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Value Effect in Indonesian Stock Returns: The Implications for the Equity Mutual Fund Industry

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We extend the persistence and pervasiveness of the presence of value effect to Indonesian stock returns in the last two decades by utilizing data set that is relatively free of survivor bias and selection bias. Our finding shows that value portfolios have been able to outperform growth portfolios. Furthermore, the presence of the effect as an asset pricing factor, along with the size effect, can significantly explain the returns of the aggregate equity mutual funds in Indonesia and unveil that the equity mutual fund industry does not provide sufficient risk-adjusted return to cover trading costs and fund expenses. Our proposition is that the equity mutual fund valuation will be better off to apply simpler model shown in this paper to capture the value premium as opposed to the general application of traditional valuation method.

Keywords: *Indonesian Stock Market; Value effect; Asset pricing models; Mutual fund performance; Mutual fund persistence; Factor Investing*

Introduction

Since the beginning of the stock market development, investors has been riddled with the greatest puzzle of the time – the pursuit of the alpha or active return on an investment – until Graham and Dodd (GD, 1934) provide a thought provoking insight about how a stock price of a company should be perceived from its various intrinsic value measurements, or in other word, value investing. Although value investing method put a solid theoretical foundation upon the field of finance, it does not cover significant portion of portfolio construction methodologies. Through the development of modern portfolio theory by Markowitz (1959), the game of investing has shifted significant part of its focus to the portfolio management and followed by the development of capital asset pricing model (CAPM) by Sharpe (1964) and Lintner (1967) where the excess return of any asset or portfolio can be explained by its dependency to the market risk factor under the assumption of mean-variance-efficient portfolio.

Under the strict assumptions of CAPM, the unexplained part of return of any asset or portfolio should be jointly zero, hence the market is efficient as termed by Fama (1970). The theoretical perspective of CAPM has been widely accepted in academics and practices while many empirical evidences of the theory seem to defy its success through the findings of a handful amount of market anomalies. One of the widely known anomalies is the value effect that shows the relationship of stock returns and their value proxies such as multiples like earnings yield or E/P (Basu (1975, 1977)), book-

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to-market ratio or B/M (Rosenberg, Reid, and Lanstein (1985) and Fama and French (1992, 1993, 1996, 1997)), cash flow yield or C/P (Lakonishok, Shleifer, and Vishny (1994) and Fama and French (1998)), and dividend yield or (D/P) explained by Ball (1978) and Fama and French (1988). Recall that the value investing method of GD (1934) focuses on the individual security selection; value effect focuses on the construction of portfolio of stocks with similar characteristic based on the pre-determined value proxy. In essence, both valuation and multiple methods coincide in the investment philosophy, which is to buy stocks that are underpriced and sell those that overpriced regardless of the method to determine the fair value.

Furthermore, we relate our findings with the real world application. Equity investment managers in the investment management industry have adopted value investing methodology as a part of their investment process. This can be seen from the structure of a typical investment management firm that always employs financial analysts and portfolio managers. Financial analysts analyze and determine the fair value of selected publicly traded stocks, and then present it to the investment committee. Portfolio managers construct the portfolio based on the selection process of financial analysts. Regardless of the valuation method being employed, financial analysts are trying to identify underpriced stocks to be bought and overpriced stocks to be sold. Since these firms are trying to provide added value to the returns of their portfolios, we can classify their activity as active management whose job is to generate long-term risk-adjusted returns.

The a constraints posed by active management (Sharpe (1991)), where in the aggregate level, the alpha of active portfolio management negative after considering fees. Our findings with Indonesia data support this hypothesis. We find that the cumulative returns is significantly lower than market portfolio and there is no persistence in Indonesian equity mutual fund performance due to the highly excessive management fees and expenses. This paper intends to provide an alternative way to manage institutional equity portfolios passively and systematically by utilizing value effect which provides a comparison of simulated value portfolios, the transaction costs and management fees, and the aggregate equity mutual fund performance.

The rest of this paper is organized as follows. Section 2 discusses theoretical frameworks and key issues surrounding our research topic; section 3 provides explanations about the data construction and methodology. The results of the tests will be discussed in section 4 and followed by conclusion in section 5.

Literature Review

The empirical success of value effect was widely observed internationally. The documentation can be traced back to the finding of earnings yield effect in U.S. stock returns by Basu (1975, 1977) and is amplified further by Ball (1978) who stated that earnings yield can be used as a direct proxy for expected returns. The early findings of value effect have triggered academic attention to discover other kind of proxies that can be used to measure the existence of value effect as Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) who show further evidence of the existing relationship between book-to-market ratio and stock returns that is left unexplained by CAPM. Further findings include the relationship between stock returns and accounting variables such as dividend yield (Ball (1978) and Fama and French (1978)), cash flow yield, and sales rank (Lakonishok, Shleifer, and Vishny (1994) and Fama and French (1996)). Nevertheless, there were still debates in the explanation of this phenomenon despite the fact that a bulk of empirical evidences has been well-documented.

In general, there are three possible explanations which tend to contradict each other. The first group typically aligns with the arguments of Lakonishok, Shleifer, and Vishny (1994) and Haugen (1995) who argue that value investing works simply because the market is irrational and has a tendency to overreact to any news related to certain companies, hence drive the stock movements to be overpriced or underpriced. The other group belongs to the supporter of risk premiums, as described by Fama and French (1992) that believes value stocks exhibit higher fundamental risks so that higher average returns are required to compensate for taking the risks; hence value effect should be

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incorporated in the asset pricing model (Fama and French (1993)).

The last group, as described by Black (1993), stands between the previous two, believing that value premium does not eventually exist, but only a result of a data-mining process. The value phenomenon is persistence over decades and its pervasiveness can be found through the empirical evidence in a global scale. The objective of this paper is simply to show the existing value premium in Indonesian stock returns and to provide some empirical evidences regarding market overreaction and fundamental risks of this phenomenon.

