MARKET TIMING ABILITY OF DOMESTIC EQUITY FUNDS IN INDONESIA

By

Setiyo Wibowo

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

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ABSTRACT

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Since mutual fund had been introduced to Indonesian market in 1995, it has grown very rapidly in last few years. Its portfolio approximately reached IDR 90 trillion (equivalent to USD 10 billion) by the third quarter of 2008. This thesis examines performance of public equity funds in Indonesia in term of market timing ability. We examine the market timing ability of 28 samples of domestic public equity funds covering period from July 2000 to September 2008. Using the classic market timing tests developed by Treynor and Mazuy (1966), and Henriksson and Merton (1981), we find evidence that domestic equity funds in Indonesia have positive timing ability as an aggregate based on both measurement models. In this thesis, we also examine the market timing performance based on funds characteristics and the persistence of timing performance during different market conditions.

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Section I – Introduction

Market timing ability refers to the ability of fund manager to increase risk exposure before the market goes up, and decrease risk exposure before the market goes down. For the active fund managers' perspective, their performance is not only determined by ability to forecast individual security return or security selection, but also determined by ability to make precise investment decision, which refers to enter or exit the market on the right time, in the volatile markets. Market timing is one of vital investment decision for active manager in order to generate superior returns as well as security selection; it also plays crucial important to investment performance. Fund manager's timing ability would depend on how well market information he may have to predict market movement; sometimes he may fail to predict market return precisely and ends up with negative return. Studies about market timing ability are very important to observe how well an active fund manager to achieve his target return, and also to observe how well the performance of a particular fund manager compared with other fund managers or benchmark.

There are numerous tests of timing ability that had been developed, such as Treynor and Mazuy (1966), Henriksson and Merton (1981), Graham and Harvey (1996). Those tests found that mutual fund managers in the United States had a little or even negative timing ability. However, there are very limited researches, which observed market timing ability in emerging market. Do mutual fund managers in emerging country have a little timing ability also? Or even worse? In emerging financial markets, market timing could behaves differently compared with those in advance financial markets such as United States, Europe and Japan since emerging markets generally do not have certain level of market efficiency and strict standard in accounting and securities regulation compared with advanced markets.

Several papers had shown different result in evaluating fund manager's timing ability in emerging markets. Chander (2006), did research based on monthly return data and found negative timing ability in Indian market; however, Sehgal and Jhanwar (2008) found that fund manager's timing ability was significantly positive when used daily return data for Indian market case.

This thesis examines performance of public equity funds in Indonesia in term of market timing ability. It also examines correlation of timing ability of fund manager with size of the fund. Do equity funds, which have better timing ability, have larger size of funds? In emerging markets like Indonesia, the existence of mutual fund industry is relatively young; it had been introduced to Indonesian market by September 7, 1995. However, it gets very popular and has grown very rapidly in last few years as a result of a heavy promotion from banks and financial institutions. Recently, the fund portfolio approximately reached IDR 90 trillion or equivalent to USD 10 billion by the end of 2007. Since it becomes larger, it is important to observe the skills of domestic fund managers; in this case we examine fund managers' skills in term of their market timing, then we compare their performance relatively to other fund managers' performance or benchmark.

In order to examine market timing ability of mutual fund managers in Indonesia, we observe 28 sample equity funds which represent Indonesian equity fund industry during the period from July 2000 to September 2008. Moreover, due to limitation of the available data we use monthly fund returns to observe market timing activities done by fund managers. Furthermore, we do 99 observations for each fund during the period. Using the traditional models of market timing test, Treynor and Mazuy (1966) model and Henriksson and Merton (1981) model, we find that in aggregate level the domestic equity fund managers possess positive timing ability during the sample period.

This paper is organized as follows. Section II reviews literature on market timing that provides any methods and findings on observation of market timing ability of mutual funds or investment portfolios. This section also builds hypothesis. Section III explains particular models being used to observe market timing ability. Section IV describes the sample and data set. In section V, we discuss empirical results of our test on market timing ability of domestic equity fund managers based on their fund size and other characteristics; and finally Section VI summarizes and concludes the paper.

Section II – Literature Review and Hypothesis Building

Market timing is one of the most important strategies which may improve the risk and return profile of a fund portfolio. There are numerous papers that had examined market timing ability of mutual fund managers. The research was initiated by Treynor and Mazuy, hereafter referred to as TM, in 1966. They developed quadratic regression model based on yearly return data of 57 samples of mutual funds during the period 1953 – 1962. In standard CAPM, a portfolio return is a linear function of market return, but they argue if fund manager has good forecasting ability, he will hold a greater proportion of market portfolio when the market return is high and smaller proportion of market portfolio when the market return is low. Therefore, the returns of portfolio are likely to have a non linear function of market returns. Finally, they found only 1 of 57 sample mutual funds can outguess the markets. The findings suggested that investor of mutual funds is completely dependent on fluctuations in general markets, so improvement in fund rate of return will be due to fund manager's ability to identify underpriced industry and companies rather than to any ability to outguess turns in the level of markets as a whole. Therefore, investor should not hold fund manager responsible for failing to foresee changes in the market climate. Fama (1972) distinguished between timing ability or "macro-forecasting", i.e. changing the portfolio systematic risk in anticipation of significant market movement, and selectivity or "micro-forecasting", i.e. forecasting price of individual securities.

Henriksson and Merton (1981), hereafter referred to as HM, developed another statistical framework to observe market timing ability of fund manager. They developed both parametric and non-parametric statistical procedures to test for superior forecasting skills. When the fund manager's forecasts were observable, the parametric test was suggested to be used without any assumptions on distributions of fund returns. Otherwise, the non-parametric

test with further assumptions of capital assets pricing model or multi-factor model can be used. Basically their approach differs from previous studies, which is less sophisticated and under assumption that forecasters follow a more qualitative approach to time the market. Based on that methodology, Henriksson (1984) found no evidence of timing ability on examining 116 open-end mutual funds during period 1968 – 1980 in the US. There are various studies of market timing which used HM approach such as Chang and Lawellen (1984). By employing parametric statistical technique, they found that fund managers were unable to outperform passive investment strategies. Eun, Kolodny and Resnick (1991) examined performance of international mutual funds and found no evidence of timing ability in general exhibited by US-based international mutual funds. Rao (2000) also found only four out of a sample of the US 570 mutual funds have positive timing ability during 1987 to 1996 using the HM measure.

Those previous studies were also coherent with Chen, Lee, Rahman, and Chan (1992). They examined the cross-sectional relationship between security selection and market timing. According to their study, collectively mutual funds appeared to possess no market timing ability. Furthermore, the evidence also suggested that a trade-off existed between market timing and security selection.

Chen and Jang (1994) used the modified Treynor and Mazuy methodology to examine the performance of a sample of 15 US-based international mutual funds for selection and timing performance during the period from 1980 to 1989. The result differed from previous study where most international mutual funds outperformed the markets both security selection skills and timing skills, especially when they used S&P 500 as a benchmark rather than MSCI World index. Study on international mutual funds was also conducted by Kao, Cheng, and Chan (1998). Based on monthly return data of 97 international mutual funds from January 1989 to December 1993, their findings suggested that international mutual fund

managers possessed good selectivity and overall performance, but poor timing ability. They also found a negative correlation between security selection ability and timing ability, where European fund manager showed poorer performance than other international mutual fund managers.

Market timing tests using conditional and unconditional multi-factor models were conducted by Comer (2000) on a sample of the US mutual funds covering the periods 1992 to 1998 and 1978 to 1998. Comer's study observed market timing ability of funds to switch between various categories of stocks, bonds, and cash. The results showed that regardless the model used or the sample tested; there was no widespread evidence of significant market timing ability among funds. The results suggested that it was difficult for the market timing funds to consistently predict the direction of various financial markets. However, Bae and Yi (2008) found that the market timing skills of fund managers in the US had improved significantly since the Short-Short Rules repealed in 1997.

Those previous market timing tests are basically based on fund returns; different approach was also introduced by Jiang, Yao and Yu (2004) using holding-based measure to conduct market timing test of mutual funds in the US markets. They estimated portfolio's beta by measuring the weighted average of individual security's betas held by the portfolio, and they also measured the relations between portfolio's betas and market returns. According to them, the approach has several empirical advantages than using fund returns. First, it gives higher accuracy in estimating fund beta. Second, it could avoid the 'artificial timing' bias, which can be interpreted as a condition where fund managers have ability to adjust fund betas in response to precedent or simultaneous market returns. Their study examines 2,294 sample US mutual funds covering the period from 1980 to 2002. Using the holding-based tests, they found average market timing were positive, and it became more statistically significant when forecasting horizons were extended to longer period to 3-, 6- and 12-month.

