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THE EFFECT OF LEVERAGE IN ASSET PRICING, AN EMPIRICAL STUDY OF INDONESIAN MARKET

Sinta Aryani [a,b,] Sudarso Kaderi Wiryono [a,] Deddy P. Koesrindartoto[a]
[a]School of Business and Management, Institut Teknologi Bandung Jl. Ganesha No. 10 Bandung, 40132 Indonesia

Abstract

Background – The based model of asset pricing, CAPM, only considers the surrounding factors of the asset. It omits the internal factors of the asset itself. Some scholars only consider the one factor which contributes to the asset pricing; it could be the Size or Earning Price Ratio or Leverage or other financial factors. Empirically, the asset pricing model combines the financial factors into the asset pricing and it has not considered the leverage as one of the financial factors all together.

Purpose – The study adds the leverage into empirical model of asset pricing together with other financial factors i.e. Size, Book to Market, Operating Profit, and Investment. The excess return is considered as a proxy of asset pricing and its value will be assessed by all the factors proxied in the model.

Design/Method/Approach – Data used in this study is monthly adjusted prices and other financial factors of all stock listed in the Indonesian Market from the period of 2006 to 2015. The examination of all financial factors proxied in this model empirically has been done by having the stationary test and statistical relationship among the excess return and the factors. It will be used the portfolio approach to examine the relationship among them since the surrounding factors are better represent the asset pricing.

Findings – The finding suggests that all the financial factors involved in the empirical asset pricing have contributed to the empirical asset pricing and all the factors of asset pricing have different characteristic in influencing the excess return of the portfolios in general and in diversified approach.

Research Limitations – The study has been done in Indonesian Market only and it used the financial report of each firms in the market as the main data resource. The study does not consider the financial institutions since they might have different composition of leverage compare to other firms, and they might bias the results of study.

Originality/Value – This empirical study has been done in Indonesia and considers the leverage as additional factors of the asset pricing factors together with other asset pricing factors of asset pricing. The leverage as the single factor has been considered as important factors for asset pricing however how far the leverage contribute to asset pricing compares to other financial factors has not examined yet.

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Keywords: asset pricing; leverage; Indonesian maket; factors, diversified portfolio.

Introduction

The improved of economic Indonesia has shown in the Indonesian Stock Exchange (IDX) Fact Book 2017. Indonesian economic shows a significant improvement, especially in the second half of 2016. The improvement includes the portfolio investment in capital market. It marks by a significant surge in shares trading in Indonesian stock market in terms of value, volume, and frequency of transactions. In 2016, the average daily market value of shares has surged from IDR 5,76 trillion in 2015 to IDR 7.50 trillion. The average daily trading volume, in term of number of shares, has surged from 5,928 million to 7,827 million. While, the average daily trading frequency has increased from 222,000 to 264,000 times during the same period of the year. In the same time, those three main capital indicators have extended to a record level in the history of Indonesian stock exchange. On November 11th, the operating volume has reached IDR 189 trillion and trading frequency of 433,674 times with a total trading volume of 36.05. billions of shares on October 27th. Market capitalization has surged as well from IDR 4,872.70 trillion in 2015 to IDR 5,753.61 trillion on December 30th, 2016 or by 18.09%. Indonesia's economic condition in first quarter of 2018 was at a robust pace according to Indonesian Economic Quarterly. It is because of big investments.

Previously, according to IDX Fact Book 2016 Indonesia stock market capitalization set the second highest in the Southeast Asia and the most profitable in the world. Further, the return of Indonesia Stock Exchange was the highest in the world. The growth was more than 360%.

Among other countries in emerging markets, Indonesia is the one that has performed a significant progress. There is also a positive IDX trend with respect to previous years (see Figure 1). This is the main reason why security prices play a very important role in the investment strategy of Indonesian stock market players. Most asset pricing models offer higher returns, less, or equal to systematic risk.

The term "asset pricing" that is defined as the expected return can be modeled as a linear function of several fundamental factors or values, where sensitivity to changes in each factor is represented by a particular beta factor. A researcher previously presented a series of asset pricing models, e.g. Sharpe's early model (1964) to calculate capital prices (CAPM), introduction of Ross (1976) regarding Arbitrage Pricing Theory, the French- Fama model (1993, 1995, 1996, 2015, 2018) and a four-factor model of Carhart (1994).

Among others, Capital Asset Pricing Model (CAPM) is the most shared and beneficial of asset pricing model. Under Efficient Market Hypothesis (EMH), CAPM has some assumptions e.g. investors are rational, market is efficient, and there is unlimited arbitrage. Rational investors considered as the investors who would make judgment that generate the most optimal level, efficient market deliberated as the reflection of the share prices in term of information, and unlimited arbitrage pondered as a condition that investors could take profit from temporary

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difference in share prices. These assumptions direct the condition in which the only way investors could possibly obtain higher return is by purchasing riskier assets.

The CAPM reflects only the risk around the asset i.e. risk-free rate, volatility or systematic risk of shares or portfolios, and market risk premium which calculates from the difference of expected market return and risk-free rate. The fundamental and technical aspects which are reflected in the price of the asset are omitted. However, some researchers has found that pricing the asset relates to other factors involved in the asset rather than just risks e.g. Banz (1981), Basu (1983), Bhandari (1988), Fama and French (1992), and Fama and French (2015a).

This paper invesigates the recent development of factors model in asset pricing with empirical approach of Indonesian stock market. Even though there are some studies regarding this subject e.g. Zarina (2011) and Bergbrant & Kelly (2016) and for Indonesian case i.e. Sutrisno & Ekaputra (2016), this study expand the possibility of adding a new factor in the asset pricing. The leverage which investigated previously by Bhandari (1988) as a fundamental factor contributes to the expected return of the stock has never been reinvestigated simultaneously with other fundamental factors in a model of asset pricing. Thus, this paper studies the collaboration of other fundamental factors and leverage to test the anomaly return. The leverage factor is proxied in debt equity ratio. It is combined to equip other fundamental factors i.e. size, B/M, profitability, and investment in addition to the surrounding factor of beta. These factors are used to investigate the performance of Indonesian stock market and how asset pricing empirically represented by these factors.

Concurrently, the asset pricing factor model of Zarina (2011) and Bergbrant & Kelly (2016) are considered incomplete due to limited asset pricing factors involved in their model. However, the model of Fama & French (2015) has not reflected the asset pricing in the emerging market. Sutrisno & Ekaputra (2016) resolved that Fama-French model was not well-suited in Indonesian stock market due to the occurrence of thin trading even though Indonesia's trading infrastructure is one of the best in the world. This study attempts to fill the gap of the situation about the asset pricing model in emerging market, especially in Indonesia by overlooking inactive stocks that cause thin trading in Indonesian stock market. Besides, the additional of leverage factor to the model of asset pricing.

Literature Review

The classic asset pricing model is based on the Efficient Market Hypothesis (EMH) and the one that most used is Capital Asset Pricing Model (CAPM) by Sharpe (1964). In this model, the expected return of the asset solely determined by the risks of the asset itself. Investors are assumed to be rational, the price of the asset is reflected by the information available, and there is unlimited arbitrage. If there is a deviation between the price of asset and the information available, the arbitrager would limit the deviation to disappear. By having these assumptions, the only way for the investors to gain wealth is by buying higher risk assets to generate higher return for their portfolios. Within this model, the only factor contributes to asset pricing is the risks associate to the share itself. The shares price is determined by risk free rate, risk premium, and

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beta. Risk premium is measured by the excess return of the asset and beta is volatility of the asset compare to the market.

Since CAPM does not consider fundamental factors in predicting the asset pricing, many researchers investigate that there are some anomalies which cannot be explained by CAPM. The size of shares has found to be linked to the asset pricing negatively, according to Banz (1981). The higher capitalizations, the lower the returns of shares. In addition to beta factor, Lakonishok and Shapiro (1986) thought that risk of the firm had no links at all to asset return, only size affected. The significant link of earning price ratio (E/P) of any size of firms to the asset return has been found by Basu (1983). In his finding, E/P has more significant affect than size to asset return. The higher the E/P the higher return of the asset. The leverage, which measured by debt to equity ratio, links positively to asset return according to Bhandari (1988).