Interestingly, the existence of value effect also draws significant attentions of investment professionals who manage diversified equity portfolios. Those investment managers generally subscribe to the value investment process as they continuously try to identify potentially undervalued stocks to be included in their portfolio. The question is whether they are able to produce positive risk-adjusted returns over time. Fama and French (2010) show that the aggregate returns of U.S. equity mutual fund is close to market portfolio and even lowered by the high fees of active management. Carhart (1997) also finds that the persistence of equity mutual fund performance can be highly attributed to the loser funds. The studies generally finds that the realized mutual fund performance adhere to the law of arithmetic of active management.

If the role of active management leads to more exposure to the market risk factor, then it should consider alternative way of managing portfolio. A study conducted by Ang et al (2009) also found that pension fund performance is highly exposed to the market risk factor, hence they encourage investment managers to look for another systematic risk factor as a potential source of returns.

Data and Methodology

Data of stock returns, mutual fund returns, and accounting data are collected from Bloomberg Terminal, supplemented with returns data Thomson Reuters Datastream and accounting data from S&P Capital IQ to mitigate some missing data. Data collections exclude preferred stocks, exchange traded funds, and index funds. All stock returns are adjusted with the dividends by spreading the dividends from the previous year throughout the year starting from the second half of the year. As a proxy for risk-free rate, the discount yield of certificate of Bank Indonesia (SBI) is used until April 2007. Beginning on May 2007, the discount yield of Surat Perbendaharaan Negara (SPN) is used afterwards because SPN bears better resemblance to U.S. T-bills since it is directly issued by Indonesian treasury department. Unlike U.S. T-bills that is steadily available over time, the availability of SBI varies in term of length of maturity (1, 3, 6, and 9 months) hence we decide to use the SBI rate with the shortest maturity available during the test. Conversely, we are able to acquire 1-month SPN discount rate from Indonesia Capital Market Review (ICMR) committee hence no further adjustment is needed. The choice of risk-free rate in this paper might be considered uncommon by other researchers since we do not include any default spread measure into the calculation as described by Damodaran (2008) who suggest the usage of credit default swap (CDS) market as a proxy to calculate default spread. We acknowledge that we are unable to acquire CDS spread and this condition leads us to make a strict limitation in this paper where we explicitly assume that Indonesia, as a country, does not bear any default risk. By fulfilling prior assumption, both SBI and SPN discount rate will be able to be considered as the most riskless securities in Indonesia.

The data period for stock returns is from July 1994 to August 2014 while we limit the period for equity mutual fund returns for about ten year to align with the database of Indonesian financial services authority (OJK) that begins from November 2003. Database construction is what matters the most in this particular field, hence we put a lot of effort to deal with risks that are occurring from the survivor and look-ahead bias. The database is not perfectly free from those biases, but we minimize the exposures by including all of the acquired and delisted stocks data, along with the dead mutual funds in our testing period. Since the Indonesian stock markets data in Bloomberg Terminal are available starting from August 1992, we can have more than two decades of testing period for stock returns. Conversely, the equity mutual funds data has significantly higher level of survivor bias in the database of Bloomberg Terminal, there are too many missing data for dead funds before 2003. This is a difficult decision to be made since there is a tradeoff between the length of testing period and the exposure to the survivor bias. Infovesta also provide equity mutual fund index data that can be considered as an alternative. Nevertheless, this paper use a synthetic equity mutual fund index due to the fact that we are unable to clarify the database used by Infovesta to construct the index.

Asset Pricing Models

There are two models that we use in this paper. The models can be specified as follows:
(1) Sharpe (1964) – Lintner (1965) capital asset pricing model (CAPM)

$$R_{it} - R_{ft} = a_{it} + b_i\left[R_{mt} - R_{ft}\right] + e_{it}, \quad 1)$$

where R_it is the return of left-hand side (LHS) portfolio i for month t, R_{ft} is the risk-free rate, R_{mt} is the return of Jakarta Composite Index (JCI), a_{it} is the intercept of the regression, b_i is the loading on the market risk premium (MRP), and e_{it} is the residual.
(2) Fama and French (1993) three-factor model

$$R_{it} - R_{ft} = a_{it} + b_i\left[R_{mt} - R_{ft}\right] + s_i MB_t + h_i HML_t + e_{it}, \quad 2)$$

where SMB_t is the difference between the return on a portfolio of small stocks and big stocks, HML_t is the difference between the return on a value and growth portfolio, s_i is the loading on the SMB factor, and h_i is the loading on the HML factor.

In total, we have 3 right-hand side (RHS) portfolios which act as explanatory variables. Each RHS portfolios are constructed by value-weighting each stock within each division of portfolios. The first RHS portfolio is the market risk factor, $R_m(t) - R_f(t)$, where we simply subtract the risk-free rate from each value weight market return for month t. We follow Fama and French (2011) for the calculation of the *SMB* and *HML* factors.

The calculation of *SMB* and *HML* is related by double sorting the stock universe into 2x3 size (Market Capitalization) – book-to-market B/M portfolios. The 10 – 90% breakpoints used by Fama and French (2011) correspond with the median of NYSE stocks. The distribution of market capitalization in Indonesian stock market is different, hence at the end of each June at year *t*, we divide the stock universe into small and big stocks based on the median breakpoint. Independently, we divide the stock universe into value, neutral, and growth stocks based on B/M, then we assign specific breakpoints as follows, the top 30% as the value stocks, middle 40% as the neutral stocks, and the bottom 30% as the growth stocks.

