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Relationships Between Stock Returns and Corporate Financial Ratios Based on a Statistical Analysis of Corporate Data from the Hong Kong Stock Market

SUMMARY: The financial sector is the foundation and lifeblood of the 21st century economy and the global recessions witnessed during the past few years, serve as a testament to this assertion. In order to explore the effectiveness of popular financial ratios this study adopted a positivist investigation into ratios, such financial ratios are selected from 17 firms of 50 HSI constituent stocks in Hong Kong Stock Exchange then using a multiple regression analysis technique. This involved comparing the effectiveness of a number of independent variables are price-to-sales, market-to-book, earnings per share, dividend yield, market capitalization etc., against the dependent variable of stock returns received by investors. Whilst the literature suggests that there is a clear relationship and dependence between these variables, the results of this research proved inconclusive. As such, it was not possible to say categorically which of the financial instruments under investigation was the most effective in predicting stok returns and thus which was the most useful to prospective investors. The research did however contribute to our understanding of the analysis and investigation of financial instruments, as well as the extent to which analysis of one firm, industry or market can be generalised an applied elsewhere. Furthermore, the research also determined the close alignment between a regression line and financial ratio data. As a result, it showed the effectiveness and suitability of multiple regression to research within the financial disciplines.

KEYWORDS: Financial Ratios, Stock Returns, Hong Kong Stock Exchange, Multiple Regression Analysis
JEL-CODE: C33, E44, G11, G12, G17

INTRODUCTION

Over the past few decades there has been a considerable interest in financial ratios and their ability to predict stock-returns; financial ratios are widely acknowledged as being accurate in determining the investment potential of a company. In addition to this, they allow for insight into the liquidity, liabilities as well as the extent to which a company uses its assets to generate returns. As such, there have been a number of studies therefore devoted to determining which ratio is the most effective in determining stock returns in recent years, for example there is an accepted norm in finance that firm specific variables and macroeconomic variables can explain the behaviour of stock returns. Even though previous studies by *Gordon* (1959), *Bower* and *Bower* (1969) and *Zahir* (1992), they found that stock re-

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turns were highly sensitive to macroeconomic factors, there are number of firm specific factors such as earnings, dividends, risk leverage, size, book-to-market ratio, right issue, bonus etc. explain the behaviour of stock returns. In light of this, the present study will examine financial ratios in greater detail as a means of determining the financial ratios that are in turn the most effective or have a strong explanatory power as far as stock returns are concerned. In this respect, the chosen ratios as far as this study is concerned include price-to-sales, debt-to-equity and book-to-market ratios as well as overall firm size.

Having selected the relevant ratios, the study will be set within the context of the Hong Kong stock market. Reasons for this are two-fold, the first of which relates to the fact that there is little research has been devoted to this particular stock market, whilst the second relates to the authors' own interest in the stock market, mainly due to the fact that they hope to invest within this very stock market in the near future. As such, upon the completion of the study, the authors will gain a more in-depth insight into the degree to which financial ratios can accurately predict stock movements and if so, this very technique will be used in future by the authors when making future investment decision. In light of this, the aim of the study is to make a comparison between sales-to-prices, debt-to-equity, and book-to-market value as well as firm size in analysing stock returns of the Firms in Hong Kong Stock Market.

LITERATURE REVIEW

Predicting stock markets

A considerable amount literature and empirical research has been directed at the financial sector, in particular the behaviour of stock markets. In this respect, the past Century has been dominated by research relating to behavioural finance resulting in notable and seminal material published by the likes of *Fama* and *French* (1988) and *Campbell* and *Shiller* (1988). As a result of the deluge of research relating to the field, a number of distinct thought of schools have emerged, such as those which prescribe to the fact that stock movements and markets can be predicted to those who argue that stock markets are dynamic and complex, the movements of which are unpredictable and risky (Cambell and Ammer 1993, Cambell and Shiller 1988, Papanastasopoulos et al., 2011, Rosenberg et al. 1985). Stock market movements have fascinated observers and the emergence of behavioural finance as a discipline in its own right is a testament to the former.