Rosenberg, Reid, and Lanstein (1985) have found that book to market ratio (B/M) links positively to the asset return. In addition, they have investigated that besides B/M, there are other factors contribute to the asset pricing. The factors are in the forms of ratios which measure the yield of the asset e.g. E/P and dividend price ratio. The significant of B/M in determining the asset return was approved by Chan, Hamao, and Lakonishok (1991). In their model, di addition of B/M, they include size, earning yield, and cash flows as well. Thus, they found that among these factors B/M appeared to have the most significant impact in asset return.

However, all the factors mentioned before i.e. size, earning/price, book/price, and leverage appeared to be redundant in explaining the expected returns according to Fama & French (2012). They believe that those factors are the scaled version of price. Thus, they extract those variables into B/M and size only which to be more represent in valuing asset return. The explanation confirms the three factor model of Fama and French (1992) which consists risk or beta, B/M, and size factors.

Another approach of valuing asset return is introduced by Jegadeesh and Titman (1993) who find that purchase past winners and sell past losers, called momentum. The momentum is used by many researchers as a complimentary tool (Chan, Jegadeesh, and Lakonishok, 1996). Another tool used by Bicer (2006) combines the approach of technical and fundamental, while momentum considered as the technical approach. Islamic shares investigated by Narayan and Phan (2016) uses momentum strategy to calculate the shares return. In Korea, Pyo & Shin (2013) use momentum to explain idiosyncratic risk. A technical approach of momentum explored by Bornholt & Malin (2014) shows that early- stage momentum strategy persistently produces larger profits, while late-stage and pure momentum strategies are less effective. The momentum strategy is used by Frazzini & Pedersen (2014) in combination with Fama-French three-factor and liquidity as another modification of asset pricing.

Kaplan and Ruback (1995) observe that transaction values and forecast cash flow link to the shares return and the discount rate outperforms size and B/M. Carhart (1997) adds momentum in their model as the completion of Fama-French three-factor model. He finds that last year's stocks with higher return have higher average expected return next year, but not in years thereafter.

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Fama-French three-factor transforms itself as open to be modified to best fit the condition of the research. In the developed countries, those studies above prove significant factor relation to shares expected return. However, in the other side of the world, not all those factors are contributed significantly. In developing countries especially in Eastern European countries, the study of Foye et al. (2013) show that proxy of earning is best explained by net income over cash flow from the operating activities (NI/CFO) rather than book to market. They propose the use of NI/CFO instead of book to market for the alternative of doing the shares expected return using the model of Fama- French three-factor.

Fama and French add momentum to their three-factor model to investigate international asset pricing model in 2012. In advanced countries, Japan does not appear to be well-suited to the momentum. The perspective of momentum is different globally, regionally or locally. However, this scope is beyond this study that focus only locally. The works of Fama- French four-factor, which add momentum in to Fama-French three-factor, performs well in some countries, i.e. Central Eastern Europe (Zaremba & Konieczka, 2015) and India (Balakrishnan, 2016).

The extension of Fama-French three-factor continues to be found. Further, they complete their model by adding two more fundamental factors i.e. profitability and investment, both are proxied by the operating profitability and change of asset, respectively. Operating profitability is calculated by revenues minus cost of goods sold, minus selling, general, and administrative expenses, and minus interest expenses all divided by book equity. Change of asset is the difference of total asset in year t-2 and t-1and then divided by total asset at t-1. However, the factors of profitability and investment have been done separately before Fama and French come out with their five-factor. The contribution of Novy-Marx (2013) and Aharoni, Grundy, and Zeng (2013) respectively believes that profitability and investment support the prediction of shares average expected returns. After accommodating those new factors in their model, however, empirical model of Fama and French (2015) is still incomplete. The failure is to capture the low average returns on small stocks (with high investment and low profitability).

Data

This study is based on data of the firms listed in Indonesian Exchange Market (IDX) from the period of 2005 to 2016. The firms listed in Indonesian Exchange Market are always more from one period to another. There were 347 firms listed in 2005 but then the numbers were soaring to 558 firms in 2016.

The data of the firms consist of adjusted closed monthly prices, the numbers of stocks outstanding, stocks price index, book value, operating income, interest rates, total assets, liabilities, and equities. The period of observation is from July 2005 to June 2015 which is 109 months. The risk-free rate is the Bank Indonesia Rate.

Size is the ratio of market capitalization of a firm to market capitalization of IDX. While market capitalization of a firm at year t is taken from number share of outstanding on December of year t-1 and market equity of a firm for June year t.

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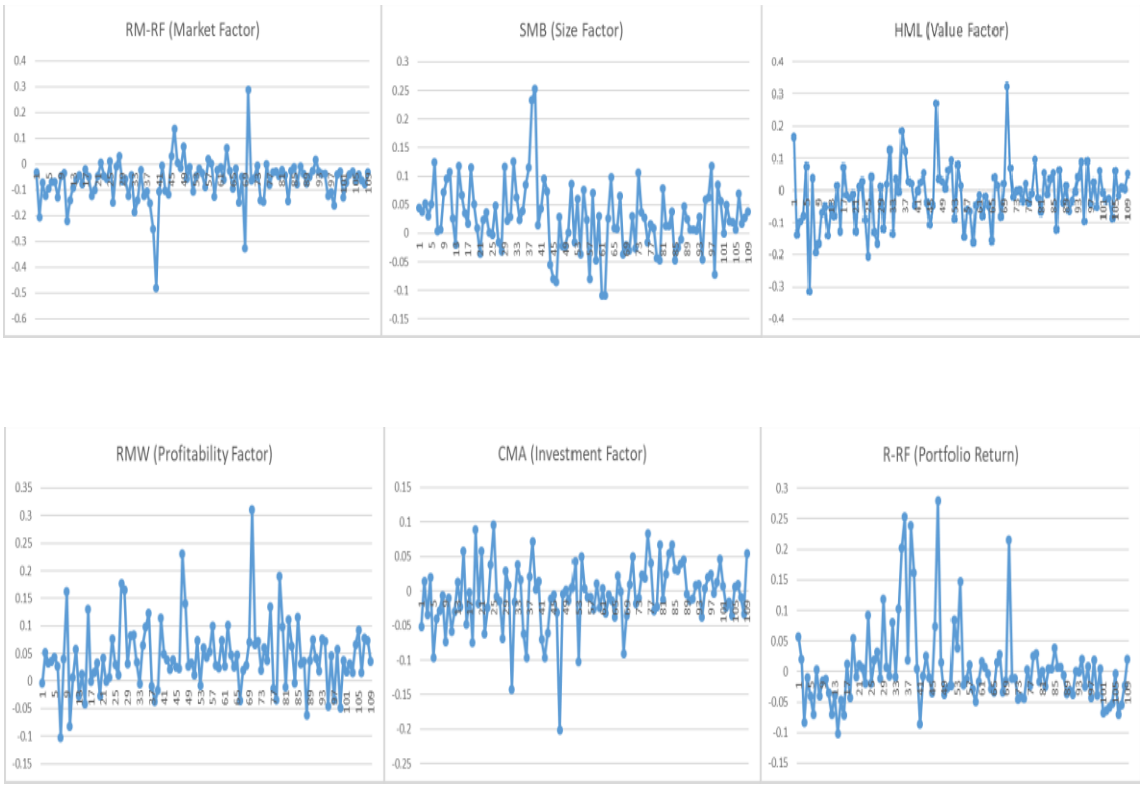
Book equity for June of year t is the book equity at the end of fiscal year ending in year t- 1 and market cap is at the end of December of year t-1. Operating income data of June year t is taken from end of year revenue of year t-1 which consists of revenues minus cost of goods sold, minus selling, general, and administrative expenses, minus interest expense. Thus, this number is divided by book to equity. Operating income data of each firm is taken from the IDX Annual Report. Data of investment of June year t is taken from the change in total asset of year t-2 and t-1 divided by total asset of year t-1. Data of leverage is taken from the IDX Annual Report by extracting the liabilities and equity data of each firm listed in the market. The leverage of June year t is taken from liabilities and equity of firm for end of fiscal year of t-1. The returns are taken from July of year t to June of t+1.

The sample taken for this study is based on Fama French (1992, 1993, 2015a) which is not included the financial sector firms. The financial firms tend to have higher leverage than non-financial firms and it have different meaning. The higher leverage in non-financial firms indicates a distress. The firms with negative equity are excluding from study. The firms involve in study should have total asset for year t-2 and t-1 to be considered in the study. The last requirement of the firms to be included in the study is the firms must have operating profit and book value of year t-1.

