adjusted t-statistics are used in all regressions and some ARMA terms are used when required³. The seasonal dummy variables were significant for Australia and Kazakhstan, but not for New Zealand. The SARS dummies show a significant negative effect for both Australia and New Zealand.⁴

In an attempt to provide a control for general changes in tourism to the area, we estimate the models using both New Zealand and Australian data where data is available. All series were collected through the Thomson Reuters DataStream and found to be trend stationary using the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test.

III. Empirical Results

Table 2 shows that each of the *Mad Max* franchise films were associated with a significant increase in tourism after the release of the first movie, but there is a decrease in the growth rate that negates this after a year. As the plot was not specifically Australian, and the scenery not appealing, any increase is surprising.

The first two *Crocodile Dundee* movies coincide with an increase in Australian tourism but, unlike the *Mad Max* movies, there is no decrease in the growth rate. Over the same period, there is also an increase in tourism to New Zealand, but not as large as for Australia. This is followed by a decrease in growth that negates the increase after 10 months. This could be due to a contagion effect, with some tourists who travelled to Australia deciding to visit New Zealand as well. The third *Crocodile Dundee* movie corresponds to a decrease in tourism to Australia. This could be because the movie was not successful, or that there was little Australian footage, or because the

³ HAC is Heteroskedastic Autocorrelation Consistent and ARMA is Auto Regressive Moving Average. Details of the ARMA terms used in our models are available from the authors on request.

⁴ The results are not reported but are available from the authors on request.

Lord of the Rings movies were released during the estimation period and tourists were diverted to New Zealand. Over the same period, tourists to New Zealand show a marginally significant increase.

When we examined the impact of the *Lord of the Rings* trilogy on New Zealand tourism, we find no significant effects for the first movie, but after the second and third there is an increase in tourist numbers. This is accompanied by a decrease in growth that would negate the increase after two years. Over the same period, there is a drop in the number of tourists to Australia, but a small increase in the growth rate. This suggests there may be a diversionary effect, which dissipates slowly.

As a change of pace we look at the influence of *Borat's* release in 2006 on Kazakhstan tourism. Unfortunately, data is limited. Quarterly data on foreign direct investment in hotels and restaurants from the National Bank of Kazakhstan shows an increased mean value from USD\$3.0 million before the movie to USD\$11.7 million after it⁵. A t-test for equality of the two means rejects the null at the 5 % level (p-value = 0.030). A similar model to that for tourist numbers was estimated using data on employment in hotels and restaurants in Kazakhstan is presented in Table 2⁶. The employment figures show a significant increase in employment shortly after the release of the movie. If these effects are due to the movie, Kazakhstan has done very well. They made no financial contribution of any kind to the film and the “Kazakhstan” scenes were shot in Romania⁷. This is interesting given that the Kazakhstan president, Nursultan Nazarbayev, complained about the movie portraying his country in a bad light⁸.

⁵ The data started in the first quarter of 2001.
⁶ No comparable data is available for similar countries.
⁷ This effect is not uncommon (see Busby and Klug, 2001), and is attributed to playful or ‘post-tourists’ (Williams, 1998, p. 181) rather than ignorance of the movie’s true location.
⁸ See *Daily Mail*, 2006.

IV. Conclusion

Using data on tourist numbers to Australia and New Zealand, and hospitality employment in Kazakhstan, we find evidence of an increase in tourism after the release of a movie. However, this increase is not generally sustained for more than two years. It does not seem to matter if the movie is specifically set in that location or a fictional one, such as the *Lord of the Rings*' Middle Earth. This effect may be present even if the movie claims to be set in a particular location, but is actually filmed elsewhere. There is also some evidence of both contagion and diversion effects.

As our study shows, the third *Crocodile Dundee* movie, which was not a box-office success, had no positive effect on tourism. Government support for movies, then, must be considered a gamble. Whether the inducements offered by governments to entice movie makers to shoot within their countries are worthwhile requires a full cost benefit study that would compare what the governments invest with the dollar value of the extra tourism.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

Table 1: Data sources

Country	Series	Source	Time period	Movies
Australia	Visitor Arrivals – purpose of visit holiday	Australian Bureau of Statistics	Jan 1976 to Nov 2010	Mad Max, 1979, 1981, 1985
Australia	Visitor Arrivals – purpose of visit holiday	Australian Bureau of Statistics	Jan 1976 to Nov 2010	Crocodile Dundee, 1986, 1988, 2001
Kazakhstan	No. of Employees – hotels and restaurants	Agency of Kazakhstan on Statistics	April 2000 to Dec 2009	Borat 2006
New Zealand	Short term visitor arrivals	Statistics New Zealand	Jan 1982 to Nov 2010	Lord of the Rings, 2001, 2002, 2003

