

## **Empirical Analysis of the Dogs of the Dow (DoD) Trading Strategy in Developed and Developing Asian Markets**

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### **ABSTRACT**

Supporters of Efficient Market Hypothesis argued that investors are not able to make abnormal returns when the market is in an efficient condition. In contrast Overreaction Hypothesis theory acknowledges the presence of anomalies in the financial markets and indicated that investors can generate abnormal returns through the establishment of trading strategy like Dogs of the Dow (DoD). Thus, this paper examines Dogs of the Dow (DoD) trading strategy to generate abnormal returns in stock markets in developing and developed Asian countries. The trading strategy is based on dividend anomaly and was tested in three developed markets in Asia (Singapore, South Korea and Hong Kong) and in three developing markets (Malaysia, Thailand and Indonesia). The DoD portfolio comprises 10 shares with the highest dividend yield from the identified stock market indices between 2000 and 2014. The calculated returns of DoD portfolio were benchmarked against the market returns of the respective countries studied. Results show that on average the DoD strategy statistically and significantly outperforms the average market returns for both Asian developed and developing markets. Findings appear to contradict the validity of Efficient Market Hypothesis (EMH) and support the Overreaction Hypothesis.

*Keywords:* Abnormal return, Asian developed markets, efficient market hypothesis, Dogs of the Dow strategy, overreaction hypothesis, stock markets

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### **INTRODUCTION**

Fama (1970), an advocate of the well-known Efficient Market Hypothesis (EMH), asserts

investors are not likely to make abnormal returns based on a trading strategy using historical stock prices. Rizvi and Arshad (2015) supported the relevance of EMH theory and found the stock markets of Singapore, South Korea, Malaysia and Indonesia to be efficient. Raju (2015) found the Indian stock market to be efficient even after segregating the economy into pre-recession, during recession and post-recession. On the other hand, Gumus and Zeren (2014) claimed that stock markets in the developing countries are more inefficient relative to the developed countries as these markets are said to be fragmented. Kim, Doucouliagos and Stanley (2014) negated this claim saying that inefficient Asian stock markets are improving due to economic freedom and an increase in their market capitalisation.

However, De Bondt and Thaler's overreaction hypothesis (1985, 1987) appeared to invalidate the EMH. The authors believed that in most cases investors are inclined to overreact to unanticipated information that could lead to rewarding investment strategy. Maheshwari and Dhankar (2014) pointed out that there is abundance of unanticipated events (or factors) that can cause markets to react unexpectedly and one of them is dividend yield.

Dogs of the Dow (DoD) trading strategy, a dividend-yield based investment introduced by O'Higgins and Downes (1991), supports the overreaction hypothesis. They explained that investors are not in favour of high dividend yield stocks as they are subjected

to market overreaction, particularly on negative information. As a result, the high dividend yield stocks are undervalued. In short, a profitable trading strategy is possible if investors undervalue shares and short the past winners through the selection of shares with the highest dividend yield (DY) in their prospective portfolios. This simple strategy was first implemented in US markets, where an equally weighted portfolio comprising 10 highest dividend-yield stocks from the Dow Jones Industrial Averages (DJIA) is picked and then rebalanced annually.

Over the past two decades, investors and academicians have been testing this DoD strategy in the US market and empirical results show it is capable of beating the market (Domian, Louton, & Mossman, 1998; O'Higgins & Downes, 1991; Slatter, 1988). This has motivated researchers to apply the DoD trading strategy in other developed markets such as Canada (Visscher & Filbeck, 2003) and Japan (Song & Hagio, 2007). Findings of these studies indicated the DoD strategy was superior and statistically significant. In recent years, DoD trading strategy has slowly attracted attention of researchers from developing countries (Qiu, Yan, & Song, 2012; Yan, Song, Qiu, & Akagi, 2015) due to increased dividend payments. Cook (2014) reported that dividend payout by companies in Asia increased by 75 per cent between 2009 and 2013. She also observed that companies in Malaysia have high yielding stocks and provided huge dividends between 2013 and 2014. In 2015, these were the top three companies with high dividend

payouts in ASEAN (Bursa Malaysia Annual Report, 2015). Yan et al. (2015) showed the accumulated returns from the DoD strategy was much higher than the Taiwan 50 Index. Meanwhile, Carvalhal and Meireles (2015) revealed that DoD portfolio returns were slightly above Argentina, Chile, Colombia, Mexico, Peru and Venezuela share market indices. Nonetheless, although Qiu et al. (2012) discovered DoD strategy was able to outperform the Hang Seng Index, the results were statistically insignificant.