Figure 1. Average Monthly Return of Factors Portfolios



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Research Methodology

The model of Fama-French (Fama and French, 2015) will be the base for this study. The five factors include the Market Beta, Size of stocks or market capitalization of stocks, B/M ratio, Operating Profitability, and Investment. This study adds Leverage as further factor for the model. The Market Beta is taken from the historical data, the Size of stocks or market capitalization of stocks, B/M ratio, Operating Profitability, Investment, and Leverage data are taken from the fundamental data of the firms. The construction of the factors is as follow.

The Market Beta is constructed as RM – RF (market factor) and is calculated based on the difference of market return and risk-free rate. The factor of Size is represented by market capitalization of IDX. Market capitalization of each stock is calculated by number of shares outstanding multiplied by end of year market price. The number shares outstanding are stated in the firm annual report or otherwise is calculated from the information of Earning Per Share (EPS) and the Net Income (NI) of each firm. The numbers share of outstanding are found by calculating the EPS divided by NI. The market capitalization is divided by 5 groups, from small to big. Each year, the firms in the market are allocated in those groups. Thus, the Size is constructed by SMB or Small Minus Big which is estimated by the excess return difference of small size portfolio of stocks i.e. 20th percentile and big size portfolio of stocks i.e. 80th percentile.

Chan et al. (1991) and Rosenberg, Kenneth Reid, and Lanstein (1985) show that B/M has a link to excess return of the stocks. The factor of B/M is represented by book value and market value of each firms in the market. Each year, the firms in the market are allocated into five groups of high book to market ratio to low book to market ratio. Book value is taken from the equity reported in the annual report of each firm listed in the IDX. Market value is represented by the market capitalization of each firm. Therefore, the B/M is constructed by HML or High Minus Low which is estimated by the excess return difference of high B/M portfolio of stocks i.e. 80th percentile excess return and low B/M portfolio of stocks i.e. 20th percentile excess return.

The factor of Operating Profitability is represented by revenue minus cost of goods sold, minus selling, general and administrative expenses, minus interest expenses and all divided by book equity of each firm in the market. Profitability is a good predictor of asset excess return (Novy-Marx, 2013). Each year, the Operating Profitability of the firms in the market are allocated into five different groups of robust operating profitability to weak operating profitability. Thus, the factor of Operating Profitability is constructed by RMW or Robust Minus Weak and estimated by the excess return difference of robust Operating Profitability portfolio of stocks i.e. the 80th percentile excess return and weak Operating Profitability portfolio of stocks i.e. the 20th percentile excess return.

The factor of Investment is represented by the difference of total asset of the firms two years ago to the total asset of a year ago divided by total asset of a year ago. According to Novy-Marx, (2013) the investment is contributed to the excess return of asset. Each year, the Investment of the firms are allocated into five different groups which represent firms with conservative

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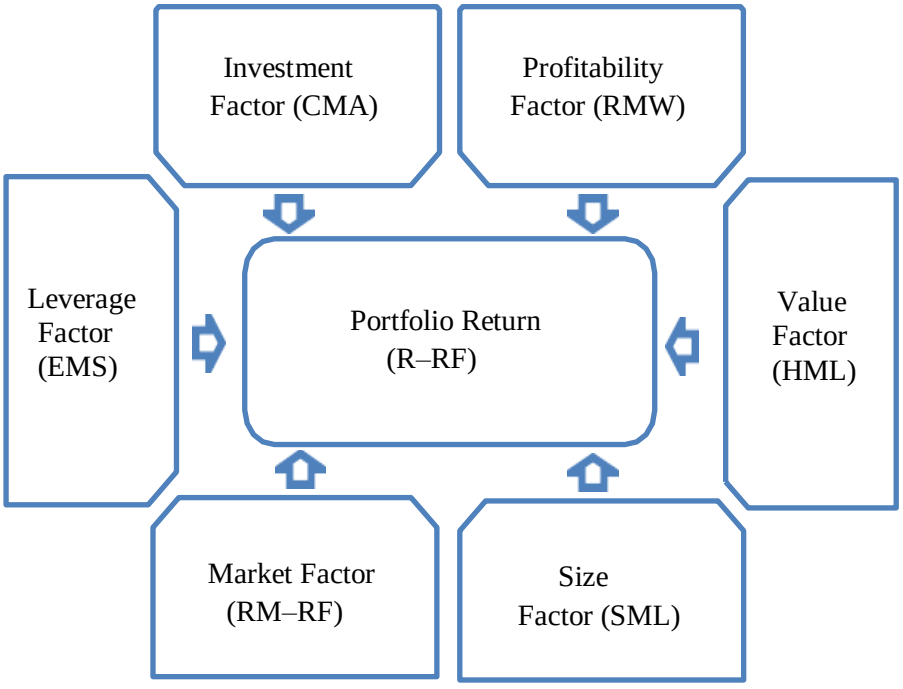
investment to firms with aggressive investment. Thus, the factor of investment is constructed by CMA or Conservative Minus Aggressive and estimated by excess returns difference of conservative Investment portfolio of stocks i.e. the 20th percentile excess return and aggressive Investment portfolio of stocks i.e. the 80th percentile excess return.

The factor of Leverage is represented by debt equity ratio. The higher the debt equity ratio, the higher the expected returns of the common stocks (Bhandari, 1988). The Leverage of the firms are allocated into five different groups which are from the portfolio of excessive leverage to portfolio of subtle leverage. So, the factor of Leverage is represented by EMS or Excessive Minus Subtle and estimated by the difference of 80th percentile or excessive Leverage portfolio of stocks and 20th percentile or subtle Leverage portfolio of stocks.

Figure 2. Diagram of Factors to Portfolio Return



The regression model is as follow:

$$Rit - RFt = ai + bi(RMt - RFt) + siSMBt + hiHMLt + riRMWt + ciCMAt + eiEMSt + rit \quad (1)$$

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Table 1. Description of Variables in the Regression Model

Variables	Description of Variables
R_{it}	a return on stock i for period t
RF_t	a risk-free rate
RM_t	a return on the value-weight (VW) market portfolio
SMB_t	a return on a diversified portfolio of small stocks minus the return on a diversified portfolio of big stocks in term of capitalization
HML_t	the difference between the returns on diversified portfolios of high and low B/M stocks
RMW_t	the difference between the returns on diversified portfolios of stocks with robust and weak profitability
CMA_t	the difference between the returns on diversified stocks portfolios of conservative and aggressive investment stocks
EMS_t	the difference between the returns on diversified portfolios of stock with excessive and subtle leverage,
e_{it}	a zero-mean residual
b_i, s_i, h_i, r_i, c_i, and e_i	coefficients of each factors, respectively

If the sensitivities to the six factors bi, si, hi, ri, ci, and ei capture all variation in expected returns, the intercept ai is zero for all securities and portfolios i. The excess return is calculated by the difference of the monthly return of each stock and the risk-free rate. The risk-free rate is taken from the BI rate for the period of observation up to July 2016. Afterward the BI 7-Day (Reverse) Repo rate or BI repo rate is used. For this study, the adjustment of BI repo rate has been done by taking the last BI repo rate of the month.

The regression follows the classical assumption tests e.g. multicollinearity and heteroscedasticity. The multicollinearity is the test to determine the correlation among the independent variables. High collinearity between independent variables will disturb the relationship of the independent variables and dependent variable. The remedial multicollinearity is done by transforming the variables into log natural. The heteroscedasticity is the test to absent of homoscedasticity which describes the case where the variance of errors is not the same for all observations. The remedial of the heteroscedasticity is by transforming the variables into log natural.

The study evaluates the adjusted R2 of the portfolios built to test which portfolios with higher excess return and better suitable in Indonesia market. The higher the adjusted R2 shows the better portfolio stock investment in Indonesia market.

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Empirical Evidence

The statistical summary of the asset pricing factor is shown in Table 1 below. The mean of monthly market factor is -6.4%, while the mean of monthly excess return for factor of size (SMB), book to market (HML), operating profitability (RMW), investment (CMA), and leverage (EMS) are 2.8%, -1.5%, 4.4%, -0.7%, and -0.5% respectively. The highest standard deviation is for book to market factor which is 9.2% and the lowest is for investment factor which is 4.7%.

