A COMPARISON OF THE FINANCIAL CHARACTERISTICS OF HONG KONG AND SINGAPORE MANUFACTURING FIRMS

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ABSTRACT

In this paper, we compare the financial characteristics of Hong Kong and Singapore manufacturing firms with the MANOVA (Multivariate Analysis of Variance) technique. Our findings indicate that the liquidity, accounts receivable turnover, inventory turnover, total assets turnover, and equity ratios of manufacturing firms in Hong Kong and Singapore are not significantly different. However, the profitability ratios and annual sales growth rates of Hong Kong manufacturing firms are significantly higher than those of Singapore manufacturing firms. Manufacturing firms in Hong Kong also appear to have higher fixed assets turnover rates compared with their counterparts in Singapore. Our findings in this study provide valuable insights for financial managers and for investors who invest in Hong Kong and Singapore.

JEL: G30, G31, G32

KEYWORDS: Financial Characteristics, Manufacturing Firms, Hong Kong, Singapore, MANOVA, Multivariate Analysis of Variance

INTRODUCTION

Singapore and Hong Kong are highly successful free market economies. They are attractive to investors because of their location, government friendly policies towards business, a well-educated and trained workforce, and excellent infrastructure including major port facilities and top-ranked international airports. In 2012, The World Bank ranked Singapore "#1" and Hong Kong "#2" as far as "ease of doing business" worldwide.

Hong Kong is the third largest financial center of the world, offering investors a laissez faire business environment, a low tax rate, and transparency about government decision making policy. Their government is now considering a more structured approach for attracting investors, as its rival, Singapore seems to have perfected.

Building a globally competitive economy has been integral to Singapore's success. The government of Singapore has been proactive, invested resources, and deliberately intervened to create the economy they enjoy today. Singapore's is developing policy, the "Third Industrialization Revolution" to maintain and grow their global competitive advantage.

A comparison of the financial characteristics of manufacturing firms in Hong Kong and Singapore would be of interest to financial managers and to global investors who invest in these stock markets. The objective of this study is to make such a comparison with the multivariate analysis of variance (MANOVA) technique by using financial ratios.

Our paper is organized as follows: The next section reviews the previous literature. The following section explains our data and methodology. We present our empirical findings in the Results section. Our concluding comments are presented in the last section.

LITERATURE REVIEW

Detailed statistics about Hong Kong and Singapore economies can be found in www.cia.gov/worldfactbook. The accounting systems in Hong Kong and Singapore have been strongly influenced by Western Anglo-Saxon accounting, which is oriented toward the decision needs of market participants, is less conservative and more transparent, and emphasizes the fair presentation of financial information and full disclosure (Nobes, 1983).

Under today's trend towards the harmonization of accounting standards, both Hong Kong and Singapore have made a public commitment in support of moving towards a single set of high quality global accounting standards, and towards International Financial Reporting Standards (IFRSs) as that single set of high quality global accounting standards. Detailed information about Hong Kong and Singapore accounting systems can be found in Nobes (1983) and Doupnik and Perera (2009). Detailed information about the application of the International Financial Reporting Standards (IFRSs) in Hong Kong and Singapore can be found in IFRS Foundation (June 2013) and in Deloitte (www.iasplus.com).

Comparing the financial characteristics of different groups of firms has long been a popular methodology in finance. Multiple Discriminant Analysis (MDA) and Multivariate Analysis of Variance (MANOVA) are the two multivariate techniques that are most commonly used in previous studies to compare the financial characteristics of different groups of firms. Detailed information about the MDA and MANOVA techniques can be found in Marascuilo and Levin (1983) and Johnson and Wichern (2007).

In his pioneering study, Altman (1968) uses the MDA technique to compare the financial ratios of bankrupt and health firms to predict bankruptcy. In several subsequent studies, Beaver (1968), Deakin (1972), Edmister (1972), Moyer (1977), and Dambolena and Khoury (1980) also develop econometric models that predict bankruptcy by comparing the financial characteristics of bankrupt and non-bankrupt firms.

Stevens (1973), Belkaoui (1978), and Rege (1984) use the MDA technique to predict corporate takeovers by identifying the differences between the financial characteristics of firms that have been corporate takeover targets and those that have not been corporate takeover targets.

