
**RISK-RETURN THROUGH FINANCIAL RATIOS AS DETERMINANTS OF STOCK PRICE:
A STUDY FROM ASEAN REGION**

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Abstract. The objective of this empirical research is to analyze the risk-return through financial ratios as determinants of stock price in ASEAN region. To address this purpose, business firms from Malaysia, Indonesia, Thailand and Singapore are selected with a sample of 10 firms in each state over 2012 to 2016. Multiple regression technique is applied to analyze the relationship between financial ratios and stock prices. It is observed that current ratio, quick ratio, assets growth, return on assets, return on equity, return on capital employed, and price to earning ratio are significant determinants of stock price. Although this study is a reasonable addition in existing literature of financial ratios as determinants of stock price. However, contribution of the study can be viewed through covering a gap from the context of ASEAN region, which is under reserachers attentions for stock price determinants. Core limitations of the study covers limited number of sample size and five years of time duration. Besides, some ratios are missing which can be reconsidered in upcoming studies. These ratios include debt ratios, interest payment ratios, and fixed cost covered ratios as well.

Keywords: financial ratios, stock price, price to earnings, assets growth, ASEAN

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1. Introduction and Background

In financial market, investors make investment decision through available information and level of risk perception while studying the business trend (Healy & Palepu, 2001; Slovic, 1972). For this purpose, various type of analysis tools and procedures are applied. The most significant technique is to examine the business trend through financial statement analysis (Edwards, Magee, & Bassetti, 2018; Taylor & Allen, 1992; Hilkevics, Semakina, 2019).

Various sub methods under financial statements like trend analysis, fundamental analysis, technical analysis and ratio analysis are very much significant (Bisoi & Dash, 2014; Pring, 2002; Bugu & Yucheng, 2018; Castro, 2018; Astrauskaitė, Paškevičius, 2018; Narkunienė, Ulbinaitė, 2018).

Decision makers and analysts in the field of finance and risk management have widely examined the business trends through financial ratios and their overall pattern over series of analysis (Bromiley, Miller, & Rau, 2001; Kamran, Chaudhry, et al., 2016; Tarasova et al., 2018; Zandi & Haseeb, 2019; Vinogradova, N.P., Popov, 2019).

Among various financial ratios, the first measure is under the title of liquidity measures which consider firms ability to pay its short-term liabilities and financial obligations on time (Gitman, Juchau, & Flanagan, 2015). In this regard, the role of current ratio and quick ratio is very much important. The second measure in financial ratios is under the title of activity ratio which explains the firm's ability to actively convert its various account into cash or sales (Yada & Nakai, 1986). The idea of inventory turnover ratio, assets turnover ratio, average collection period, and average payment period are important indicator under activity ratio (Raheman & Nasr, 2007; Richards & Laughlin, 1980; Chang-Sheng, 2018; Chima & Kasim, 2018). The third ratio as per the earlier literature is known as debt ratio which considers the firm's solvency, its portion of long term and current debts in the assets, coverage of interest expense through its operating profit, fixed payment through earning before interest and tax, dividend payment ratio. These ratios are widely used in examining the leverage pattern, and capital structure as well (Kamran, Khan, & Sharif, 2016). Business risk is measured through liquidity, activity and debt ratio. To examine the level of earnings and return in the business, various measures like return on assets, equity return, and capital employed return, gross profit margin, net profit margin and return on sales have got significant attention in present literature. The fifth measure for the financial ratios entitles as market ratios, covering the title of both risk and return factors. This ratio covers the proxies like market to book ratio, and price over earning ratio.

In addition, business organizations are working for various objectives but the most significant is to maximize the stockholder's wealth over longer period of time (Kronman, 1980; Posner, 1985). Various measures are discussed in the literature, but market price of the equity share is found to be the most important (Adjasi, 2009; Porter & Kramer, 2019; Masood et al., 2019). It reflects the firm's capacity to generate more return over its investment and sales, creating positive image in the market place, attracting more investors from the market, sustaining existing owners, competing in the market through innovative products and services and surviving over long run. However, the factor of sustaining long run in the market comparatively to the rivals, business organizations are working constantly in the world economy through improving financial performance. Meanwhile risk-return factors are accepted as among the significant determinant to affect the wealth of stock holders in the form of share price. In this regard, effect of financial ratios on business stock price is a significant topic to be addressed. This study has considered various financial ratios and their impact on stock price of selected firms in ASEAN region, which is not under significant attention earlier. The rest of the paper is as follows. Section two explains the literature review of the research. Section three explains the variables and their operational definition. Section four explains samples and methods. Section five provides a comprehensive discussion about empirical findings. Last section explains conclusion and future direction.