Table 2. Statistical Summary of Asset Pricing Factor

	RM-RF	*SMB*	*HML*	*RMW*	*CMA*	*EMS*
Mean	-0.064	0.028	-0.015	0.044	-0.007	-0.005
Median	-0.048	0.026	-0.011	0.036	-0.006	-0.001
Maximum	0.287	0.253	0.323	0.310	0.095	0.146
Minimum	-0.480	-0.109	-0.313	-0.102	-0.201	-0.203
Std. Deviation	0.084	0.059	0.092	0.061	0.047	0.051

The correlation between factors is shown in Table 2. Size, investment, and leverage factor have negative correlation to the market factor, while book to market and operating profitability have positive correlation to the market factor. Book to market and leverage factors have positive correlation to size factor and operating profitability and investment factors have negative correlation to size factor. Investment and leverage factors have negative correlation to book to market factor, and operating profitability factor has a positive correlation to book to market factor. Investment and leverage factors have negative correlation to operating profitability factor. The investment factor has a negative correlation to leverage factor.

Table 3. Correlation of Asset Pricing Factor

	RM-RF	*SMB*	*HML*	*RMW*	*CMA*	*EMS*
RM-RF	1	-0.256	0.188	0.200	-0.039	-0.158
SMB	-0.256	1	0.051	-0.364	-0.056	0.024
HML	0.188	0.051	1	0.221	-0.081	-0.284
RMW	0.200	-0.364	0.221	1	-0.215	-0.065
CMA	-0.039	-0.056	-0.081	-0.215	1	-0.173
EMS	-0.158	0.024	-0.284	-0.065	-0.173	1

The stationary test using Kwiatkowski, Philips, Schmidt, and Shin (KPSS) test shows that time series of the factors are stationary around their mean or they are non-stationary due to unit roots. All the independents variables have P-Value less than 10%. It is shown in Table 3.

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Table 4. Kwiatkowski, Philips, Schmidt, and Shin (KPSS) Stationary Test

Lags	P-Value	t-stat	Lags	P-Value	t-stat	Lags	P-Value	t-stat
RM-RF			SML			HML		
0	0.1000	0.0800	0	0.0353	0.1636	0	0.1000	0.1171
1	0.1000	0.0750	1	0.0710	0.1347	1	0.0930	0.1228
2	0.1000	0.0700	2	0.0924	0.1231	2	0.0989	0.1196
3	0.1000	0.0646	3	0.1000	0.1138	3	0.1000	0.1099
4	0.1000	0.0611	4	0.1000	0.1042	4	0.1000	0.1006
5	0.1000	0.0601	5	0.1000	0.0985	5	0.1000	0.0958
6	0.1000	0.0600	6	0.1000	0.0959	6	0.1000	0.0910
7	0.1000	0.0594	7	0.1000	0.0946	7	0.1000	0.0893
8	0.1000	0.0592	8	0.1000	0.0940	8	0.1000	0.0898
RMW			CMA			EMS		
0	0.0724	0.1339	0	0.1000	0.0877	0	0.1000	0.0239
1	0.0759	0.1320	1	0.1000	0.0856	1	0.1000	0.0345
2	0.0554	0.1341	2	0.1000	0.0887	2	0.1000	0.0405
3	0.0551	0.1433	3	0.1000	0.0967	3	0.1000	0.0430
4	0.0545	0.1436	4	0.1000	0.0932	4	0.1000	0.0435
5	0.0512	0.1454	5	0.1000	0.0868	5	0.1000	0.0420
6	0.0496	0.1464	6	0.1000	0.0798	6	0.1000	0.0429
7	0.0551	0.1432	7	0.1000	0.0781	7	0.1000	0.0443
8	0.0591	0.1411	8	0.1000	0.0774	8	0.1000	0.0473

The regression result is in Table 4, it shows that the coefficient of intercept has negative relationship with the monthly excess returns of stocks, the value is -0.0104. The asset pricing factor of debt (EMS) is -0.0767 and has negative relationship as well to the monthly excess returns of stocks. Other asset pricing factors have positive relationships to the monthly excess return of the stocks. Their values are 0.0017, 0.2287, 0.3285, 0.3300, and 0.0543 for market factor (RM-RF), capitalization of stocks (SMB), book value (HML), net income (RMW), and total asset (CMA). This regression has R square close to 40% and adjusted R square of 32%.

Table 5. Regression Results

	Coef.	*Std. Error*	*t Stat*	*P-value*	*Lwer 95%*	*Uper 95%*	*Lwer 95.0%*	*Uper 95.0%*
Intercept	-0.0104	0.0092	-1.1229	0.2641	-0.0287	0.0079	-0.0287	0.0079
RM-RF	0.0017	0.0689	0.0248	0.9803	-0.1349	0.1383	-0.1349	0.1383
SMB	0.2287	0.1024	2.2326	0.0278	0.0255	0.4318	0.0255	0.4318
HML	0.3285	0.0642	5.1129	0.0000	0.2010	0.4559	0.2010	0.4559

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RMW	0.3300	0.1019	3.2382	0.0016	0.1278	0.5321	0.1278	0.5321
CMA	0.0543	0.1217	0.4459	0.6566	-0.1871	0.2957	-0.1871	0.2957
EMS	-0.0767	0.1146	-0.6691	0.5049	-0.3040	0.1506	-0.3040	0.1506

The summary of average monthly excess return of each portfolio is shown in Table 5. It consists of the average monthly excess return of 25 portfolios of Size and Book to Market (B/M), 25 portfolios of Size and Operating Profitability (OP), 25 portfolios of Size and Investment (INV), and 25 portfolios of Size and Leverage (LEV). Most of portfolios have positive average monthly excess returns except for portfolios of high B/M and high INV.

For 25 portfolios of Size and Book to Market (B/M), market capitalization of stocks does not have any influence on the excess return of the portfolios. The findings show no certain pattern for the portfolio's excess return. However, book value of stocks has tendency to portfolios, high book value tends to create negative excess returns for portfolios or high book value tends to have smaller excess returns compared to low book value. This pattern applies to the 25 portfolios of Size and Leverage as well. Stock of firm with high debt tends to have low excess returns and vice versa.

Other diversified portfolios i.e. 25 portfolios of Size and Investment and 25 portfolios of Size and Operating Profitability have no certain pattern in the average monthly excess returns. Thus, net income and asset of firms have no certain link to the excess return of stocks. The capitalization of stocks has no certain link to the excess return as well.

Table 6. Portfolio Average Monthly Excess Return

	Low	2	3	4	High
Panel A: Portfolio 25 SIZE/BM					
Small	0.011	0.011	0.009	0.046	-0.035
2	0.015	0.011	0.049	0.007	-0.023
3	0.011	0.016	0.010	0.011	-0.022
4	0.047	0.010	0.016	0.011	0.043
Big	0.004	0.010	0.011	0.014	-0.020
Panel A: Portfolio 25 SIZE/OP					
Small	0.073	0.074	0.101	0.043	0.064
2	0.016	0.076	0.048	0.095	0.068
3	0.075	0.016	0.073	0.072	0.069
4	0.047	0.070	0.016	0.071	0.048
Big	0.097	0.070	0.070	0.016	0.074

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Panel A: Portfolio 25 SIZE/INV						
	Small	0.025	0.023	0.026	0.047	-0.005
2		0.016	0.024	0.048	0.027	-0.006
3		0.024	0.016	0.023	0.024	-0.006
4		0.047	0.023	0.016	0.023	0.047
	Big	0.026	0.024	0.023	0.017	-0.006
Panel A: Portfolio 25 SIZE/LEV						
	Small	0.030	0.026	0.030	0.044	0.000
2		0.016	0.028	0.048	0.032	0.000
3		0.029	0.016	0.027	0.027	0.000
4		0.049	0.028	0.016	0.025	0.047
	Big	0.033	0.028	0.027	0.015	0.000

The coefficients regressions for the 25 portfolios of Leverage (EMS) and Size (SMB) are in Table 6. The statistically significant is based on P-Value less than 1%, 5%, and 10%. Table 6 shows that all the coefficients of intercepts are positive and most of them are statistically significant at 1%, however there is no certain pattern for stock capitalization of the firm in affecting the excess returns of the stocks. The coefficients of Market factors are all positives and all of them are not significant statistically. All coefficients factor of Size (SMB), Book to Market (HML), and Operating Profitability (RMW) are positives and statistically significant at 1% level. The more excessive the debts of the firms, the less coefficients of the Size (SMB), Book to Market (HML), and Operating Profitability (RMW). All coefficients factors of Investment (CMA) and Leverage (EMS) are all negatives and are not statistically significant.