Whilst the movement of stock markets are widely investigated and studied within the academic arena, the subject area holds a considerable interest to investors given that they stand to both lose and gain financially from speculating on stock markets. To this extent, investors therefore have a vested interest in observing the stock market and the increasing volatility associated with stock markets has resulted in investors seeking more novel and precise ways of better explaining stock returns (Papanastasopoulos et al. 2011, Tsoukalas 2005). *Shafana* et al. (2013) add to this and suggest that financial markets have serve to establish themselves as cornerstone of a number of economies therefore the behaviour stocks and returns has garnered interest from a number of quarters, extending beyond investors such as financial regulators, policy makers and government and stock market regulators in particular (Shafana et al., 2013). In light of this, the subsequent section of the literature review will examine the latter phenomenon in greater detail and focus on the use of financial ratios in understanding stock returns.

A critical evaluation of empirical research relating to stock returns

Financial ratios are widely agreed to be effective in aiding potential investors in determining the financial health of a firm, the extent to which it effectively utilises its assets as well as its ability to meet any debt obligations. That said however, the use of financial ratios is not confined to the latter as it is acknowledged by a number of authors that financial ratios can also be applied to stock markets as a tool capable of predicting returns (Lewellen 2004). *Kheradyar* et al. (2011) also note that financial ratios are especially effective in predicting stock returns given that they pose a lower level of risk when compared to other speculative variables and the observation and historical returns and movements (Bower and Bower 1969, Zahir 1992, Shafana et al. 2013).

A number of authors have since revealed that financial ratios are indeed effective in predicting returns and this assertion is seldom contested (Fama and French 1992, 1995, and 1998; Kothari and Shanken 1997, Pontiff and Schall 1998, Lewellen 1994). That said however, the research area itself is made up of a number of studies examining the most effective and accurate financial ratios that can be used to facilitate this end. As a result of this, a number of authors (Chen and Shen 2009, Deaves et al. 2013, Shafna et al. 2013, Lewellen 2004) point to three financial ratios which they suggest are the most effective in and useful in stock return predictability. As such, these three ratios, mainly book-to-market (B/M), dividend yield (DY) and earning yield (EY) are amongst the most venerated ratios as far as both theoretical and empirical research are concerned (Kheradyar and Ibrahim 2011). It is prudent to note however that whilst there is a multitude of existing research which recognises the effectiveness of financial ratios, this remains mostly within the context of developed markets, rather than emerging markets (Kheradyar and Ibrahim 2011, Kim 1997).

Barbee, Mukherjiand and Raines (1996) showed their study to determine whether sales-to-price, debt-to-equity have more explanatory power than book-to-market and firm size. From the variables the sales-to-price has the strongest relation with stock returns, 60% higher than the book-to-market value which is the closest competitor. The book-to-market value, sales-to-price and debt-to-equity were strongly and positively related with each other and moderately and negatively with market value of equity. Similarly, Bali et al. (2010) have also investigated interactions of ratios such as E/Y, B/M and cash flow yield and conclude that only growing firms, to which they refer to as 'value' firms experience poor stock price performance. As such, it is concluded that a relationship does exist between value/growth and to what *Papanastasopoulos* et al. (2011) refer to as the "*external financing anomaly*".

Empirical studies by the likes of *Bhandari* (1988) also indicate that debt-to-equity ratios presented positive relationships as far as predicting stock returns were concerned. Expanding on the findings of Kheradyar and *Ibrahim* (2011), *Fama* and *French* (1988) and *Kothari* and *Shanken* (1997) state that the DY ratio is particularly effective in predicting stock returns. Furthermore, the latter authors state that DY possess a certain level of 'power' which allows is to effectively predict future return in over 36 international markets. More recent studies have sought to test DY in more developed markets such as the USA, China and Canada (Wang and Iorio 2007, Deaves et al. 2008, Chen and Shen 2009) and the results reveal that DY is considered as being a 'strong predictor' as far as stock return predictability is concerned.

Lewellen (2004) provides further insight

into the use of financial ratios in predicting stock return stating that it has been determined that ratios are low when stocks are overpriced as "*they predict low future returns as prices return to fundamental*". As far as EY is concerned, *Lau* et al. (2002) tested this ratio against stock returns over 1988–1996 in the Asian stock market, more specifically, the Malaysian stock market and they found that there was a positive relation during the period tested. Kheradyar and Ibrahim (2011) suggest that there is a significant amount of empirical literature attesting to the "*predictive power*" of EY and its ability to predict stock returns. Coupled with this, the authors assert that "*the EY can demonstrate the efficiency of market that has an important role in emerging markets, thus this study uses EY as the empirical predictor of stock return*" (Kheradyar and Ibrahim 2011).

