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Financial ratios affecting stock returns in ecommerce companies

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Financial Ratios Affecting Stock Returns in Ecommerce Companies

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ABSTRACT

The paper aimed to find out the relationships between stock returns and three financial ratios. The author selected 23 listed Ecommerce companies as sample and searched the financial information over 9 quarters from 2017 to 2019 through Bloomberg terminal. The penal data analysis methodology was used to test the data and to draw conclusions.

The results show that profit margin, debt to equity ratio, and quick ratio all have significant positive relationships with stock returns. High profit margin and high quick ratio will motivate investors to buy stocks, since they will confidentially consider that the companies are profitable and stable. Although high debt to equity ratio requires companies to pay much debt, investors will believe that higher debt to equity ratio probably generates much tax shield and then high dividend paid, so that companies will generate higher return on stocks.

Keywords: Stock Returns, Profit Margin, Quick Ratio, Debt to Equity Ratio, Penal Data Analysis

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Introduction

Stock market plays a pivotal role in the economics for a country. General speaking, the data in stock market reflects the growth or the decline of industries and the situation of the commerce in a country, which will affect the whole economy. Since the listed companies in the stock market cover the overall industries and each company's performance is totally reflected by the stock prices, the stock market is a significant indicator to a country's economy. Also, as for companies, it is efficient to raise money for their operation by issuing stocks through stock market. As for investors, stock investment becomes more attractive with the high expectation of the stock return.

Obviously, stock returns are essential for both investors and listed companies. To be more specific, as for investors, stock returns are essential considerations to decide whether invest money into a specific stock or not. Besides, as for companies, high stock returns help them to attract more investors to raise enough money quickly in the stock market. The major goal for each company is to maximize shareholders wealth (Jordan et al., 2018). Therefore, increasing the stock price is each company's mission, and the factors of stock returns become essential considerations to achieve the ultimate goal for each listed company.

Furthermore, factors affecting stock returns include external economic factors, company performance, which is called internal factors, and market behaviors. Among these factors, companies' financial performance is one of the major elements affecting stock returns. Also, there are several existing models, such as discounted dividend model (DDM), and discounted cash flow model (DCFM), helping analysts to evaluate stock returns. However, each of these two models is limited by some strict assumptions. In DDM, the analysts cannot use it to test the stock price and stock returns for those companies which does not pay dividend in the stock market. DCFM is more widely applied in the real case to help analysts estimate the stock price

in the future, but it relies more on the relationship with future interest rate, an external economic factor that is commonly discussed by researchers (Al-Tamimi et al., 2011). The present study will pay more attention to the relationships between stock returns and internal factors, namely financial ratios.

Undeniably, financial ratios in companies' financial statements are essential for investors to determine whether invest in one company or not, thus internal factors, such as profit margin, quick ratio, and debt to equity ratio, are essential for investors to judge whether the investment will gain or not. Since, the profit margin is the significant indicator which helps investors to evaluate the profitability of such companies and predict the returns on the stock prices. Also, quick ratio is determined by current assets, inventories, and current liabilities. Therefore, it is essential for investors to assess the financial liquidities, so that they can judge both risks and liquidity of such companies and determine whether they invest money into the company or not. Debt to equity ratios is a significant indicators for investors to see the financial leverage of companies, and also it is relevant to the dividend paid and the money reinvest into the company's operation.

Simultaneously, the relationships between stock returns and internal factors will provide companies with significant information to set up specific goals to maximum shareholders wealth in the stock market. The factor with the most significant relationship with stock returns is the most important element companies need to manage. Since with the factors taking large proportion to affect stock return, the better companies do with the most important factor, the more attractive the companies' stock will be. Thus, in this paper, the author would collected data from Bloomberg dataset about several Ecommerce companies in a relative large period during 2017-2019, and try to figure out whether there are significant relationships between these financial ratios and stock returns.

In the following sections of the paper, the author would provide several relative finding about factors affecting stock returns. In the third part, the author would show the dataset collected, build up a specific model, and test data by penal data methodology and regression. Then the author would provide original finding about the completed results. In the last part, conclusions and recommendations would be provided. Simultaneously, the limitation and contribution is uploaded.

