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Market power, competition and earnings management: accrual-based activities

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Abstract

Purpose – This study aims to understand the impact of market power and competition on earnings management, particularly discretionary accruals, in the Chinese and Taiwanese tourism industries. China and Taiwan differ not only in their political and social systems but also in their economic systems. The research aims to provide managers and investors with stock selection strategy in the decision-making process.

Design/methodology/approach – Accounting data consisted of 60 publicly traded travel companies in China and Taiwan from 2000 to 2014. Methodology included correlation matrix for the variables, univariate and multivariate regression and competition analysis.

Findings – Based on empirical results, the authors found a significant negative correlation between market power and discretionary accruals and market concentration (or lower market competition) and discretionary accruals in both the Chinese or Taiwanese markets. Although the Chinese travel companies enjoyed higher market power and market concentration, they engaged in less earnings manipulation than their Taiwanese counterparts as a result of the Chinese Government regulation.

Research limitations/implications – Based on listed travel companies, generalization of the research results to entire tourism industry is limited. This study compares the travel companies' practices of smoothing out earnings between China and Taiwan, thus helping managers and investors in making their financing, investment decisions.

Originality/value – This research contributes to the earnings management literature by examining a specific industry of tourism. This paper is original in two ways. The authors linked market power and market competition with earnings management simultaneously and then compared the Chinese and Taiwanese tourism industries in manipulating earnings.

Keywords Investment decisions, Financing policy, Economics of regulation

Paper type Research paper

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1. Introduction

Financial reports are used to convey corporate information on firm performance. However, corporate managers could choose reporting methods to reflect the financial figures to their own advantages. One of these accounting practices is called earnings management, also known as earning manipulation. Earnings management refers to a strategy used by a firm's management to apply accounting rules flexibly to manipulate corporate profits (Bodie *et al.*, 2013). This technique is conducted for income smoothing, which means that by eliminating large movements in profits, companies can report a smooth trend over a number of years (Hussey, 1995).

The study of earnings management began in the 1980s, with Dye (1988) stating that managers engaged in earnings management because their compensation schemes depended on a firm's profits. Moreover, prior research indicated the main reason for managers to use earnings management was to achieve the standards for chief executive officer (CEO) compensation and bank loans (Almadi and Lazic, 2016; Bergstresser and Philippon, 2006; Dechow *et al.*, 1995). Furthermore, Sambharya (2011) claimed that earnings management assisted firms in meeting stock analysts' earnings forecasts to enhance the firm's perceived performance.

Prior research indicated that firms with a lower level of corporate governance and stock trading regulation in undeveloped countries exhibited increased earnings management (Almadi and Lazic, 2016). The authors asserted that earnings management poses a considerable problem for investors who rely on the accuracy and transparency of a firm's financial information in deriving investment decisions.

Earnings management can be achieved through two accounting methods: real activities and accrual-based activities (Schipper, 1989). Accrual-based earnings management can be further divided into two categories: discretionary and non-discretionary. Moradi *et al.* (2015) found that managers preferred accrual-based activities to real activities because the former improves the firms' future performance, thus securing managers' bonuses.

Most notably, previous research has shown earnings management to be associated with product market pricing power (also known as "market power") and market competition. Datta *et al.* (2011) found that firms with lower market power possess an inferior ability to raise their product prices when costs surge and are thus unable to pass on such increases in cost to consumers. Hence, these firms had greater incentives to practice earnings management. Markarian and Santaló (2014) claimed that firms in greater market competition likewise engaged in more earnings management to match analysts' forecasts.

Bodie *et al.* (2013) suggested that growing businesses attract investors seeking higher-yield returns. However, if a company does not achieve its expected growth, its shareholders may suffer a decline in the share price due to diminishing market confidence. Thus, firms experiencing high growth may resort to using earnings manipulation to temporarily either inflate or reduce the firm's current income to meet a predetermined target (Bodie *et al.*, 2013). Building on this phenomenon, we observed that the tourism industries of China and Taiwan have both experienced significant growth in the past decade with the number of tourists traveling to and from these countries rising by 5 per cent or more per year. Therefore, the high potential revenue from travel and tourism expansion in China and Taiwan has created the expectation of a lucrative market for investors (Chen and Kim, 2010).

China and Taiwan, although separated for more than 100 years politically, share the same language and cultural roots. However, China and Taiwan differ not only in their political and social systems but also in their economic systems.

China is ruled by one single ruling party, the Communist Party, since 1949. It developed itself into a socialist market economy in which public ownership and state-owned enterprises (SOE) dominate within a market economy (Qian, 2000). In contrast, Taiwan became a

democratic society after the lifting of martial laws in 1987. Taiwan developed itself into a capitalist economy and became one of the Four Asian Tigers. Most of the businesses in Taiwan are small to medium size enterprises and privately owned (SMEA, 2018).