The MANOVA technique has been used in several studies to compare the financial characteristics of different groups of firms. Meric at al. (1991) identify the financial characteristics of banks that have been targets in interstate bank acquisitions by comparing them with banks that have not been targets in interstate bank acquisitions. Hutchinson at al. (1988) and Meric and Meric (1992) identify the financial characteristics of firms which achieve stock market quotation by comparing them with firms that do not have stock market quotation. Meric at al. (2000) compare the financial characteristics of Japanese *keiretsu*-affiliated and independent firms to identify the financial characteristics of *keiretsu*-affiliated firms.

A number of studies compare the financial characteristics of firms in different countries. Kester (1986) and Wald (1999) compare the capital and ownership structures of firms in different countries and they find significant differences. Meric and Meric (1989 and 1994) compare the financial characteristics of U.S. and Japanese manufacturing firms and they find significant differences. Meric et al. (2003) find significant differences between the financial characteristics of U.S. and Canadian manufacturing firms. Meric et al. (2002) find significant differences between the financial characteristics of U.S., E.U., and Japanese manufacturing firms.

METHODOLOGY AND DATA

In this study, we use the MANOVA technique to compare the financial characteristics of Hong Kong and Singapore manufacturing firms. Financial ratios are generally used in empirical studies to compare the financial characteristics of different groups of firms. The financial ratio data used in this study were obtained from the 'Research Insight/Global Vintage' database from the year-end financial statements of the firms for the year 2012.

Manufacturing industries with SIC codes between 2000-3999 are included in the study. Our research sample consists of 177 Hong Kong and 252 Singapore manufacturing firms with no missing financial data in the database. We use the financial ratios presented in Table 1 in our comparisons.

Table 1: Financial Ratios Used in the Study as Measures of Firm- Financial Characteristics

Financial Ratio Name	Financial Ratio Definition
Liquidity	
Current Ratio (CR)	Current Assets / Current Liabilities
Quick Ratio (QR	(Current Assets - Inventories) / Current Liabilities
Asset Management (Turnover) Ratios	
Accounts Receivable Turnover (ART)	Sales / Accounts Receivable
Inventory Turnover (INT)	Sales / Inventory
Fixed Assets Turnover (FAT)	Sales / Net Fixed Assets
Total Assets Turnover (TAT)	Sales / Total Assets
Financial Leverage	
Equity Ratio (EQR)	Common Equity/Total Liabilities
Profitability	
Net Profit Margin (NPM)	Net Income / Sales
Return on Assets (ROA)	Net Income / Total Assets
Return on Equity (ROE)	Net Income / Common Equity
Growth	
Annual Sales Growth Rate (ASGR)	Average for the Last Three Years

Financial ratios are used in the study to compare the financial characteristics of Hong Kong and Singapore manufacturing firms. This table explains how the financial ratios used in the study are computed.

RESULTS

Our MANOVA test results are presented in Table 2. The multivariate F value statistic in the table indicates that the overall financial characteristics of Hong Kong and Singapore manufacturing firms are significantly different at the 1-percent level. The univariate F value statistics in the table indicate that the financial characteristics of Hong Kong and Singapore manufacturing firms are not significantly different in terms of liquidity, accounts receivable turnover, inventory turnover, total assets turnover, and financial leverage.

The univariate F value statistics in Table 2 show that the profitability and sales growth characteristics of Hong Kong and Singapore manufacturing firms are significantly different. The most significant difference is in terms of sales growth. The average annual sales growth rate is significantly higher in Hong Kong manufacturing firms (16.38%) than in Singapore manufacturing firms (5.09%). Net profit margin, return on assets, and return on equity ratios are all significantly higher in Hong Kong manufacturing firms than in Singapore manufacturing firms. The univariate F value statistics for the profitability ratios indicate that the difference between the two groups of firms is most significant in terms of return on equity. Hong Kong manufacturing firms appear to provide a significantly higher return on equity to their stockholders compared with their counterparts in Singapore.

The average fixed assets turnover ratio also appears to be higher in Hong Kong manufacturing firm

compared with Singapore manufacturing firms. However, the difference is significant only at the 10-percent level. Hong Kong manufacturing firms appear to generate more sales per unit of investment in fixed assets compared with Singapore manufacturing firms.