The primary aim of this study is to test the applicability and effectiveness of the DoD trading strategy in the developed and developing Asian markets. The study differs from previous ones in several aspects. First, unlike those previous studies that concentrated only on a specific market, this study attempts to apply the DoD trading strategy on developed and developing markets. This enables the researchers to determine whether different financial development influences the effectiveness of DoD. For instance, Singapore and Hong Kong have been recognised as top financial hubs in Asia, and according to Necander and Olsson (2016), such trading strategy may not be applicable or effective for investors. Second, if indeed the strategy does work in both developed and developing Asian countries, does it indicate the overreaction hypothesis over rules the EMH?

The framework of the study is as follows. Sections 2 and 3 contains a review of previous studies related to the performance of Dogs of Dow (DoD) trading strategy and an explanation of research

method. Empirical results are analysed and discussed in section 4, while section 5 concludes the study.

## LITERATURE REVIEW

The ultimate motive of investors investing in the stock markets is to generate returns through appreciation of stock prices and dividend. Efficient Market Hypothesis and Dividend Irrelevance theories dispute that dividend has no impact on stock prices either directly or indirectly. According to these theories generating excess returns are impossible. Specifically excess returns are impossible. Nevertheless, other schools of thoughts have refuted those theories and propose that existence of market anomalies could create an opportunity for investors to make abnormal returns (Bondt & Thaler, 1985; Latif, Arshad, Fatima, & Farooq, 2012; O'Higgins & Downes, 1991). Kahneman and Tversky (1982) pointed out that since investors need to make decision quickly and do not have the time to process available information, they tend to make irrational investment decisions.

Dogs of the Dow (DoD) is a high dividend yield investment-based strategy that is said to be able to beat stock market returns. In 1991, O'Higgins and Downes in their book introduced the Dogs of the Dow trading strategy and claimed the strategy to be able to provide investors with abnormal returns. Under this strategy, a portfolio comprising 10 highest dividend yield stocks (and lower prices) is constructed from the Dow Jones Industrial Average (DJIA). DJIA The ten stocks picked from the DJIA are

made up of blue chip stocks (biggest and strongest companies) and the portfolio is held and rebalanced on a yearly basis. The authors revealed that the strategy is effective since abnormal returns were generated during the year 1973 until 1991. McQueen, Shields and Thorley (1997) tested the same strategy using longer time horizon, from 1946 to 1995. They also uncovered the returns of the DoD portfolio to exceed the DJIA's market return statistically and significantly.

Nonetheless, there are researchers who are sceptical about the effectiveness of DoD. Hirshey (2000) refuted the findings of Higgins and Downes (1991); Slatter (1988) due to the error in their sampling and collection of data. In contrast, Prather and Webb (2002) had rerun the data and found the DoD portfolio returns to be statistically significant. They concluded that the US stock market was inefficient at the time the DoD strategy was applied. Assefa, Esqueda and Galariotis (2014) reported that the strategy was effective using large-cap stock in the US market, but another study by Zou and Chen (2014) discovered that these large-cap shares failed to outperform non-popular stocks in the US markets.