Unlike the previous studies, Graham and Harvey (1996) conducted a test on timing ability implied by newsletters' asset allocation recommendations. By evaluating the performance of 237 newsletter strategies from June 1980 to December 2002, they found that newsletters failed to provide correct recommendations in assets allocation to anticipate future market movement. Studies on market timing were also conducted on hedge funds; unlike the results of studies on mutual funds, hedge fund managers showed evidence of significant timing ability. Chen (2005) extended TM and HM models to observe timing ability of hedge fund managers. By observing 1,471 sample hedge funds, he found that hedge fund managers have significantly positive timing abilities in bonds, stock and also currency markets. Similar with this result, Chen and Liang (2007), using a sample of 221 market timing hedge funds during 1994 – 2005, also found that market timing hedge funds significantly timed the US equity market.

Then, how was market timing observed in other countries? Comparing market timing ability in different countries is very important to obtain complete picture how market timing ability influences investment strategies of fund manager across countries. In Italy, another approach was proposed by Doninelli and Falbo (2004) to infer mutual fund investment style based on genetic programming. They used important tool of genetic programming to extract useful information about the trading strategies implemented by market timers. The methodology had been used extensively by practitioners to find profitable technical trading rules, in particularly in currency and stock index futures markets. Using this methodology, they attempted to describe objectively mutual fund market timing activity based on performance return data. Through empirical testing of a sample of 20 mutual funds in Italy for time period from 1988 to 2000, they found that market timing ability may provide positive excess returns earned by a given fund. Those findings were coherent with the findings based on CAPM model. Saez (2006) observed mutual fund performance in term of

stock selection, market timing, and seasonality in Spain. Through his assessment on 228 Spanish mutual funds from July 1988 to September 2004 using linear model, he found that in aggregate terms market timing ability did not exist. However, there was greater evidence of preserve or negative timing ability.

Chander (2006) conducted a study on market timing ability of mutual funds in India. The study was based on the performance outcome of 80 investment schemes from public as well as private sectors for period January 1998 to December 2002. Based on monthly returns, they found as a whole 96.25% of investment managers failed to time the markets in relation to Treynor and Mazuy measure, and 95% in relation to Henriksson and Merton measure. Study about timing ability in India was also conducted by Sehgal and Janwhar (2008) using modified TM and HM measure. They modified the methodology using four-factor model developed by Carhart (1997). Their findings on examining a sample of growth funds during the period of January 1999 to December 2003 showed that market timing improved as return data was shifted from monthly to daily return data. Based on modified TM method, only 1 out of 60 sample funds provided positive timing ability on monthly basis. However, timing ability improved significantly (45% of the sample) when daily return data was used. Thus fund managers seemed to execute more active market timing strategies which were better captured by daily return data. This result was also coherent with that when they used HM method.

In other emerging market, Turkish mutual fund performance in term of security selection and market timing ability was observed by Imisiker and Ozlale (2008). They observed mutual fund performance based on weekly return data during the period January 2000 to October 2003. The results indicated weak evidence of selectivity and some evidence for market timing ability among mutual fund managers.

In case of Indonesia, we do not find any literatures related to market timing ability

which is possessed by mutual fund managers in Indonesia. The reason is possibly that the existence of mutual fund industry is quite young compared with that in developed countries such as the US, Europe, and Japan. Thus, any observations about marketing timing ability of Indonesian mutual funds are very limited. However, an observation on fund managers' ability would be an interesting issue.

In order to have better and comprehensive objectives thus inferred, our thesis conducts tests to the validity of the following null hypothesis:

H_{01}: Mutual fund managers cannot time the market successfully;

H_{02}: Timing performance is independent to the fund characteristics;

H_{03}: Timing performance uniformity exists across the model used to measure the performance.

H_{04}: Timing performance persistence does not exist during different market conditions.

Section III – The Models of Market Timing Test

In this section we discuss the models used to observe market timing ability of Indonesian mutual funds. We test market timing using the model of Treynor and Mazuy (1966), then compare the results using the model of Henriksson and Merton (1981). Since our study is the first one which observes market timing ability of Indonesian mutual funds, we prefer to use the simplest models for initial diagnostic on this problem. In addition, these models are still popular to be used in many observations on market timing. In relation to the models used in our study, it is still comparable with other recent studies, such as Chen and Jang (1994), Kao, Cheng and Chan (1998), and Chander (2006).

3.1 Treynor and Mazuy (1966) Model

TM used the quadratic regression to test market timing; basically the TM model used the following regression:

$$r_{i,t} = \alpha_i + \beta_i r_{m,t} + \gamma_i r_{m,t}^2 + e_{i,t} \quad (1)$$

Where $r_{i,t}$ is the excess return of the portfolio i at time t, $r_{m,t}$ is the excess return of the market at time t, and γ_i is the measure of market timing ability. Meanwhile, α_i is an intercept which represents security selection skill and β_i represents portfolio beta. When a fund manager has good market timing ability, he increases (decreases) portfolio risk exposure prior to up (down) market. Thus, portfolio return will be a curved function of market return and γ will be positive.

The explanation of TM model is following; a fund manager tries continually to outguess the market by oscillating between two characteristic lines, the high volatility and

low volatility line. Characteristic line refers to a plotted line of a fund returns against market returns. Figure 1 illustrates the extreme case where a fund manager has ability to predict the market movement precisely. In this case, fund manager increases portfolio's beta prior to up market, which is demonstrated by characteristic line C-D. In contrast, fund manager decreases portfolio's beta before the market goes down; it is demonstrated by characteristic line A-B. On the other hand, figure 2 describes a condition when a fund manager always has incorrect forecast. In this case, the unexpected points of fund returns (points H, G, F, and E) can be happened as frequently as the expected fund returns (points A, B, C and D).

However, there is likely no fund manager can perfectly anticipate the market movement. When the market performs better, fund manager is likely anticipating by increasing fund's volatility properly. The higher market hikes, the higher volatility of fund portfolio. Thus, the characteristic line will have flatter at the excessive left and steeper slope at the excessive right, as shown in figure 3.

Figure 1 – Fund that has consistently outguessed the market

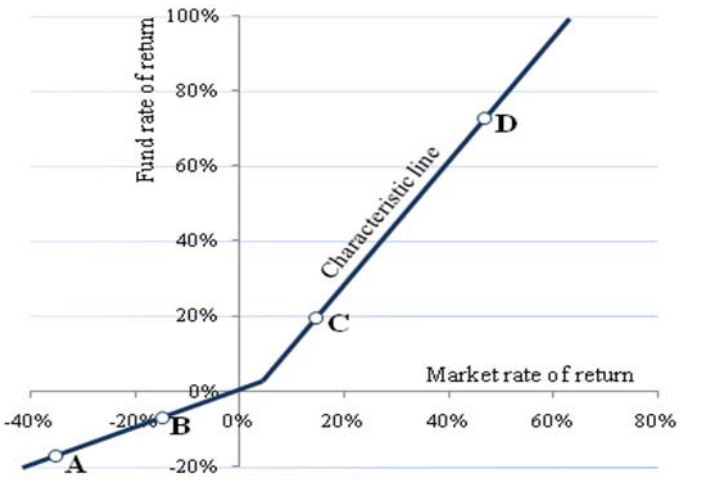


Figure 2 – Fund that has guessed both right and wrong

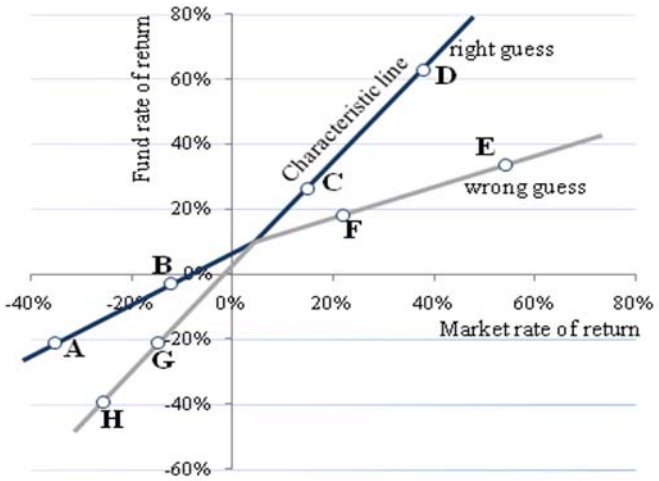
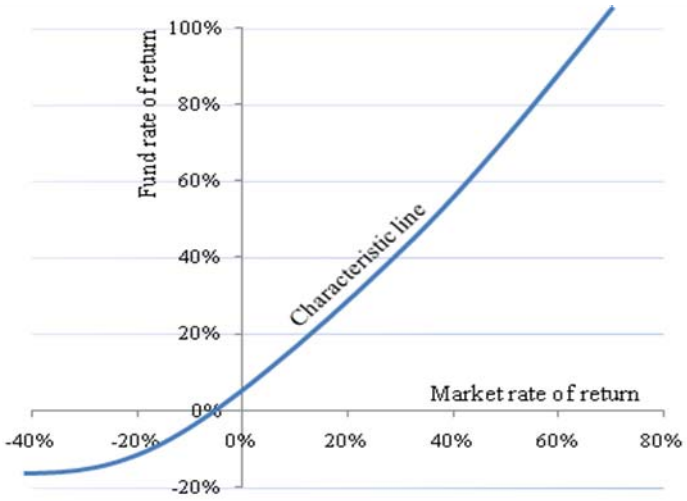