Objects of the study

To analyze the effects of Ecommerce companies' profit margin, quick ratio, and debt to equity ratio on stock returns.

To help investors in their investment decision making.

Hypothesis of the study

H0: The profit margin (PM) has no significant relationship with stock returns.

H0: The quick ratio (QR) has no significant relationship with stock returns.

H0: The debt to equity (DER) has no significant relationship with stock returns.

Literature review

Till now, lots of researchers dedicated to figure out how financial ratios affect stock returns, collected their evidence from various exchanges, and completed an ocean of research papers on this field. However, many researchers held different ideas about the relationships between financial ratios, including earning per share, book to market ratio, and net profit margin, and stock returns. Also, some researchers paid attention to the relationships in some specific fields, such as non-financial firms, and coal mining companies. Or others focused on the relationships from the top view that they picked up their data from overall industry sectors and

drew their conclusions. Some conclusions these researchers made were consistent with others, but some conclusions derived from previous findings. Particularly, data collected from different stock exchanges and industry sectors might lead to different results, so the findings in specific industry sectors are still significant.

Stock returns

It is wildly believed that stock returns could be affected by both internal and external factors, whereas, this paper pay attention to the internal factors, which contain profit margin, debt to equity ratio, and quick ratio. According to a book conducted by Elsevier, the author states that analysts always utilize accounting ratios to evaluate the profitability of companies and expect future stock returns of the companies (Elsevier, 2004). Also, in previous studies, many researchers engaged themselves in testing the impacts of financial ratios on stock returns. The effects of earning per share and return on assets against stock return can be traced to Wiwi and Aditio. In this study, the two researchers collected 11 coal mining companies as the sample in Indonesia stock exchange, used both Eviews software and SPSS with a regression model to test data and concluded that both EPS and ROA have positive and significant relationships with stock returns in Indonesia companies (Wiwi & Aditio, 2015).

Quick ratio and stock returns

Quick ratio represents the liquidity of companies, so it is essential for analysts and investors to evaluate the stock returns of companies. However, the results about quick ratio in previous studies are also disputable. In Anwaar's paper, the researcher selected 30 firms in London stock exchange and collected data from their financial statements during 2005 to 2014 to explore the impacts of company performance. The researcher used regression to testify that quick ratio has an insignificant relationship with stock returns (Anwaar, 2016). The result is

different from Widya's. In Widya's paper, the researchers collected data not only about debt to equity ratio, but also about quick ratio, and they investigated that quick ratio has negative impacts on stock returns in the Indonesia construction sector. They stated that if companies own the cash flow, it is more likely that they will use money to expand their business rather than to pay dividends to shareholders (Widya et al., 2015).

Debt to equity ratio and stock returns

Debt to equity ratio indicates the financial leverage of companies, there could be a particular relationship between debt to equity ratio and stock returns in the stock market. In current research papers, there are several controversial findings about what kind of influences debt to equity ratio brings to stock returns. Firstly, researchers Widya, Sri, and Tubagus tested their hypothesis in Indonesia stock exchanges, and concluded that debt to equity ratio has an inverse relationship with stock returns. These researchers concentrated on investigating the relationship between debt to equity ratio and stock returns on 6 construction and building companies, collecting data from 2010 to 2014 and testing data in regression models (Widya et al., 2015). However, according to Amalia and Isrochmani, not only did they test the relationship between profit margin and stock returns, they also investigated the relationship between debt to equity ratio and stock returns. As a result, they figured out that debt to equity ratio has a positive relationship with stock returns, since high debt to equity ratio helps companies develop their long term plans and will generate high profit return to investors in the future (Amalia & Isrochmani, 2014).

Moreover, debt to equity ratio represents the capital structure of the companies, so as to provide investors with an indicator to evaluate firms' performance. The result that the capital structure plays a major role to judge firm performances could be traced to Mirza. In his research paper, he applied the fixed effect model to process the data from 60 non-financial companies

which are listed in 100 index of Pakistan, and found that debt to equity ratio can positively affect firm performances, since more debt indicates more incentive to generate more profit to investors. However, the long term debt to assets and the short term debt to asset bring much burden for companies due to the high interest payment (Mirza, 2013).