Motivated by the effectiveness of the DoD trading strategy, other researchers started to apply this outside the US market. Thus far, the empirical results of those studies in the developed and developing markets are found to be diverse. Andre and Silva (2001) found that the strategy was ineffective in the Brazilian stock market and

DoD portfolio returns in Argentina, Chile, Colombia, Mexico, Peru and Venezuela slightly exceeded the market returns. When Tai (2014) tested the strategy in US, Hong Kong, Taiwan and Singapore markets, he discovered that in the long run, the strategy worked best in developed Asian countries during non-financial crisis periods. Similarly, Akarim and Sevim (2013) concluded that the share markets of the 18 developing countries studied were able to generate huge abnormal returns using the DoD strategy. Alles and Sheng (2008) applied DoD strategy in the Australian market and found that investors were able to make excess returns.

Conflicting empirical findings were also noted when DoD trading strategy was used in the Swedish market. Findings by Broberg and Lindh (2012) showed that returns from the DoD strategy is statistically significant during upward trend, yet a recent study by Necander and Olsson (2016) proved that DoD worked best during economic downturns. However, the authors were not able to conclude the effectiveness of this strategy in Sweden since the results of the t-test were found to be statistically insignificant.

Several studies were also carried out in other Asian markets. Sahu (2001) tested the DoD strategy in the Indian market and noted the DoD is statistically significant only when the market is bullish. In Taiwan, Hong Kong and China (Huang, You, Huang, & Kuo, 2014), Thailand (Rowlett, 2012) and Indonesia (Ekaputra

& Sukarno, 2012) studies indicated DoD strategy to be statistically significant. Wang, Larsen, Ainina, Akhbari and Gressis (2011) found that in the Chinese market, the strategy is suitable for short-horizon while Tissayakorn, Song, Qiu and Akagi (2013) observed that the DoD trading strategy in Thailand appeared to be significant in the long term. Further studies in the Asian markets revealed that statistically, DoD outperformed the markets in Taiwan (Yan et al., 2015) and Japan (Qiu, Song, & Hasama, 2013).

In lieu of the diversity of results from previous studies related to the applicability of DoD strategy as well as the latest development on dividend payout among companies in the Asian countries, could the DoD trading strategy work on the developed and developing Asian markets?

## METHODS

Six Asian countries (three developed and three developing countries) are selected for the purpose of this study. The countries are Hong Kong (HK), Singapore (SG), South Korea (KR), Indonesia (ID), Malaysia (MY) and Thailand (TH). The market indices identified are Hang Seng Index (Hong Kong), FTSE Strait Times Index (Singapore), Korea Stock Exchange 50 Index (South Korea), FBM Kuala Lumpur Composite Index (Malaysia), Jakarta Composite Index (Indonesia) and Stock Exchange of Thailand Index (Thailand). Other Asian markets are excluded in the study due to the difficulty in retrieving

prices of several high dividend yield stocks making up the DoD portfolio constructed. Annual data starting from the year 2000 until 2014 was gathered from *Thomson One Banker*.

The construction of DoD portfolio for the respective stock markets is created as follows:

- Ten stocks with the highest dividend yield from the components of the market indices studied were identified on the first trading day of the year, that is, January 2000.
- Equal weighted is given to ten stocks and is held for a year, December 2000.
- Those shares that do not meet the criteria of having the ten highest dividend yield are being replaced accordingly.
- This process is repeated yearly throughout the duration of the study, that is from year 2000 until 2014.

Once the ten stocks have been selected, the return ( $R_{i,t}$ ) of individual stock that made up the DoD portfolio is calculated. The calculation is based on the method applied by Broberg and Lindh (2012) and is formulated in Equation (1) below:

$$R_{i,t} = [(P_{i,t} - P_{i,t-1}) + D_{i,t}] / P_{i,t-1} \times 100 \quad (1)$$

Where:

$P_{i,t}$  = Market price of current year for company share i

$P_{i,t-1}$  = Market price of previous year for company share i

$D_{i,t}$  = Dividend paid of the current year  
for company share i

*Alternate Hypothesis ( $H_a$ ) :DoD Abnormal  
Return is not equal to zero*

Next, the study proceeds with the computation of return of the DoD portfolio. Equal weighted ( $W_i$ ) is assigned to the return of the ten stocks selected and then being added up to derive the weighted total return of the DoD portfolio. The mathematical expression of the total return of the DoD portfolio ( $R_{p,it}$ ) is shown in Equation (2).