Table 7 shows the coefficient of regressions for the 25 portfolios of Leverage (EMS) and Book to Market (HML). The coefficients of Intercept are all positives and significant statistically. The coefficients of market are all positives however are not statistically significant. The coefficients of Size (SMB) are all positives and statistically significant. The higher debts of the firms, the lower the coefficients of the SMB. The coefficient regression of Book to Market (HML) are all positives and statistically significant. Similar to the coefficient of SMB, the higher debts the lower coefficient of the SMB. This pattern is applied as well to the Operating Profitability (RMW) coefficients of regression. For Investment (CMA) and Leverage (EMS) all the coefficients of regression are negatives and not statistically significant.

The coefficients of regression of the 25 portfolios of Leverage (EMS) and Operating Profitability (RMW) are shown in Table 8. The coefficients of regression for Intercepts, Market (RM-RF), Size (SMB), Book to Market (HML), and Operating Profitability (RMW) are positive and statistically significant except for the factor of Market. The coefficients of intercept tend to be higher while the debts of the firms are higher. The lower the debts of the firms make the coefficients of SMB and RMW higher. The opposite pattern applies to the HML. The coefficients of regression for CMA and EMS are all negatives and not statistically significant.

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Table 9 shows the regression coefficients for the 25 portfolios of Leverage (EMS) and Investment (CMA). All the regression coefficients for the intercept, Market (RM-RF), Size (SMB), Book to Market (HML), and Operating Profitability (RMW) are positives and statistically significant, except for the Market. The intercepts show no certain pattern regarding the debts and asset of the firms. Higher assets of the firms show lower coefficients regression for SMB, HML, and RMW. Coefficients regression for CMA and EMS are all negatives and statistically insignificant.

Table 7. Regression Coefficients Matrix for EMS and SMB

EMS\SMB	Small	P-Value	2	P-Value	3	P-Value	4	P-Value	Big	P-Value
Intercept										
Subtle	0.6859	0.0400	0.7448	0.0067	0.7059	0.0245	0.7542	0.0044	0.7448	0.0067
2	0.7792	0.0011	0.7237	0.0144	0.7346	0.0099	0.7496	0.0054	0.8091	0.0001
3	0.8091	0.0001	0.7448	0.0067	0.7631	0.0029	0.7496	0.0054	0.7714	0.0018
4	0.8120	0.0001	0.7754	0.0015	0.7587	0.0036	0.8148	0.0001	0.7754	0.0015
Excessive	0.7714	0.0018	0.7792	0.0011	0.7673	0.0023	0.7830	0.0009	0.7714	0.0018
RM-RF										
Subtle	0.0770	0.9144	0.0725	0.9085	0.0756	0.9124	0.0716	0.9076	0.0725	0.9085
2	0.0689	0.9053	0.0743	0.9106	0.0734	0.9095	0.0720	0.9081	0.0650	0.9028
3	0.0650	0.9028	0.0725	0.9085	0.0707	0.9068	0.0720	0.9081	0.0698	0.9060
4	0.0646	0.9026	0.0693	0.9056	0.0711	0.9072	0.0642	0.9024	0.0693	0.9056
Excessive	0.0698	0.9060	0.0689	0.9053	0.0702	0.9064	0.0684	0.9050	0.0698	0.9060
SMB										
Subtle	3.8946	0.0009	3.4107	0.0008	3.7340	0.0008	3.3295	0.0008	3.4107	0.0008
2	3.1105	0.0009	3.5874	0.0008	3.4965	0.0008	3.3695	0.0008	2.8384	0.0009
3	2.8384	0.0009	3.4107	0.0008	3.2526	0.0009	3.3695	0.0008	3.1797	0.0009

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4	2.8116	0.0009	3.1447	0.0009	3.2905	0.0008	2.7854	0.0009	3.1447	0.0009
Excessive	3.1797	0.0009	3.1105	0.0009	3.2157	0.0009	3.0772	0.0009	3.1797	0.0009
HML										
Subtle	1.9366	0.0001	1.8144	0.0000	1.8965	0.0000	1.7936	0.0000	1.8144	0.0000
2	1.7368	0.0000	1.8595	0.0000	1.8364	0.0000	1.8039	0.0000	1.6652	0.0000
3	1.6652	0.0000	1.8144	0.0000	1.7737	0.0000	1.8039	0.0000	1.7548	0.0000
4	1.6581	0.0000	1.7457	0.0000	1.7835	0.0000	1.6511	0.0000	1.7457	0.0000
Excessive	1.7548	0.0000	1.7368	0.0000	1.7642	0.0000	1.7281	0.0000	1.7548	0.0000
RMW										
Subtle	4.8294	0.0002	4.1997	0.0002	4.6193	0.0002	4.0951	0.0002	4.1997	0.0002
2	3.8146	0.0002	4.4284	0.0002	4.3106	0.0002	4.1466	0.0002	3.4696	0.0002
3	3.4696	0.0002	4.1997	0.0002	3.9964	0.0002	4.1466	0.0002	3.9030	0.0002
4	3.4359	0.0002	3.8582	0.0002	4.0450	0.0002	3.4029	0.0002	3.8582	0.0002
Excessive	3.9030	0.0002	3.8146	0.0002	3.9490	0.0002	3.7722	0.0002	3.9030	0.0002
CMA										
Subtle	-1.7752	0.0613	-1.4953	0.0837	-1.6827	0.0677	-1.4479	0.0886	-1.4953	0.0837
2	-1.3198	0.1041	-1.5979	0.0743	-1.5452	0.0790	-1.4713	0.0862	-1.1596	0.1291
3	-1.1596	0.1291	-1.4953	0.0837	-1.4030	0.0937	-1.4713	0.0862	-1.3604	0.0988
4	-1.1437	0.1320	-1.3399	0.1014	-1.4252	0.0911	-1.1282	0.1349	-1.3399	0.1014
Excessive	-1.360	0.0988	-1.319	0.1041	-1.381	0.0962	-1.300	0.1067	-1.360	0.0988

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	4		8		4		3		4	
EMS										
Low	-1.7976	0.1139	-1.5798	0.1167	-1.7257	0.1146	-1.5429	0.1174	-1.5798	0.1167
2	-1.4430	0.1198	-1.6597	0.1154	-1.6187	0.1161	-1.5611	0.1171	-1.3176	0.1240
3	-1.3176	0.1240	-1.5798	0.1167	-1.5079	0.1182	-1.5611	0.1171	-1.4746	0.1190
4	-1.3052	0.1245	-1.4586	0.1194	-1.5252	0.1178	-1.2931	0.1250	-1.4586	0.1194
High	-1.4746	0.1190	-1.4430	0.1198	-1.4911	0.1186	-1.4277	0.1203	-1.4746	0.1190

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Table 8. Regression Coefficients Matrix for EMS and HML