The calculation of HML requires accounting data with six month lag from the last fiscal year to ensure the availability of the data, hence the starting point of the sort is the same with the size, which is at the end of each June of year *t*, but we apply breakpoints only to the big stock universe to avoid the impact from micro-cap stocks. Fama and French (2011) align the market capitalization with the ending fiscal year of the accounting data for HML calculation. We choose a different track by using the market capitalization at the end of each June at year *t*, as described by Asness (1997), in order to update the value to the most recent change in the prior six months, which we think is more reasonable. The 2x3 sorts of size – B/M produce six portfolios, *SV*, *SN*, *SG*, *BV*, *BN*, and *BG*. *S* and *B* indicate small and big stocks while *V*, *N*, and *G* indicate value, neutral, and growth stocks. The *SMB* factor is the equal-weight returns of *SV*, *SN*, and *SG* minus the equal-weight returns of *BV*, *BN*, and *BG*. For the calculation of the *HML*, we first construct the value – growth returns for small and big stocks, $HML_S = SV - SG$ and $HML_B = BV - BG$, and *HML* is the equal-weight average of HML_S and HML_B.

LHS Portfolios

We examine the relation of value proxies (B/M, E/P, C/P, and D/Y) with other variables like size and shares turnover ratio (TO) by spreading the stock universe into 2x3 sorts. Many academic papers use 5x5 sorts. Considering that we are dealing with relatively smaller

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number of stock universe, which only consists of 594 stocks in total, we decide to use much smaller division of portfolio in order to acquire better diversification within each portfolio.

TO is the proxy for liquidity and defined as the ratio of total shares traded and outstanding shares each month over the past 12 months. We treat TO as a substitute controlling variable for size as Lam and Tam (2011) describe TO as an additional risk factor to explain expected stock returns. In Indonesia, Amanda and Husodo (2014) incorporate liquidity premium using Amihud Illiquidity ratio (2002) in an attempt to explain the excess stock returns while also indicating a close relationship between size and liquidity due to the tendency of small stocks to be more difficult to be traded (illiquid). Thus we think that it is necessary to observe the pattern of value effect in relation with the liquidity proxy.

Asset Pricing Test

We use Gibbons, Ross, and Shanken (GRS, 1989) test-statistic to test the validity of asset pricing models utilized in this paper. The GRS test-statistic can be defined as follows:

$$GRS=\left(\frac{T}{N}\right)\left(\frac{T-N-L}{T-L-1}\right)\left(\left[\frac{\hat{a}'\hat{\Sigma}^{-1}\hat{a}}{1+\mu'\hat{\Omega}^{-1}\hat{\mu}}\right]\sim F(N,T-N-L), \quad 3)$$

where T is the sample size, N is the number of LHS portfolios, L is the number of RHS portfolios, $\hat{a}$ is a $Nx1$ vector of regression intercepts, $\hat{\Sigma}$ is the residual covariance matrix of the sample, and $\hat{\Omega}$ is the covariance matrix of RHS portfolios. The GRS test-statistic follows F-distribution with N and $T-N-L$ degrees of freedom. The null hypothesis of the GRS test is $a_{it}=0\forall i$, hence the larger the values of the αs the larger the GRS-statistic will be implying higher likelihood to reject the validity of the model being tested.

The Explanations of Value Effect

We explain the existence of value effect in Indonesian stock returns from rational and behavioral perspectives. Our attempt to rational perspectives of value effect follows the procedures of Fama and French (1995) by observing the relationship between 2x3 size – B/M portfolios and past profitability of the companies. If value stocks, or stocks with high B/M, are associated with persistent low profitability and growth stocks, or stocks with low B/M, are associated with persistent high profitability, then we can attribute higher returns in value stocks as a form of a compensation of taking higher risks induced by value stocks. We use the ratio of earnings before extraordinary items at year t to book value at year t-1. Due to the resemblance with the common formula of return on equity, we will term the ratio as ROE for simplicity.

Another way to explain value effect is by constructing 2x3 momentum – B/M portfolios. Asness (1997) find that value (growth) stocks, sorting on B/M, produces typically higher returns over stocks with low momentum (losers), sorting on cumulative past 12 month returns lagged one month. We see this finding as a potential way to observe the relationship between value effect and past returns hence we can identify the existence of market overreaction if value effect is indeed stronger over loser firms. In other word, the conjunction between value effect and market overreaction support the premise of behavioral perspective to explain the existence of value effect as a part of market anomalies.

Mutual Funds Performance and Persistence

As described by Sharpe (1991), the law of arithmetic of active management states that the expected net returns of any actively managed mutual funds are negative in excess of market returns. Suppose a random investor wants to buy some shares of randomly picked equity mutual fund, regardless of the size of the asset under management (AUM). We can expect that, by the law of large number, the net excess returns of the mutual fund he picked will likely be negative. Therefore, we develop a synthetic index of equal-weight as opposed to value-weight mutual funds returns throughout this paper in order to neutralize the domination of mutual funds with higher AUM. We are implicitly assuming that market impact of any transaction of any mutual funds is indifferent.