Table 2: MANOVA Statistics

Financial Ratios	Means and Standard Deviations†		Univariate Statistics	
	Hong Kong	Singapore	F Value	P Value
Liquidity				
Current Ratio (CR)	2.72	2.60	0.24	0.63
	(2.66)	(2.54)		
Quick Ratio (QR)	2.08	1.99	0.16	0.69
	(2.47)	(2.22)		
Asset Management (Turnover) Ratios				
Accounts Receivable Turnover (ART)	6.38	5.75	1.49	0.22
	(5.36)	(5.22)		
Inventory Turnover (INT)	7.11	8.18	1.71	0.19
	(7.91)	(8.58)		
Fixed Assets Turnover (FAT)	8.78	6.59	3.45*	0.06
	(15.34)	(9.04)		
Total Assets Turnover (TAT)	0.89	0.94	0.78	0.38
	(0.54)	(0.48)		
Financial Leverage				
Equity Ratio (EQR)	2.50	2.66	0.26	0.61
	(2.94)	(3.35)		
Profitability				
Net Profit Margin (NPM)	7.32%	4.26%	4.62**	0.03
	(13.79%)	(14.96%)		
Return on Assets (ROA)	7.24%	4.68%	13.72***	0.00
	(6.76%)	(7.28%)		
Return on Equity (ROE)	14.31%	7.75%	20.36***	0.00
	(14.74%)	(14.86%)		
Growth				
Annual Sales Growth Rate (ASGR)	16.38%	5.09%	41.20***	0.00
	(21.00%)	(16.43%)		
		Multivariate Statistics:	**6.79***	**0.00**

The Multivariate Analysis of Variance (MANOVA) technique is used in the study to compare the financial characteristics of Hong Kong and Singapore manufacturing firms. This table presents the mean ratios of Hong Kong and Singapore manufacturing firms, the standard deviations of the ratios, and the multivariate and univariate MANOVA test statistics. † The figures in parentheses are the standard deviations. ***, **, * indicate that the difference is significant at the 1-percent, 5-percent, and 10-percent levels, respectively.

CONCLUDING COMMENTS

In this paper, we compare the financial characteristics of Hong Kong and Singapore manufacturing firms with the MANOVA (Multivariate Analysis of Variance) technique. We use eleven financial ratios in the comparisons as measures of liquidity, asset management, indebtedness, profitability, and growth characteristics of firms. The data of the study were obtained from the 'Research Insight/Global Vintage' database from the 2012 year-end financial statements of the firms. Our research sample includes 177 Hong Kong and 252 Singapore manufacturing firms with SIC codes between 2000-3999 with no missing financial data in the database.

Our multivariate test statistics indicate that the overall financial characteristics of Hong Kong and Singapore manufacturing firms are significantly different at the 1-percent level. Our univariate test statistics show that the liquidity, accounts receivable turnover, inventory turnover, total assets turnover, and financial leverage ratios of Hong Kong and Singapore firms are not significantly different.

The univariate test statistics reveal that the profitability ratios and sales growth rates are significantly higher in Hong Kong manufacturing firms than in Singapore manufacturing firms. The most significant difference is in terms of the sales growth rate. The annual average sales growth rate is 16.38% in Hong Kong manufacturing firms versus only 5.09% in Singapore manufacturing firms. Among the profitability ratios, the most significant difference is in terms of return on equity. Hong Kong manufacturing firms provide a higher return on equity to their stockholders compared with Singapore manufacturing firms (14.31% versus 7.75%). Fixed assets turnover rate also appears to be higher in Hong Kong manufacturing firms (8.78%) than in Singapore manufacturing firms (6.59%). However, the difference is significant only at the 10-percent level. A summary of our major findings in the study is presented in Table 3.

Table 3: Summary of Major Findings

Financial Ratios	Hong Kong vs. Singapore
Fixed Assets Turnover	Singapore firms have significantly more investment in fixed assets per dollar of sales compared with Hong Kong firms. This adversely affects asset profitability in Singapore firms compared with Hong Kong firms.
Net Profit Margin	Net profit margin is significantly higher in Hong Kong firms than in Singapore firms. Since firms cannot have higher product prices in competitive markets, this result implies that the cost of production is significantly lower in Hong Kong firms than in Singapore firms.
Return on Assets	Return on assets is significantly higher in Hong Kong firms than in Singapore firms. Since their total assets turnover rates are not significantly different, this is the result of Hong Kong firms having a significantly higher net profit margin compared with Singapore firms.
Return on Equity	Return on equity is significantly higher in Hong Kong firms than in Singapore firms. Since their leverage ratios are not significantly different, this is the result of Hong Kong firms having a significantly higher return on assets compared with Singapore firms.
Sales Growth Rate	Hong Kong firms have a significantly higher annual sales growth rate compared with Singapore firms. This implies that Hong Kong firms have greater growth opportunities compared with Singapore Firms.

This table summarizes the major findings of the study.

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