The efficiency was first highlighted by Fama and French (1992) who suggested that BM strongly has the ability to explain the variation in stock returns. This assertion was later tested by *Pontiff* and *Schall* (1998) who showed that the BM ratio was able to accurately and effectively predict stock returns over time-frame of 69 years.

Mukherji, Dhatt and *Kim* (1997) studied the Korean Stock Exchange to see the relationship between stock returns and fundamental financial variables. Senthikumar (2009) studied the relation between stock returns of selected Indian companies with the fundamental financial variables named firm size and book-to-market value of equity for the period between April 2000 to March 2006. This study showed that when portfolios formed on the basis of size same behaviour was observed as in the developed stock markets, small sized firm earn higher return than the large sized firms.

Historically, the price to earnings (P/E) ratio and the price to book value of equity (P/B) ratio have been used by investors for equity valu-

ations and to subsequently guide them during their stock selection decisions (Penman et al. 2005). It had issued a third financial ratio, the price-to-sales (P/S) ratio, which has been increasingly used by investors for selecting stocks in recent years. The price-to-sales ratio measures how much an investor is willing to pay for each dollar of sales. It argues that the price-to-sales ratio is a very good indicator of a stock's popularity. Stock of companies with high price-to-sales ratios are very popular with investors but are unlikely to earn long-term, above-average returns because of their high stock price in relation to sales. Similarly, in a study covering a 13-year time period (1979–1991), Barbee et al. (1996) found that a portfolio of low price-to-sales stocks greatly outperformed a portfolio of low price to book stocks. Finally, *Jensen* et al. (1998) compared the results of investment portfolios based upon low P/S, P/E, P/B, and price to cash flow ratios covering a 32-year period (1963–1995). The mean returns and standard deviations of returns of all the portfolios formulated by the various ratios were quite similar. This suggests that P/S ratio was at least comparable to the other value ratios over an extended period of time. In aggregate, these findings do provide some support for the usefulness of the P/S ratio.

DATA AND METHODOLOGY

The data will be made up of firms in the Hong Kong stock market and as a means of providing consistency and obtained mainly from online secondary sources, company's annual reports will also be used given that the majority of the necessary data such as financial ratios will be sourced from these reports. This paper aims to investigate the behaviour of the stock returns with respect to the financial ratios in the Hong Kong stock market. For the purpose of this study, data of selected variables

have been collected from the yahoo financial website, AA stock website and the annual reports of the selected 17 companies from 50 HSI constituent stocks for the period of 2008 to 2012. The reason for selection 5 years' time span was that one business cycle is completed in 5 to 7 years. The following criteria are also used to select the companies. They are

❶ selected companies listed on Hong Kong Stock Exchange and 50 HSI constituent stocks,

❷ selected companies are most stock traded frequently,

❸ selected companies the financial year of which ended in December, and

❹ this study excludes those companies whose book values are negative.

The selected companies are shown in the *Table 1,* the financial indicators are shown in the *Table 2.*

They included small, medium and large capitalization and classify constituent stocks into Hang Seng Utilities, Properties, and Commerce and Industry Sub-index. All the data were transferred to the natural logarithm prior to the empirical analysis, because the natural logarithm assists symmetricalness and normality in data distribution.

In light of the objectives of the study, the analysis of the following hypotheses have been generated:

Ho1: β_1: price-to-sale is not an effective measurement for predicting the stock return

Ho2: β_2: market-to-book is not an effective measurement for predicting the stock return

Ho3: β_3: earning per share is not an effective measurement for predicting the stock return

Ho4: β_4: dividend yield is not an effective measurement for predicting the stock return

Ho5: β_5: market capitalization is not an effective measurement for predicting the stock return

H1: β_1: price-to-sale is an effective measuring for predicting the stock return

H2: β_2: market-to-book is an effective measuring for predicting the stock return

H3: β_3: earning per share is an effective measuring for predicting the stock return

H4: β_4: dividend yield is an effective measuring for predicting the stock return

H5: β_5 market capitalization is an effective measuring for predicting the stock return