$$R_{p,it} = \sum_{i=1}^{10} W_i R_{i,t} \quad (2)$$

The total return of the DoD portfolio ( $R_{p,it}$ ) is divided by the number of years (which in this study is 14 years) to get the average DoD portfolio return for each market. The abnormal return ( $AR_{i,t}$ ) is then computed to determine if the average portfolio returns ( $R_{p,it}$ ) of the DoD trading strategy exceed the average market return ( $R_{m,it}$ ). The computation of ( $AR_{i,t}$ ) of the DoD portfolio is shown in Equation (3).

$$AR_{i,t} = R_{p,it} - R_{m,it} \quad (3)$$

The following hypothesis statement is developed for this study.

*Null Hypothesis ( $H_0$ ) :DoD Abnormal  
Return is not equal to zero*

A t-test is performed on the tested hypothesis statement to determine if the DoD abnormal returns are statistically significant (Friso, 2016; Qiu et al., 2013). A p-value that is greater than 0.05 implies the rejection of the null hypothesis.

## RESULTS AND DISCUSSION

Table 1 provides the results of the DoD portfolio returns, market returns and abnormal returns for both developed and developing Asian markets studied. In the case of Asian developed markets of Hong Kong, Singapore and South Korea, it appears that the performance of DoD trading strategy is more superior than the market performance. The results of the t-test indicate the abnormal returns to be statistically significant at 1% and 5% level. As indicated by the t-test, the abnormal returns in Singapore (2.0373) are more superior to the abnormal returns generated in Hong Kong (1.3760) and South Korean markets (1.8150) respectively. The findings are similar to studies by Chong and Luk (2011); Qiu et al. (2012); Qiu et al. (2013) when they tested the DoD trading strategies in the developed countries of Japan, Hong Kong and Canada respectively.

Table 1  
Results of average portfolio return, market return and abnormal return in developed and developing markets

	Developed Markets			Developing Markets		
	HK	SG	KR	ID	MY	TH
Mean DoD Portfolio Return	1.4350	2.0937	1.9030	3.8271	1.7571	2.6536
Mean Market Return	0.0590	0.0565	0.0881	0.2100	0.0734	0.1441
Abnormal Return (AR)	1.3760	2.0373	1.8150	3.6171	1.6837	2.5095
T-Test	0.0433**	0.0093***	0.0308**	0.0250**	0.0010***	0.0141***

Notes: \*\*\*Significant at 1% level and \*\*Significant at 5% level

As for the developing markets of Indonesia, Malaysia and Thailand, Table 1 once again indicates that the DoD trading strategy is capable of providing excess return relative to the respective market returns. These abnormal returns are statistically significant at 5% level for Indonesian market and 1%

level for both Malaysian and Thailand markets. Interestingly the investors are able to have larger abnormal return in the Indonesian market (3.6171) when this strategy is applied as opposed to the Malaysian (1.6837) and Thailand (2.5095) markets.

Table 2  
Results of yearly abnormal return in developed and developing asian markets from 2000 to 2014