As an emerging market for the past 25 years, China developed its tourism industry in 1978 after the government announced the open-door reform policy. Approximately 60 per cent of the businesses in China are state-owned. SOE have accounted for 30-40 per cent of total GDP and 20 per cent of China's total employment. SOE exist in all sectors of the economy, including tourism (The international trade administration, ITA, 2018). In contrast, Taiwan developed its tourism industry in the 1960s. Almost all of the Taiwanese hotels, travel agents, and airlines are privately owned and smaller in firms size compared to China (Tourism Statistics, 2017).

The purpose of this study is to investigate the impact of market power and market competition on earnings management, using data from high-growth, publicly listed Chinese and Taiwanese travel and tourism companies. The results of this study identified the types of travel companies that are prone to manipulate earnings and deceive investors, providing managers and investors with stock selection strategy during their decision-making process.

The extant literature has probed into the relationship between market power and earnings management, or market competition and earnings management, but not all three factors simultaneously. This paper is also among the first to link market power and market competition with earnings management while comparing the Chinese and Taiwanese tourism industries. The outcome of this research provides useful information for investors to safeguard themselves against misrepresented earnings (Chen, 2017).

2. Related literature and hypotheses development

2.1 Earnings management

Earnings management is defined as a strategy used by a firm's management wherein a generally accepted accounting method is deliberately selected with the aim of manipulating the firm's earnings (Dechow *et al.*, 1995). The altered accounting numbers either misleads some stakeholders about the firm's performance or aids the company in loan agreements dependent on reported financial numbers (Nisar, 2009; Sambharya, 2011). This practice is conducted specifically for the purpose of income smoothing, which is to stabilize income and expenses over the years to meet a predetermined outcome (Hussey, 1995). Inaccurate earnings reported on a firm's financial statements can be detrimental to investors, who may be deceived into buying overvalued stocks or selling undervalued stocks based on such altered earnings figures, resulting in unwarranted losses (Katmon and Farooque, 2015; Martínez-Ferrero *et al.*, 2016).

Prior researchers identified that firms used earnings management the purpose of securing CEO compensation and contractual agreements (Almadi and Lazic, 2016; Schipper, 1989). In particular, firms under pressure to obtain bank loans have a higher inclination to utilize earnings management to ensure that their earnings meet the standards specified by the financing agency in the contractual agreement (Cheng *et al.*, 2015; Schipper, 1989).

Healy and Wahlen (1999) found that the widespread use of accounting information by investors and financial analysts to value stocks induced managers to manipulate earnings in an effort to stimulate short-term stock price performance while ignoring the long-term effects of this practice. Graham *et al.* (2005) presented evidence after conducting surveys with more than 400 chief financial officers. The results showed that 73.5 per cent of the participants were willing to sacrifice long-term economic value in exchange for smooth earnings in the short term to maintain or boost their firm's stock price.

The practice of earnings management to achieve short-term benefits for the firm and for insider investors has been shown to be detrimental to outside investors. Moreover, prior research revealed that senior managers of firms use accrual-based earnings management to either inflate or deflate earnings (Almadi and Lazic, 2016). Subsequently, the directors or large shareholders sold their own shares at the higher price or bought shares at lower prices, reaping higher returns than outsiders (Del Brio *et al.*, 2016; Sawicki and Shrestha, 2008).

2.2 Discretionary accruals

Earnings management can be divided into two methods: real activities and accrual-based activities (Schipper, 1989). The former involves real transactions, while the latter revolves around reserve fund accounting for expense items. Accrual-based earnings management can be further categorized into discretionary and non-discretionary methods, wherein discretionary accrual is defined as the reservation of non-obligatory expense, such as an anticipated bonus for management that is unrealized but recorded in the accounting books (Business Dictionary, 2017a). Non-discretionary accrual is defined as a pre-booking of an obligatory expense that has yet to be realized, but is already recorded in the firm's accounting records. Examples of this include future taxes or salaries (Business Dictionary, 2017b).

2.3 Market power

Prior study showed that the two main factors influencing earnings management comprised of market power and market competition (Datta *et al.*, 2013; Markarian and Santaló, 2014). Market power is defined as a firm's ability to affect the price or quality of products or services by dominating the market in either supply or demand (Oxford Dictionary, 2017). Few studies had probed into this subject and their findings varied. Kale and Loon (2011) indicated that firms with greater market power had more stable cash flows, thus reducing fluctuations in stock price. This situation occurs because a firm with monopoly power has a higher market power to raise or lower product price. When a sudden and unpredictable increase in product cost occurs, a firm with higher market power can raise the product's price and pass on a proportional cost increase to the customer (Kale and Loon, 2011). In doing so, the firm retains a steady level of profit and cash flow, resulting in a lower degree of cash flow volatility (Kubick *et al.*, 2015). However, Mitra *et al.* (2013) discovered that although firms with greater market power engaged in less real activity earnings management, these firms still used accrual-based earnings management.