EMS\HML	Low	P-Value	2	P-Value	3	P-Value	4	P-Value	High	P-Value
Intercept										
Subtle	0.8602	0.0000	0.8844	0.0000	0.8892	0.0000	0.8844	0.0000	0.8714	0.0000
2	0.8922	0.0000	0.8809	0.0000	0.8936	0.0000	0.8892	0.0000	0.8827	0.0000
3	0.8990	0.0000	0.8773	0.0000	0.8907	0.0000	0.8907	0.0000	0.9039	0.0000
4	0.8877	0.0000	0.9062	0.0000	0.8892	0.0000	0.9027	0.0000	0.8990	0.0000
Excessive	0.8936	0.0000	0.8964	0.0000	0.8964	0.0000	0.8877	0.0000	0.8936	0.0000
RM-RF										
Subtle	0.0375	0.9004	0.0339	0.9009	0.0331	0.9012	0.0339	0.9009	0.0359	0.9005
2	0.0326	0.9015	0.0344	0.9007	0.0323	0.9006	0.0331	0.9012	0.0342	0.9008
3	0.0314	0.9011	0.0350	0.9006	0.0328	0.9014	0.0328	0.9014	0.0305	0.9028
4	0.0334	0.9022	0.0300	0.9032	0.0331	0.9012	0.0307	0.9027	0.0314	0.9022
Excessive	0.0323	0.9016	0.0318	0.9019	0.0318	0.9019	0.0334	0.9011	0.0323	0.9016
SMB										
Subtle	1.6095	0.0010	1.4300	0.0012	1.3930	0.0013	1.4300	0.0012	1.5277	0.0011
2	1.3699	0.0013	1.4561	0.0012	1.4836	0.0012	1.3930	0.0013	1.4429	0.0012
3	1.4050	0.0012	1.4836	0.0012	1.3813	0.0013	1.3813	0.0013	1.2778	0.0014
4	1.3164	0.0014	1.2596	0.0015	1.3930	0.0013	1.2871	0.0014	1.3164	0.0014
Excessive	1.3587	0.0013	1.3371	0.0013	1.3371	0.0013	1.4050	0.0012	1.3587	0.0013
HML										
Subtle	0.8232	0.0000	0.8095	0.0000	0.8065	0.0000	0.8095	0.0000	0.8171	0.0000
2	0.8046	0.0000	0.8116	0.0000	0.8137	0.0000	0.8065	0.0000	0.8105	0.0000
3	0.8075	0.0000	0.8137	0.0000	0.8056	0.0000	0.8056	0.0000	0.7970	0.0000
4	0.8002	0.0000	0.7955	0.0000	0.8065	0.0000	0.7978	0.0000	0.8002	0.0000
Excessive	0.8037	0.0000	0.8019	0.0000	0.8019	0.0000	0.8075	0.0000	0.8037	0.0000
RMW										
Subtle	2.0452	0.0002	1.8111	0.0002	1.7634	0.0002	1.8111	0.0002	1.9381	0.0002
2	1.7336	0.0002	1.8450	0.0002	1.8807	0.0002	1.7634	0.0002	1.8278	0.0002
3	1.7789	0.0002	1.8807	0.0002	1.7483	0.0002	1.7483	0.0002	1.6157	0.0002
4	1.6650	0.0002	1.5926	0.0002	1.7634	0.0002	1.6276	0.0002	1.6650	0.0002
Excessive	1.7192	0.0002	1.6915	0.0002	1.6915	0.0002	1.7789	0.0002	1.7192	0.0002
CMA										
Subtle	-0.7031	0.1370	-0.6258	0.1481	-0.6097	0.1510	-0.6258	0.1481	-0.6680	0.1416
2	-0.5995	0.1529	-0.6371	0.1462	-0.6490	0.1443	-0.6097	0.1510	-0.6314	0.1472
3	-0.6149	0.1500	-0.6490	0.1443	-0.6045	0.1519	-0.6045	0.1519	-0.5589	0.1615
4	-0.5760	0.1577	-0.5509	0.1635	-0.6097	0.1510	-0.5631	0.1606	-0.5760	0.1577
Excessive	-0.5946	0.1538	-0.5851	0.1558	-0.5851	0.1558	-0.6149	0.1500	-0.5946	0.1538
EMS										
Low	-0.4874	0.2017	-0.4092	0.2608	-0.3926	0.2757	-0.4092	0.2608	-0.4523	0.2262
2	-0.3821	0.2856	-0.4208	0.2509	-0.4330	0.2410	-0.3926	0.2757	-0.4149	0.2559
3	-0.3980	0.2708	-0.4330	0.2410	-0.3873	0.2807	-0.3873	0.2807	-0.3396	0.3297
4	-0.3576	0.3102	-0.3311	0.3393	-0.3926	0.2757	-0.3440	0.3248	-0.3576	0.3102
Excessive	-0.3770	0.2905	-0.3671	0.3004	-0.3671	0.3004	-0.3980	0.2708	-0.3770	0.2905

Table 9. Regression Coefficients Matrix for EMS and RMW

EMS\RMW	Weak	P-Value	2	P-Value	3	P-Value	4	P-Value	Robust	P-Value
Intercept										
Subtle	0.9547	0.0000	0.9557	0.0000	0.9537	0.0000	0.9610	0.0000	0.9557	0.0000
2	0.9575	0.0000	0.9547	0.0000	0.9561	0.0000	0.9599	0.0000	0.9566	0.0000
3	0.9617	0.0000	0.9587	0.0000	0.9599	0.0000	0.9591	0.0000	0.9603	0.0000
4	0.9637	0.0000	0.9614	0.0000	0.9603	0.0000	0.9614	0.0000	0.9617	0.0000
Excessive	0.9561	0.0000	0.9617	0.0000	0.9621	0.0000	0.9637	0.0000	0.9566	0.0000
RM-RF										
Subtle	0.0092	0.9219	0.0091	0.9226	0.0094	0.9211	0.0083	0.9268	0.0091	0.9226
2	0.0088	0.9239	0.0092	0.9219	0.0090	0.9229	0.0084	0.9259	0.0089	0.9233
3	0.0082	0.9275	0.0086	0.9249	0.0084	0.9259	0.0086	0.9253	0.0084	0.9262
4	0.0079	0.9292	0.0082	0.9272	0.0084	0.9262	0.0082	0.9272	0.0082	0.9275
Excessive	0.0090	0.9229	0.0082	0.9275	0.0081	0.9278	0.0079	0.9292	0.0089	0.9233
SMB										
Subtle	0.4428	0.0038	0.4380	0.0039	0.4479	0.0036	0.4109	0.0046	0.4380	0.0039
2	0.4289	0.0041	0.4428	0.0038	0.4356	0.0039	0.4165	0.0044	0.4333	0.0040
3	0.4073	0.0047	0.4225	0.0042	0.4165	0.0044	0.4205	0.0043	0.4146	0.0045
4	0.3973	0.0050	0.4091	0.0046	0.4146	0.0045	0.4091	0.0046	0.4073	0.0047
Excessive	0.4356	0.0039	0.4073	0.0047	0.4055	0.0048	0.3973	0.0050	0.4333	0.0040
HML										
Subtle	0.2816	0.0000	0.2833	0.0000	0.2797	0.0000	0.2933	0.0000	0.2833	0.0000
2	0.2867	0.0000	0.2816	0.0000	0.2842	0.0000	0.2913	0.0000	0.2851	0.0000
3	0.2947	0.0000	0.2890	0.0000	0.2913	0.0000	0.2898	0.0000	0.2920	0.0000
4	0.2984	0.0000	0.2940	0.0000	0.2920	0.0000	0.2940	0.0000	0.2947	0.0000
Excessive	0.2842	0.0000	0.2947	0.0000	0.2953	0.0000	0.2984	0.0000	0.2851	0.0000
RMW										
Subtle	0.6032	0.0004	0.5964	0.0004	0.6103	0.0004	0.5588	0.0004	0.5964	0.0004
2	0.5837	0.0004	0.6032	0.0004	0.5931	0.0004	0.5666	0.0004	0.5899	0.0004
3	0.5539	0.0004	0.5749	0.0004	0.5666	0.0004	0.5721	0.0004	0.5640	0.0004
4	0.5401	0.0005	0.5563	0.0004	0.5640	0.0004	0.5563	0.0004	0.5539	0.0004
Excessive	0.5931	0.0004	0.5539	0.0004	0.5515	0.0004	0.5401	0.0005	0.5899	0.0004
CMA										
Subtle	-0.1730	0.2428	-0.1711	0.2457	-0.1749	0.2400	-0.1605	0.2628	-0.1711	0.2457
2	-0.1676	0.2511	-0.1730	0.2428	-0.1702	0.2470	-0.1627	0.2590	-0.1693	0.2484
3	-0.1591	0.2653	-0.1651	0.2551	-0.1627	0.2590	-0.1643	0.2564	-0.1620	0.2603
4	-0.1551	0.2724	-0.1598	0.2640	-0.1620	0.2603	-0.1598	0.2640	-0.1591	0.2653
Excessive	-0.1702	0.2470	-0.1591	0.2653	-0.1584	0.2665	-0.1551	0.2724	-0.1693	0.2484
EMS										
Low	-0.0483	0.6882	-0.0467	0.6989	-0.0500	0.6772	-0.0371	0.7617	-0.0467	0.6989
2	-0.0435	0.7194	-0.0483	0.6882	-0.0459	0.7041	-0.0391	0.7482	-0.0451	0.7093
3	-0.0357	0.7704	-0.0413	0.7341	-0.0391	0.7482	-0.0406	0.7388	-0.0384	0.7527
4	-0.0319	0.7952	-0.0364	0.7661	-0.0384	0.7527	-0.0364	0.7661	-0.0357	0.7704
Excessive	-0.0459	0.7041	-0.0357	0.7704	-0.0351	0.7747	-0.0319	0.7952	-0.0451	0.7093