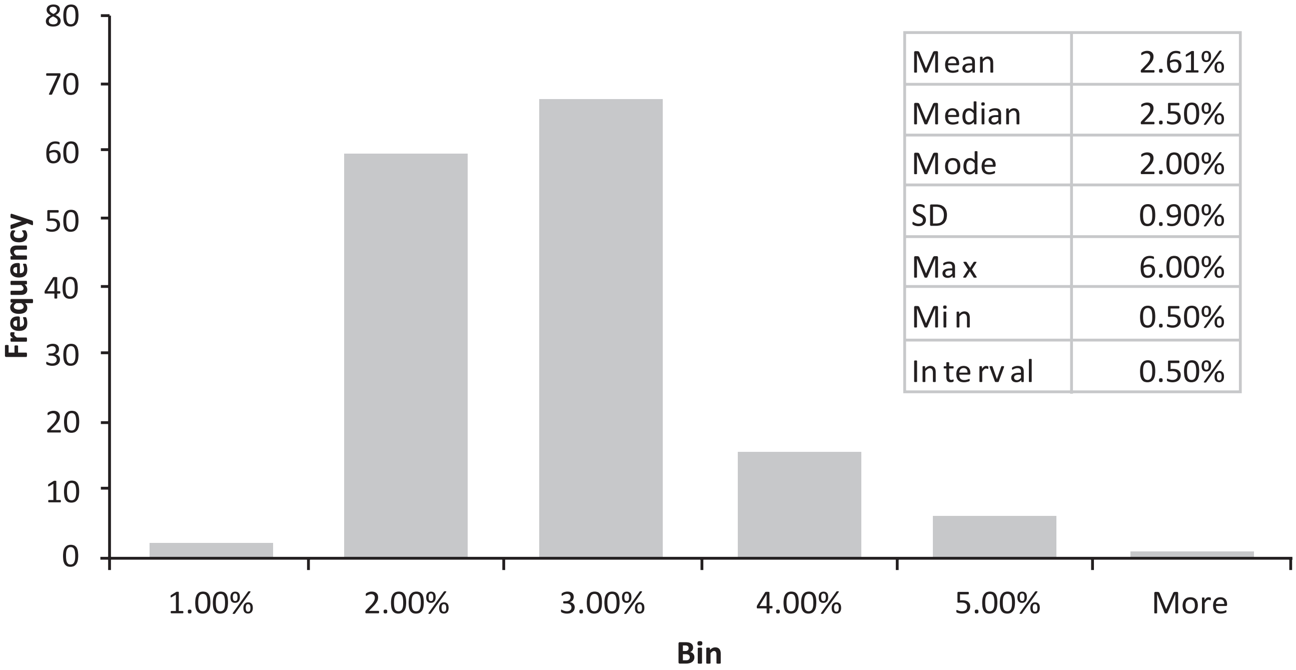

Figure 1. Histogram of Management Fees

We firstly evaluate the aggregate mutual fund performance using CAPM and Fama and French (1993) three-factor model to evaluate the aggregate skill and the exposures to the risk factors, then we continue to the examination of the mutual fund persistence following the method of Carhart (1997) by dividing mutual funds into several groups based on the previous one year performance. Carhart (1997) examines the persistence of 1892 equity mutual funds by sorting them into decile groups, and even divides them into smaller sub-groups. The problem we are facing is that our mutual fund universe is much smaller than the mutual fund universe in the more developed countries like U.S. In total, our mutual fund database covers the returns of 191 mutual funds in total, hence we decide to divide the mutual funds into five quintile groups.

The idea of mutual fund persistence is to examine whether funds with higher returns in the previous one year are likely to generate persistently high returns relative to their peers. This can be observed by constructing momentum portfolios from the mutual fund universe. At the end of each December, we divide the mutual fund universe into quintile groups based on their previous year returns, then we calculate the difference between the average monthly returns of the top (winners) and bottom (losers) quintile groups. If the difference is significantly different from zero (either positive or negative), we can conclude that there is a persistence in the mutual fund performance. Conversely, there is no persistence of the mutual fund performance if the difference is not significantly different from zero.

Positive persistence of mutual fund performance implies the tendency of past winner or loser is likely to continue to be a winner or loser in the following year while negative persistence imply a contrarian nature of the mutual fund performance where significant underperformer or outperformer is likely to turn to be the opposite in the following year. However, lack of persistence in mutual fund performance will imply that there is no significant relationship between the past and future performance, hence if a fund has a good or bad past performance, their continuation or reversal of the performance should be attributed to the realm of chance.

Portfolio Simulation

The value portfolios used in the simulation are defined as the equal-weight average of SV and BV portfolios sorted on B/M, E/P, C/P, and D/Y. There are three associated costs that we estimate in each portfolios; 0.2% buying fee, 0.3% selling fee, and 2.5% annual management fee. The transaction costs (buying and selling fees) are estimated as one-way costs to adjust with the way Indonesian stock brokerage firms charge their services. We spread the annual

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Table 1. Average Monthly Returns of Value (V), Neutral (N), and Growth (G) Portfolios Formed on Size

Size - B/M	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
S	0.65	1.22	1.55	0.90	8.07	6.99	6.87	7.14	1.25	2.72	3.53	1.98
B	1.35	1.28	1.46	0.11	5.76	5.43	7.81	7.00	3.63	3.68	2.91	0.26
S-B	-0.67	-0.06	0.09		7.30	5.27	6.55		-1.48	-0.19	0.23	

Size - E/P	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
S	1.05	0.92	1.58	0.53	6.68	7.46	6.05	6.53	2.44	1.93	4.06	1.27
B	1.03	0.94	1.81	0.78	6.53	5.83	10.15	9.08	2.44	2.50	2.78	1.35
S-B	0.02	-0.02	-0.23		7.09	6.29	8.41		0.05	-0.03	-0.43	

Size - C/P	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
S	0.68	1.35	1.53	0.85	7.02	6.57	6.23	7.00	1.50	3.21	3.81	1.89
B	1.09	0.94	1.26	0.17	5.62	4.84	8.94	8.41	3.02	3.00	2.19	0.31
S-B	-0.42	0.42	0.27		6.77	5.47	7.43		-0.95	1.19	0.56	

Size - D/P	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
S	0.74	1.60	1.71	0.97	7.77	9.34	7.81	7.48	1.49	2.66	3.41	2.02
B	0.89	0.85	1.52	0.63	7.17	6.73	6.76	7.53	1.93	1.97	3.94	1.30
S-B	-0.15	0.75	0.20		8.10	9.28	7.38		-0.28	1.26	0.41	

Table 2. Average Monthly Returns of Value (V), Neutral (N), and Growth (G) Portfolios Formed on Shares Turnover Ratio (TO)

TO - B/M	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
I	1.40	1.66	1.49	0.09	5.79	7.48	6.95	6.99	3.77	3.44	3.33	0.19
L	1.08	1.05	1.19	0.11	7.87	6.83	8.35	8.01	2.13	2.39	2.22	0.22
I-L	0.32	0.61	0.30		7.67	6.65	7.97		0.65	1.42	0.58	

