



**DIE ERDE**

Journal of the  
Geographical Society  
of Berlin

Vol. 149, No. 1 · Short communication

# Corruption and travel: effects of China's anti-graft campaign on Macao

**Tao Li<sup>1</sup>, Li Sheng<sup>2</sup>**

<sup>1</sup>Associate Professor, Department of Government and Public Administration, University of Macau, Taipa, Macao

<sup>2</sup>Associate Professor, Department of Government and Public Administration, University of Macau, Taipa, Macao, [edmundsheng@umac.mo](mailto:edmundsheng@umac.mo)

Manuscript submitted: 04 Januar 2017 / Accepted for publication: 12 July 2017 / Published online: 30 March 2018

## Abstract

*Using differences-in-differences regression models, this research note tries to evaluate the effects of China's anti-graft campaign on tourism in Macao. It finds that anti-corruption policies significantly curbed gambling with public money in Macao, causing a recent drop in Macao's gaming revenue. Furthermore, the more strongly the campaigns have been enforced, the less tourists go to the city of Macao. Macao is urged to diversify its casino-dominated and mainland China-dependent economy.*

## Zusammenfassung

Unter Verwendung von Differenz-von-Differenzen Regressionsmodellen versucht dieser Artikel die Auswirkungen der chinesischen Antikorruptionskampagne auf den Tourismus in Macao zu analysieren und zu bewerten. Auf der Grundlage dieser Analyse und Bewertung wird festgestellt, dass die Anti-Korruptionsmaßnahmen das Glücksspiel in Macao erheblich gebremst haben, was kürzlich zu einem Rückgang der Glücksspieleinnahmen in Macao führte. Je stärker die Kampagnen durchgesetzt werden, desto weniger Touristen reisen nach Macao. Macao wird dringend aufgefordert, seine vom Kasino dominierte und von Festlandchina abhängige Wirtschaft zu diversifizieren.

**Keywords** gaming revenue, tourist arrivals, anti-corruption campaign, diversification

## 1. Introduction

The backbone of Macao's economy is its gambling industry, which generated approximately 360 billion Patacas (8 Patacas for approximately 1 US\$) in 2013, which is seven times that of Las Vegas. In fact, the gaming sector accounted for 85% of Macao's Gross Domestic Product, over 30% of its total employment, and nearly 90% of its government revenue (*Macao Statistics and Census Services* 2013). Macao's post-colonial

economic miracle is mainly due to its gaming liberalization for foreign investors in 2002 and China's Free Individual Travel Scheme. From 2004 to 2013, Macao had been experiencing spectacular economic growth of over 20% annually and was becoming one of the richest economies in the world. Since the 3<sup>rd</sup> quarter 2014, however, Macao's major economic data have been falling, as shown in *Table 1*. In particular, per tourist spending declined for the first time since Macao's handover to China. The declining trend has been

Tao Li, Li Sheng 2018: Corruption and travel: effects of China's anti-graft campaign on Macao. – DIE ERDE 149 (1): 44-51



DOI: 10.12854/erde-149-57

obvious since the 2<sup>nd</sup> quarter 2015 with a significant decrease in tourist arrivals, gross gaming revenue and earnings before interest, taxes and amortization (*Macao Statistics and Census Services* 2015). Because the casino industry contributes the lion's share to public revenue and remains by far the largest employer in the city, its downturn will ultimately have a negative effect on each and every branch and household in the city (*Scheyvens* 2011).

Table 1 Changes in Major Economic Indicators. Source: Authors' calculations based on data from *Macao Statistics and Census Services, Yearbook of Statistics (2016: 157-175)*. Note: 8 Patacas for approximately 1 US\$

	Tourist arrivals ('000 persons)	Year-on-year change	Per capita tourist spending (Patacas)	Year-on-year change	Gross Gaming Revenue (million Patacas)	Year-on-year change
3 <sup>rd</sup> quarter 2014	8,245	-3.6%	1,878	-1.4%	83,143	-7%
4 <sup>th</sup> quarter 2014	7,997	-3.3%	1,757	-13.1%	75,844	-24.5%
1 <sup>st</sup> quarter 2015	7,412	-6.9%	1,802	-20.2%	65,033	-36.5%
2 <sup>nd</sup> quarter 2015	7,344	-7.9%	1,668	-22.1%	57,115	-37.4%