Datta *et al.* (2013) conducted the first research on the relationship between market power and discretionary earnings manipulation. The authors found that companies with lower market power engaged in greater discretionary accruals. In addition, firms with weak market power are more likely to manipulate earnings to meet market expectation on the firm's stock price.

2.4 Market competition

Datta *et al.* (2013) found that greater competition in an industry led to a higher degree of earnings management. The authors also verified that firms under intense competitive pressure were less likely to fully and accurately disclosure earnings information. Such alteration was particularly imperative for companies that had underperformed in the competitive market (Miloud, 2014).

Evidence demonstrated that higher market competition resulted in a higher incidence of earnings manipulation, because firms found it essential to show positive market value through reporting satisfactory earnings (Kordestani and Mohammadi, 2016; Markarian and Santaló, 2014). However, Laksmana and Yang (2015) argued that firms faced with lower

market competition were more inclined to manipulate earnings, because the consequences of missing earnings targets were more severe than for firms experiencing higher market competition.

In summary, although there was an inconsistency in the literature, most authors indicated that a firm's ability to exercise market power and avoid competition decreases the uncertainty about its future performance, thus diminishing managers' motives to manipulate earnings.

2.5 Earnings management in China and Taiwan

Prior research suggested that earnings management was associated with both the country's level of development and firm growth. First, Almadi and Lazic (2016) pointed out that firms from countries within the Anglo-American regions, such as the USA and the UK, witnessed a lower incidence of earnings management as result of higher investor protections, stricter regulatory environment, and greater implementation of corporate governance. Conversely, countries with less developed financial systems and corporate governance saw higher levels of earnings management (Scholtens and Kang, 2013).

Recent studies have also revealed that substantial earnings management have been used in China and Taiwan. Li *et al.* (2016) argued that earnings management has been more pervasive in China than in mature economies such as the USA. Recent research has indicated that Chinese companies have undertaken earnings management for various reasons, such as matching analysts' forecasts, ensuring CEO's performance-based compensation, reducing tax payments, and maintaining the firm's reputation (Chi *et al.*, 2016; Li *et al.*, 2016; Liu *et al.*, 2016). Similarly, evidence unveiled the occurrence of earnings management in Taiwan. Huang (2010) and Lin (2011) found that Taiwan managers tended to adjust earnings upward before selling their own shares. Chi *et al.* (2014) discovered that Taiwanese family-owned businesses engaged more in earnings management, while Chen and Chen (2016) maintained that Taiwanese firms with higher capital expenditures and greater customer bargaining power overstated their earnings.

Additionally, Debnath (2017) found that firms experiencing continued growth tended to conduct discretionary accruals, because the businesses needed investors' funds to maintain their growth trend. China has experienced an economic expansion with at least a 7 per cent annual growth rate from 1991 to 2015 (World Bank, 2017) while Taiwan maintained an average growth rate of 2 per cent during the same period, despite the global financial crisis (Statista, 2017). Further scrutiny of China and Taiwan revealed that one of the high-growth industries in both regions during the past decade was travel and tourism.

2.6 Tourism industries in China and Taiwan

China has become a major tourist destination after its open-door reform in the late 1970s, as ordained by the Chinese leader, Deng Xiaoping. Significant investments in China's tourism programs have led to major accommodations, constructions, and renovations to hundreds of tourist spots. According to the United Nations World Tourism Organization (UNWTO, 2016), China ranked fourth in tourism destinations in the world in 2015, generating the second-highest income of US$114bn from international tourists. Goldman Sachs Global Investment Research (2015) has predicted that Chinese tourism will see an annual growth of 6 per cent per year until 2025, surpassing the projected global economic growth of 2.5 per cent per year.

The Taiwanese Government has likewise been developing its tourism industry over the past decade. In 2008, newly elected Taiwan President Ma Ying-jeou opened the doors of Taiwan to receive Chinese tourists. Since then, the number of inbound visitors there has skyrocketed. Consequently, Taiwan saw the number of international and Chinese tourists

increase from 3.7 million in 2007 to 10.69 million in 2016, a compound growth rate of 11.13 per cent, with Chinese tourists being the largest group. The tourism-related income earned by Taiwan increased from US$4.98m in 2005 to US$14.6bn in 2014, representing a compound growth rate of 11.37 per cent (Tourism Statistics, 2017).

In summary, the high growth rate of the Chinese and Taiwanese tourism industries resulted in an increase in corporate profits for travel companies and their stock prices, thus arousing the interest of investors.

Based on the above literature, we arrived at the first two hypotheses:

H1. Firms with greater product market pricing power relative to other firms in the travel and tourism industry use less discretionary accrual-based earnings management.