Table 2: Regression results⁹

Intercept	Trend	DA	DA*trend	Adjusted R ²
Mad max – first movie - estimation Jan 1976 to April 1984				
12.268	0.009	0.110	-0.008	0.924
(0.000)	(0.005)	(0.001)	(0.013)	
Mad max – movie and first sequel – estimation Jan 1976 to Dec 1986				
12.196	0.013	0.074	-0.008	0.942
(0.000)	(0.001)	(0.007)	(0.022)	
Mad max – movie and two sequels – estimation Jan 1976 to July 1990				
11.937	0.020	0.083	-0.013	0.972
(0.000)	(0.000)	(0.001)	(0.000)	
Crocodile Dundee – first movie – estimation Sept 1981 to Sept 1991 – Australia				
12.690	0.007	0.078	-0.001	0.968
(0.000)	(0.000)	(0.026)	(0.437)	
New Zealand data – estimation Jan 1982 to Sept 1991				
11.046	0.010	0.055	-0.006	0.955
(0.000)	(0.000)	(0.008)	(0.000)	
Crocodile Dundee – movie and first sequel – estimation Sept 1981 to May 1993 – Australia				
12.682	0.007	0.086	-0.001	0.975
0.000	0.000	(0.013)	(0.339)	
New Zealand – estimation Jan 1982 to May 1993				
11.041	0.010	0.048	-0.006	0.963
0.000	0.000	(0.012)	(0.000)	
Crocodile Dundee – third sequel – estimation April 1996 to April 2006 – Australia				
13.659	0.004	-0.083	0.001	0.947
0.000	0.000	(0.010)	(0.263)	
New Zealand – estimation April 1996 to April 2006				
11.919	0.004	0.058	0.001	0.950
0.000	0.000	(0.077)	(0.582)	
Lord of the Rings – first movie – estimation Dec 1996 to Dec 2006 – New Zealand				
11.996	0.005	0.041	-0.002	0.958
(0.000)	(0.000)	(0.144)	(0.126)	
Australia - estimation Dec 1996 to Dec 2006				
13.677	0.004	-0.078	0.002	0.951
(0.000)	(0.000)	(0.018)	(0.002)	
Lord of the Rings – first two movies – estimation Dec 1996 to Dec 2007 – New Zealand				
11.995	0.006	0.051	-0.002	0.963
(0.000)	(0.000)	(0.075)	(0.040)	
Australian data - estimation period Dec 1996 to Dec 2007				
13.678	0.004	-0.070	0.002	0.960
(0.000)	(0.000)	(0.026)	(0.005)	
Lord of the Rings – three movies – estimation Dec 1996 to Sep 2008 – New Zealand				
12.000	0.006	0.061	-0.003	0.964
(0.000)	(0.000)	(0.037)	(0.015)	
Australia - estimation Dec 1996 to Sep 2008				
13.682	0.004	-0.067	0.001	0.965
(0.000)	(0.000)	(0.031)	(0.012)	
Borat - Kazakhstan– estimation Aug 2001 to Sep 2009				
2.986	0.009	0.058	-0.001	0.989
(0.000)	(0.000)	(0.000)	(0.136)	

⁹ p-values in parenthesis.

References

Busby G. and Klug J. (2001) Movie induced tourism: the challenge of measurement and other issues, *Journal of Vacation Marketing*, 7, 318-332.

Clark, A. (2010) New Zealand changes labour laws to save filming of the Hobbit movies, *The Observer*, 31 October, 2010.

Daily Mail. (2006) Bush to hold talks on Ali G creator after diplomatic row, *Daily Mail*, 12 September, <http://www.dailymail.co.uk/news/article-404852/Bush-hold-talks-Ali-G-creator-diplomatic-row.html> (accessed September 2011).

Dore L. and Crouch G. I. (2003) Promoting destinations: an exploratory study of publicity programmes used by national tourist organizations, *Journal of Vacation Marketing*, 9, 137-151.

Kim, H. J., Chen, M. H., and Su, H. J. (2009) The impact of Korean TV dramas on Taiwanese tourism demand for Korea, *Tourism Economics*, 15, 867-873.

Riley, R., Baker, D., and Van Doren, C. S. (1998) Movie induced tourism, *Annals of Tourism Research*, 25, 919-235.

Riley, R.W. and Van Doren, C. S. (1992) Movies as tourism promotion: a ‘pull’ factor in a ‘push’ location, *Tourism Management*, September, 267-275.

Williams, S. (1998) *Tourism Geography*, Routledge, London.