A number of scholars have been conducting research on the dramatic decline of Macao's gaming sector, identifying at least three factors that may have caused the drops in Macao's gaming revenues. Firstly, it is argued that the worldwide economic slowdown, and in particular that of China as Macao's largest source of travelers, may have negatively affected Macao's gaming market demand. In fact, the World Bank keeps adjusting its economic growth forecast downwards. For example, while in July 2014, World Bank economists predicted an economic growth rate of 3% for 2015, they shrunk that predication to 2.6% in their December 2014 press conference (*Charemza and Ladley* 2016). More seriously, the growth rate of the Chinese economy declined from over 10% in the first decade of the 21<sup>st</sup> century to merely 7% last year. Even worse,

contrary to China's official statistics, China's real economic growth may have already turned negative, which can be deduced from its declining energy consumption and transportation turnover (*Holz* 2014). Macao is a very small economy with very limited resources, and its mono-economic structure makes it very dependent on the country that provides the majority of its travelers. Consequently, any negative sign in the Chinese economy may cause significantly more compound volatility and recession in the city of Macao (*Sheng* 2014). In fact, GDP, gaming export and export of other tourism goods and services keep declining, as shown in *Table 2*, despite the fact that investment has been increasingly conducted to offset the negative outside impacts (*Macao Statistics and Census Services* 2015).

Table 2 Recent Macroeconomic Indicators. Source: Authors' calculation based on data from *Macao Statistics and Census Services, Yearbook of Statistics (2016: 365-384)*

	1 <sup>st</sup> quarter 2014	2 <sup>nd</sup> quarter 2014	3 <sup>rd</sup> quarter 2014	4 <sup>th</sup> quarter 2014	1 <sup>st</sup> quarter 2015	2 <sup>nd</sup> quarter 2015
GDP	12.4%	8.1%	-2.1%	-17.2%	-24.5%	-26.4%
Gaming export	13.0%	-0.5%	-12.3%	-28.9%	-39.7%	-40.5%
Tourism export	6.6%	10.4%	-0.7%	-15.7%	-17.7%	-21.5%
Investment	30.1%	49.2%	35.4%	26.9%	30.9%	2.9%

Secondly, increasing inter-destination gaming competition may also contribute to Macao's recent decline in the gaming sector. Macao's economic success, induced by casino liberalization and massive inflow of mainland Chinese gamblers, has inspired its neighboring economies to follow their model. Singapore opened its two luxury casino resorts in 2010, primarily to compete with Macao for Chinese high rollers. It was a huge success, as shown in 10 million gaming tourist arrivals, which largely contributed to Singapore's remarkable economic growth rate of 14.7% that year. In 2014, the city state surpassed Las Vegas to become the world's second largest casino city next to Macao (Wu and Chen 2015). Following Singapore, casinos have been mushrooming in Vietnam, Laos, Cambodia, the Philippines, Malaysia, Korea, and Russia. Taiwan and Japan are seriously considering pursuing gaming liberalization. Among the newly established casinos surrounding Macao, those located in the Philippines and Vietnam recorded the most remarkable growth at 50% annually, 'stealing' away a considerable number of high spending Chinese tourists and casino resort investors from Macao (Sheng and Zhao 2016).