Table 1

THE ANALYZED COMPANIES

Nr.	Stock Code	Firm's Name	Nr.	Stock Code	Firm's Name
1	001.HK	Cheung Kong (Holdings) Ltd.	10	330.HK	Esprit Holdings Ltd.
2	002.HK	CLP Holdings Ltd.	11	494.HK	Li and Fung Ltd.
3	003.HK	Hong Kong and China Gas Co. Ltd.	12	688.HK	China Overseas Land and Investment Ltd.
4	012.HK	Henderson Land Development Co. Ltd.	13	883.HK	CNOOC Ltd.
5	013.HK	Hutchison Whampoa Ltd.	14	992.HK	Lenovo Group Ltd.
6	017.HK	New World Development Co. Ltd.	15	1088.HK	China Shenhua Energy Co. Ltd.-H Shares
7	066.HK	MTR corporation Ltd.	16	1880.HK	Belle International Holdings Ltd.
8	151.HK	Want Want China Holdings Ltd.	17	2628.HK	China Life Insurance Co. Ltd. – H shares
9	293.HK	Cathay Pacific Airways Ltd.			

Source: own editing

Table 2

FINANCIAL INDICATORS

Nr.	Financial Ratios	Nr.	Financial Ratios
1	Stock return	11	Turnover Growth
2	Return on Equity	12	Net Profit Growth
3	Shareholder Equity	13	Earnings per Share
4	Price-to-sales Ratio	14	Dividend per Share
5	Market-to-book Ratio	15	PE Ratio
6	Current Ratio	16	EPS Growth
7	Quick Ratio	17	PEG Ratio
8	Total Debt-to-Equity	18	Yield Dividend Payout
9	Return on Capital Employ	19	Dividend Yield
10	Return on Total Asset	20	Market Capitalization

Source: own editing

A multiple regression model is applied to test the significance of independent variables on dependent variable. The multiple regression equation is as follow:

$$R_t = \beta + \beta_1(PS_t) + \beta_2(MB_t) + \beta_3(EPS_t) + \beta_4(DY_t) + \beta_5(FS_t) + \in_t \quad (1)$$

Where:
R_t = Stock Return
PS_t = price-to-sales Ratio
MB_t = market-to-book Ratio
EPS_t = Earnings per Share Ratio
DY_t = Dividend Yield
FS_t = Firm Size
β_1 = Regression Coefficient for PS_t
β_2 = Regression Coefficient for MB_t
β_3 = Regression Coefficient for EPS_t
β_4 = Regression Coefficient for DY_t
β_5 = Regression Coefficient for FS_t

EMPIRICAL RESULTS

In order to select the most suitable variables from the 20 financial ratios from 17 firms to predict the stock return factor analysis is used to find the factors among observed variables if the data contain many variables. With factor analysis we can produce a small number of factors from a large number of variables. The reduced factors can also be used for further analysis.

The Principle Component Communalities (extraction, as the initial are always 1.00) range from 0.369 to 0.834, thus most of the variance of these variables was accounted for by this two dimensional factor solution, but attention is paid to the ratio of price-to-sales which was 0.369, a bit smaller. The final financial ratios used to comparison between price-to-sale, market-to-book, earning per share, yield and market capitalization in analysing stock returns of the firms in Hong Kong Stock Market.

The correlation matrix is showing the Pearson Coefficient between variables. The dependent variable of stock return is positively correlated to independent variables market-to-book ratio and market capitalization, but negatively correlated to price-to-sale ratio,

earning per share and yield. These ratios would be used for Multiple Regression Analysis

One of the regressions model is developed to test the H_o1 and H1 and also test the relationship that exists between selected financial ratios and stock returns. The results of the multiple regression analysis are in *Table 3,* it included 15 tests are dependent and independent variables, model summary, ANOVA, coefficients and number of participants. The result in Model Summary showed the selected 5 financial ratios were tested individually, two by two, three by three, four by four and five by five. The ANOVA results showed the overall significance level, while the coefficients showed the *t*-test of individual significance.

For test 1 of price-to-sales Ratio, the *p*-value ≥ 0.05 (0.387), we shall not reject the null hypothesis (H_o1), Ho1 is not an effective measuring for predicting the stock return.

For test 2 of market-to-book Ratio, the *p*-value ≤0.05 (0.043), we shall reject the null hypothesis (Ho2), H_o2 is an effective measuring for predicting the stock return.