TO - E/P	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
I	1.19	1.56	1.77	0.58	6.75	6.43	6.51	7.75	2.75	3.77	4.24	1.16
L	0.70	0.56	1.35	0.64	8.17	6.76	11.36	10.02	1.34	1.29	1.84	1.00
I-L	0.49	1.00	0.43		8.39	7.44	10.88		0.91	2.08	0.61	

TO - C/P	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
I	1.36	2.01	1.14	-0.22	5.96	9.80	6.93	7.50	3.56	3.19	2.57	-0.46
L	0.55	0.44	1.39	0.84	8.36	6.68	10.18	10.08	1.02	1.02	2.13	1.30
I-L	0.82	1.57	-0.25		9.23	9.93	9.76		1.37	2.46	-0.40	

TO - D/P	Means (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
I	1.33	1.76	2.10	0.78	5.50	9.24	7.40	7.12	3.74	2.97	4.42	1.69
L	0.94	0.91	1.17	0.22	7.41	7.27	8.22	7.82	1.99	1.94	2.21	0.44
I-L	0.38	0.86	0.93		6.46	8.46	8.20		0.91	1.58	1.77	

Table 3. Summary Statistics of RHS Portfolios

	MRP	SMB (B/M)	HML (B/M)
Mean (%)	0.30	-0.22	0.51
SD (%)	8.15	4.34	5.26
t -statistic	0.57	-0.79	1.51

Table 4. Correlations between RHS Portfolios

	SMB (B/M)	HML (B/M)
MRP	-0.11	0.00
SMB (B/M)		-0.23

management fee across 12 months by dividing the fee by 12 and charging the fee to each simulated portfolio in the beginning of the month. The 2.5% annual management fee corresponds to the median of equity funds management fees in Indonesia. The histogram of management fees can be seen in the following Figure 1.

Summary Statistics

We begin with the discussion of summary statistics for LHS portfolios along with the asset pricing tests. Then we examine the summary statistics of mutual funds and simulated value portfolios.

Value Effect

Table 1 summarize value-weight portfolios formed on B/M, E/P, C/P, and D/P, controlled by size. We can see that value portfolios consistently outperform growth portfolios, but the statistical significance of each portfolio differs variably. Portfolios formed on B/M, C/P, and D/P clearly show a size pattern where the differences between V and G portfolios are typically stronger on smaller size stocks except for the portfolios formed on E/P that show considerable consistency on both sizes, but with lower level of statistical significances. Based on our observation on the volatility (denoted as SD) of size-value portfolios, we also find a compromising pattern from the risk-return relationship. Except for the size-D/P portfolios, the volatility of growth portfolios are generally higher than the value portfolios on the small-cap portfolios while the converse is true for the big-cap portfolios. The risk-return relationships on our finding implies that there are possibly more than one explanation to rationalize the difference between the average return of value and growth portfolios. We will discuss this issue further in the next section.

As a substitute for size, we use TO as a controlling variable for value effect. Table 2 shows the summary statistics of value, neutral, and growth portfolios formed on TO. There are some insignificant positive illiquidity premiums produced across portfolios, which is contrary to size-based portfolios that do not show any recognizable pattern. After controlling for TO, the differences between V and G portfolios formed on B/M do not produce any statistically significant value effect while portfolios formed on E/P and D/P show similar result with the size – E/P and size – D/P portfolios. Meanwhile, TO-C/P portfolios produce stronger value effect over more liquid stocks. Although there are positive value premiums across the TO-based portfolios, we find that the value premiums are generally weaker than our finding in the size-based portfolios.

We report the summary statistics of our asset pricing test for each size-based portfolios in Table 4. Although the result of our GRS test widely varies across each portfolio, we still can observe the improvement in explaining the variations across LHS portfolios. The GRS test-statistic in Table 5 shows that variation of average returns on size – B/M portfolios can be captured only by using CAPM, but the average level of R-squared rises significantly to 0.72 from 0.48 and average absolute intercepts is lowered by 0.10% when three-factor model is applied in the test. Contrarily, size – C/P portfolios reject all the null hypothesis of GRS test, indicating that even three-factor model does not show considerable capability to capture the variation of the average returns on the portfolios. Size – E/P and Size – D/P portfolios seem to be the portfolios show better picture of model improvement. Both portfolios reject the validity of CAPM at 0.06 and 0.05 level, which are more than 90% level of confidence, but their p-values double and each of their average absolute intercepts decline by 0.11%

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Table 5. CAPM and Three-Factor Model Regression for Average Monthly Returns of Value (V), Neutral (N), and Growth (G) Portfolios Formed on Size

Size - B/M	SG	SN	SV	BG	BN	BV	GRS	*p*(GRS)
				CAPM				
a (%)	-0.55	0.03	0.40	0.13	0.07	0.25		
(*t*-statistic)	(-1.23)	(0.08)	(1.03)	(0.61)	(0.39)	(0.63)		
b	0.54	0.52	0.55	0.61	0.59	0.60		
(*t*-statistic)	(9.85)	(11.58)	(13.20)	(23.95)	(26.63)	(12.40)	1.10	0.36
R-Squared	0.28	0.36	0.42	0.70	0.75	0.39		
Av|a|				0.24				
Av|R-Squared|				0.48				
				FF				
a (%)	-0.13	-0.03	0.24	0.19	0.07	-0.18		
(*t*-statistic)	(-0.44)	(-0.10)	(1.09)	(0.97)	(0.40)	(-0.65)		
b	0.60	0.57	0.60	0.60	0.58	0.59		
(*t*-statistic)	(16.52)	(18.32)	(22.46)	(24.84)	(26.32)	(17.46)		
s	0.97	0.90	0.84	-0.17	-0.07	-0.05		
(*t*-statistic)	(13.87)	(15.00)	(16.23)	(-3.71)	(-1.61)	(-0.77)	0.70	0.65
h	-0.44	0.46	0.56	-0.19	-0.03	0.81		
(*t*-statistic)	(-7.65)	(9.43)	(13.10)	(-5.09)	(-0.93)	(15.22)		
R-Squared	0.69	0.69	0.76	0.74	0.75	0.7		
Av|a|				0.14				
Av|R-Squared|				0.72				