Thirdly, since 2012, China's anti-graft movement may have negatively affected Macao casinos' VIP businesses and thus the overall performance of the Macao economy. Unlike Western casino cities, Macao's gaming sector relies heavily on its high-spending gamblers, who are estimated to contribute two-thirds of its total gaming revenue. It is also estimated that half of these high rollers are either government officials or state-owned enterprises' managerial staff from mainland China, and they gamble with public money. In addition, Macao casinos also play the role of money launderer for these state cadres allowing them to transfer their embezzled public money out of the country (Saha and Yap 2015). Since Xi Jinping came into power in 2012, however, a serious anti-corruption campaign has spread over the territory, and a large number of corrupt government officials have been put behind bars. Other officials who have escaped arrest are also reluctant to gamble in Macao, as the city is ultimately under the supervision of the central government despite its autonomous status. To further restrict money laundering and capital flight, the Chinese government forced the Macao Monetary Authority to forbid usage of Union Pay Cards (China's largest credit card) in Macao casinos, starting in July 2014. The total number of bets in Macao casinos declined dramatically once this regulation took effect. Furthermore, the Chinese government forced the Macao Police Authority to restrict

visas for Chinese transit visitors to Macao from 7 to 3 days, also starting in July 2014 (Sheng and Zhao 2016).

These three factors are not necessarily mutually exclusive, nor do they make an exhaustive list of factors behind Macao gaming revenue drops. This research note focuses on the specific factor of China's anti-corruption campaign, and we try to use quantitative methods to isolate and evaluate the relationship between anti-corruption and tourist arrivals.

## 2. Empirical Evidence from Macao

Chinese officials with financial support from the government make up a sizable portion of Chinese tourism abroad. There is, however, no public data from China on officials travelling abroad. We make use of official statistics collected by the Macao government on the number of visitors from Chinese provinces. Note that only 23 provinces have data. The other provinces are not reported separately because of the small size of tourists from those places. To remove seasonal effects, we calculate the year-on-year monthly growth rate of the number of visitors to Macao from each Chinese province in our data. Our panel data span 56 months (July 2011 to Feb 2016) for all 23 provinces in our data. The unit of analysis is month-province combination. In total, we have 1,288 observations.

Many Chinese officials like to gamble in Macao. However, the Macao government's statistics do not report whether a Chinese visitor is a government official. Therefore, we have to use more sophisticated methods to uncover the extent and mechanisms of Chinese officials travelling abroad. Our empirical strategy is based on key insights into the implementation of Xi's anti-corruption campaigns and their varied effects across Chinese provinces, which tend to have different impacts on Chinese tourists to Macao based on their province of origin. We use the differences-in-differences (DID) regression models to identify the effects of Xi's anti-corruption campaign on Macao tourism. The anti-corruption campaign was officially launched soon after Xi took the top ruling party position in November 2012. In the next month, Xi laid out the so-called 'Eight Rules' as a strict guide for official behavior. The core of the anti-corruption campaign – mass sacking of top officials – did not start until 2013 (Sullivan 2014). The anti-corruption campaign was not uniformly implemented across China. Some provinces, such as Beijing and Shanghai, only had one of

ficial at the level of deputy governor or above sacked from January 2013 to February 2016. On the other hand, Shanxi province had seven such officials sacked during the same period, according to an official media report. There is also a difference in timing. The earlier the first official was sacked in one province, the more officials tended to be sacked over time (see evidence below).

We may use January 2013 as the beginning of the national anti-corruption campaign and compare the number of tourists from Chinese provinces to Macao before and after that date to obtain our first differences. We can then use our two measures of the intensity of the campaign as second differences. Our DID model, which estimates the impact of the anti-corruption campaign's intensity on the drop in Chinese tourism's growth rate in Macao after the campaign, is specified as follows:

$$(1) \Delta Visitor_{pt} = \alpha_1 post + \alpha_2 post \times intensity_p + Z_{pt} \mu_1 + \lambda_p + e_{pt}$$

$\Delta Visitor_{pt}$  is the year-on-year monthly growth rate of the number of visitors to Macao from Chinese province  $p$  in month  $t$  (from July 2011 to February 2016). The variable *intensity* measures the intensity of the implementation of the anti-corruption campaign in province  $p$ . We have two measures of intensity: *NumberSacked* (the number of officials being sacked at the deputy provincial governor level or above) and *Month-FirstSack* (the month in which the first official at the deputy provincial governor level or above was sacked). *Post* is an indicator of the nominal start of the national anti-corruption campaign,  $post = 1$  if  $t$  is after December 2012, and  $post = 0$  if  $t$  is on or before December 2012.  $Z_{pt}$  is a vector of month dummies. We also include provincial fixed effects  $\lambda_p$ . We do not control for year dummies because they are perfectly correlated with *post*. Our main DID estimate for specification (1) is  $\alpha_2$ .