2. Review of Literature

Literature context for the association between financial ratios and their impact on stock price have provided significant evidences. For instance, (Meriç, Kanişlı, & Temizel, 2017; Garfield, 2018) have examined the impact of price to earnings ratios, dividend yield ratio as core indicator of stock price in banking sector of Turkey. Data for monthly price of banking stock and related ratios have been explored during the time of 2008 to 2017. It is found that there exists significant association between financial ratios and stock price of banking firms in Turkey. Meanwhile, very first impact of price to earning ratio is examined by (Basu, 1977) who considered 1400 business firms, listed in NYSE through regression analysis. Time period of the study was 1956 to 1971 with annual observation. It is observed that efficient market hypothesis exists between the relationship of stock price and price to earning ratio. In his study, (So & Tse, 2004; Clausen, 2018; Dar & Bhat, 2018) explores the association between stock return, price to earning ratio and dividend yield for the real estate business firms during 1991 to 2000. Through regression analysis, it is confirmed that fast growth in the stock price and slow growth in dividend are significant linked to price to earning ratio. Meanwhile, (Omran & Ragab, 2004) exam-

ined the link of financial ratios with stock price. Overall 46 Egyptian firms during 1996 to 200 is observed with annual observations.

Musallam (2018) review the association between financial ratios and 26 firms, listed in the Qatar stock market during the time of 2009 to 2015. Research designed is based on the secondary data with annual observation and application of weighted least square for the price per share of stock, earning yield ratio, and dividend yield (Hussain, Salem, Rashid, & Kamarudin, 2019). It is found that key financial ratios have their significant and positive impact on the return of stock. Besides, financial ratios like market to book, return on equity, return on assets, price to earning ratios, and net profit margin have their insignificant impact on stock return of selected firms. Practical implication of the study indicates that policy makers from the government, investors and business mangers can use the findings for strategic decision.

The study of (Pech, Noguera, & White, 2015; Trejo-Pech, White, & Noguera, 2015) provides the evidence that financial ratios are playing their major role while defining the stock market return. During the end of last decade, (Wang & Lee, 2010) explains that effect of profitability, leverage, assets turnover and solvency ratio for the stock return in shipping industry. Series of other research studies as conducted by (Beaver, 1968; Bhandari, 1988; Hoque, Kim, & Pyun, 2007; Huang, 1995; In & Kim, 2006; Khan, Gul, Rehman, Razzaq, & Kamran, 2012; Kheradyar, Ibrahim, & Nor, 2011; Lakonishok & Lev, 1987; Lam, 2002; O'Connor, 1973; Smith, Jafferis, & Ryoo, 2002) state the fact that stock return is found to be significantly associated with the financial ratios in selected region.

In addition, earlier research studies have explored the relationship between financial ratios and market stock return while considering different nations. For instance, (Alam, Hasan, & Kadapakkam, 1999; Cascio, Young, & Morris, 1997; Cheng, Fung, & Lam, 1998; Kheradyar et al., 2011; Martani, Khairurizka, & Khairurizka, 2009; Ramkillawan, 2014). As per implication of econometric modelling, (Dajcman, 2012) used two way of fixed effect considering the ratio of earning yield with the book to market during 2002 to 2008. Another study conducted by (Chan, Hamao, & Lakonishok, 1991; Dori, 2018; EGBUNIKE & OKOYE, 2017; Elad et al, 2017) have tested the association between the fundamental ratios and stork return for the firms working in Japan. It is argued that there exists a direct relationship between stock return in Japan and key financial ratios over time. another study conducted by have examine the impact of book to market ratio and price to earning ratio for the stock market return for the firms working in Hong Kong. It is observed that both financial ratios are significant determinants of stock market return. Cheung, Chung, and Kim (1997) examines the effect of book value and earning indicators for the profitability in the similar region of Hong Kong.

In depth review of the literature reveals that ASEAN region is not under researcher's attention for exploring the relationship between financial ratios and their impact on price of common stock for business firms. to the best of author" findings, therefore, this study is examining this association for the very first time while taking all financial ratios as core determinants of stock price (Table 1).