H2. Firms in a more competitive market in the travel and tourism industry use greater discretionary accrual-based earnings management.

3. Methodology

3.1 Data collection

The data for this study consisted of 60 publicly traded travel companies in China and Taiwan, with 34 companies in China and 26 in Taiwan from January 2000 to December 2014. The selection of Chinese travel companies was based on the International Standard Industrial Classification of All Economic Activities (ISIC) specified by UNWTO (Department of Economic and Social Affairs Statistics Division, 2008). The data of the listed Taiwanese travel companies was collected from the Taiwan Economic Journal (TEJ, 2017).

3.2 Models and variables

The variables for regression were defined and their equations listed below.

3.2.1 Market power. We utilized the Lerner Index (LI) to measure the market power of a firm (Lerner, 1934). This measure was based on the price and marginal cost, calculated as follows:

$$LI = \frac{Sales - COGS - SG\&A}{Sales} \tag{1}$$

Where Sales is a firm's net sales, COGS means cost of goods sold, and SG&A means sales, general and administrative expenses. However, this formula does not isolate the firm-specific factors that affect market power from unrelated, industry-wide factors. Therefore, we used the adjusted Lerner Index (adj-LI) utilized by Datta *et al.* (2011) to compute firm-specific market power. The formula is written as:

$$Adj - LI = LI_i - \omega_i LI_i$$

$$\omega i = \frac{Sales_i}{\sum_{i=1}^{N} Sales_i} \tag{2}$$

where LI_i is the Lerner Index [defined in Equation (1) above] for firm i, ω_i is the proportion of sales of firm i to total industry sales. N is the total number of firms in the industry. The

adjusted LI ranges from 0 to 1 with larger values representing greater market power. Firms in a perfectly competitive market have an adjusted LI equal to 0, which implies no market power.

3.2.2 Market competition. We used the Herfindahl-Hirschman Index (HHI) to measure market concentration (The USA Department of Justice, 2017). The HHI is computed by squaring the market share or each competing firm, then summing the resulting numbers. The equation of HHI is written as:

$$HHI = \sum_{i=1}^{N} \left(\frac{X_i}{X}\right)^2 \tag{3}$$

where x_i is the sales of firm I, x is the total sales of all firms in the industry. The HHI can be calculated using either all firms or based on sales of the largest four companies in each industry (Cremers *et al.*, 2008). In this study, we chose the latter as the measure for market competition.

3.2.3 Earnings management. We used the model used by Kothari *et al.* (2005) to compute discretionary accruals. This framework is essentially a cross-sectional modified Jones (1991) model, which includes lagged assets. At least 15 observations were required in the cross-sectional regression analysis; therefore, we excluded the years in which there were fewer than 15 observations. The equation of discretionary accruals is expressed as:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \left[\frac{\Delta REV_{it}}{\mathrm{A}_{it-1}} - \frac{\Delta AR_{it}}{\mathrm{A}_{it-1}}\right] + \alpha_3 \frac{PPE_{it}}{\mathrm{A}_{it-1}} + \alpha_4 \frac{NI_{it-1}}{A_{it-1}} + \varepsilon_{it} \tag{4}$$

Where i is firm i, *t* is year *t*, TA equals net income minus cash flow from operations, A is the total asset, ΔREV is the change in sales from year t–1 to *t*, ΔAR is the change in receivables from year t-1 to *t*, PPE is the gross property, plant, and equipment, and NI is net income. All these variables are scaled by lagged one-year assets (A_{t-1}).

To compute the discretionary accruals, we used the estimated coefficients from equation (5) as follows:

$$DA_{it} = \varepsilon_{it} = \frac{TA_{it}}{A_{it-1}} - \hat{\alpha}_1 \frac{1}{A_{it-1}} + \hat{\alpha}_2 \left[\frac{\Delta REV_{it}}{A_{it-1}} - \frac{\Delta AR_{it}}{A_{it-1}}\right] + \hat{\alpha}_3 \frac{PPE_{it}}{A_{it-1}} + \hat{\alpha}_4 \frac{NI_{it-1}}{A_{it-1}} \tag{5}$$

DA is a firm's discretionary accruals, while the other variables have been described in the previous equation (4). Regardless of whether the value of DA is positive or negative, only its absolute value is relevant. A greater absolute value of DA implies a higher degree of earnings manipulation by the firm.

4. Empirical results

4.1 Descriptive statistics

Table I lists the descriptive statistics of the variables. Panels A and B list the Chinese and Taiwanese travel companies, respectively. The four firm-specific control variables were asset growth, book-to-market ratio, financial leverage ratio and firm size. The results indicated that the Chinese travel companies had a greater asset growth rate (0.232 or 23.2 per cent) than the Taiwanese firms (0.146 or 14.6 per cent).