Size - E/P	SG	SN	SV	BG	BN	BV	GRS	*p*(GRS)
				CAPM				
a (%)	-0.13	-0.28	0.39	-0.21	-0.28	0.56		
(*t*-statistic)	(-0.36)	(-0.73)	(1.32)	(-.080)	(-1.21)	(1.04)		
b	0.47	0.56	0.51	0.65	0.58	0.70		
(*t*-statistic)	(10.50)	(11.89)	(14.15)	(20.29)	(20.60)	(10.51)	2.03	0.06
R-Squared	0.31	0.37	0.45	0.63	0.64	0.31		
Av|a|				0.31				
Av|R-Squared|				0.45				
				FF				
a (%)	-0.04	-0.32	0.30	-0.17	-0.25	0.12		
(*t*-statistic)	(-0.12)	(-0.10)	(-1.05)	(1.39)	(-1.08)	(-0.27)		
b	0.50	0.61	0.55	0.65	0.58	0.69		
(*t*-statistic)	(12.10)	(16.11)	(20.36)	(20.13)	(20.42)	(12.14)		
s	0.53	0.81	0.63	-0.03	-0.03	-0.09		
(*t*-statistic)	(5.55)	(11.10)	(12.16)	(-0.53)	(-0.51)	(-0.80)	1.70	0.12
h	0.04	0.40	0.42	-0.08	-0.07	0.83		
(*t*-statistic)	(0.62)	(6.70)	(9.80)	(-1.67)	(-1.49)	(9.16)		
R-Squared	0.42	0.60	0.70	0.63	0.64	0.50		
Av|a|				0.20				
Av|R-Squared|				0.58				

and 0.04% when using three-factor model. Overall, three-factor model provides better explanation of the expected returns by adding SMB and HML as its explanatory variables, but it still leaves some unexplained parts of excess returns.

We also calculate explanatory variables, SMB and HML, using the size – B/M portfolios as shown in table 3 along with the estimate of MRP to set the stage for our asset pricing test. Our estimate of MRP averages about 0.19% per month with 8.17% level of standard deviation, resulting a low level of t-statistic that is indistinguishable from zero. While our estimate shows there is no considerable level of significance on the SMB, HML seems to

Table 5 – Continued

Size - C/P	SG	SN	SV	BG	BN	BV	GRS	p(GRS)
				CAPM				
a (%)	-0.49	0.17	0.33	-0.09	-0.23	0.02		
(t-statistic)	(-1.20)	(-0.48)	(1.10)	(-.33)	(-1.02)	(0.05)		
b	0.42	0.50	0.52	0.48	0.43	0.67		
(t-statistic)	(8.47)	(11.76)	(14.00)	(14.24)	(15.38)	(11.81)	9.01	0.00
R-Squared	0.23	0.36	0.45	0.46	0.49	0.36		
Av|a|				0.22				
Av|R-Squared|				0.39				
				FF				
a (%)	-0.27	0.13	0.22	-0.07	-0.22	-0.26		
(t-statistic)	(-0.74)	(0.47)	(0.96)	(-0.27)	(-0.97)	(-0.60)		
b	0.45	0.54	0.55	0.48	0.43	0.65		
(t-statistic)	(10.11)	(15.14)	(19.91)	(14.18)	(15.35)	(12.45)		
s	0.55	0.67	0.60	0.04	0.05	-0.19		
(t-statistic)	(6.29)	(9.73)	(11.22)	(0.67)	(0.97)	(-1.91)	8.47	0.00
h	-0.21	0.33	0.47	-0.01	0.00	0.47		
(t-statistic)	(-2.90)	(5.83)	(10.57)	(-0.24)	0.00	(5.65)		
R-Squared	0.38	0.56	0.69	0.45	0.49	0.46		
Av|a|				0.20				
Av|R-Squared|				0.51				

Size - D/P	SG	SN	SV	BG	BN	BV	GRS	p(GRS)
				CAPM				
a (%)	-0.45	0.41	0.51	-0.34	-0.37	0.32		
(t-statistic)	(-1.07)	(0.75)	(1.21)	(-1.07)	(-1.26)	(0.94)		
b	0.53	0.51	0.55	0.65	0.62	0.54		
(t-statistic)	(10.23)	(7.65)	(10.58)	(16.55)	(17.07)	(13.09)	2.12	0.05
R-Squared	0.30	0.19	0.32	0.53	0.55	0.41		
Av|a|				0.40				
Av|R-Squared|				0.38				
				FF				
a (%)	-0.47	0.41	0.45	-0.28	-0.32	0.24		
(t-statistic)	(-1.20)	(0.80)	(1.40)	(-0.88)	(-1.07)	(-0.73)		
b	0.57	0.56	0.60	0.66	0.63	0.54		
(t-statistic)	(11.69)	(8.91)	(15.42)	(16.75)	(17.26)	(12.98)		
s	0.58	0.75	0.95	0.13	0.11	-0.07		
(t-statistic)	(6.17)	(6.18)	(12.55)	(1.71)	(1.61)	(-0.83)	1.87	0.09
h	0.26	0.30	0.51	-0.07	-0.07	0.12		
(t-statistic)	(3.42)	(3.02)	(8.19)	(-1.04)	(-1.13)	(1.79)		
R-Squared	0.40	0.31	0.61	0.54	0.55	0.42		
Av|a|				0.36				
Av|R-Squared|				0.47				