Table 1. Variables description

Variable Name	Measurement	Source
Current Ratio	Current assets/current liabilities	(Gitman et al., 2015)
Quick Ratio	Current assets-inventory/current liabilities	(Gitman et al., 2015)
Assets turnover	Total sales/ total assets	(Gitman et al., 2015)
Assets growth	Annual increase (%) in assets	(Brigham & Houston, 2012)
Average collection period	Account receivable/ annual sales per day	(Jain, 1999)
Average payment period	Account payable/ annual purchase per day	(Damodaran, 1996)
Return on assets	Net income after tax/total assets	(Gitman et al., 2015)
Return on Equity	Net income after tax/total common	(Subramanyam, 2009)
Return on capital employed	Net income/ total capital employed by the business	(Subramanyam, 2009)
Gross profit margin	Gross profit/sales	(Subramanyam, 2009)
Earnings per share	Net income after tax/total common shares	(Nissim & Penman, 2003)
Price/earnings Ratio	Market price per share of common stock/ net income after tax	(Prasetyorini & fitri, 2013)
Market price per share	Market price per share of common stock	(Adam, Marcet, & Nicolini, 2016; Arthur, 2018; Fama, 1965)

3. Methods and Sample

This study has applied quantitative technique to explore the relationship between financial ratios and stock prices in ASEAN region. For this purpose, secondary data is collected from various sources including online data portals, annual reports and company’s website. Data is collected for the time period of five years (2012-2016) with annual observations. A sample of 10 business firms is selected from each of the selected states in ASEAN. After the collection of data, regression technique is applied to examine the causal effect of financial ratios on stock market price of selected firms. Robust regression provides more reliable findings for statistical inference and further decision making.

4. Discussion of Results

Table 2 presents regression results for selected firms working in the region of Malaysia. Model 1 reflects the effect of both risk and return overall ratios. It is found that effect of quick ratio on stock price is 1.201 with standard error of .634. It means that stock price of the company will be increased with the increasing value of current ratio in the business. The effect of assets turnover on stock price is significantly positive at 1 percent with the coefficient of 4.109. While from the return factors like return on capital employed, effect on stock price is .656. Through model 2, effect of liquidity and assets turnover ratio is observed through market price. Both quick ratio and assets turnover have their significantly positive influence on stock price with the regression coefficient of .815 and 9.195. Assets growth is significantly and positive affecting stock price under model three with the standard error of .361. Under model four, none of the variable is found to be significantly affecting the stock price of the selected companies. Under model five, effect of both risk-return effect through price over earnings ratio is negatively insignificant for stock price. Model 6 indicates the fact that quick ratio and assets turnover have their significantly positive influence on stock price in the market. Besides, when the presence of current ratios, assets growth, and turnover ratios, effect of price to earnings ratio on stock price is significantly positive under full sample for selected firms in Malaysia. All regression models present good explained variation of above .80 with the highest variation under model 1, followed by model 3 respectively.

Table 2. Financial ratios as determinants of stock price in Malaysia

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 2	(4) Model 4	(5) Model 5	(6) Model 6
CURRENT RATIO	-14.63 (21.12)	2.091 (1.865)				2.406 (1.781)
QUICK RATIO	1.201* (0.634)	0.815* (0.442)				0.827* (0.428)
ASSETS TURNOVER RATIO	4.109*** (1.450)	9.195*** (0.581)				9.222*** (0.591)
ASSETS GROWTH	0.198 (0.219)		1.408*** (0.361)			
AVERAGE COLLECTION PERIOD	-0.0153 (0.0102)		-0.0318 (0.0317)			-0.0161 (0.0172)
AVERAGE PAYMENT PERIOD	-0.0106 (0.00890)		-0.0156 (0.0232)			0.00943 (0.0194)
RETURN ON ASSETS	-0.140 (0.660)			0.858 (0.577)		
RETURN ON EQUITY	-0.672 (1.596)			-2.540 (2.211)		
RETURN ON CAPITAL EMPLOYED	-0.656* (0.364)			0.108 (0.350)		
GROSS PROFIT MARGIN	-0.963 (0.869)			-0.103 (0.538)		
EARNING PER SHARE	52.05 (86.94)			1.433 (4.350)		
PRICE/EARNIG RATIO	-1.977 (10.80)				-2.928 (5.943)	2.930** (1.208)
Constant	10.75** (4.921)	-0.0751 (0.311)	2.870 (1.977)	0.980 (4.474)	4.708** (2.282)	-1.059 (1.349)
Observations	48	45	49	43	46	43
R-squared	0.92	0.864	0.901	0.452	0.624	0.634

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 3 presents the effect of various financial ratios on stock price of Indonesian firms, it is found that with the presence of all ratio factors, effect on stock price is significant through return on equity, with the coefficient of 2.077. While model 2 found to be insignificant with the presence of .211 explained variation through constant factor. Model three reflects the fact that assets growth is significantly and negatively affecting the stock price with the coefficient of -1.336 and standard error of .298. Model four indicates that return on assets has its significant and positive influence on stock price. While gross profit margin shows an effect of .455 with standard error of .129. This effect explains that higher gross profit margin creating a positive image in the market place, which in return increase the price of equity shares. Model 5 presents the effect of risk return factor through price over earnings ratio. The effect through price over earning is 2.094, significant at 10 percent. Model 6 shows that average collection period is positively and significantly affecting the stock price for sample firms in Indonesia. Meanwhile through price over earnings ratio, significantly positive influence is observed.