Variables	Observation	Mean	Median	SD
Panel A: Travel Companies in China				
Firm-specific				
Asset growth rate	460	0.232	0.848	1.629
BM ratio	438	1.508	0.424	4.269
Leverage ratio	292	0.165	0.151	0.130
Firm size	438	14.60	14.65	1.59
Market power				
Adjusted-LI	470	0.118	0.126	0.139
Market competition				
HHI(4)	15	0.203	0.196	0.024
Earnings management				
Discretionary accruals	445	−0.011	−0.006	0.077
Panel B: Travel Companies in Taiwan				
Firm-specific				
Asset growth rate	303	0.146	0.036	0.492
BM ratio	226	0.741	0.624	0.444
Leverage ratio	175	0.157	0.136	0.112
Firm size	236	7.938	7.905	1.16
Market power				
Adjusted-LI	312	0.057	0.088	0.400
Market competition				
HHI(4)	15	0.098	0.101	0.031
Earnings management				
Discretionary accruals	289	−0.006	0.003	0.130

Notes: This table shows the descriptive statistics of variables. Panels A and B list the Chinese and Taiwanese travel companies, respectively. The four firm-specific control variables are asset growth, book-to-market ratio, financial leverage ratio and firm size

Table I.
Descriptive statistics of the variables

The book-to-market ratio is calculated as the book value of a firm divided by its market value. If the ratio is above one, the stock is undervalued. If it is below one, the stock is overvalued. Based on the results, Chinese travel companies showed a higher book-to-market ratio (1.508) than the Taiwanese firms (0.741). The outcome suggested that the Chinese travel companies were undervalued, while the Taiwanese firms were overvalued.

Financial leverage is defined as the ratio of long-term debt to total assets (Kothari *et al.*, 2005). The leverage ratios of Chinese travel companies (0.165 or 16.5 per cent) is similar to that of the Taiwanese travel companies (0.157 or 15.7 per cent).

Based on the studies of Yermack (1996), Anderson *et al.* (2004), we used the natural log of firms' market value as a measure of firm size. Overall, the Chinese travel companies had a larger firm size (14.60) than the Taiwanese firms (7.938).

The Chinese travel companies also showed a greater market power adjusted LI (0.118) than Taiwanese firms (0.057) with lower standard deviation (0.139) compared to Taiwan (0.400). The Chinese travel companies had a higher market competition HHI (0.203) than the Taiwanese firms (0.098) with lower standard deviation (0.024) that of Taiwanese firms (0.031). This outcome indicates that the tourism industry in China has higher concentration and lower volatility, and hence is less competitive. The absolute value of earnings management discretionary accruals for the Chinese travel companies (0.011) was higher than that for Taiwanese firms (0.006) while the standard deviation of the Chinese firms (0.077) was lower than that of Taiwanese firms (0.130). Therefore, the Chinese travel

companies practiced more earnings management or manipulation and moved with less volatility than the Taiwanese firms, as a result of the Chinese Government regulations.

Table II presents the correlation matrix showing the correlation coefficients among the four variables. The market power adjusted LI of the Chinese companies had a positive correlation with firm size and a negative correlation with the other variables (asset growth, book-to-market ratio, and leverage ratio), whereas the market power adjusted LI of the Taiwanese firms had a negative correlation with all four variables.

4.2 Univariate analysis

We sorted the data from Table II into ten equal levels based on the value of the market power adjusted LI and the absolute value of earnings management discretionary accruals. Level 1 represents the lowest average adjusted LI and level 10 represents the highest. Then we calculated the equal-weighted-average absolute value of discretionary accruals.

Table III shows the ten equal levels of data sorted by the market power adjusted LI. Panel A presents the Chinese travel companies with the lowest mean of adjusted LI portfolio being –0.138, and the highest being 0.310. The earnings management discretionary accruals for the lowest adjusted LI level and the highest level were 0.070 and 0.047, respectively. While the means of the ten levels were ascending, nine of the ten absolute values of the discretionary accruals were descending. There was a negative correlation between market power adjusted LI and earnings management discretionary accruals although it was not in a straight-line reverse relationship. The results of further test, we calculated the difference between the absolute values of earnings management discretionary accruals of the highest and lowest market power adjusted LI level and applied a simple *t*-test. We found the difference to be -0.029 at a 10 per cent significance level.