Profit margin and stock returns

Profit margin is an important indicator for shareholders to analyze the profitability of a special company, and it could have a special relationship with stock returns. In many published research papers, many researchers put forward their opinions on the relationship between profit margin and stock returns, and the majority of them consistently agreed that profit margin affects stock returns positively. In Öztürk's research paper, he processed the data from 2008 to 2016 which comes from 14 companies in technology and communication firms. He used the two-way fixed effects model with robust standard error, and checked results by using Parks Kmenta and Beck-Katz methods. Based on these methods and models, the author concluded that profit margin positively affects stock returns in Istanbul stock exchange (Öztürk, 2017). In addition, Amalia and Isrochmani have post their research findings about the influence of profit margin on stock returns. They collected financial ratios in the financial statements post by 20 listed consumer goods companies during 2009 to 2013 at Indonesia stock exchange, and processed data by t test, F test, and linear regression. Eventually, they stated that profit margin has the significant positive relationship with stock returns (Amalia & Isrochmani, 2014). Therefore, these researchers put forward that profit margin is a reliable indicator for investors to make decisions in stock markets.

Research design

Sample and data

The data contains 23 listed companies which have large market capitalization in Ecommerce companies operating in the 9 quarters from 2017 to 2019. The author collected data from the quarterly financial reports of these companies, and the observers used in the panel data analysis are 184 total. The companies which are fulfill the requirements are showing in the follow way.

Ecommerce Companies	
RAKUTEN INC	ISTYLE INC
AMAZON.COM INC	SORIBADA INC
MONOTARO CO LTD	MEDIA DO HOLDING
ALIBABA GRP-ADR	JD.COM INC-ADR
PILOT CORP	MARUZEN CHI HOLD
INTERPARK CORP	EBAY INC
ASKUL CORP	SYUPPIN CO LTD
INTERPARK HOLDIN	HAMEE CORP
YES24 CO LTD	BEENOS INC
ESANG NETWORKS	PCHOME ONLINE
ZALANDO SE	EBOOK INITIATIVE
VIPSHOP HOLDINGS	

Table 1 Sample Companies

The total information of such 23 listed companies comes from Bloomberg terminal. The samples are collected from the Ecommerce industry, each of them being active during 2017 to 2019. The posted data of profit margin, quick ratio, debt to equity ratio, and stock returns of these companies should be complete. The data of explanatory variables could be traced back to 2 to 9 quarters before during 2017 to 2019, but the data of stock returns are collected in last 1 to 8 quarters during 2017 to 2019. Since the market should leave time for investors to react after

companies disclose their financial reports, the data of stock return we used is one quarter after that of financial ratios. Thus, the results would be more reliable and could accurately reflect the relationships between these factors and stock returns.

Model Specification

The panel data methodology was applied in this paper to figure out the effects of profit margin, quick ratio, and debt to equity ratio on stock returns. This methodology is applicable to examine the cross-sectional and time series data in the testing. The detailed model used in the present paper is listed in the follow way:

$$SR = \beta 0 + \beta 1(PM) + \beta 2(QR) + \beta 3(DER) + ei1 + ei2 + ei3$$

Where SR refers to stock returns, and $\beta 0$ is coefficient of intercept which is a constant, and $\beta 1$ is coefficient of profit margin in 8 quarters during 2017-2019, and $\beta 2$ is coefficient of quick ratio in 8 quarters during 2017-2019, and $\beta 3$ is coefficient of debt to equity ratio in 8 quarters during 2017-2019, and ei is an error term of each factor.

In current papers, the dependent variable, stock returns, is calculated as (Price2–Price1+other distribution)/ Price1. The independent variables contains profit margin, quick ratio, and debt to equity ratio. The profit margin which is used to show the profitability of these companies is calculated as net income divided by net sales; quick ratio which stands for the liquidity is calculated as (current asset - inventories)/ current liabilities; debt to equity ratio which represents the financial leverage of these ecommerce companies is calculated as total debt divided by total equity. In addition, the descriptive analysis should process the fundamental data, such as mean, median, maximum, minimum, and standard deviation. Finally the regression analysis was used to testify the relationships between three financial ratios and stock returns.