Figure 3 – Fund that has outguessed the market with better-than-average-success



3.2 Henriksson and Merton (1981) Model

HM model describes that fund manager adjusts beta risk exposure depending on where there is an up or a down market:

$$r_{i,t} = \alpha_i + \beta_i r_{m,t} + \gamma_i r^{+}_{m,t} + e_{i,t} \quad (2)$$

$$r^{+}_{m,t} = r_{m,t} I\{r_{m,t} > 0\} \quad (3)$$

where $r_{i,t}$ is the excess return of portfolio i at time t, $r_{m,t}$ is the excess return of the market at time t , and γ_i is a measure of market timing ability of a portfolio i. The γ also represents the

difference of beta between up-market and down-market, and β_i is the down-market beta of a portfolio *i*. Thus, the sum of β_i and γ_i will be the up-market beta. According to HM model, γ_i will be positive, when a fund manager has good market timing ability. Meanwhile, $I\{r_{m,t}>0\}$ is an indicator function that equals to one if $r_{m,t}$ is positive and equals to zero if $r_{m,t}$ is negative or zero. Similar to previous model, α_i is intercept which represents security selection skills of the fund manager; it will be greater than zero, if fund manager has good selection skills of securities.

Section IV – Sample and Data Description

4.1 Overview of Mutual Fund Industry in Indonesia

Mutual funds had been introduced and sold to public since September 7, 1995. After that, the development of mutual fund industry in Indonesia become increasing quickly since the government supported its development by applying new regulation on capital market in 1995 and other supporting regulations years later. In the first year of the mutual fund had been introduced, there was only 25 registered mutual funds. However, its existence becomes increasingly significant; a decade later there were 370 mutual funds registered and sold to the public. Those funds included equity funds, fixed income funds, money market funds, balanced funds, index funds and protected funds. The growth of the industry was not only in numbers of funds, but also the size of funds as well. Initially fund asset value was counted only IDR 2.8 trillion in the beginning of its publication in 1995, but it grew to IDR 39.95 trillion a decade later. During that period, the asset value reached the peak at IDR 113.7 trillion in February 2005, before it dropped down due to changing in domestic macroeconomic and high interest rates. Recently, as the recovery of Indonesian macroeconomic, the net asset value of domestic mutual funds has recovered to around IDR 90 trillion by the end of 2007. Equity funds and Fixed income funds take the biggest portion of total industry net assets value, which are accounted for approximately 37.79% and 22.33% of total funds value or IDR 34.45 trillion and IDR 20.35 trillion of net assets value respectively. Other funds such as protected fund balanced funds, and money market funds take smaller portion, which are accounted for 17.83, 15.48%, and 5.30% of total net assets value respectively. In term of numbers of funds, the fixed income funds are the largest number of funds, which have 163 funds; meanwhile balanced funds are in the second largest, which have 97 funds. Protected funds and equity funds have 88, and 51 funds respectively.

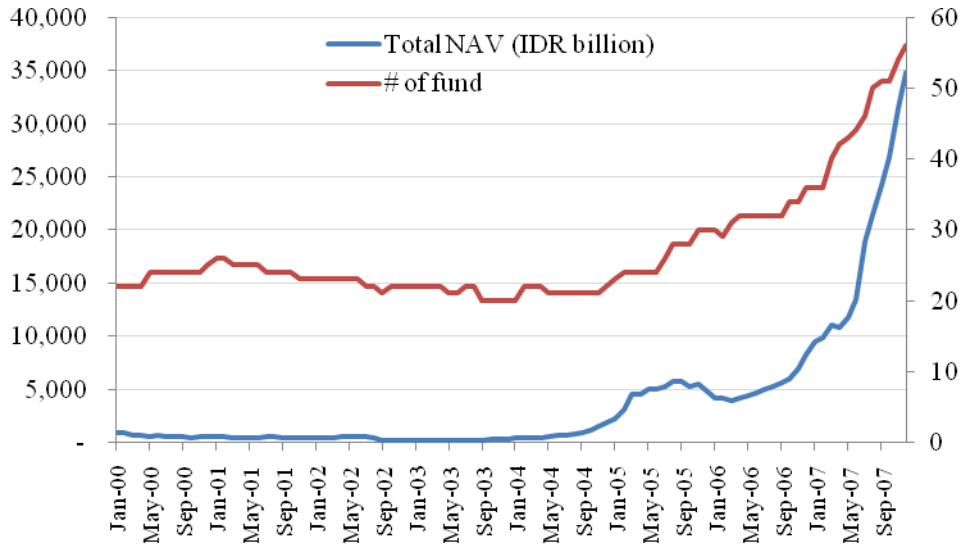
Table 1 – Profile of Mutual Fund Industry in Indonesia by the end of 2007

Type of Fund	Number of Funds		Net Assets Value (IDR billion)	
Fixed Income Fund	163	37.64%	20,354.43	22.33 %
Money Market Fund	32	7.39%	4,828.54	5.30 %
Balanced Fund	97	22.40%	14,112.04	15.48 %
Equity Fund	51	11.78%	34,449.33	37.79 %
Protected Fund	88	20.32%	16,249.56	17.83 %
Other Funds	2	0.46%	1,159.87	1.27 %
Total	433		91,153.77	

Source: Indonesian Capital Market Supervisory Agency

In this thesis, our analysis on market timing ability covers only for equity funds. Basically, the idea is based on the very aggressive growth of equity funds in Indonesia recently. In addition, the high volatility of equity markets could encourage equity fund managers to time the markets in order to achieve higher abnormal returns.

Figure 4 – Domestic Equity Fund Growth during 2000 - 2007



Source: Indonesian Capital Market Supervisory Agency

4.2 Sample Selection and Data Collection

Mainly, our data are obtained from Indonesian Capital Market Supervisory Agency. By the end of 2008, domestic equity fund consists of 70 funds including 61 active funds and 9 defunct funds. Our market timing ability uses the monthly net assets value (NAV) of 28 Indonesian equity funds covering the period from July 2000 to September 2008. The time period in our observation fairly represents bullish and bearish market conditions, which the period 2000-2002 represents bearish market conditions, 2003-2007 represents bullish markets, and 2008 represents extremely downturn markets. In general, our analysis fairly captures market timing ability of mutual fund managers in all market conditions.

Since mutual fund industry in Indonesia is quite young, which was introduced since 1995, and by the time of our analysis (2008) this sample of equity funds still represent a large portion of equity based mutual funds in Indonesia. Furthermore, this sample size is still comparable to that used in other empirical studies on market timing ability such as Chen and Jang (1994)'s study which used a sample of 15 the US-based international mutual funds, and Donelli and Falbo (2004) who analyzed daily performance of 20 Italian mutual funds.

Moreover, due to limitation of the available data of historical fund returns, our analysis on market timing uses monthly returns. All the funds we have chosen do not distribute dividend to fund holder, therefore the NAVs are continuously compounded. We use logreturns to define the fund returns R_t which are derived from NAV as following:

$$R_t = ln \frac{NAV_t}{NAV_{t-1}} \tag{5}$$

Due to Indonesian tax regulation, open-end mutual funds are taxed at source, so that the fund's NAV is net of taxes. The fund's NAVs of our sample are obtained from Indonesian Capital Market Supervisory Agency. Meanwhile, we use monthly returns of Jakarta Composite Index, which adjusted from dividend, as the proxy for market returns. We also

obtain the monthly risk free rate from monthly yield of 3-month Indonesian Treasury Bills. During the observation period, our analysis covers of 99 observations for 28 sample funds which each fund has to fulfill the following criteria:

i) The fund should be a domestic equity fund;

ii) The fund have more than IDR 1 billion of net assets;

iii) No missing data from the fund

Performance evaluation on surviving funds is likely to have survivorship bias. Survivorship bias arises from the fact that poor performance funds disappeared during the period of observation. In order to avoid survivorship bias, we select the sample funds at the beginning of observation, and we include defunct funds since the database provides historical NAV of defunct funds as well as active funds. We discuss further about this issue in section V.