Panel B of Table III presents the resulting ten equal levels of Taiwanese travel companies. The lowest mean of the market power adjusted LI level was -0.639, with the absolute value of earnings management discretionary accrual being 0.078. The highest mean of the market power adjusted LI level was 0.522, with the absolute value of earnings management discretionary accrual being 0.026. Similar to Panel A, the market power adjusted LI and the absolute value of earnings management discretionary accruals in Panel B moved in the

Variables	Adjusted LI	Asset growth	BM ratio	Leverage ratio	Firm Size
Panel A: China Market					
Adjusted LI	1	−0.250	−0.266	−0.023	0.284
Asset growth		1	0.098	−0.004	−0.078
BM ratio			1	0.009	−0.069
Leverage ratio				1	−0.099
Firm size					1
Panel B: Taiwan Market					
Adjusted LI	1	−0.057	−0.050	−0.083	−0.163
Asset growth		1	0.010	−0.607	0.343
BM ratio			1	−0.616	0.334
Leverage ratio				1	−0.211
Firm Size					1

Table II.
Correlation matrix for the variables

Notes: This table presents the correlation matrix showing the correlation coefficients among the four variables, namely, the market power adjusted LI and other variables (asset growth, book-to-market ratio, leverage ratio and firm size)

Decile	Panel A: China Market Mean	Abs DA	Panel B: Taiwan Market Mean	Abs DA
1 Low Adj-LI	−0.138	0.070	−0.639	0.078
2	0.024	0.061	−0.033	0.097
3	0.055	0.050	0.016	0.052
4	0.079	0.055	0.041	0.039
5	0.107	0.054	0.067	0.031
6	0.143	0.042	0.100	0.036
7	0.172	0.049	0.122	0.040
8	0.197	0.041	0.157	0.032
9	0.230	0.040	0.227	0.048
10 High Adj-LI	0.310	0.047	0.522	0.026
Difference between Abs DA of the highest and lowest Adj-LI after *t*-test		−0.029	Difference between Abs DA of the highest and lowest Adj-LI after *t*-test −0.052	
Standard *t*-statistic (−1.767)*			Standard *t*-statistic (−2.240)**	

Notes: We sorted the data from Table II into ten equal levels based on the value of the market power adjusted LI and the absolute value of earnings management discretionary accruals; Abs DA means absolute value of discretionary accruals; We calculated the average Abs DA difference between Decile 10 and Decile 1 and then used *t*-statistic test to determine whether it is non-zero; ***, ** and *denote 1%, 5%, and 10% significance level, respectively

Table III.
Ten equal levels of data sorted by adjusted LI

opposite direction, but not in a straight-line reverse relationship. The difference between the absolute value of earnings management discretionary accruals of the highest and lowest adjusted LI levels after a *t*-test was −0.052 at a 5 per cent significance level. Hence, we concluded that market power adjusted LI had a negative correlation with earnings management discretionary accruals in both China and Taiwan. Thus, the results of the data analysis validated *H1* that firms with greater product market pricing power relative to other firms in the travel and tourism industry use less discretionary accrual-based earnings management.

4.3 Multivariate analysis

As the univariate analysis did not take into account the effect of all variables, we conducted a multivariate analysis. Following the method used by Datta *et al.* (2013), we applied a multivariate regression analysis to identify the correlation among the earnings management discretionary accruals and the four firm-specific control variables (asset growth, book-to-market ratio, leverage ratio and firm size), and the market power adjusted LI. The equation is expressed as follows:

$$Abs\,DA_{\mathrm{it}} = \beta_0 + \beta_1 adj - LI_{it} + \beta_2 Growth_{it} + \beta_3 BM_{\mathrm{it}} + \beta_4 leverage_{it} + \beta_5 Ln\,(MV)_{it} + \varepsilon_{it} \quad (6)$$

Table IV shows the results of this multivariate regression analysis. We then compared the market power adjusted LI and each of the four control variables in Model 1 to those in Model 5. Model 6 included all the variables. Panel A lists the results for the Chinese companies. The correlation coefficients between earnings management discretionary accruals and the market power adjusted LI were all negative from Models 1 through 6, with

Table IV.
Results of multivariate analysis

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Panel A: China Market						
Adj-LI	−0.065 (−3.012)***	−0.066 (−3.043)***	−0.065 (−2.960)***	−0.065 (−2.958)***	−0.088 (−2.658)***	−0.091 (−2.704)***
Asset growth		0.0009 (0.562)				0.0003 (0.167)
BM ratio			0.0002 (0.901)			−0.0080 (−2.508)**
Leverage ratio				−0.0005 (−2.349)**		−0.0012 (−2.506)**
Firm size					0.0447 (1.4600)	0.0596 (−1.8310)*
Constant	0.058 (15.756)***	0.058 (15.669)***	0.056 (2.114)**	0.061 (15.701)***	0.057 (6.734)***	0.173 (3.716)***
Adj-R^2	0.0180	0.0164	0.0156	0.0283	0.0206	0.0570
Panel B: Taiwan Market						
Adj-LI	−0.038 (−1.899)*	−0.035 (−1.560)	−0.020 (−0.877)	−0.039 (−1.777)*	−0.031 (−2.223)**	−0.028 (−2.876)***
Asset growth		0.011 (0.648)				0.027 (2.706)***
BM ratio			−0.017 (−2.178)**			−0.008 (−1.975)**
Leverage ratio				−0.027 (−1.365)		−0.017 (−1.958)*
Firm size					−0.070 (−1.552)	−0.0771 (−1.838)*
Constant	0.050 (6.943)***	0.046 (4.903)***	0.185 (2.919)***	0.068 (3.988)***	0.051 (5.947)***	0.114 (3.117)***
Adj-R^2	0.0090	0.0038	0.0260	0.0135	0.0310	0.2141