Table 3. Financial ratios as determinants of stock price in Indonesia

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Model 1	Model 2	Model 2	Model 4	Model 5	Model 6
CURRENT RATIO	-4.644 (4.052)	-0.372 (0.423)				0.672 (0.703)
QUICK RATIO	-2.110 (0.765)	0.623 (0.551)				-0.560 (0.684)
ASSETS TURNOVER RATIO	0.292 (0.470)	0.711 (0.746)				0.927 (0.692)
ASSETS GROWTH	-0.117 (0.408)		-1.336*** (0.298)			
AVERAGE COLLECTION PERIOD	0.0190 (0.00822)		0.00536 (0.00826)			0.0366* (0.0186)
AVERAGE PAYMENT PERIOD	0.00552 (0.00272)		-0.00733 (0.00762)			-0.00834 (0.0110)
RETURN ON ASSETS	-0.0884 (0.0430)			0.178*** (0.0412)		
RETURN ON EQUITY	2.077* (0.588)			0.0549 (0.242)		
RETURN ON CAPITAL EMPLOYED	0.0591 (0.101)			-0.0224 (0.0213)		
GROSS PROFIT MARGIN	0.594 (0.265)			0.455*** (0.129)		
EARNING PER SHARE	36.27 (30.17)			3.399 (2.119)		
PRICE/EARNIG RATIO	-2.489 (1.095)				2.094* (1.167)	2.582* (1.206)
Constant	-3.946 (2.411)	1.045*** (0.233)	1.777*** (0.556)	-2.287* (1.106)	0.856*** (0.255)	-0.455 (0.739)
Observations	48	46	48	43	46	48
R-squared	0.183	0.211	0.702	0.886	0.259	0.487

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

For the determination of stock price, business firms of Thailand, table 3 indicates the key findings. Through all factors of key financial ratios, effect of return on assets is significantly negative with the coefficient of -.488. While all other ratios are found to be insignificant determinant of stock price. Model two considers the liquidity ratios and assets growth. It is observed that only the effect of assets turnover is significant and positive. For activity ratios, average payment period is found to be negatively affecting the stock price. While return on assets and return on equity have their significant and positive influence on stock price. It means that more financial performance and earning through assets and equity is beneficial for the stockholders through value maximization in the form of increasing stock price. Model six under table 3 shows the fact that all the ratios except average collection period has its significant and negative influence on stock price of business firms, working in the region of Thailand. Model 1 in table 4 shows maximum explained variation, followed by model four and model six.

Table 4. Financial ratios as determinants of stock price in Thailand

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Model 1	Model 2	Model 2	Model 4	Model 5	Model 6
CURRENT RATIO	0.864 (3.099)	-0.642 (0.723)				-0.717 (0.675)
QUICK RATIO	-3.750 (3.989)	1.702 (2.650)				-4.459 (3.127)
ASSETS TURNOVER RATIO	-0.270 (0.519)	0.896** (0.085)				0.0521 (0.187)
ASSETS GROWTH	0.0907 (0.256)		-0.170 (0.285)			
AVERAGE COLLECTION PERIOD	-0.00130 (0.0211)		-0.00308 (0.0133)			-0.0129 (0.0128)
AVERAGE PAYMENT PERIOD	-0.00197 (0.00748)		0.000512 (0.00758)			-0.170*** (0.00659)
RETURN ON ASSETS	-0.488* (0.250)			0.460** (0.077)		
RETURN ON EQUITY	2.177 (5.469)			0.724*** (.047)		
RETURN ON CAPITAL EMPLOYED	-0.0996 (0.102)			-0.0578 (0.0422)		
GROSS PROFIT MARGIN	0.207 (0.324)			0.319 (0.243)		
EARNING PER SHARE	-4.242 (14.52)			2.105 (1.923)		
PRICE/EARNIG RATIO	2.069 (1.639)				1.611*** (0.455)	2.867*** (0.928)
Constant	-0.178 (3.020)	1.106*** (0.166)	1.212** (0.423)	-1.119 (1.947)	0.875*** (0.128)	1.564*** (0.514)
Observations	48	45	46	49	47	48
R-squared	0.776	0.168	0.026	0.621	0.328	0.523