Specification (1) does not fully exploit the panel data structure in our study because all provinces are assumed to experience the anti-corruption campaign at the same time – the only difference is that some provinces experienced a more intensive campaign than others. Our second DID specification (2) makes full use of the panel data structure. We assume that the campaign was implemented earlier in some provinces than others. In other words, some provinces experienced longer exposure to the anti-corruption campaign. The regression is specified as:

$$(2) \Delta Visitor_{pt} = \beta postSack_{pt} + Z_{pt} \mu_2 + \gamma_p + \epsilon_{pt}$$

where  $postSack_{pt}$  is an indicator of the start of the provincial anti-corruption campaign,  $postSack = 1$  if  $t$  is one or after the sacking of the first official at the deputy governor level or above, and  $postSack = 0$  if  $t$  is before that date. A vector of month and year dummies is  $Z_{pt}$ . We also include provincial fixed effects  $\gamma_p$ . Our main DID estimate for specification (2) is  $\beta$ .

We have essentially used two qualitatively different DID models to study how China's anti-graft campaign affects Macao. The classical DID model estimates the treatment effect by comparing the trend differences between a treatment and a control group. Consider one of the most famous DID studies by *Card and Krueger* (1994). They aim to study the treatment effect of minimum wage on unemployment. They compared employment in the fast food sector in New Jersey and in Pennsylvania, in February 1992 and in November 1992, after New Jersey's minimum wage increase in April 1992. Here New Jersey is the treatment group, the raise of minimum wage is the treatment, and neighboring Pennsylvania is the control group. *Card and Krueger* (1994) only studied two states at two different points of time. A more general panel-data approach is to collect data for more states and more time periods. Our specification (2) follows exactly this more general panel-data approach. Under this approach, a province can be either treated (when anti-corruption campaign has started in this province) or untreated (before the start of the campaign in this province). The treatment variable is binary (whether a policy is implemented or not). At each period, untreated provinces serve as controls for other treated provinces. This way, we can build a DID model even if all provinces are eventually treated, as long as the date of treatment varies across provinces.

Our specification (1) follows an entirely different DID approach. Suppose we give a group of patient different doses of the same drug at the same time. We have medical record both before and after the administration of the drug. Here we do not have a clean control group who do not receive any drug. However, we can still compare the trends of those who receive large dose to that of those who receive small dose of the same drug. Roughly speaking, the former is the treatment group, the latter is the control group. Precisely speaking, the treatment variable is continuous and we cannot unambiguously group our observations into

control and treatment groups. In our specification (1), different Chinese provinces receive different doses (or intensities) of the anti-corruption campaigns.

We use two very different DID models so that we can give our results more credibility. In a truly randomized experiment, a researcher can evaluate the quality of the experiment by comparing the average characteristics of the control and treatment groups before the implementation of the treatment. There is no comparable way to test the validity of DID models. Our conclusion will be strengthened if two qualitatively different DID models yield consistent results. Our conclusion will be challenged if either one of the two models fail to deliver the expected effect.

Figure 1 shows the relationship between three variables at the provincial level: *MonthFirstSack*, *NumberSacked*, and *VisitorGrowthDiff*, the latter of which is defined as the average  $\Delta Visitor$  on and after January 2013 minus the average  $\Delta Visitor$  before that date. There is a clear negative relationship between our two measures of anti-corruption campaign intensity: *NumberSacked* and *MonthFirstSack*. The longer is a province exposed to the anti-corruption campaign, the more officials were sacked in that province. Both of these variables are correlated to *VisitorGrowthDiff*, the measure of the decline in the growth rate of visitors to Macao. Provinces that had more officials sacked or exposed to the anti-corruption campaign for a longer period of time tend to have more decline in the growth rate of visitors to Macao.