For test 3 of Earning per Share Ratio, the *p*-value ≥ 0.05 (0.773), we shall not reject the null hypothesis (H_o3), H_o3 is not an effective measuring for predicting the stock return.

For test 4 of Dividend Yield, the *p*-value ≤ 0.05 (0.002), we shall reject the null hypothesis (H_o4), H_o4 is an effective measuring for predicting the stock return.

For test 5 of Market Capitalization, the *p*-value ≥ 0.05 (0.17), we shall not reject the null hypothesis (H_o5), H_o5 is not an effective measuring for predicting the stock return.

For test 9 of market-to-book Ratio, Earning per Share Ratio, Dividend Yield and Market Capitalization, the *p*-value = 0.008 ≤ 0.05, the null hypotheses are rejected.

For test 12 of price-to-sales Ratio, market-to-book Ratio, Earning per Share Ratio, Dividend Yield and Market Capitalization, the *p*-value = 0.021 ≤ 0.05, the null hypotheses are rejected.

Following is the proposed multiple regression equation estimated for stock return from the selected financial ratios. According to the ANOVA, Test 9 and Test 12 show overall significance. Referred to the coefficient of price-to-sales ratio of Test 12 was zero, therefore, Test 9 result is used for estimating the multiple regression equation as follow:

$$R_t=\beta+\beta_1(PS_t)+\beta_2(MB_t)+\beta_3(EPS_t)\\+\beta_4(DY_t)+\beta_5(FS_t)+\in_t \quad (2)$$

$$R_t=-0,057+0,004(MB_t)+(-0,001)(EPS_t)\\+(-0,01)(DY_t)+0,006(FS_t)+\in_t \quad (3)$$

From the regression results, it can be clearly observed, that out of the 5 explanatory variables under study (i.e.: price-to-sales ratio, market-to-book ratio, earning per share, dividend yield and market capitalization) only market-to-book ratio and dividend yield were found to be variable having significant impact on the stock return. The probability of both these variables is within 5 % benchmark probability level. Hence it can be said with 95% confidence level that these variables play a significant role in determining the stock return in Hong Kong Stock Exchange.

The above model indicated that market-to-book and firm size are positively correlated *(see Table 4)* and reasonable explanatory power is reported in these model measured by *R*-square and adjusted *R*-square which indicated that 52.3% and 45.5% *(see Table 6)* respectively can be explained by the market-to-book and firm size. The *F*-statistics is used to test the overall fit of the model was 76.87%, while *p*= 0.006 (*p* < 0.05) that accept the regression was overall significant *(see Table 5)*. From this model, market-to-book and firm size are statistically significant (*p* = 0.03 and 0.013), *p* < 0.05, therefore at 5% significant level, the market-to-book and firm

size have a significant and positive cross section on stock returns which are consistent to the former authors *(see Table 6)*.

DISCUSSION

Firm specific characteristics are essential to explain the behaviour of the stock returns. A number of studies well documented the relationship between stock returns and most popular firm specific factors such as price-to-sales ratio, market-to-book ratio, earnings per share, dividend yield, dividend payout ratio and firm size in developed countries. These documents are mentioned in the previous sections in literature review and results interpretation. Earlier research studies found on behaviour of expected stock returns with respect to the firms' specific factors in both developed and developing countries, there have been a very few of such studies in the Hong Kong stock market. Therefore, this paper aims to reinvestigate the behaviour of stock returns with respect to the firms' financial ratios in Hong Kong stock market. There are 17 firms and 20 financial ratios selected from each firm. Having proceeded to the factor analysis, there are five essential financial ratios such as price-to-sales ratio, market-to-book ratio, earning per share, dividend yield and firm size are used for

multiple regression analysis and then for the tests of hypotheses.

The findings revealed that market-to-book ratio, dividend yield and firm size have significant positive relationship with stock returns, while price-to-sales ratio and earnings per share are insignificant and negative relationship with the stock returns. Especially, the results of price-to-sales ratio is inconsistent with the earlier studies like Jensen et al. (1998), Barbee, Mukherji and Raines (1996). The findings also imply that firm size is consistent with results of *Holder* et al. (1998), *Banz* (1981), *Basu* (1983) and *Keim* (1990). No matter what is the size of the firms, they will provide positive impact on the stock returns. Regarding the combination analysis of market-to-book ratio and firm size, the results indicated that the two popular ratios are positively correlated and statistically significant for the stock returns.