Table 10. Regression Coefficients Matrix for EMS and CMA

EMS\CMA	Conservative	P-Value	2	P-Value	3	P-Value	4	P-Value	Aggressive	P-Value
Intercept										
Subtle	0.6859	0.0000	0.7792	0.0000	0.8091	0.0000	0.8120	0.0000	0.7714	0.0000
2	0.7448	0.0000	0.7237	0.0000	0.7448	0.0000	0.7754	0.0000	0.7792	0.0000
3	0.7059	0.0000	0.7346	0.0000	0.7631	0.0000	0.7587	0.0000	0.7673	0.0000
4	0.7542	0.0000	0.7496	0.0000	0.7496	0.0000	0.8148	0.0000	0.7830	0.0000
Excessive	0.7448	0.0000	0.7448	0.0000	0.7714	0.0000	0.7754	0.0000	0.7714	0.0000
RM-RF										
Subtle	0.0770	0.9012	0.0689	0.9005	0.0650	0.9008	0.0646	0.9006	0.0698	0.9006
2	0.0725	0.9005	0.0743	0.9004	0.0725	0.9005	0.0693	0.9007	0.0689	0.9007
3	0.0756	0.9012	0.0734	0.9007	0.0707	0.9014	0.0711	0.9006	0.0702	0.9011
4	0.0716	0.9015	0.0720	0.9020	0.0720	0.9020	0.0642	0.9007	0.0684	0.9016
Excessive	0.0725	0.9011	0.0725	0.9007	0.0698	0.9017	0.0693	0.9007	0.0698	0.9010
SMB										
Subtle	3.8946	0.0009	3.1105	0.0011	2.8384	0.0012	2.8116	0.0012	3.1797	0.0012
2	3.4107	0.0011	3.5874	0.0011	3.4107	0.0011	3.1447	0.0012	3.1105	0.0012
3	3.7340	0.0013	3.4965	0.0012	3.2526	0.0013	3.2905	0.0012	3.2157	0.0012
4	3.3295	0.0013	3.3695	0.0014	3.3695	0.0014	2.7854	0.0012	3.0772	0.0013
Excessive	3.4107	0.0012	3.4107	0.0012	3.1797	0.0013	3.1447	0.0012	3.1797	0.0012
HML										
Subtle	1.9366	0.0000	1.7368	0.0000	1.6652	0.0000	1.6581	0.0000	1.7548	0.0000
2	1.8144	0.0000	1.8595	0.0000	1.8144	0.0000	1.7457	0.0000	1.7368	0.0000
3	1.8965	0.0000	1.8364	0.0000	1.7737	0.0000	1.7835	0.0000	1.7642	0.0000
4	1.7936	0.0000	1.8039	0.0000	1.8039	0.0000	1.6511	0.0000	1.7281	0.0000
Excessive	1.8144	0.0000	1.8144	0.0000	1.7548	0.0000	1.7457	0.0000	1.7548	0.0000
RMW										
Subtle	4.8294	0.0002	3.8146	0.0002	3.4696	0.0002	3.4359	0.0002	3.9030	0.0002
2	4.1997	0.0002	4.4284	0.0002	4.1997	0.0002	3.8582	0.0002	3.8146	0.0002
3	4.6193	0.0002	4.3106	0.0002	3.9964	0.0002	4.0450	0.0002	3.9490	0.0002
4	4.0951	0.0002	4.1466	0.0002	4.1466	0.0002	3.4029	0.0002	3.7722	0.0002
Excessive	4.1997	0.0002	4.1997	0.0002	3.9030	0.0002	3.8582	0.0002	3.9030	0.0002
CMA										
Subtle	-1.7976	0.1292	-1.4430	0.1416	-1.3176	0.1472	-1.3052	0.1443	-1.4746	0.1443
2	-1.5798	0.1416	-1.6597	0.1406	-1.5798	0.1434	-1.4586	0.1462	-1.4430	0.1453
3	-1.7257	0.1510	-1.6187	0.1462	-1.5079	0.1519	-1.5252	0.1443	-1.4911	0.1500
4	-1.5429	0.1529	-1.5611	0.1567	-1.5611	0.1567	-1.2931	0.1462	-1.4277	0.1538
Excessive	-1.5798	0.1500	-1.5798	0.1462	-1.4746	0.1548	-1.4586	0.1462	-1.4746	0.1491
EMS										
Low	-1.7752	0.1590	-1.3198	0.2262	-1.1596	0.2559	-1.1437	0.2410	-1.3604	0.2410
2	-1.4953	0.2262	-1.5979	0.2213	-1.4953	0.2361	-1.3399	0.2509	-1.3198	0.2460
3	-1.6827	0.2757	-1.5452	0.2509	-1.4030	0.2807	-1.4252	0.2410	-1.3814	0.2708
4	-1.4479	0.2856	-1.4713	0.3053	-1.4713	0.3053	-1.1282	0.2509	-1.3003	0.2905
Excessive	-1.4953	0.2708	-1.4953	0.2509	-1.3604	0.2955	-1.3399	0.2509	-1.3604	0.2658

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Discussion

Table 2 shows that mean of monthly market factor is -6.4%, while the mean of monthly excess return for factor of size (SMB), book value (HML), operating profitability (RMW), investment (CMA), and leverage (EMS) are 2.8%, -1.5%, 4.4%, -0.7%, and -0.5% respectively. The highest standard deviation is on book value which is 0.092. This evidence can be seen on Figure 1. The negative value of monthly market factor means that the risk- free rate adopted in this study is higher than the return of market. This situation may reflect the market of Indonesian stocks which called thin trading market according to (Sutrisno & Ekaputra, 2016), some stocks in Indonesian market are not traded however those stocks are included in this study. The superior portfolios are built based on the factor of size and operating profitability. These portfolios show positive returns.

Portfolios built based on book value, investment and leverage are showing negative average monthly returns. This situation could explain that in Indonesian market, or at least in this study, shows that the higher book value the lower the return of stocks which is contrary with the general rule of relationship between book value and rate of return. For the factor of investment, this study shows that the more aggressive the firms to invest the higher the return of the firms and for the factor of leverage, the more the debts of the firms the lower the rate of return.

The findings of this study are contrary with the findings of Fama & French (2015). Empirically, they show that book value and rate of return has positive relationship. However, the positive relationship of size and rate of return are proved both in this study and Fama & French (2015).

According to the equation 2, B/M is a noisy factor since it contributes to the factor of size and it also contributes to factor of investment.

$$M/B = ((\sum E(Y - dB))/(1 + r)\text{^}\tau\ )/B....(2)$$

If M is market price, B is book value, Y is total equity earning, and r is expected return. Thus, according to the equation above and by making all the variables fix in the equation except for M and r, the factor of B/M ratio would have negative relationship with the factor of Size which is the market value of the stock and positive relationship with the factor of Investment which is the book equity of the stock. The B/M ratio and investment would have negative relationship with expected return (r) and the factor of Size would have positive relationship with expected return. This explanation of the equation 2 is supported by the empirical evidence of this study.

For the portfolios of combinations, the excess return of the diversified portfolios combination based on the factor of size is mostly positive and quite high. The effect of high book value and high investment provide negative value of the diversified of the portfolios, even though the coefficient of regression for factor of book value and investment are both positives, Table 6. The diversification sure has certain effect to the excess returns of diversified portfolios. This occurrence is better to investigated further to know how the relationship of the asset pricing factors contributes to the effect of excess returns of diversified portfolios.

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Conclusions

The empirical evidences of the asset pricing factors in Indonesian stock market show different results with the studies performed before. Sure, there is always difference of the emerging and advanced markets in term of the characteristic of the markets. Even, among the emerging markets itself. The period of observation might influence to the results of the study as well. The effect of each asset pricing factors is different from the findings of Sutrisno & Ekaputra (2016). They used longer period of time than this study, so the effect of the economic crisis in the Indonesian stock exchange appears to have weaker influence in their findings.

The effect of the asset pricing factors to the excess returns is also different for stock portfolio investment in general and the diversified ones. Even though, this study only has performed the diversified stock portfolio investments based on the combination of factor of Leverage with other factors of asset pricing, it is quite good to investigate further for other combination of diversified stock portfolios investment. Based on the value of R2 and adjusted R2 of the regression, it is interested to find out that those values increase by having portfolios diversification. The leverage is contributed insignificant statistically to rate of return.