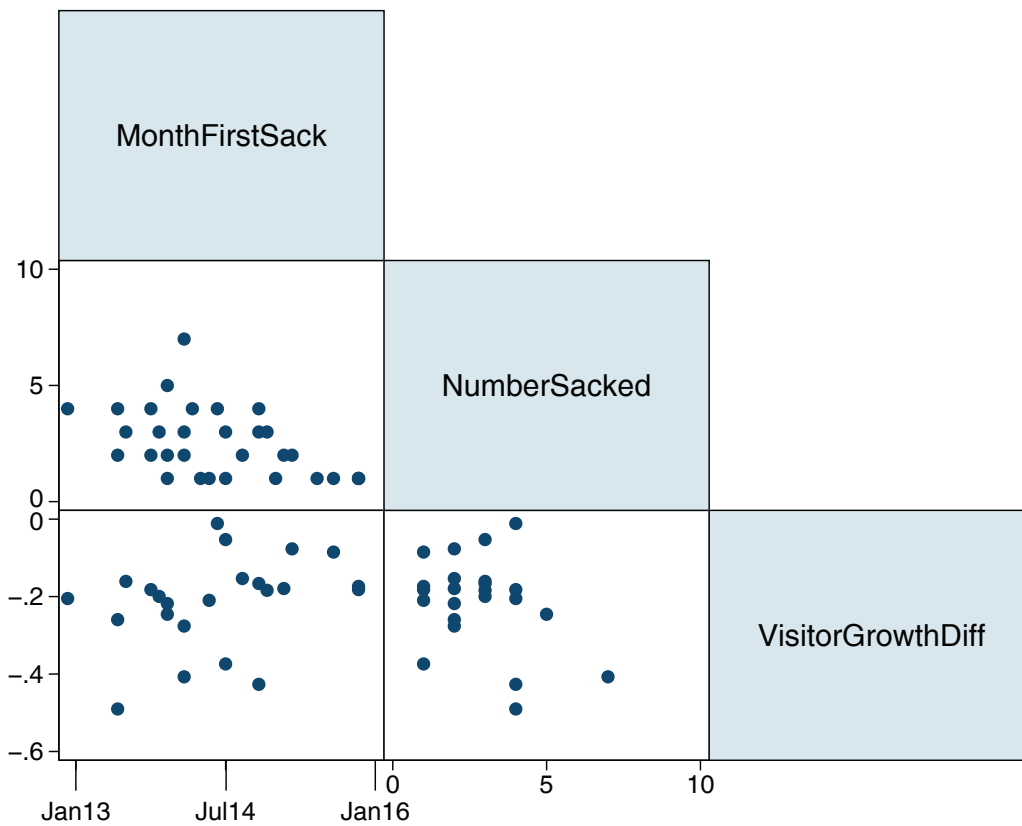


Fig 1 The relationship between provincial anti-corruption campaign initiation, outcome, and the decline of travel to Macao. Source: Own elaboration, data source: Macao Statistics and Census Services 2014, 2015, authors' own dataset compiled from official sources.

Note: *NumberSacked* is the number of officials being sacked at the deputy provincial governor level or above in a particular province; *MonthFirstSack* is the month in which the first official at the deputy provincial governor level or above was sacked; *VisitorGrowthDiff* is the year-on-year monthly growth rate of the number of visitors to Macao from a Chinese province.

DID regression results confirm this graphical pattern. Table 3 reports the results from specification (2). Column 1 reports the result of specification 2 without adding any month or year dummies. The DID estimate  $\hat{\beta}$  is -0.225, suggesting that provinces that were exposed to the anti-corruption campaign, relative to those that were not yet exposed to the campaign, on average have 22.5% lower growth rate in the number of visitors to Macao. If we add the year dummies but not the month dummies, the effect drops significantly. The DID estimate  $\hat{\beta}$  is only -0.0787 (column 2). Further adding the month dummies does not change the DID estimate  $\hat{\beta}$  much further (= -0.06 in column 3). In all these results, the estimated  $\hat{\beta}$  coefficients are statistically significant at least at the 95% level.