Total NAV's of our 28 sample funds, at the time of our study (as of September 2008), are accounted for 62.13% of total NAV of domestic equity funds industry or they worth for IDR 20.06 trillion. Furthermore, the samples also consist of 27 open-end equity funds and 1 close-end equity fund. Meanwhile, in term of the sponsor, they are sponsored 71.4% by domestic financial institutions and 28.6% by foreign or joint venture financial institutions. According to the fund's size, we categorize our sample into 46.6% of small funds (which have market share less than 0.05%), 32.1% of medium funds (which have market share 0.05% - 1%), 14.3% of large funds (which have market share 1% to 10%), and 7.1% of giant funds (which have market share above 10%). Moreover, in order to avoid survivorship bias we select 7 out of 28 sample funds as defunct funds, which are defined as funds that do not survive until the end of observation period. Thus, our sample fairly represents the domestic equity fund industry in all perspectives.

Table 2 – Summary statistics of sample fund's returns

This table describes summary statistics of all sample funds which includes average monthly return of 28 sample funds, the market index and risk-free rate during the period of observation from July 2000 to September 2008. Mean represents the average monthly return of sample funds. All the statistics are in monthly terms.

Statistics	Equity funds	JCI (market index)	Risk-free rate
Mean	0.0122	0.0151	0.0093
Standard deviation	0.1298	0.0641	0.0028
Minimum	-3.0594	-0.1277	0.0060
Maximum	3.0772	0.1415	0.0147
Skewness	-0.8755	-0.2915	0.4487
Kurtosis	331.25	2.4050	1.8392

Table 3 – Summary of sample funds' profile

This table explains the profile of our sample funds in detail which consists of average annual return, standard deviation, and Sharpe ratio of each category during the period from July 2000 to September 2008. For each fund, we compute the summary statistics and then we compute the average statistic for each category. N represents the number of funds in the category.

Fund category	NAV (IDR billion)	N	Annual return	Standard deviation	Sharpe ratio
Small	1 – 20	13	1.46%	23.71%	-0.428
Medium	20 – 300	9	21.11%	66.51%	0.152
Big	300 – 5,000	4	23.69%	21.84%	0.601
Giant	> 5,000	2	29.22%	22.91%	0.795

According to the table above, the sample funds recorded the average monthly returns of 1.22% with standard deviation of 12.98%. They performed worse compared with the market index, which the Jakarta Composite Index (JCI) recorded average monthly return of 1.51% with standard deviation of 6.41%. In term of fund size category, small funds, which represent the largest portion of our sample, recorded the worst performance. They recorded annual return by 1.46% with standard deviation of 23.71%. Best performance is recorded by giant-size funds, which they booked the highest return and Sharpe ratio of 29.22% and 0.795 respectively. Medium and big funds realized annual returns 21.11% and 23.69%, and standard

deviation 66.51% and 21.84%, respectively. This fact would be an interesting issue since larger size fund tends to have better performance than smaller size fund. It is possibly caused that investors tend to choose high performing funds as their portfolio. Therefore, high performing funds tend to get more new additional fund from investors that makes them become larger. In addition, the accumulative returns of high performing funds urge the funds grow larger even more. We will discuss this issue more detail their performance on market timing in the next section.

Section V – Empirical Results and Discussion

In this section we present the outcomes of our study in examining the market timing ability of mutual fund managers operating in Indonesian capital market. In addition, we discuss the outcomes in order to answer the null hypothesis developed in the previous section.

5.1 Empirical Results

5.1.1 Overall Performance

We estimate the market timing in Eq. (1) and Eq. (2) for sample funds, which cover 28 equity funds. To test the significance, we use the significant at 5% level by comparing the empirical t-statistic to ±1.96. Table 4 and Table 5 report the empirical test using the TM measure and HM measure, respectively.

Our results suggest evidence that mutual fund managers in Indonesia have positive timing ability during our observation period. In term of TM measure, overall market timing performance shows majority of mutual funds have positive timing ability which 71.4% of sample funds yielded positive return attributed to manager's timing activity. In addition, 32.1% of sample funds record significantly positive timing ability, while only 3.6% of the funds have significantly negative timing ability.

In relation to HM measure, the fraction of funds with their timing performance is similar with previous results, where 67.9% of the sample funds have earned positive timing performance and 17.9% of them earn significantly positive timing performance. In other hand, only 32.1% of the funds record negative timing performance and only 3.6% of significantly negative timing performance.

In relation to the magnitude of timing coefficient, as shown in panel B of table 4 and

table 5, our estimates present that on the whole, overall sample funds record positive timing performance based on both TM measure and HM measure. The average gamma (γ) estimates produced by our study is significantly positive 1.156 with t-statistic 2.05 based on TM measure and positive 0.314 but not significant at t-statistic 1.36 as per HM measure.

Table 4 – Test of market timing based on Treynor and Mazuy measure

This table presents the results of quadratic regression model to examine market timing ability of funds as following: $r_{i,t} = \alpha_i + \beta_i r_{m,t} + \gamma r_{m,t}^2 + e_{i,t}$, where $r_{i,t}$ is the excess return of the portfolio i at time t, $r_{m,t}$ is the excess return of the market at time t, and γ is the measure of market timing ability.

The examination covers 28 domestic equity funds during 99 months from July 2000 to September 2008, and we use the significance at 5% level at t-statistic ±1.96. Panel A shows the fraction of sample funds that record positive/negative timing performance and significantly positive/negative performance. Panel B shows the average timing coefficient (γ) for each fund category.

Fund category	Positive	Negative	Significantly positive	Significantly negative	Average
Panel A: Fraction					
Small	0.539	0.462	0.154	0.077	
Medium	0.778	0.222	0.333	0.000	
Big	1.000	0.000	0.500	0.000	
Giant	1.000	0.000	1.000	0.000	
All funds	0.714	0.286	0.321	0.036	
Panel B: Timing coefficient					
Small	1.397	-1.055	1.369	-2.349	0.266
Medium	5.541	-0.424	1.124	0.000	4.215
Big	1.567	0.000	2.715	0.000	1.567
Giant	1.520	0.000	1.520	0.000	1.520
All funds	2.894	-0.898	1.720	-2.234	1.156

Table 5 – Test of market timing based on Henriksson and Merton measure

This table presents the results of single-factor HM model to examine market timing ability of funds as following:

$$r_{i,t} = \alpha_i + \beta_i r_{m,t} + \gamma_i r^+_{m,t} + e_{i,t}; \text{ while } r^+_{m,t} = r_{m,t} I\{r_{m,t} > 0\}$$

where $r_{i,t}$ is the excess return of portfolio i at time t, $r_{m,t}$ is the excess return of the market at time t , and γ_i is a measure of market timing ability of a portfolio i .

Similar to the previous table the examination covers 28 domestic equity funds during 90 months from July 2000 to

September 2008, and we use the significance at 5% level at t-statistic ±1.96. Panel A shows the fraction of sample funds that record positive/negative timing performance and significantly positive/negative performance. Panel B shows the average timing coefficient (γ) for each fund category.

Fund category	Positive	Negative	Significantly positive	Significantly negative	Average
Panel A: Fraction					
Small	0.461	0.574	0.000	0.077	
Medium	0.778	0.222	0.222	0.000	
Big	1.000	0.000	0.500	0.000	
Giant	1.000	0.000	0.500	0.000	
All funds	0.679	0.321	0.179	0.036	
Panel B: Timing coefficient					
Small	0.277	-0.250	0.000	-0.617	-0.007
Medium	1.066	-0.221	0.347	0.000	0.780
Big	0.309	0.000	0.573	0.000	0.309
Giant	0.340	0.000	0.320	0.000	0.310
All funds	0.578	-0.244	0.432	-0.617	0.206

Overall, the evidence generated by our study indicates to reject our null hypothesis that mutual fund managers are unable to time the market successfully (H_{01}). However, a few fund managers are noted to indicate poor performance in their timing activity at individual level. This finding may differ with previous studies which had observed timing ability of fund manager in other countries. However, it is not necessary to conclude that Indonesian fund managers have superior timing ability than those in other countries. There are some possible explanations for this finding. Firstly, the observation period, which covers from July 2000 to September 2008, contains a long and strong trend of bullish market period from 2003 to 2007, while it contains very limited mixed and downward trends. Thus, this long upward trend may help the fund managers to time the markets in better way. Secondly, timing performance would depend not only to the skill of fund managers but also the market characteristics. In the perfectly efficient markets, it is impossible to time the market successfully. As the characteristic of emerging markets, the Indonesian capital market is more likely to have weak

market efficiency in which the market movement tends to follow other developed markets. Moreover, studies on market timing do not aim to compare the ability of fund managers across countries. It is more useful to assess fund managers' ability in a certain market to provide information for investors in order to select mutual funds for their investments.