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

For the business firms working in Singapore, stock price determinant through financial ratios are presented under table 5. Model 1 shows that current ratio indicates a significant and positive influence of 1.847 and standard error .0315. While effect of assets turnover is .187 with the error o .093, reflecting a significant influence on stock price. More collection period means that business is following the policy of extending the time for cash collection from its customers. Effect of average collection period is .130 indicates significant and positive impact on stock price. Return on equity also indicates a positive influence on the stock price of business firms in Singapore. While the factor of assets growth is found to be negatively affecting the stock price, means that higher growth of assets is not beneficial for stock price. Meanwhile, factor of earning per share also shows positive effect on stock price in Singapore. Under model 6, it is observed that more delayed in the payment to the creditor is negatively affecting the stock price with the coeffiecnt of -.025. It means that delaying the payment will create a negative image for the firms in the market, hence negative impact on shareholders wealth.

Table 5. Financial ratios as determinants of stock price in Singapore

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Model 1	Model 2	Model 2	Model 4	Model 5	Model 6
CURRENT RATIO	1.847***	-0.503				-0.821
	(.0315)	(0.582)				(0.546)
QUICK RATIO	-2.927	0.494				0.587
	(3.711)	(0.742)				(2.561)
ASSETS TURNOVER RATIO	0.187**	0.168				0.0556
	(0.093)	(0.0998)				(0.106)
ASSETS GROWTH	-0.0882		-0.331***			
	(0.415)		(0.0875)			
AVERAGE COLLECTION PERIOD	0.130***		0.0172			0.0165
	(0.0110)		(0.0113)			(0.0146)
AVERAGE PAYMENT PERIOD	-0.0115		-0.00640			-0.0250**
	(0.0154)		(0.00669)			(0.0106)
RETURN ON ASSETS	-0.140			0.144		
	(0.314)			(0.135)		
RETURN ON EQUITY	0.203***			0.109		
	(.0193)			(1.192)		
RETURN ON CAPITAL EMPLOYED	0.0514			0.0522		
	(0.107)			(0.0534)		
GROSS PROFIT MARGIN	0.0877			0.183		
	(0.569)			(0.235)		
EARNING PER SHARE	9.638			.408***		
	(11.01)			(.0162)		
PRICE/EARNIG RATIO	0.343				0.111	0.0722
	(0.531)				(0.111)	(0.423)
Constant	0.867	1.187***	1.063***	-0.100	1.155***	1.778**
	(5.173)	(0.124)	(0.299)	(1.883)	(0.103)	(0.621)
Observations ⁴⁶	48	49	47	49	48	47
R-squared	0.690	0.098	0.460	0.571	0.022	0.356

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

This study has examined the effect of financial ratios as determinants of stock price. To achieve this objective, business firms from four ASEAN region; Malaysia, Indonesia, Thailand, and Singapore are selected. Sample firms consist of 10 business organizations from each state over 2012-2016. Multiple regression approach is applied while data for financial ratios is collected from companies' annual reports and online data sources. It is observed that for business firms working in Malaysia, key determinants for the stock price are assets turnover, assets growth, quick ratio, return on capital employed, and price to earnings ratios are core determinants of stock price over sample period. For Indonesian firms, growth is found to be significant determinant among return on assets, average collection period, gross profit margin, and price to earnings ratio for stock price. For the firms working in Thailand, key determinants of stock price are assets turnover, return on assets, and return on equity, average payment period and price to earnings ratio. For the firms in Singapore, key determinants for the stock price are current ratio, assets turnover ratio, average collection period, and return on equity, assets growth and return on assets. These findings are providing a significant documentary evidence to the investors, financial analysts, and other strategic decision makers. It is suggested that while taking any type of investment

decision in these regions, association between financial ratios and stock price should be analyzed, examined and reviewed. Meanwhile, some financial ratios and their effect on stock price is very much beneficial which can be viewed as present and future document for analyzing the firm performance through selected measures. Besides, effect of some indicators is found to be significantly negative, providing the evidence that business managers should focus on these ratios. For example, assets growth up to a reasonable level is useful for the business, but too much investment can also negatively affect the stock price of business firms, which is an alarming issue. Although this study is a reasonable addition in existing literature of financial ratios as determinants of stock price. However, contribution of the study can be viewed through covering a gap from the context of ASEAN region, which is under researchers attentions for stock price determinants. Core limitations of the study covers limited number of sample size and five years of time duration. Besides, some ratios are missing which can be reconsidered in upcoming studies. These ratios include debt ratios, interest payment ratios, and fixed cost covered ratios as well.

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