Table 3 The Effects of Chinese Provincial Anti-corruption Campaign Initiation on the Monthly Growth of Travel to Macao. Source: Authors' calculation based on data from Macao Statistics and Census Services, Yearbook of Statistics (2016)

	(1) Δ Visitor	(2) Δ Visitor	(3) Δ Visitor
postSack	-0.225*** (0.0247)	-0.0787*** (0.0270)	-0.0600*** (0.0278)
year=2011		0 (.)	0 (.)
year=2012		-0.289*** (0.0335)	-0.308*** (0.0343)
year=2013		-0.367*** (0.0270)	-0.388*** (0.0283)
year=2014		-0.242*** (0.0323)	-0.270*** (0.0350)
year=2015		-0.455*** (0.0315)	-0.490*** (0.0349)
year=2016		-0.551*** (0.0379)	-0.629*** (0.0448)
Constant	0.218*** (0.00886)	0.476*** (0.0194)	0.539*** (0.0248)
Month Effects	No	No	Yes
R2	0.153	0.367	0.383
Fixed Effects	Yes	Yes	Yes
Observations	1288	1288	1288

\*\*\*p < .01

The estimated coefficients before the year dummies (with 2011 as the base year) are all negative and statistically significant at the 99% level (column 2 and 3), showing a clear declining trend in the growth rate of Chinese visitors to Macao, both before and after the introduction of the anti-corruption campaign at the end of 2012. If we do not control for the time trend (column 1), the estimated  $\hat{\beta}$  tends to be overestimated. After we control for the time trend (column 2 and 3), the estimated  $\hat{\beta}$ , which estimates the decline in tourists to Macao from the provincial timing variations of anti-corruption campaigns, becomes smaller yet still statistically significant.

Results based on specification (1) are consistent with what we discover using specification (2). In column 1-2 of Table 4, we report the results of specification (1) using *NumberSacked* as a measure of campaign intensity. Column 1 reports the results without controlling for month and provincial fixed effects. The estimated  $\hat{\alpha}_2$  coefficient is -0.0259, suggesting that a drop in the visitor growth rate tends to be larger in provinces where there are more officials being sacked. Column 2 reports the results controlling for month and provincial fixed effects. The effect on *NumberSacked* is absorbed by the provincial fixed effects. The estimated  $\hat{\alpha}_2$  coefficient is unchanged at -0.0259. In column 3-4 of Table 2, we report the results using *MonthFirstSack* as a measure of campaign intensity. The estimated  $\hat{\alpha}_2$  coefficient is 0.00411 if we do not control for month and provincial fixed effects (column 3), suggesting that the drop in the visitor growth rate tends to be smaller in provinces less exposed to the anti-corruption campaign. Adding the month and fixed provincial effects barely changed the results (column 4). In all the above cases, the estimated  $\hat{\alpha}_2$  coefficients are statistically significant at least at the 90% level.

Table 4 The Effects of Chinese Provincial Anti-corruption Campaign Intensity on the Monthly Growth of Travel to Macao. Source: Authors' calculation based on data from Macao Statistics and Census Services, Yearbook of Statistics (2016)

	(1) Δ Visitor	(2) Δ Visitor	(3) Δ Visitor	(4) Δ Visitor
post	-0.142*** (0.0415)	-0.137*** (0.0421)	-2.896** (1.344)	-2.892** (1.350)
post × NumberSacked	-0.0259* (0.0150)	-0.0259* (0.0151)		
NumberSacked	0.0261** (0.0131)	0 (.)		
post × MonthFirstSack			0.00411** (0.00205)	0.00411* (0.00206)
MonthFirstSack			-0.00523*** (0.00192)	0 (.)
Constant	0.210*** (0.0376)	0.264*** (0.0175)	3.697*** (1.255)	0.264*** (0.0177)
Month Effects	No	Yes	No	Yes
R2	0.149	0.141	0.154	0.135
Fixed Effects	No	Yes	No	Yes
Observations	1288	1288	1288	1288