Year	Developed Markets			Developing Markets		
	HK	SG	KR	ID	MY	TH
2000	1.1594 (O)	-0.5343 (U)	-3.3685 (U)	-3.6072 (U)	-0.8000 (U)	-1.4065 (U)
2001	-0.8818 (U)	2.5125 (O)	6.5335 (O)	1.3061 (O)	2.0664 (O)	4.8146 (O)
2002	0.2438 (O)	-0.3689 (U)	1.1675 (O)	1.9451 (O)	0.9118 (O)	4.2542 (O)
2003	3.5642 (O)	4.7251 (O)	5.8057 (O)	6.1878 (O)	3.6921 (O)	6.6309 (O)
2004	2.5457 (O)	3.7004 (O)	3.4437 (O)	5.9854 (O)	2.7390 (O)	-0.1870 (U)
2005	0.6060 (O)	4.4918 (O)	1.8054 (O)	2.1096 (O)	0.4772 (O)	0.1018 (O)
2006	2.9752 (O)	2.2784 (O)	2.4678 (O)	9.0755 (O)	2.4424 (O)	1.8937 (O)
2007	2.1331 (O)	3.6366 (O)	3.7390 (O)	13.6475 (O)	4.5366 (O)	3.5615 (O)
2008	-4.0376 (U)	-3.6721 (U)	-2.4736 (U)	-3.9758 (U)	-0.8775 (U)	-4.2015 (U)
2009	5.0538 (O)	6.5353 (O)	3.5663 (O)	14.5380 (O)	2.9097 (O)	8.4704 (O)
2010	2.0781 (O)	2.6352 (O)	4.1034 (O)	4.6015 (O)	2.0601 (O)	4.5292 (O)
2011	-1.2159 (U)	-0.1304 (U)	-0.6703 (U)	-0.9042 (U)	1.3226 (O)	3.2421 (O)
2012	3.2612 (O)	2.6669 (O)	0.6363 (O)	-0.1466 (U)	2.8458 (O)	5.0001 (O)
2013	1.0467 (O)	1.2614 (O)	0.4681 (O)	-0.1923 (U)	0.6959 (O)	-0.2991 (U)
2014	2.1081 (O)	0.8206 (O)	0.0004 (O)	3.6857 (O)	0.2337 (O)	1.2379 (O)
Sum	20.6401 (O)	30.5588 (O)	27.2247 (O)	54.2561 (O)	25.2559 (O)	37.6424 (O)

Notes: O indicates Outperform and U indicates Underperform the stock market

When abnormal returns in the respective markets are assessed on a yearly basis (Table 2), the results indicate that most of the DoD portfolio returns in markets beat the market returns. With exception of the HK market, the DoD portfolios in the other developed markets seem to underperform the market in the year 2000. In that same year, the DoD portfolio returns of ID (-3.6072), MY (-0.8000) and TH (-1.4065) also generated negative returns of which DoD portfolio returns of Indonesia (ID) reported the highest negative return. This is mainly due to the slow recovery process of post 1997 Asian financial crisis. Not surprisingly, the Global Financial Crisis in 2008 also resulted in negative returns of the DoD portfolio for both developed and developing countries. In addition, the European sovereign crisis appeared to generate negative returns for ID market and all the developed Asian markets studied. Rizvi and Arshad (2013) attributed the difference in the negative returns across markets to the different recovery phases experienced by those markets as well as the level of interdependence with the markets where the crises began. In sum, the results support that of Tai (2014) which showed strategy is ineffective during crisis period.

It is observed that the performance of these portfolios was better after 1997, 2008 and 2011 economic crises. Generally, between 2000 and 2014, the DoD trading strategies in most instances gave high abnormal returns to investors in both developed and developing Asian markets.

As argued by Yan et al. (2015) and Qiu et al. (2012) the results imply the market seems to be inefficient and hence, supports the overreaction hypothesis.

## CONCLUSION

This paper had analysed the effectiveness of the DoD trading strategy in both developed and developing Asian markets. Empirical results indicated statistically, DoD trading strategy was able to generate excess return in those markets. The markets in Singapore and Indonesia generated the highest accumulated abnormal returns among the developed and developing Asian markets. The findings confirm those of earlier studies by Ekaputra and Sukarno (2012); Huang, You, Huang and Kuo (2014); Rowlett (2012); Tissayakorn (2013). This suggests that investors can use this investment strategy to beat the market. It can be concluded that over performance of the Dow Dog strategy on the selected Asian developed and developing countries is in tandem with the overreaction hypothesis that claimed investors to behave irrationally on information related to high dividend-yield stocks. Future researches could examine the effectiveness of DoD strategy using returns that have been adjusted for risk, transaction costs and taxes. In addition, they could also use fewer than 10 Dogs to determine if higher abnormal returns could be attained.

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