Notes: ***, ** and *denote 1%, 5%, 10% significance level, respectively; following the method used by Datta *et al.* (2013), we applied a multivariate regression analysis to identify the correlation among earnings management discretionary accruals, four firm-specific control variables (asset growth, book-to-market ratio, leverage ratio and firm size), and market power adjusted LI. The equation is expressed as follows: $AbsDA_{it} = \beta_0 + \beta_1 adj - LI_{it} + \beta_2 Growth_{it} + \beta_3 BM_{it} + \beta_4 leverage_{it} + \beta_5 Ln\,(MV)_{it} + \varepsilon_{it}$

the values being −0.065, −0.066, −0.065, −0.065, −0.088 and −0.091, respectively, and all at a 1 per cent significance level.

Panel B of Table IV lists the results of a multivariate analysis for the Taiwanese travel companies. Similar to Panel A, the correlation coefficients between the earnings management discretionary accruals and the market power adjusted LI were all negative from Models 1 to 6, with the values being −0.038, −0.035, −0.020, −0.039, −0.031, and −0.028, respectively. In particular, Model 6 with all four control variables reached a 10 per cent significance level.

Consistent with the results of the univariate analysis, the numbers indicated a negative correlation between the market power adjusted LI and the absolute value of earnings management discretionary accruals even with all four firm-specific variables considered. Therefore, this result further validated *H1* that firms with greater product market pricing power relative to other firms in the travel and tourism industry use less discretionary accrual-based earnings management.

As to individual variables, the results of Panel A and B in Table IV slightly varied. In Panel A, book-to-market ratio exhibited a negative correlation coefficient in Model 6 (−0.008) at a 5 per cent significance level. Leverage ratio showed negative correlation coefficients of −0.0005 and −0.0012 in Models 4 and 6, respectively, at a 5 per cent significance level. Firm size showed positive correlation coefficients of 0.0596 in Model 6 at a 10 per cent significance level. These results denoted that larger firm size increased discretionary accruals while higher book-to-market ratio or higher long-term debt decreased discretionary accruals in the China market.

In Panel B, similar results were found. Asset growth of the Taiwanese travel companies indicated a positive correlation coefficient in Model 6 (0.027) at a 1 per cent significance level. Book-to-market ratio exhibited negative correlation coefficients of −0.017 and −0.008 in Models 3 and 6, respectively, at a 5 per cent significance level. Finally, the variables of leverage ratio and firm size showed negative correlation coefficients of −0.017 and −0.0771 in Model 6 at a 10 per cent significance level. These results suggested that high growth of firms increased discretionary accruals while higher book-to-market ratio, higher long-term debt, or greater firm size decreased discretionary accruals in the Taiwan market.

4.4 Competition analysis

We examined the impact of market competition on earnings management discretionary accruals using HHI as a measure of market concentration. The results of a simple *t*-test presented in the first row of Table V. The HHI was 0.203 in the Chinese market and 0.098 in the Taiwanese market. The t-statistic was 17.234 at a 1 per cent significance level. Additionally, the results of the same analysis for earnings management discretionary

		Panel A China market	Panel B Taiwan market		
Variable	*N*	Mean	Mean	*t*-statistic	*p*-value
HHI(4)	15	0.203	0.098	17.234***	0.0000
Abs DA	15	0.052	0.069	−2.417**	0.0299

Notes: HHI means a measure of market concentration; Panel A shows if the difference of HHI between China and Taiwan is different from zero; Panel B shows if the difference of HHI between China and Taiwan is different from zero; ***, ** and *denote 1%, 5%, 10% significance level, respectively; we examined the impact of market competition on earnings management discretionary accruals using HHI as a measure of market concentration

Table V.
Competition analysis

accruals are listed in the second row of Table V. The earnings management discretionary accruals were 0.052 in the Chinese market and 0.069 in the Taiwanese market. The t-statistic was −2.417 at a 5 per cent significance level. Therefore, the Chinese travel companies experienced higher concentration (or less competition) and practiced less earnings management or manipulation than the Taiwanese firms, as the result of the Chinese Government regulations.

The results of the competition analysis indicated that the tourism industry is more concentrated in China than it is in Taiwan. With higher concentration and less competition in the market, the Chinese travel companies engaged in fewer discretionary accruals. Therefore, the results validated *H2* that firms in a more competitive market in the travel and tourism use greater discretionary accrual-based earnings management.