Table 6. Average Annual Profitability of Value (V), Neutral (N), and Growth (G) Portfolios Formed on Size

	Mean (%)					SD (%)					t -statistic			
	G	N	V	V-G		G	N	V	V-G		G	N	V	V-G
S	2.12	10.37	15.29	13.17	S	71.17	34.34	43.16	80.80	S	0.14	1.38	1.62	0.75
B	35.27	19.82	18.54	-16.74	B	67.34	32.49	43.22	83.07	B	2.40	2.80	1.97	-0.92

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Table 7. Average Monthly Returns of Value (V), Neutral (N), and Growth (G) Portfolios Formed on Momentum

MOM-B/M	Mean (%)				SD (%)				*t* -statistic			
	G	N	V	V-G	G	N	V	V-G	G	N	V	V-G
L	0.56	1.18	1.55	0.99	6.82	7.47	6.80	6.36	1.27	2.45	3.55	2.43
W	1.32	1.26	1.44	0.12	5.75	5.38	7.76	6.85	3.57	3.65	2.89	0.28
W-L	0.76	0.08	-0.11		6.25	5.92	6.31		1.90	0.23	-0.28	

Table 8. Summary Statistics of Aggregate Mutual Fund Performance

	Cumulative (%)	Mean (%)	SD (%)	*t* -statistic
MF	478.17	1.57	6.40	2.79
JCI	721.18	1.85	6.42	3.28
Diff		-0.28	1.36	-2.33

be the strongest factor estimate among others. Table 4 shows us low level of correlation between explanatory variables that we need to investigate potential of multicollinearity that may violate the assumptions of model estimation . In fact, there exists an extremely low level of correlation between MRP and HML which is barely indistinguishable from zero. SMB, in the other hand, is negatively related with MRP. The strongest correlation can be observed in a negative relationship between SMB and HML.

Rational and Behavioral Explanations

We examine the average annual profitability, as measured by ROE, across size – B/M portfolios. The result can be examined in the following Table.

Table 6 shows that there is no persistence in the average profitability across size-B/M portfolios. The differences of average profitability between value and growth portfolios are less than 1 standard error from zero. In other word, the existence of value effect in Indonesian stock returns is not associated with higher fundamental risks based on average annual profitability of each company.

Now, we examine another possibility of the explanations from the behavioral perspective. We construct 2x3 momentum – B/M portfolios as follows:

After controlling for momentum, we find that the value effect is stronger over the losers (L), in line with the finding of Asness (1997). The difference between value and growth portfolios formed on losers is 0.99% and provide a t-statistic of 2.43 which is more than the critical value of 1.96, implying significant outperformance of value portfolio over growth portvolio, while the difference across winners is barely significant. Hence, it is concluded that short-term market overreaction does exist in Indonesian stock returns and it is possible to attribute the value effect to this phenomenon.

Mutual Fund Performance and Persistence

The result shown in table 8 shows significant underperformance of aggregate mutual fund relative to the performance of JCI. Although the performance of aggregate mutual fund accounts for management fees and expenses, it does not account for any front and end-load fees, hence the net returns of aggregate mutual fund may be overstated. This is in line with Sharpe's (1991) arithmetic of active management where the game of managing portfolios actively will result negatively in term of net excess returns. Table 9 shows that aggregate mutual fund performance exhibit significantly negative alpha, and also, significant exposure to market risk factor in both CAPM and three-factor model regression. Furthermore, we find that aggregate mutual fund performance is lack of persistence. The difference between winner and loser groups, as described in Table 10, is only 0.23% with a t-statistic of 1.01 which is lower than the critical value of 1.96. The conclusion is that there is no difference between winner and loser groups.

The evidence is clear that in the aggregate level, mutual funds who pursue active management

Table 9. CAPM and Three-Factor Model Regression for Average Monthly Returns of Aggregate Mutual Fund Performance

	CAPM			FF				
	a	b	R-Squared	a	b	s	h	R-Squared
Coef	-0.25	0.97	0.96	-0.26	0.98	0.1	-0.05	0.96
(t-statistic)	(-2.03)	(52.54)		(-2.22)	(54.46)	(2.74)	(-1.36)	

Table 10. Summary Statistics of Mutual Fund Persistence

Portfolio	Mean (%)	SD (%)	CAPM a (%)	CAPM b	CAPM R-Squared	FF a (%)	FF b	FF s	FF h	FF R-Squared
W	1.66	6.82	-0.16	0.98	0.85	-0.20	0.99	0.26	0.04	0.87
(t-statistic)	(2.77)		(-0.71)	(27.56)		(-0.91)	(29.26)	(4.02)	(0.56)	
N	1.77	6.52	-0.08	1.00	0.97	-0.09	1.00	0.04	-0.07	0.98
(t-statistic)	(3.09)		(-0.86)	(69.09)		(-0.96)	(71.72)	(1.55)	(-2.76)	
L	1.43	6.48	-0.37	0.96	0.91	-0.39	0.97	0.11	-0.06	0.92
(t-statistic)	(2.52)		(2.16)	(36.57)		(-2.29)	(37.41)	(2.14)	(-1.27)	
W-L	0.23	2.60	-0.41	0.02	0.00	-0.43	0.03	0.16	0.10	0.03
(t-statistic)	(1.01)		(-1.78)	(0.54)		(-1.91)	(0.70)	(2.33)	(1.53)	

Table 11. Summary Statistics of Simulated Value Portfolios Performance

	Cumulative (%)	Mean (%)	SD (%)	*t* -statistic
B/M	563.97	1.56	4.27	4.16
E/P	940.16	1.95	5.22	4.25
C/P	697.85	1.72	4.74	4.13
D/P	975.97	1.94	4.54	4.87

Table 12. CAPM and Three-Factor Model Regression for Average Monthly Returns of of Simulated Value Portfolios Performance