5.1.2 Timing performance in Relation to Fund Characteristics

At the category level as shown in table 4 and table 5, giant and big-sized funds have earned superior market timing performance, 100% of these fund categories show positive timing performance. Moreover, a half of both big and giant-sized funds record significantly positive timing performance as per both TM measure and HM measure. Meanwhile, medium-sized funds record worse performances in their timing activities compared with big and giant funds, but still have positive timing performance on average. Due to our estimation 77.8% of them have positive timing ability as per both TM measure and HM measure; and 33.3% of them record significantly positive timing ability on TM measure and 22.2% as per HM measure. There is no fund in medium-sized funds have significantly negative timing ability. The results also show that small funds have the worst performance, which large portions of them (46.2%) have negative timing ability. Furthermore, only 15.4% of these funds have significantly positive and 7.7% have significantly negative timing ability.

In term of timing coefficient or gamma estimates, the highest gamma is noted by medium-sized fund, which funds in this category record average gamma of 4.215 as per TM measure and 0.780 as per HM measure. Positive gamma estimates is also noted by both big-sized and giant-sized funds, which funds in these categories have average gamma estimates of 1.567 and 1.520 respectively as per TM measure, and 0.309 and 0.310 respectively as per HM measure. In contrast, marginal gamma estimate is noted by small-sized funds, which they have average gamma estimate of 0.66 and -0.007 as per TM measure and HM measure

respectively. Interestingly, the poor timing performance of small-sized funds is not attributed by defunct funds, which the defunct funds themselves realize average gamma estimate of positive 1.08 as per TM measure and 0.19 as per HM measure; the active small-size funds earn average negative gamma estimate which is -0.62 as per TM measure and -0.19 as per HM measure.

The results also can be interpreted that medium-sized funds time the market more actively than other funds. Big and giant-sized fund even though do less active market timing than medium-sized funds, they still show impressive market timing ability. The marginal timing performance of small-sized funds is likely attributed to poor performance of their investment managers. This timing performance is coherent with overall funds performance includes annual return, risk and Sharpe ratio as previously shown in table 3 in section IV, which fund with poor risk adjusted return has poor timing performance. However, this statement need more study in security selection performance. To endorse this result, the following table shows fund performance including risk-return, Sharpe ratio and timing performance at individual level.

Table 6 – Market Timing Performance at Individual Level

This table presents the funds' performance at individual level including return, standard deviation, Sharpe-ratio, and timing performance both TM measure and HM measure. The return, standard deviation and Sharpe ratio are in annual term. The examination covers 99 months of observation from July 2000 to September 2008.

Fund Name	Category	Annual Return	Std. Dev	Sharpe Ratio	TM Measure	TM Rank	HM measure	HM Rank
ABN Amro Ind.Dana Saham	Medium	16.79%	155.59%	0.036	3.526	3	0.795	3
Arjuna	Small	-0.31%	18.81%	-0.643	-0.086	21	-0.162	22
Bahana Dana Prima	5Medium	20.78%	23.23%	0.413	1.059	16	0.189	15
BDNI Reksa Dana Tertutup	Small	-1.69%	19.44%	-0.892	-0.512	24	-0.284	26
Big Nusantara	Small	-1.84%	20.51%	-0.637	0.278	20	-0.046	20
Big Palapa	Small	9.92%	15.57%	0.049	-2.349	28	-0.617	28
Bima	Small	-26.23%	41.55%	-0.922	1.434	9	0.081	17
BNI Berkembang	Medium	8.84%	22.78%	-0.103	-0.197	22	-0.181	23

Fund Name	Category	Annual Return	Std. Dev	Sharpe Ratio	TM Measure	TM Rank	HM measure	HM Rank
Dana Megah Kapital	Big	16.86%	22.44%	0.252	0.331	19	0.040	19
Dana Sentosa	Small	6.91%	21.45%	-0.102	-1.139	26	-0.223	24
Danareksa Syariah	Small	-4.07%	20.43%	-0.938	1.711	6	0.365	6
Fortis Ekuitas (Citi Ekuitas)	Giant	27.49%	24.08%	0.685	1.447	8	0.299	10
GTF Agresif	Small	-17.38%	30.90%	-1.030	2.278	4	0.384	4
GTF Sejahtera	Small	-1.65%	19.59%	-0.822	1.346	13	0.208	14
Makinta Mantap	Medium	45.87%	147.87%	0.244	29.217	1	5.478	1
Mandiri Investa Atraktif	Big	28.10%	23.14%	0.795	4.283	2	0.873	2
Manulife Dana Saham	Big	33.52%	20.32%	1.202	1.148	14	0.273	12
Master Dinamis	Small	16.45%	21.33%	0.268	1.354	12	0.275	11
Mawar	Medium	18.24%	21.08%	0.334	1.100	15	0.216	13
Niaga Saham	Small	14.39%	22.34%	0.100	1.385	11	0.348	7
Nikko Saham Nusantara	Small	8.25%	21.09%	-0.140	-0.368	23	-0.098	21
Panin Dana Maksima	Big	22.72%	21.72%	0.531	0.506	18	0.049	18
Phinisi Dana Saham	Medium	23.92%	22.87%	0.556	1.826	5	0.381	5
Platinum Saham	Medium	28.23%	24.82%	0.767	-0.653	25	-0.263	25
Rencana Cerdas	Medium	23.68%	22.71%	0.549	0.673	17	0.092	16
Saham BUMN	Small	2.91%	20.37%	-0.324	-1.877	27	-0.321	27
Schroder Dana Prestasi Plus	Giant	30.93%	21.81%	0.912	1.593	7	0.320	8
SiDana Saham	Medium	22.40%	21.27%	0.527	1.387	10	0.312	9
Overall		**13.36%**	**31.75%**	**0.060**	**1.811**		**0.314**	

In order to observe timing performance in relation to different kind of characteristics in the sense that the fund's characteristics influence or even determine the fund managers' decision making and the investment risk-return, we also observe market timing performance in relation to other characteristics such as fund's nature and sponsorship in addition to fund's size category as we discussed previously. We believe that mutual fund managers practice specific investment strategies to achieve the desired investment objectives. Thus, it would be useful to examine fund's timing performance in relation to such characteristics.

Table 7 reveals that open-end mutual funds have outperformed the close-end funds in their timing performance, which open-end funds have average gamma estimates of 1.897 compared with -0.512 of close-end funds as per TM measure. This result is also persistence when we apply HM measure in relation to this characteristic. Based on HM measure, open-

end funds have experienced positive gamma estimates of 0.336, while their counterparts, close-end funds, experience negative timing coefficient of -0.284. This result actually endorses that open-end funds tend to be more active market timer than close-end funds, while the close-end funds possibly have less active trading behavior and have tendency to be contrarian since the funds usually live in a certain long period.

Table 7 – Average Market Timing Performance in Relation to Other Characteristics

	Fund Characteristic	Fraction	TM measure	HM measure
A)	**Nature**			
	Close-end funds	3.6%	-0.512	-0.284
	Open-end funds	96.4%	1.897	0.336
B)	**Sponsorship**			
	Domestic financial institution	71.4%	3.005	0.372
	Foreign/JV financial institution	28.6%	1.895	0.311

Furthermore, these findings also reveal that local-financial-institution-sponsored funds have timing skills as good as foreign financial-institution-sponsored funds. In this case, local fund managers are accounted for 71.4% of total selected funds in our sample, and the rest 28.6% represent foreign or joint venture financial institutions. Our findings show that market timing skills of local fund managers are even better than those of foreign fund managers. On average basis, gamma estimate of domestic fund managers based on TM and HM measure is 3.005 and 0.372, respectively. This is higher compared with average gamma estimates of foreign fund managers, which they realize 1.895 and 0.311 based on TM and HM measure respectively.