Data

Descriptive analysis

The total variables are showing in the following table. The statistics contain a dependent variable, total stock returns, and three independent variables, which are profit margin, quick ratio, and debt to equity ratio.

The mean of stock returns in total 23 Ecommerce companies over the period 2017 to 2019 is 14%, with the highest return reaching 100%, but the standard deviation is as low as 0.26, indicating that the stock returns are not too volatile. As for profit margin, the average is around o.o4, with the standard deviation is about 0.12, which shows that the variation among such 23 Ecommerce companies is not so large. The average quick ratio is 1.10, and the highest reaches to 3.08. As for debt to equity ratio, the average amount is 0.64, and the variability is about 0.12, which is relative low. The skewness in the matric represent the distribution of the data. QR and DE are all right skewed, while PM is strongly left skewed. However, the distribution of stock returns is closest to normal distribution.

	QR	DE	PM	Stock return
Mean	1.10	0.64	0.04	0.14
Median	1.00	0.35	0.03	0.12
Min	0.17	0.00	-0.96	-0.61
Max	3.08	6.93	0.32	1.00
St.	0.59	0.80	0.12	0.26
Skewness	0.76	3.57	-3.16	0.23
Observation	184	184	184	184

Table 2 Descriptive Data

Correlation analysis

The table 2 shows the correlation coefficient among dependent variable and three independent variables.

	QR	DE	PM	Stock return
QR	1			
DE	-0.24780885	1		
PM	0.253595258	-0.074612736	1	
Stock return	0.202377176	0.161977307	0.200960439	1

Table 3 Correlation Data

There is negative relationship between debt to equity ratio and quick ratio, which means that the increases in debt to equity ratios will lead quick ratio decrease. Although there is a negative relationship between debt to equity ratio and profit margin, the data shows that all of these three factors have positive relationships with stock returns. In the following steps, we still need to use regression to test the real relationships among them.

Multiple linear regression

Multiple linear regression is conducted to test the relationships between explanatory variables and dependent variable. In this paper, it is used to measure whether quick ratio, debt to equity ratio, and profit margin have positive or negative relationship with stock returns.

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.02446931	0.045777385	-0.53452844	0.5936356
X Variable 1	0.096692621	0.033181486	2.914053345	0.004020439
X Variable 2	0.074900188	0.023790744	3.148291119	0.001922792
X Variable 3	0.361640776	0.161164472	2.243923679	0.026055821
Multiple R	0.337182365		**F**	7.6965529
R Square	0.113691947		**Significance F**	7.23444E-05
Adjusted R Square	0.098920146			
Standard Error	0.250321663			
Observations	184			

Table 4 – multiple linear regression results

Based on the data posted above, the equation shows as following:

$$SR = -0.024 + 0.097X1(PM) + 0.075X2(QR) + 0.36X3(DER) + 0.03 + 0.024 + 0.16$$

The constant is -0.024, which means when the independent variables maintain at zero, the stock return will be -0.024.

The sign mark of coefficient shows that quick ratio has positive relationship with stock return. The correlation coefficient for variable 1 (QR) is 0.09669, which means that if the quick ratio changes 1 point, the stock return will change 0.09669 points with the same direction. In addition, the error term of variable 1 is around 0.033, which means that even though the quick ratio is at zero, the stock return will get 0.033 addition.

The correlation coefficient for variable 2 (DER) is 0.0749. The positive number indicates that debt to equity ratio has positive relationship with stock returns. In addition, if debt to equity ratio increases 1 point, stock returns will increase 0.0749 points. Also, the error term of variable 2 is around 0.023, which means that when the debt to equity ratio is at zero, the stock return will still get 0.03 addition.

Variable 3 (PM) has relative larger correlation coefficient, which is 0.36164. The positive sign shows profit margin has positive relationship with stock returns, which means if the profit margin increases 1 point, stock returns will increase 0.36164 points. Furthermore, the error term of variable 3 is around 0.161, which means that when profit margin is at zero, the stock return will be added by 0.016.