The limitations are the duration of the data. It will be certainly better when the future research can run a long run regression analysis and especially divide into different stock durations such as bull and bear durations repeatedly for a long run analysis. It is believed that the result will be more convincing and reliable. Additionally, cross-country comparison on this topic could be done once data and manpower are available.

APPENDIX

SUMMARY OF MULTIPLE REGRESSION RESULTS

Tests	Dependent variable	Independent variables (Predictors)	Model summary		ANOVA				Coefficients				N (participants)
			R Square	Adj. R Square	F-value	Sig.		Unstandardised Coefficients B	Standardized Coefficients Beta	t-value	Sig.	
1	Stock Return	Price to Sale	0,05	−0,013	0,792	0,387	(Constant)	0,007		1,629	0,124	17
							Price to Sale	−0,001	−0,224	−0,89	0,387	
2	Stock Return	Market-to-book	0,246	0,196	4,89	0,043	(Constant)	0		−0,141	0,89	17
							Market-to-book	0,006	0,496	2,211	0,043	
3	Stock Return	Earnings per Share	0,006	−0,061	0,086	0,773	(Constant)	0,005		1,343	0,199	17
							Earnings per Share	−0,001	−0,075	−0,293	0,773	
4	Stock Return	Yield	0,482	0,448	13,985	0,002	(Constant)	0,02		4,198	0,001	17
							Yield	−0,16	−0,695	−3,74	0,002	
5	Stock Return	Market Cap.	0,324	0,279	7,18	0,17	(Constant)	−0,103		−2,57	0,21	17
							Market Cap.	0,009	0,569	2,679	0,17	
6	Stock Return	Yield	0,547	0,483	8,463	0,004	(Constant)	−0,039		−0,926	0,37	17
		Market Cap.					Yield	−0,013	−0,547	−2,63	0,02	
							Market Cap.	0,005	0,294	1,416	0,179	
7	Stock Return	Earnings per Share	0,599	0,507	6,485	0,006	(Constant)	−0,071		−1,482	0,162	17
		Yield					Earnings per Share	−0,003	−0,27	−1,301	0,216	

(continuation of Table 3)

Tests	Dependent variable	Independent variables (Predictors)	R Square	Adj. R Square	F-value	Sig.		Unstandardised Coefficients B	Standardized Coefficients Beta	t-value	Sig.	N (participants)
7							Yield	−0,01	−0,456	−2,121	0,054	
		Market Cap.					Market Cap.	0,007	0,462	1,921	0,077	
8	Stock Return	Earnings per Share	0,486	0,412	6,611	0,01	(Constant)	0,021		4,029	0,001	17
		Yield					Earnings per Share	−0,001	−0,057	−0,296	0,772	
							Yield	−0,016	−0,693	−3,615	0,003	
9	Stock Return	Market-to-book	0,655	0,541	5,708	0,008	(Constant)	−0,57		−1,219	0,246	17
		Earnings per Share					Market-to-book	0,004	0,302	1,397	0,188	
		Yield					Earnings per Share	−0,001	−0,076	−0,313	0,76	
		Market Cap.					Yield	−0,01	−0,421	−2,017	0,067	
							Market Cap.	0,006	0,365	1,507	0,158	
10	Stock Return	Market-to-book	0,59	0,496	6,242	0,007	(Constant)	0,013		2,062	0,06	17
		Earnings per Share					Market-to-book	0,005	0,395	1,821	0,092	
		Yield					Earnings per Share	0,002	0,139	0,668	0,516	
							Yield	−0,013	−0,583	−3,107	0,008	
11	Stock Return	Market-to-book	0,286	0,184	2,805	0,095	(Constant)	−0,003		−0,689	0,502	17
		Earnings per Share					Market-to-book	0,007	0,612	2,345	0,034	
							Earnings per Share	0,003	0,232	0,888	0,389	
12	Stock Return	Market-to-book	0,66	0,505	4,263	0,021	(Constant)	−0,054		−1,087	0,3	17

Header groupings: *Model summary* spans R Square / Adj. R Square; *ANOVA* spans F-value / Sig.; *Coefficients* spans Unstandardised Coefficients B / Standardized Coefficients Beta.