References

Aharoni, G., Grundy, B., & Zeng, Q. (2013). Stock returns and the Miller Modigliani valuation formula: Revisiting the Fama French analysis. Journal of Financial Economics, 110(2), 347–357. https://doi.org/10.1016/j.jfineco.2013.08.003

Balakrishnan, A. (2016). Size, Value, and Momentum Effects in Stock Returns: Evidence from India. Vision: The Journal of Business Perspective, 20(1), 1–8. https://doi.org/10.1177/0972262916628929

Banz, R. W. (1981). The relationship between return and market value of common stocks. Journal of Financial Economics, 9(1), 3–18. https://doi.org/10.1016/0304-405X(81)90018-0

Basu, S. (1983). The relationship between earnings' yield, market value and return for NYSE common stocks. Further evidence. Journal of Financial Economics, 12(1), 129–156. https://doi.org/10.1016/0304-405X(83)90031-4

Bergbrant, M. C., & Kelly, P. J. (2016). Macroeconomic Expectations and the Size, Value, and Momentum Factors. Financial Management, 45(4), 809–844. https://doi.org/10.1111/fima.12140

Bhandari, L. C. (1988). Debt/Equity Ratio and Expected Common Stock Returns : Empirical Evidence. The Journal of Finance, 43(2), 507–528. https://doi.org/10.2307/2328473

Bicer, B. (2006). Stock valuation for investment and corporate decisions. ProQuest Dissertations and Theses, (Stock Valuation), 136-136 .

Vol. 3, No. 03; 2019

ISSN: 2456-7760

Bornholt, G., & Malin, M. (2014). Strong and Weak Momentum Components : Evidence From International Market Indices. The Finsia Journal of Applied Finance, (2), 11– 16.

Carhart, M. (1997). On Persistence in Mutual Fund Performance.pdf. Journal of Finance, 52(1), 57–82.

Chan, L. K. C., Hamao, Y., & Lakonishok, J. (1991). Fundamentals and Stock Returns in. The Journal of Finance, 46(5), 1739–1764. https://doi.org/10.2307/2328571

Chan, L. K. C., Jegadeesh, N., & Lakonishok, J. (1996). Momentum Strategies. The Journal of Finance, 51(5).

Fama, E. F., & French, K. R. (1992). The Cross-Section of Expected Stock Returns. The Journal of Finance, XLVII(2), 427–465.

Fama, E. F., & French, K. R. (2012). Size, Value, and Momentum in International Stock Returns.

Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. Journal of Financial Economics, 116(1), 1–22. https://doi.org/10.1016/j.jfineco.2014.10.010

Foye, J., Mramor, D., & Pahor, M. (2013). A Respecified Fama French Three-Factor Model for the New European Union Member States. Journal of International Financial Management & Accounting, 24(1).

Frazzini, A., & Pedersen, L. H. (2014). Betting against beta. Journal of Financial Economics, 111(1), 1–25. https://doi.org/10.1016/j.jfineco.2013.10.005

Jegadeesh, N., & Titman, S. (1993). Returns to Buying Winners and Selling Losers : Implications for Stock Market Efficiency. The Journal of Finance, 48(1), 65–91.

Kaplan, S. N., & Ruback, R. S. (1995). The valuation of cash flow forecasts: an emprical analysis, L(4), 1059–1093. https://doi.org/10.1017/CBO9781107415324.004

Lakonishok, J., & Shapiro, A. C. (1986). Systematic risk, total risk and size as determinants of stock market returns. Journal of Banking and Finance, 10(1), 115– 132. https://doi.org/10.1016/0378-4266(86)90023-3

Narayan, P. K., & Phan, D. H. B. (2016). Momentum strategies for Islamic stocks.

Pacific-Basin Finance Journal, (August). https://doi.org/10.1016/j.pacfin.2016.05.015

Novy-Marx, R. (2013). The other side of value: The gross profitability premium. Journal of Financial Economics, 108(1), 1–28. https://doi.org/10.1016/j.jfineco.2013.01.003

Pyo, U., & Shin, Y. J. (2013). Momentum profits and idiosyncratic volatility : the Korean evidence. Review of Accounting and Finance, 12(2), 180–200. https://doi.org/10.1108/14757701311327722

Vol. 3, No. 03; 2019

ISSN: 2456-7760

Rosenberg, B., Kenneth Reid, & Lanstein, R. (1985). Persuasive evidence of market inefficiency PROPERTIES OF THE STRATEGIES. The Journal of Portfolio Management, 113, 9–16. https://doi.org/10.3905/jpm.1985.409007

Selim, K. S., Okasha, A., & Ezzat, H. M. (2015). Loss Aversion , Adaptive Beliefs , and Asset Pricing Dynamics. Advance in Decision Sciences, 2015, 1–18.

Stancic, V., Petrovic, E., & Radivojevic, N. (2015). CONDITIONAL RELATIONSHIP BETWEEN BETA AND RETURNS: A CASE STUDY OF THE BELGRADE STOCK EXCHANGE УСЛОВНИ ОДНОС ИЗМЕЂУ БЕТА КОЕФИЦИЈЕНТА

И ПРИНОСА : СТУДИЈА СЛУЧАЈА. Casopis Za Društvene Nauke, 39(4), 1165– 1183.

Sutrisno, B., & Ekaputra, I. (2016). Uji Empiris Model Asset Pricing Lima Faktor Fama- French di Indonesia FAMA-FRENCH DI INDONESIA. Jurnal Keuangan Dan Perbakan, 20(September 2016), 343–357. Retrieved from https://www.researchgate.net/publication/324066525

Zaremba, A., & Konieczka, P. (2015). Are Value , Size and Momentum Premiums in CEE Emerging Markets Only Illusionary ? Journal of Economics and Finance, 65(1), 84–105.

Zarina, M. N. (2011). Asset pricing and macro factors in ASEAN5. 2011 IEEE Colloquium on Humanities, Science and Engineering, CHUSER 2011, (Chuser), 592–596. https://doi.org/10.1109/CHUSER.2011.6163801

(Stancic, Petrovic, & Radivojevic, 2015)

This study cannot confirm that during up markets high-beta stocks earned positive returns, and during down markets high-beta stocks incur lower returns.

Furthermore, it does not show that as expected, high beta stocks incur lower returns during down markets than those of low beta stocks.

The test results obtained from the application of the conditional CAPM are inconsistent with the previous studies conducted in the

emerging markets in Europe, which use the same methodology. The main reason may be in the small number of stocks involved. The small number of selected stocks does not give us much confidence in estimating beta coefficients, because of a possible error in variable problem. Moreover, accepting the findings of this study, we should take into account the possible errors in the estimation of the regression coefficients of equation

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(5) and (7), since the regression is conducted on the assumption that estimation of beta coefficients is unbiased and reliable. Increased uncertainty about the accuracy of the estimates of parameters means a greater probability that regression coefficients are asymptomatically biased. In up market months, beta coefficient estimates were statistically significant at the confidence level of 5% in the case of only 7 stocks, and in down market months it was the case with 12 actions. Such a small number of statistically significant results certainly raised much doubt on the validity of the research.

An explanation for this phenomenon can be found in the fact that a large number of securities in the BSE are not traded or are traded

Occasionally, thus they are exposed to the effect of non-synchronous trading. Even 32 stocks out of 40 under consideration had not been traded for three or more consecutive days. The existence of non-synchronous trading leads to a spurious correlation among the stocks and between the stocks and the market. In fact, this phenomenon leads to the difference between the actual and observed (spurious) covariance. It is higher for rarely traded stocks, and especially if an individual stock is rarely traded and the other is traded very often. Differences in covariance are such that the observed covariance is less

by the absolute value than the actual covariance. In this way, nonsynchronous trading causes the spurious non-correlation between the low liquid stocks and the market, and thus directly affects the validity of estimation of beta coefficient and the results of the research as well.

(Selim, Okasha, & Ezzat, 2015) loss aversion improves market quality and market stability. Te increase in switching to the fundamental analysis will pull asset prices to their fundamentals and the volatility diminishes. Due to the market dynamics, no trading strategy dominates the

Others. Tis cause substantial long memory effects in returns volatility.