T-test

T-test is conducted to test the significance between explanatory variables and dependent variable.

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.02446931	0.045777385	-0.53452844	0.5936356
X Variable 1	0.096692621	0.033181486	2.914053345	0.004020439
X Variable 2	0.074900188	0.023790744	3.148291119	0.001922792
X Variable 3	0.361640776	0.161164472	2.243923679	0.026055821

Table 5 – t-test results

The analysis for variable 1 – quick ratio

According to the table 4 above, variable 1 (QR) has calculation t value at 2.914, which is larger than t table value 1.66. Since t calculation value is larger than t table value, the H_0 is rejected. Thus, quick ratio has significant relationship with stock returns.

The analysis for variable 2 – debt to equity ratio

According to the table 4 above, it can be observed that variable 2 (DER) has calculation t value at 3.14829, which is larger than t table value 1.66. Since t calculation value is larger than t table value, the H_0 is rejected. Thus, debt to equity ratio has significant relationship with stock returns.

The analysis for variable 3 – profit margin

According to the table 4 above, it can be seen that variable 3 (QPM) has calculation t value at 2.24392, which is larger than t table value 1.66. Since t calculation value is larger than t table value, the H_0 is rejected. Thus, profit margin has significant relationship with stock returns.

Results analysis

	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.02446931	0.045777385	-0.53452844	0.5936356
X Variable 1	0.096692621	0.033181486	2.914053345	0.004020439
X Variable 2	0.074900188	0.023790744	3.148291119	0.001922792
X Variable 3	0.361640776	0.161164472	2.243923679	0.026055821
Multiple R	0.337182365		**F**	7.6965529
R Square	0.113691947		**Significance F**	7.23444E-05
Adjusted R Square	0.098920146			
Standard Error	0.250321663			
Observations	184			

Table 6 – results

Since significance F is lower than 0.05, the author had 95% confidence to reject H_0. The R square number is 0.114, which represents that quick ratio, debt to equity ratio, and profit margin only contribute 11% to the change of stock returns among total factors of stock returns. Thus, these factors cannot significantly affect stock return, but they still have some influence on stock returns.

Relationship between quick ratio and stock returns

Also, the quick ratio has significant positive relationship with stock returns, which is deviate from Anwar's conclusion that there is no significant relationship between stock returns and quick ratio.

The reason why the quick ratio has positive relationship with stock returns is that if the quick ratio remains at high level, the investors will become confident to believe companies have abilities to repay their debts and avoid bankruptcy. The conclusion about quick ratio and stock returns is not coincident with the conclusions in the paper conducted from Widya's group, who hold that quick ratio has significant negative relationship with stock returns. However, high quick ratio gives investor confidence that the companies have health financial situation and high liquidity. Thus, investors may keep positive expectations on the stock prices in the secondary market, resulting in increase of stock returns.

Relationship between debt to equity ratio and stock returns

The debt to equity ratio has significant positive relationship with stock returns. This result is coincident with Amalia's conclusion. This result could account for the tax shield. Since the interest rate the companies paid is deducted before the tax paid, the increase in debt to equity will maintain more tax shield from the high level debt, and then the companies could pay more for their shareholders. In addition, if companies devote debts they borrowed to increase research and development to increase sales and revenue, such companies are likely to generate high stock return, so it is rational for investors to invest money in such companies.

Relationship between profit margin and stock returns

The profit margin has significant and positive relationship with stock return. In other words, with increase in profit margin, the stock returns of such company will increase. This result will be coincident with Öztürk's and Amalia's conclusion in the previous papers.

The reason for it is that if the company can generate more profit, the company will increase its return on asset so that the stock return will increase. Therefore, it is more likely that the investors will hold positive expectations of such companies, resulting in higher stock returns.

As a result, the profit margin, quick ratio and debt to equity ratio have significant positive relationships with stock returns. So, all of these three factors could be reliable indicators for investors before investing into the stock market, and also for managers to legally manipulate financial ratios during operational management or before disclosing financial statements.