(continuation of Table 3)

Tests	Dependent variable	Independent variables (Predictors)	R Square	Adj. R Square	F-value	Sig.		B	Beta	t-value	Sig.	N (participants)
12		Market-to-book					Market-to-book	0	0,073	0,364	0,722	
		Earnings per Share					Market-to-book	0,004	0,327	1,394	0,191	
		Yield					Earnings per Share	−0,001	−0,066	−0,26	0,8	
		Market Cap.					Yield	−0,01	−0,451	−1,947	0,077	
							Market Cap.	0,006	0,345	1,339	0,207	
13	Stock Return	Market-to-book	0,604	0,472	4,577	0,018	(Constant)	0,012		1,81	0,095	17
		Market-to-book					Market-to-book	0,001	0,132	0,648	0,529	
		Earnings per Share					Market-to-book	0,005	0,43	1,883	0,084	
		Yield					Earnings per Share	0,002	0,136	0,638	0,535	
							Yield	−0,014	−0,62	−3,095	0,009	
14	Stock Return	Market-to-book	0,288	0,124	1,753	0,206	(Constant)	−0,002		−0,397	0,698	17
		Market-to-book					Market-to-book	0	−0,047	−0,187	0,855	
		Earnings per Share					Market-to-book	0,007	0,595	2,077	0,058	
							Earnings per Share	0,003	0,231	0,853	0,409	
15	Stock Return	Market-to-book	0,248	0,141	2,31	0,136	(Constant)	0		0,056	0,956	17
		Market-to-book					Market-to-book	0	−0,051	−0,205	0,84	
							Market-to-book	0,006	0,477	1,92	0,075	

Source: own editing

Table 4

CORRELATIONS

		Stock Return	Market-to-book Ratio	Market Cap.
Pearson Correlation	Stock Return	1 000	.496	.569
	Market-to-book Ratio	.496	1 000	.089
	Market Cap.	.569	.089	1 000
Sig. (1-tailed)	Stock Return	.	.021	.009
	Market-to-book Ratio	.021	.	.367
	Market Cap.	.009	.367	.
N	Stock Return	17	17	17
	Market-to-book Ratio	17	17	17
	Market Cap.	17	17	17

Source: own editing

Table 5

ANOVA[a]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	2	.001	7 687	.006[b]
	Residual	.001	14	.000		
	Total	.002	16			

a. Dependent Variable: Stock_return

b. Predictors: (Constant), Market_Cap, Market_to_Book_Ratio

Source: own editing

Table 6

MODEL SUMMARY[b]

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Change Statistics				
					R-Square Change	F-Change	df1	df2	Sig. F Change
1	.723[a]	.523	.455	.0090053	.523	7 687	2	14	.006

a. Predictors: (Constant), Market_Cap, Market_to_Book_Ratio

b. Dependent Variable: Stock_return

Source: own editing

LITERATURE

BALI, T. – CAKICI, N. – WHITELAW, R. (2010): "Maxing Out: Stocks as lotteries and the cross–section of expected returns" *Journal of Financial Economics.* 99. pp. 427–446

BANZ, R. W. (1981): "The relationship between return and market value of common stocks" *Journal of Financial Economics.* 9(1). pp. 3–18

BARBEE, W. C. Jr. – MUKHERJI, S. – RAINES, G. A. (1996): "Do sales-price and debt-equity explain stock returns better than book-market and firm size?" *Financial Analysts Journal.* 52(2). pp. 56–60

BASU, S. (1983): "The relationship between earnings yield, market value and returns for NYSE common stocks: Further evidence" *Journal of Financial Economics.* 12. pp. 129–156

BHANDARI, L. C. (1988): "Debt/Equity ratio and expected common stock returns; empirical evidence" *Journal of Finance.* 43. pp. 507–528

BOWER, R. – BOWER, D. (1969): "Risk and the valuation of common stock" *Journal of Political Economy.* pp. 349–362

CAMPBELL, J. Y. – AMMER, J. (1993): "What moves the stock and bond markets? A variance decomposition for long-term asset returns" *Journal of Finance.* 48(1): 3–37

CAMPBELL, J. Y. – SHILLER, R. (1988): "The dividend-price ratio and expectations of future dividends and discount factors" *Review of Financial Studies.* 1. 195–228