5. Discussion and conclusion

This study investigated the impact of market power and market competition on earnings management in the Chinese and Taiwanese tourism industries. The data consisted of 60 publicly traded travel companies in China and Taiwan from 2000 to 2014. These results denoted that larger firm size increased discretionary accruals while higher book-to-market ratio or higher long-term debt decreased discretionary accruals in the China market. On the contrary, the results suggested that high growth of firms increased discretionary accruals while higher book-to-market ratio, higher long-term debt, or greater firm size decreased discretionary accruals in the Taiwan market. The empirical results showed that two hypotheses proposed previously in this study were validated:

H1. Firms with greater product market pricing power relative to other firms in the travel and tourism industry use less discretionary accrual-based earnings management.

H2. Firms in a more competitive market in the travel and tourism industry use greater discretionary accrual-based earnings management.

5.1 Conclusion

(1) Chinese travel companies practiced more earnings management or manipulation and moved with lower volatility than their Taiwanese counterparts as a result of the Chinese Government regulation.

First, based on the descriptive statistics of the variables, we conducted both univariate and multivariate analyses market power (adjusted LI) and absolute value of discretionary accruals. The results indicated a significant negative correlation between market power and discretionary accruals in both China and Taiwan markets. However, when comparing the two markets, the Chinese travel companies with higher market power demonstrated a higher level of discretionary accruals than the Taiwanese firms. This finding was contrary to the literature that higher market power led to lower earnings management, but consistent with the literature that Chinese firms were inclined to engage in earnings management. Therefore, the Chinese travel companies with tighter government regulations practiced more earnings management or manipulation and experienced lower volatility than the Taiwan:

(2) Chinese travel companies engaged in higher concentration (or less competition) and practiced less earnings management or manipulation than the Taiwanese firms as a result of the Chinese Government regulation.

Second, we performed a market competition analysis based on HHI, a measure used to capture market concentration. The results indicated a significantly positive correlation between market concentration and discretionary accruals in both China and Taiwan markets. When comparing the two markets, the Chinese travel companies with higher market concentration performed a slightly lower degree of discretionary accruals than their Taiwanese counter parts. This finding was consistent with the literature that greater market competition kindled more earnings management. Therefore, the Chinese travel companies, as influenced more by the government regulations, see higher concentration (or less competition) and use less earnings management or manipulation than their Taiwanese counter parts.

(3) The firms with lower market power and in higher market competition engaged in a greater incidence of earnings management.

The combined results of this study provided insights on earnings management in the Chinese and Taiwanese tourism industries. When comparing the travel companies in a single market, the firms with lower market power and in greater market competition engaged in a greater incidence of earnings management. However, we found contradictory results to the literature when comparing the Chinese and Taiwanese markets. Although the Chinese travel companies enjoyed higher market power and concentration, they performed more discretionary accruals than the Taiwanese firms on an overall basis:

5.2 Limitations and implications

Based on empirical results, we found a significantly negative correlation between:

- market power and discretionary accruals; and
- market concentration (or lower market competition) and discretionary accruals in both the Chinese or Taiwanese markets.

Although the Chinese travel companies with greater government restrictions enjoyed higher market power and market concentration, they engaged in less earnings manipulation than the Taiwanese firms.

The results of this study produced implications for managers, investors and regulators. Managers and investors should guard themselves against Chinese travel companies despite their greater market power and lower market competition. Additionally, investors should be cautious about Taiwanese travel companies with high growth but lower market power in a competitive market. Moreover, the Taiwanese Government has attempted to attract both international tourists and foreign direct investment (FDI) in the past decade. While international tourists may become potential foreign investors, the Taiwan Government could protect investors' rights through a well-developed regulatory system and corporate governance to curb earning managements in listed firms (Haley and Haley, 1997).

The researchers pioneered this study, linking market power and market competition with earnings management. Accordingly, this study has broadened the current understanding of earnings management in the thriving tourism and travel markets. Hence, we have provided useful information for investors to better understand how market power and competition can impact earnings manipulation by the Chinese and Taiwanese tourism companies.

This study was limited to the publicly traded travel companies. The large number of travel agencies, hotels, restaurants, and tourist firms that are not listed resulted in the unavailability of information for these companies. However, this research presented an evaluation framework that can be utilized by managers and investors to compare the likelihood of earnings management practiced by listed companies across regions.

Future research could examine other high-growth industries, such as the high-technology, biotechnology and construction industries. With regard to market power and market concentration, which are applicable mainly to retail industries, studies may be conducted on earnings management in regard to other retail businesses such as food services, motor vehicles, and general merchandise. Finally, the effect of discretionary accruals could be compared against non-discretionary earnings management in specific industries to gain further insights.

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