Conclusion and recommendation

Conclusion

This paper was conducted to test the relationships between financial ratios and stock returns in Ecommerce companies. The author processed data of 23 Ecommerce companies in 9 periods from 2017-2019 by using panel data analysis. In the processing, the data of stock returns was selected 1 period before those financial ratios, since the author believed that after companies disclose their financial reports, investors needed time to make reactions on stock market and then reflected on stock return. Therefore, the market behaviors due to these financial ratios would be relative accurately matched, and results were relatively reliable. The results show that quick ratio, debt to equity ratio, and profit margin all have significant relationship with stick returns, and each of them has significant positive relationship with stock returns. The quick ratio stands for the liquidity of a company, so high quick ratio means that the company can easily cover its debt, indicating the healthy financial situation of such company. Hence, the investors might hold more confidence to believe that those companies are stable and purchase their stocks. Also, high debt to equity ratio represents that the company have higher proportion of debt, which means the company will gain much tax shield from its debts, so the shareholders believe that the more retained earning left, the more they gain. In addition, high profit margin shows the ability to generate profit in the company. Generally, it is wildly believed that companies with ability to generate much profit, and it is likely for such companies to increase shareholders wealth. Hence, the higher the profit margin is, the higher the expectations of stock prices are from investors, resulting high stock returns.

Recommendations

For the future studies, researchers could collect data from larger sample size with smaller time interval, since the reaction of stock returns because of financial ratios will be reflected in few days or weeks. Thus, the shorter time interval, the more accurate relationships are. Meanwhile, researchers could find return on equity in the first step to testify weather it has

significant relationship with stock returns, and then find other contributive factors. In addition, if researchers collect data from larger sample size, they will get easier to figure out the pattern of the stock returns and more reliable results. The most important is that in the future studies, researchers are highly recommended to figure out some factors which can contribute more on change of stock returns than these three financial ratios do.

Limitations and/or contributions

Limitations

Although this paper focuses on finding the relationship only between stock returns and three internal factors, the author does not hold other factors stable, such as interest rate, exchange rate, and other marketable factors. Also, the results do not represent large proportion of Ecommerce companies, probably since the sample size is relative small. Also, time interval used to test in this paper is around 30 days, but if future researchers could find data in smaller interval, the relationship would be more accurate. Therefore, as for future investigators, larger sample size, smaller time interval data, and longer time series are important to generate more reliable and representative conclusions.

Contributions

This paper found out reliable indicators affecting the stock returns in ecommerce companies among these three kinds of financial ratios, which include profit margin, quick ratio, and debt to equity ratio. The results showed that each of these financial ratios has significant relationship with stock returns. Thus, these financial ratios would give public reliable indicators for Ecommerce companies.

First, as for investors, the conclusions will help investors to make more considerate decisions before investing. Since, the financial statement will be post by companies regularly, after checking the financial ratios of the target companies, the investors will obtain enough information to decide whether the companies are likely to generate higher stock returns or not. Since the profit margin is the significant indicator which helps investors to evaluate the profitability of such companies and predict the returns on the stock prices. Also, quick ratio is determined by current assets, inventories, and current liabilities. Therefore, it is essential for investors to assess the financial liquidities, so that they can judge both risks and liquidity of such companies and determine whether they invest money into the company or not. Debt to equity ratios is a significant indicators for investors to see the financial leverage of companies and to compare the risks with other companies, and also it is relevant to dividend paid and the money reinvest into the company's operation, which in turn affect the stock returns in the stock market.

Also, for company managers, the conclusions in this paper will provide reliable information to let them know the factors which are sensitive to stock returns, so that company managers could set up their goals to increase or decrease the specific ratio on purpose to increase their stock returns in the stock market. Thus, the conclusions in this paper have importance for company managers to increase their shareholders value and attract more investors by managing the internal financial ratios.

Finally, as for the market, the results of this paper would enhance market efficiency to some degree. To be more specific, the disclosed financial ratios are available to the public, so the whole public have means to gain the information and make their decision with such reliable indicators. With more investor believe and regard these financial ratios as indications to make decision, the market will become more efficient and predictable.