Portfolio		CAMP a (%)	CAMP b	CAMP R-Squared	FF a (%)	FF b	FF s	FF h	FF R-Squared
B/M	Coef	0.28	0.53	0.65	0.23	0.55	0.37	0.26	0.75
	(*t* - statistic)	(1.23)	(15.47)		(1.20)	(17.75)	(6.49)	(4.68)	
E/P	Coef	0.61	0.59	0.51	0.58	0.59	0.20	-0.10	0.53
	(*t* - statistic)	(1.86)	(11.64)		(1.80)	(11.94)	(2.05)	(-1.021)	
C/P	Coef	0.42	0.55	0.55	0.41	0.55	0.07	-0.13	0.56
	(*t* - statistic)	(1.48)	(12.65)		(1.45)	12.77	(0.87)	(-1.533)	
D/P	Coef	0.79	0.44	0.37	0.76	0.44	0.15	-0.23	0.42
	(*t* - statistic)	(2.43)	(8.84)		(2.44)	(9.24)	(1.65)	(-2.55)	

process will likely end up with significant exposure to the market factor. Through the finding of value effect in this paper, we propose an alternative explanation of risk factors, namely the value effect. We simulate long-only value portfolios that will take long positions on stocks with high B/M, E/P, C/P, or D/P. The results of the simulation are summarized in the following Table 11 and 12, while the charts of cumulative returns of the simulated portfolios can be seen in Figure 2.

All of the simulated value portfolios outperform the aggregate mutual fund in term of cumulative and risk-adjusted returns. Table 11 shows that each simulated value portfolio has lower level of volatility while the average returns are either close or higher as compared to the performance of aggregate mutual fund performance in Table 8. These returns are not just simply acquired from taking higher exposure to the systematic market risk factor but rather

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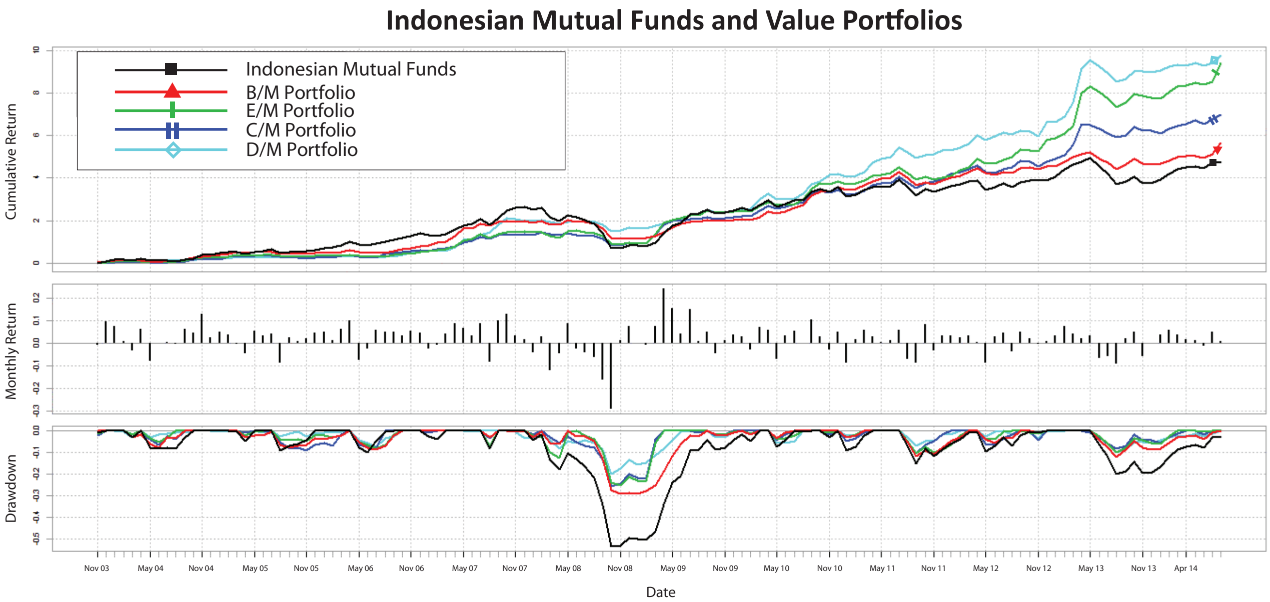

Figure 2. Cumulative Returns of Aggregate Mutual Fund and Simulated Value Portfolios

acquired from the other factors like SMB (s) and HML (h) as described in Table 12. All of the simulated value portfolios have positive alpha and lower exposure to the market risk factor regardless of the model used to determine the coefficients. Figure 1 also shows that all value portfolios exhibit lower rate of maximum drawdown on the period of subprime mortgage crisis

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Conclusion

The existence of value effect (based on B/P, E/P, C/P, and D/P) in Indonesia is evident to a limited extent due to the fact that our findings show a degradation of statistical significance when controlling the value portfolios for TO, and yet our attempt to provide some explanations regarding the existence of value effect is still openly debatable. We would like to remind that our main objective in this paper is to extend the persistence and pervasiveness of value effect as an additional out-of-sample test of this major global phenomenon. We incorporate the value effect documented in this paper into asset pricing model, as proposed by Fama and French (1993). We show that the value effect as an asset pricing factor exhibits very low correlation to the market risk factor and holds the most statistically significant value relative to the other factors. Using asset pricing test proposed by GRS (1989), the three-factor model generally shows some marginal improvements in attempt to explain the variation of average return across size-value portfolios.

We also provide a brief simulation of portfolios based on the value effect. All of our simulated value portfolios outperform the aggregate mutual fund industry in term of cumulative returns, risk-adjusted returns, and maximum drawdown. Nevertheless, there are some parts of value effect that we still leave unexplained since we do not examine the model performance of three-factor model using other variables aside of B/M and our mutual fund database is far from perfect, hence leaving another tasks for other researchers who are interested in this topic.

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