On the whole, we can infer that market timing performance of mutual funds vary across fund category or fund characteristics, in a sense that a unique fund characteristic determines the investment objectives, risk-return profile, and also trading behavior of a

mutual fund. Therefore, these findings may conclude to refuse our null hypothesis (H_{02}) that market timing performance of mutual fund managers is independent across fund characteristics. It may be inconsistent with the general principle of market efficiency, which market returns follow random walking theory. These results may differ from similar study previously in various countries, where most studies in the developed markets found there was only little evidence that mutual fund managers consistently timed the market for a certain long period. However, the vary results may be determined by the difference of the degree of market efficiency across countries.

5.1.3 Timing Performance in Relation to Measurement Models

As shown previously in table 4 to table 7, comparing the result based on TM measure and HM measure will get similar result but slightly different. Previous table has described that both TM measure and HM measure give consistent outcomes in examining timing performance. However, the HM measure has tendency to under-rate the funds' performance. At individual fund level, the TM measure and HM measure present slightly different rank of fund's timing performance.

For greater objectivity and precision investigation on the proximity between the two measurement models, we employ Spearman's rank order correlation coefficient (r_s) between the TM measure and HM measure. In principle, r_s is simply a special case of the Pearson product-moment coefficient in which calculating the correlation coefficient of the ranking of gamma based on TM and HM measure. If there are no tied ranks, r_s is given by:

$$r_s = 1 - \frac{6\sum d_i^2}{n(n^2-1)};$$

where d_i is the difference between the ranks of corresponding value TM rank and HM rank, and n is the number of sample funds.

Our calculation on this correlation coefficient (r_s) is 0.969 significant at 1% level; this means that both measurement models tend to be identical in measuring timing ability among funds. Thus, we may infer to accept another null hypothesis that timing performance uniformity exists across the model used to measure the performance (H_{03}).

5.2 The Results in Relation to Survivorship Bias

An important issue to take into account when we are analyzing past performance during a certain period is survivorship bias. It refers to a tendency failed mutual funds to be excluded from performance evaluation because they no longer exist at the end of observation period. It also often causes the observation result to skew higher because the sample only consists of only funds that survive until the end of observation period. In one condition survivorship bias can be neglected in observing timing performance when the results show negative or only little evidence of timing ability. However, when the results show positive or significantly positive timing performance, it possibly raises as an issue.

In this case, on the whole, sample funds in our study show positive timing ability. In order to avoid survivorship bias in our study, we conduct sample selection at the beginning of observation period instead of at the end. Thus, these would be funds that have existed at July 2000, but have disappeared before September 2008. Out of our sample funds, we select 7 defunct funds, which refer to funds do not survive until the end of observation period. These funds are accounted for 25% of total numbers of funds in our sample; therefore these fairly represent failed funds during the period.

Table 8 – Market Timing Performance of Non-Surviving Funds in Relation to Survivorship Bias

This table reports the result of timing ability test of non-surviving funds which consist of 7 non-surviving funds out of total 28 sample funds. These funds have failed or been closed before September 2008. This table shows the fraction and the magnitude of timing coefficient (gamma estimates) for the funds whose positive, negative, significantly positive, and significantly negative timing performance based on TM measure and HM measure at the significance 5% level.

	Funds/Timing performance	TM measure		HM measure	
		Fraction	Coefficient	Fraction	Coefficient
A)	**Non-surviving funds**				
	Positive	0.714	1.631	0.714	0.223
	Negative	0.286	-0.299	0.286	-0.749
	Significantly positive	0.143	1.385	0.000	0.000
	Significantly negative	0.000	0.000	0.000	0.000
	Overall	0.250	1.079	0.250	0.134
B)	**Surviving funds**				
	Positive	0.714	3.315	0.667	0.685
	Negative	0.286	-1.097	0.333	-0.250
	Significantly positive	0.381	1.762	0.238	0.432
	Significantly negative	0.048	-2.349	0.048	-0.617
	Overall	0.750	2.054	0.750	0.373

Our analysis as shown in table 8 reveals that as a whole the non-surviving funds had been showing positive timing performance based on both TM measure and HM measure, which the magnitude of the coefficient is 1.631 and 0.223, respectively. Out of non-surviving funds, 4 funds or 71.4% show positive timing ability, and 14.3% or 1 of those funds has significantly positive timing ability. Interestingly, only 2 out of 6 non-surviving funds have negative timing performance, and also none of them has significantly negative timing performance as per both TM measure and HM measure. Comparing the magnitude of timing coefficient (gamma), the non-surviving funds have lower gamma than those of surviving funds, which the aggregate non-surviving funds' gamma is 1.079 compared to 2.054 as per

TM measure, and 0.134 compared to 0.373 as per HM measure. Thus, as a whole, the results are not fully driven by survivorship bias.

5.3 Do Mutual Funds Have Persistence Timing Performance through Time?

Another important issue to take into account, when we find evidence of positive market timing ability of mutual fund managers, is to examine whether the positive performance persists during up and down market conditions. In other word, it needs to take another test whether the timing performance is still inconsistent with efficient market hypothesis.

In order to test the persistence of market timing performance, we divide our period of observation into 3 sub-periods which represents upward, downward market trend, and the turning point between upward-downward market trends. The rationale is to find the persistence timing performance in upward (bullish) market as well as downward (bearish) market trend through time. In addition, if the fund managers have strong market timing ability, they should be able to forecast market movement when the market turns to go down. Hence, we need to observe timing performance particularly during around the turning point. Then, we simply cut the sample period into sub-period 1 which covers after January 2008(from January to September 2008), sub-period 2 which observe the turning period (September 2007 to March 2008) and sub-period 3(from July 2000 to December 2007). The figure in exhibit 3 show that the movement of JCI as proxy of the market which the period 2000 – 2007 represents mixed condition from sluggish to bullish, while 2008 represents significant bearish market condition. Meanwhile, the third quarter of 2007 to first quarter of 2008 is fairly representing the turning period of market trend, in which contains a significant market hike and also a significant market drop.

Table 9 – Market Timing Performance in Different Market Conditions

This table reports the result of timing ability test of our sample funds during three different market conditions in order to examine the persistence of timing ability. The period from January to September 2008 represents a significant downturn period, while the period from July 2000 to December 2007 represents upward trend of the market. The period from September 2007 to March 2008 represents the turning period between upward and downward period. This table shows the fraction and the magnitude of timing coefficient (gamma estimates) for the funds whose positive, negative, significantly positive, and significantly negative timing performance based on TM measure and HM measure at the significance 5% level.

	Funds/Timing performance	TM measure		HM measure	
		Fraction	Coefficient	Fraction	Coefficient
A)	**Sub-period 1: Jan – Sep 2008**				
	Positive	0.476	2.100	0.667	0.852
	Negative	0.524	-2.044	0.333	0.650
	Significantly positive	0.000	-	0.000	-
	Significantly negative	0.048	-8.902	0.000	-
	Overall	1.000	-0.058	1.000	0.351
B)	**Sub-period 2: September 2007 – March 2008**				
	Positive	0.381	0.565	0.238	0.211
	Negative	0.619	-1.162	0.761	-0.255
	Significantly positive	0.000	-	0.000	-
	Significantly negative	0.000	-	0.048	-0.478
	Overall	1.000	-0.504	1.000	-0.144
C)	**Sub-period 3: July 2000 – December 2007**				
	Positive	0.714	4.066	0.679	0.826
	Negative	0.286	-.0855	0.321	-0.240
	Significantly positive	0.357	1.983	0.250	0.489
	Significantly negative	0.036	-2.497	0.036	-0.674
	Overall	1.000	1.350	1.000	0.256

Our findings as shown in table 9 reveal that TM measure presents significant change in both fraction and magnitude of timing coefficient during upward, downward period and also the turning period. Based on TM measure, during the period from January to September 2008 (sub-period 1), 52.4% of sample funds have negative timing performance, while only 47.6% of the funds have positive timing performance. Moreover, there is no fund has

significant positive timing performance. Contradictive situation, during 2000-2007 (sub-period 2) large portion of funds have positive timing performance which cover 71.4% of sample funds, and only 28.6% of them have negative timing performance. Different results are presented with HM measure where there is no significant change in fraction of funds whose positive or negative timing performance between downward and upward period. As per HM measure, there are 66.7% of funds whose positive timing performance during the downward period compared with 67.9% of those during upward period.

Interestingly, both TM and HM models have been showing a significant change in timing performance during the turning period. Based on both models, majority of mutual funds have experienced negative timing performance, in which the fraction of negative timing funds is 69.1% for TM measure and 76.1% for HM measure.