CHEN, S. W. – SHEN, C. H. (2009): "Is the stock price higher than that implied by the fundamentals?" *International Research Journal of Finance and Economics.* 29. pp. 87–109

DEAVES, R. – MIU, P. – WHITE, C. B. (2008): "Canadian stock market multiples and their predictive content" *International Review of Economics and Finance.* 17. pp. 457–466

FAMA E. F. – FRENCH, K. (1992): "The cross-section of expected stock returns" *Journal of Finance.* 47. pp. 427–465

FAMA, E. F. – FRENCH, K. (1995): "Size and book-to-market factors in earnings and returns" *Journal of Finance.* March. pp. 31–55

FAMA. E. F. – FRENCH, K. (1998): "Value versus growth: The international evidence" *Journal of Finance.* 6. pp. 1975–1999

GORDON, M. J. (1959): "Dividends, earnings and stock prices" *Review of Economics and Statistics.* 41. pp. 99–105

HOLDER, M. F. – LANGREHR, F. W. – HEXTER, J. (1998): "Dividend policy determinants: An investigation of the influences of stakeholder theory" *Financial Management.* pp. 73–82

KEIM, D. (1990): "A new look at the effects of firm size and E/P ratio on stock returns" *Financial Analysts Journal.* 46. pp. 56–67

KHERADYAR, S. – IBRAHIM, I. (2011): "Financial ratios as empirical predictors of stock return" *International Conference on Sociality and Economics Development, IPEDR.* Vol. 11. pp. 345–401

KIM, D. (1997): "A re-examination of firm size, book-to-market, earnings price in the cross-section of expected stock returns" *Journal of Financial and Quantitative Analysis.* 32. pp. 389–463

KOTHARI, S. P. – SHANKEN, J. (1997): "Book-to-market, dividend yield, and expected market returns:

A time series analysis*" Journal of Financial Economics.* 44. pp. 169–203

LAU, S. T. – LEE, T. C. – MCINISH, T. H. (2002): "Stock returns and Beta, firms size, E/P, CF/P, book-to-market and sales growth: Evidence from Singapore and Malaysia" *Journal of Multinational Financial Management.* 12. pp. 207–222

LEWELLEN, J. (2004): "Predicting returns with financial ratios*" Journal of Financial Economics.* 74. pp. 209–235

MUKHERJI, S. M. – DHATT, S. – KIM, H. (1997): "A fundamental analysis of Korean stock returns" *Financial Analysts Journal.* 53(3). pp. 75–80

PAPANASTASOPOULOS, G. – THOMAKOS, D. – WANG, T. (2011): "Information in balance sheets for future stock returns: Evidence from net operating assets" *International Review of Financial Analysis.* 20. pp. 269–282

PENMAN, S. H. – SCOTT, A. R. – TUNA, A. I. (2005): *The book-to-price effect in stock reforms: Accounting for leverage.* Columbia University – Department of Accounting.

PONTIFF, J. – SCHALL, L. (1998): "book-to-market ratios as predictors of market returns" *Journal of Financial Economics.* 49. pp. 141–160

ROSENBERG, B. – REID, K. – LANSTEIN, R. (1985): "Persuasive evidence of market inefficiency" *Journal of Portfolio Management.* 11. pp. 9–17

SENTHILKUMAR, G. (2009): "Behaviour of stock market in size and market-to-book ratio – Evidence from selected Indian industries" *International Research Journal of Finance and Economics.* 33. pp. 145–198

SHAFANA, A.L. – FATHIMA, R. – INUNJARIYA, A. M. (2013): "Relationship between stock returns and firm size, and book-to-market equity: Empirical evidence from selected companies listed on Milanka Price Index in Colombo Stock Exchange" *Journal of Emerging Trends in Economics and Management Sciences.* 4(2). pp. 277–325

TSOUKALAS, D. (2005): "Macroeconomic factors and stock prices in the emerging Cypriot equity market" *Managerial Finance.* 29. pp. 87–92

WANG, Y. – IORIO, A. D. (2007): "The cross-sectional relationship between stock returns and domestic and global factors in the Chinese A-share market" *Review Quantitative Finance and Accounting.* 29. pp. 181–203

ZAHIR, M. H. (1992): "Factors affecting equity prices in India" *The Chartered Accountant.* pp. 743–748