\*p<.1, \*\*p<.05, \*\*\*p<.01

### 3. Concluding Remarks

Using two qualitatively different differences-in-differences regression models, in this research note, we attempt to measure the effects of China's anti-graft movement on Macao's tourist inflows. We find relatively robust evidence that provinces that experienced stronger anti-corruption campaigns started to send less tourists to Macao. The evidence lends support to the view that many Chinese tourists to Macao (at least before the campaign) were government officials whose trips were not entirely financed by their own money. The anti-corruption campaigns were effective to some degree in curbing such corruptive behaviors. However, there is no evidence that the decline in Macao's tourism economy is entirely due to the anti-corruption campaign; the visitor growth rate had already started to decline before Xi's campaign started. A combination of several factors contribute to the decline of visitors to Macao, and our paper delivers relatively robust evidence that the anti-corruption campaign is at least one of the causes.

As one of China's two special administrative regions following China's 'One Country, Two Systems' ideology, which experiments with the co-existence of capitalism and socialism as well as a high degree of political autonomy under the Communist regime, Macao's success has significant political value for the legitimacy of Chinese leadership (Sheng and Tsui 2009). Therefore, the casino city has been gaining various types of support from the central government and governments at all levels in China. As Macao, after more than a decade of rapid economic growth, steps into a wealthy and advanced welfare society, the Chinese authority gradually withdraws its special treatments of Macao, and recently it often concentrates on its own well-being instead of supporting Macao unconditionally. In particular, as a rather controversial sector, the casino boom in Macao, driven by foreign investment, often gives mainland Chinese the impression that foreign capitalists use Chinese territory and earn Chinese money by corrupting Chinese government officials. The series of anti-corruption measures targeting Chinese gamblers in Macao seem to be a response by Chinese government to this widespread opinion.

In general, tourism is a highly externally dependent sector that is vulnerable to any outside fluctuation: economic, social, environmental and political (Nelson 2012). To reduce potential risks, the government of Macao needs to seriously consider diversifying its economy, such as by revitalizing the high-value-added manufacturing industry; fostering medical, educational and cultural sectors; and increasing the non-gaming aspects of Macao's tourism industry.

### References

- Card, D. and A.B. Krueger (1994): Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania. – *American Economic Review* **84** (4): 772-793
- Charemza, W. and D. Ladley (2016): Central Bank's Forecasts and their Bias: Evidence, Effects and Explanation. – *International Journal of Forecasting* **32** (3): 804-817
- Holz, C.A. (2014): The Quality of China's GDP Statistics. – *China Economic Review* **30** (3): 309-338
- Macao Statistics and Census Services (2013): Yearbook of Statistics 2013. – Macao
- Macao Statistics and Census Services (2014): Yearbook of Statistics 2014. – Macao
- Macao Statistics and Census Services (2015): Yearbook of Statistics 2015. – Macao
- Nelson, F. (2012): Blessing or Curse? The Political Economy of Tourism Development in Tanzania. – *Journal of Sustainable Tourism*: **20** (3): 359-375
- Saha, S. and G. Yap (2015): Corruption and Tourism: An Empirical Investigation in a Non-linear Framework. – *International Journal of Tourism Research* **17** (3): 272-281
- Scheyvens, R. (2011): The Challenge of Sustainable Tourism Development in the Maldives: Understanding the Social and Political Dimension of Sustainability. – *Asia Pacific Viewpoint* **52** (2): 148-164
- Sheng, L. (2014): Effects of Foreign Expansion on Local Growth: The Case of Macao. – *European Planning Studies* **22** (8): 1735-1743
- Sheng, L. and Y.M. Tsui (2009) Casino Booms and Local Politics: The City of Macao. – *Cities* **26** (2): 67-73
- Sheng, L. and W.B. Zhao (2016): Strategic Destination Management in the Face of Foreign Competition: The Case of Macao. – *Journal of Travel & Tourism Marketing* **33** (2): 263-278
- Sullivan, J. (2014): Country Focus: China. – *Political Insight* **5** (1): 10-13
- Wu, S.T. and Y.S. Chen (2015): The Social, Economic, and Environmental Impacts of Casino Gambling on the Residents of Macau and Singapore. – *Tourism Management* **48** (2): 285-298