In term of the magnitude of timing coefficient (gamma estimates), there are significant changes presented by TM measure. During 2008 (sub-period 1), as a whole the sample funds realized negative timing performance of -0.058 but statistically not significant. Similar result is also generated during the turning period (sub-period 2), the sample funds, as an aggregate, have experienced negative timing of -0.504 (with t-statistic -1.12). These results are contradictive compared to the period 2000-2007 (sub-period 3) where overall funds experienced positive timing performance of 1.350 (which is statistically significant) as a whole.

Meanwhile, the result of HM measure is quite different with previous results. There is no a significant difference between upward and downward period as shown in table 9 During the sub-period 1 (January - September 2008), based on HM measure the funds, as an aggregate, still experienced positive timing performance but statically not significant with gamma estimates of 0.351. This is only slightly different compared to those during sub-period 3 (July 2000- December 2007) which the funds realized gamma estimates of 0.256 as a whole.

However, a significant change of timing performance is found during the turning period (sub-period 2). During that period, the sample funds, as a whole, have shown negative timing performance, with overall gamma estimate of -0.144 (t-statistic -1.25). In addition, the evidence of fleeting timing performance is also found at individual fund level. There are significant changes in timing performance at individual fund level for both TM measure and HM measure in the three different sample sub-periods as reported in Exhibit 4 and 5. Both absolute timing performance (the magnitude of gamma estimate) and relative timing performance (performance rank) have been changing during three sub-periods.

Thus, the results strongly show that mutual fund managers have no ability to forecast the market movement particularly when the market changes significantly from bullish to bearish. Overall, our findings may infer to accept the null hypothesis that market timing persistence does not exist through time (H_{04}).

Section VI – Conclusion

In this paper, we use both TM model and HM model based on fund returns data to examine market timing ability of domestic mutual funds. Similar with the previous literature which the results are mixed, our findings show significantly positive market timing ability experienced by domestic equity funds in Indonesia based on both models. Large proportions of mutual funds have experienced superior timing performance, while a few mutual funds are noted to indicate poor performance in their timing activity at individual level.

Classifying the sample funds according to the fund size, we find the larger sized funds tend to have larger fraction of funds whose positive timing performance. The medium-sized funds are timing the market most actively, and then followed by big, giant and small funds. In other classifications, open-ended mutual funds tend to have better timing performance than close-ended funds; while there is no significant difference in timing performance between local-sponsored funds and foreign-sponsored funds. We also find that uniformity exists across the models used to measure the market timing ability among funds, which both TM measure and HM measure tend to be identical in measuring market timing ability among funds. Interestingly, positive timing ability is also experienced by non-surviving funds, which endorse the results not being driven by survivorship bias.

Finally, we examine timing performance persistence in three different market conditions during upward and downward market trends. In aggregate level, the results show that market timing ability persistence does not exist when we used both TM measure and HM measure; particularly when we observe the timing performance around the turning point

between upward and downward market. Furthermore, at individual fund level the persistence of timing performance also does not exist for both TM and HM measure.

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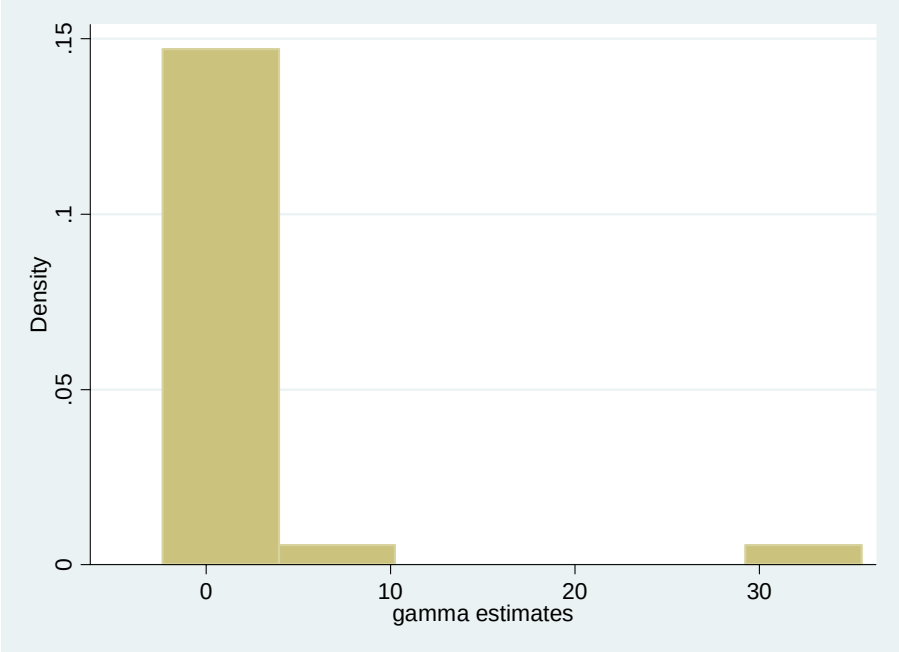
Exhibit 1 – Distribution of timing coefficient (gamma) estimate and t-statistics based on TM Measure



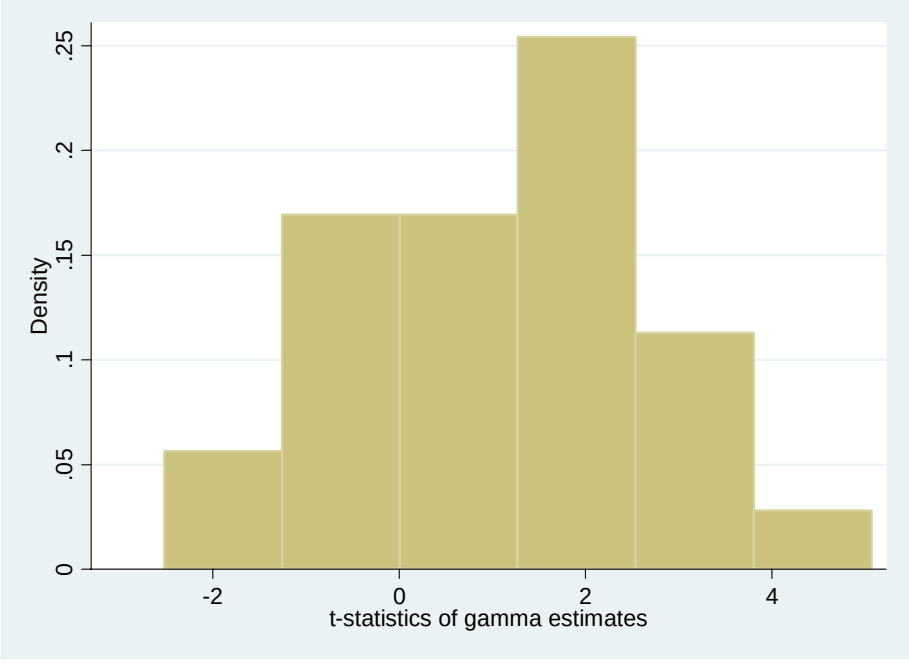
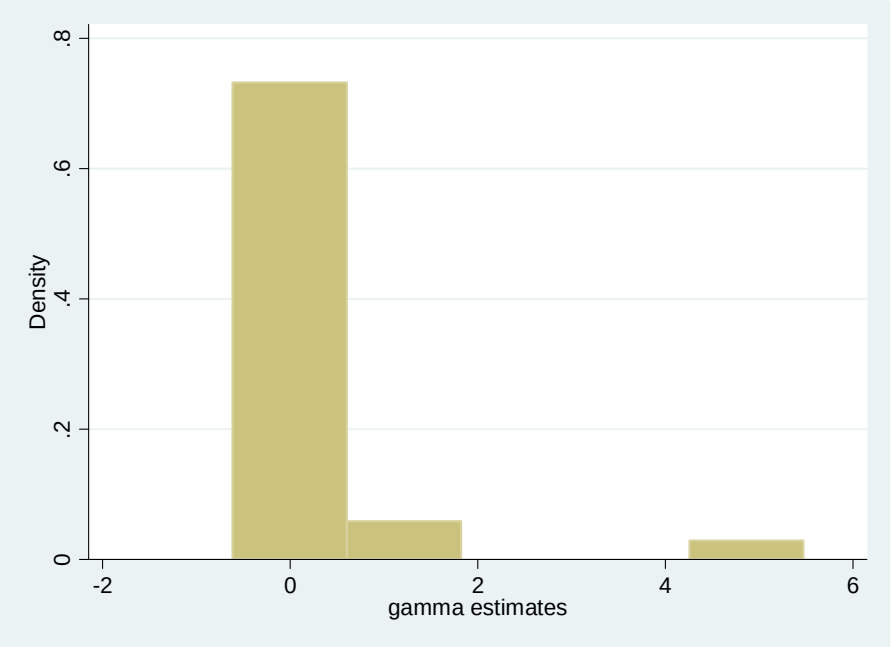


Exhibit 2 – Distribution of timing coefficient (gamma) estimate and t-statistics based on HM Measure



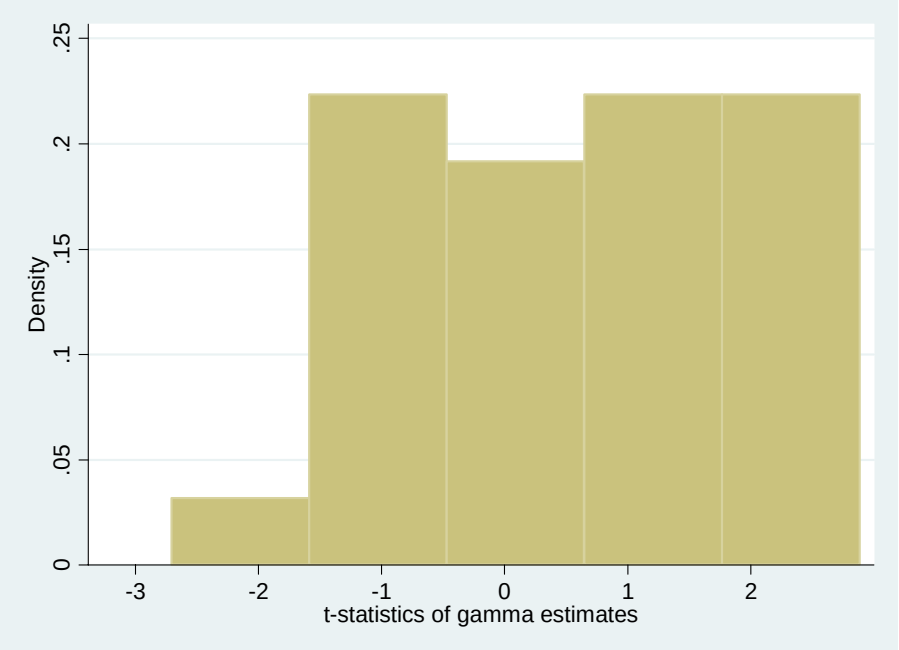


Exhibit 3 – Jakarta Composite Index from July 2000 to Dec 2008

Source: http://finance.yahoo.com

Exhibit 4 – The Changes in Timing Performance during Upward and Downward Market Condition at Individual Fund Level as per TM measure

This table reports the result of timing ability test of our sample funds during three different market conditions in order to examine the persistence of timing ability at individual fund level based on TM measure. The period from January to September 2008 represents a significant downturn period, while the period from July 2000 to December 2007 represents upward trend of the market. The period of September 2007 – March 2008 represents the turning period between upward and downward markets. This table shows different gamma estimates in different sample periods. Funds whose n.a gamma estimates do not survive during the sub-period.

Fund Name	Category	Period 2000-2007		Period Sep 2007 – Mar 2008		Period Jan – Sep 2008	
		Gamma	Rank	Gamma	Rank	Gamma	Rank
ABN Amro Ind.Dana Saham	Medium	4.237	3	0.187	6	0.690	7
Arjuna	Small	-0.086	21	n.a	n.a	n.a	n.a
Bahana Dana Prima	Medium	1.218	16	0.523	3	-0.367	11
BDNI Reksa Dana Tertutup	Small	-0.512	25	n.a	n.a	n.a	n.a
Big Nusantara	Small	0.303	20	-0.890	15	1.423	4
Big Palapa	Small	-2.497	28	0.029	7	-0.414	12
Bima	Small	1.434	12	n.a	n.a	n.a	n.a
BNI Berkembang	Medium	-0.208	22	-0.367	10	0.149	10
Dana Megah Kapital	Big	0.598	18	-1.816	18	-0.968	15
Dana Sentosa	Small	-0.870	26	-0.786	14	2.569	3
Danareksa Syariah	Small	1.711	7	n.a	n.a	n.a.	n.a
Fortis Ekuitas (Citi Ekuitas)	Giant	1.614	9	-0.508	11	0.598	8
GTF Agresif	Small	2.278	4	n.a	n.a	n.a	n.a
GTF Sejahtera	Small	1.346	14	n.a	n.a	n.a	n.a
Makinta Mantap	Medium	48.221	1	-2.601	21	-8.903	21
Mandiri Investa Atraktif	Big	5.823	2	-1.149	16	0.296	9
Manulife Dana Saham	Big	1.535	11	0.356	5	-1.043	16
Master Dinamis	Small	1.662	8	-0.747	12	1.068	6
Mawar	Medium	1.302	15	-0.232	9	-1.652	18
Niaga Saham	Small	1.385	13	n.a	n.a	n.a	n.a
Nikko Saham Nusantara	Small	-0.334	24	0.003	8	9.122	1
Panin Dana Maksima	Big	0.556	19	1.820	1	3.808	2
Phinisi Dana Saham	Medium	1.953	5	1.092	2	-0.621	14
Platinum Saham	Medium	-0.325	23	-1.842	20	-2.472	19
Rencana Cerdas	Medium	0.808	17	-1.822	19	1.280	5
Saham BUMN	Small	-2.010	27	-1.565	17	-4.268	20
Schroder Dana Prestasi Plus	Giant	1.745	6	0.512	4	-1.352	17
SiDana Saham	Medium	1.593	10	-0.785	13	-0.424	13
Overall		**1.350**		**-0.504**		**-0.058**	

Exhibit 5 – The Changes in Timing Performance during Upward and Downward Market Condition at Individual Fund Level as per HM measure

This table reports the result of timing ability test of our sample funds during three different market conditions in order to examine the persistence of timing ability at individual fund level based on HM measure. The period from January to September 2008 represents a significant downturn period, while the period from July 2000 to December 2007 represents upward trend of the market. The period of September 2007 – March 2008 represents the turning period between upward and downward markets. This table shows different gamma estimates in different sample period. Funds whose n.a gamma estimates do not survive during the sub-period.

Fund Name	Category	Period 2000-2007		Period Sep 2007 – Mar 2008		Period Jan – Sep 2008	
		Gamma	Rank	Gamma	Rank	Gamma	Rank
ABN Amro Ind.Dana Saham	Medium	1.020	3	-0.001	6	0.583	9
Arjuna	Small	-0.162	23	n.a	n.a	n.a	n.a
Bahana Dana Prima	Medium	0.226	14	0.161	3	0.244	11
BDNI Reksa Dana Tertutup	Small	-0.284	26	n.a	n.a	n.a	n.a
Big Nusantara	Small	-0.052	20	-0.244	15	0.929	5
Big Palapa	Small	-0.674	28	-0.007	7	0.427	10
Bima	Small	0.081	18	n.a	n.a	n.a	n.a
BNI Berkembang	Medium	-0.161	22	-0.163	12	-0.016	15
Dana Megah Kapital	Big	0.116	17	-0.515	20	0.233	12
Dana Sentosa	Small	-0.181	24	-0.158	11	1.426	2
Danareksa Syariah	Small	0.365	8	n.a	n.a	n.a	n.a
Fortis Ekuitas (Citi Ekuitas)	Giant	0.341	12	-0.082	8	0.600	8
GTF Agresif	Small	0.384	5	n.a	n.a	n.a	n.a
GTF Sejahtera	Small	0.208	15	n.a	n.a	n.a	n.a
Makinta Mantap	Medium	9.090	1	-0.587	21	-2.063	21
Mandiri Investa Atraktif	Big	1.229	2	-0.297	16	0.839	6
Manulife Dana Saham	Big	0.365	7	0.101	5	-0.035	16
Master Dinamis	Small	0.346	11	-0.210	14	1.174	3
Mawar	Medium	0.266	13	-0.109	10	-0.038	17
Niaga Saham	Small	0.348	10	n.a	n.a	n.a	n.a
Nikko Saham Nusantara	Small	-0.112	21	-0.097	9	3.340	1
Panin Dana Maksima	Big	0.053	19	0.397	1	0.798	7
Phinisi Dana Saham	Medium	0.408	4	0.262	2	0.111	13
Platinum Saham	Medium	-0.196	25	-0.506	19	-0.711	19
Rencana Cerdas	Medium	0.117	16	-0.478	18	1.133	4
Saham BUMN	Small	-0.342	27	-0.449	17	-1.407	20
Schroder Dana Prestasi Plus	Giant	0.363	9	0.137	4	-0.277	18
SiDana Saham	Medium	0.374	6	-0.167	13	0.097	14
Overall		**0.351**		**-0.144**		**0.256**	