



## The Performance of Asian Hedge Funds

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### ABSTRACT

This research paper investigates on the performance of Asian hedge funds that consist of five countries, which are Malaysia, Singapore, China, Japan and Hong Kong. These countries are categorized as top leaders in the Asian financial industry. A sample size of 347 hedge funds and fund of hedge fund (FOHF) between January 2006 and April 2012 were taken. Performance was measured using five alternative benchmark models that are Sharpe Ratio, Treynor Index, Classical CAPM, 3-Factor model and 4-Factor model. In order to identify the factors that contribute to hedge funds' performance, fund characteristic and performance technique is used. Based on Sharpe Ratio, the result shows that hedge funds in these countries are underperformed as compared to the equity funds, while for Treynor Index, three countries out of five (China, Japan and Hong Kong) are underperformed. Using CAPM techniques, hedge funds in China and Hong Kong are found to outperform the equity funds within the study period. Overall, it is found that hedge funds in China and Hong Kong are better investment as compared to equity investment.

**KEYWORDS:** Hedge Fund, Funds of hedge fund, Performance Indices.

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### 1 INTRODUCTION

Hedge funds have evolved globally since 1949 although in the early years they were not legally defined, but they did share some common characteristics such as the use a broad range of instruments like short selling, derivatives, leverage or arbitrage on different markets. [6] indicates that hedge fund actually requires high minimum investments. Thus, their access is limited to individual investors or to institutions with large financial resources where the minimum investment amount is USD1.0 million.

The definition of hedge fund is an aggressively managed portfolio of investments that uses advanced investment strategies such as leveraged, long, short and derivative positions. In the earlier stage of hedge funds existence, the main purpose is to hedge against the downside risk of a bear market by shorting the market. However, the objective has recently shifted to maximize return on investment.

Hedge funds employ dynamic investment strategies which are designed to find unique opportunities in the market and then actively traded the portfolio investments in order to maintain high and diversified absolute return by taking a short and long position strategy.

There are four broad groups of hedge fund strategies - arbitrage, event driven, equity related and macro. The first two groups, arbitrage and even driven attempt to achieve returns that are uncorrelated with general market movements. Managers of these strategies try to find price discrepancies between related securities by using derivative and active trading based on computer-driven models and extensive research. The second two groups, equity based and macro are affected by movements in the market, and they require intelligent anticipation of price movements in stocks, bonds, foreign exchange, and physical commodities based on extensive research and model building.

Most of researchers supported that hedge funds offered higher returns to investors. In [8] the author agreed that on average, hedge funds have performed well for the past 15 years as compared to mutual funds or stock markets. In addition, [5] stated that hedge funds are still producing significant excess return or alphas in a poor year of traditional investment. However, there are also different viewpoints on the hedge fund performance. A finding of Italian hedge funds indicates that hedge funds had lower performance compared to

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other countries. Another finding stated that emerging market hedge funds do not consistently outperformed the regular hedge funds globally.

In this study, we evaluate the performance of hedge funds in Asian countries that include Hong Kong, China, Japan, Singapore and Malaysia as they are considered as the top leaders in the Asian financial industry.

**Table 1.**Hedge Fund Investment Strategies

Category	Subcategory	Description
Arbitrage	Fixed-income based arbitrage	Exploits pricing inefficiencies in fixed-income markets, combining long/short positions of various fixed income securities
	Convertible arbitrage	Purchase convertible bonds and hedges equity risk by selling short the underlying common stocks
	Relative value arbitrage	Exploits pricing inefficiencies across asset classes (e.g. pairs trading, dividend arbitrage, yield curve traders).
Event Driven	Distressed securities	Invest in companies in a distressed situation (e.g. bankruptcies, restructuring) and/or shorts companies expected to experience distress.
	Merger arbitrage	Generates return by going long on the target and shorting the stock of the acquiring company.
	Activism	Seeks to obtain representation in companies' board of directors in order to shape company policy and strategic direction.
Equity Based	Equity Long/Short	Consists of a core holding of particular equity securities, hedge with short sales of stocks to minimize overall market exposure
	Equity non-hedge	Commonly known as "stock-picking"; invests long in particular equity securities.
Macro	Global Macro	Leveraged bets on anticipated price movements of stock markets, interest rates, foreign exchange, and physical commodities.
	Emerging Markets	Invests a major share of portfolio in securities of companies or the sovereign debt of developing or "emerging" countries; investment are primarily long.

Source: Adapted from An Introduction to Investment Banks, Hedge Funds, and Private Equity by Elsevier Inc. Originally from Mckinsey Global Institute; Hedge Fund Research, Inc; David Stowell (2010).

### 1.1 Development of Hedge Funds in Asia

In the 20<sup>th</sup> century, Asia has out paced the growth in the world of new funds which is driven by local investors, who tend to invest in smaller amounts compared to the United States and European country. Investment managers saw that there were a lot of internally funded growth in Asia, including Japanese and Indian institutions. This showed that Asia investors are now more comfortable with hedge funds.

Currently, Securities and Exchange Commission (SEC) is undertaking an education campaign to advise investment managers to register the investment under SEC. Previously, hedge funds are not required to register with SEC until May 2012. Hedge funds typically issue securities in “private offerings” that are not registered with the SEC under the Securities Act of 1933. They are not required to provide periodic reports under the Securities Exchange Act of 1934. But, hedge funds are subject to the same prohibitions against fraud as in other market participants, and their managers have the same fiduciary duties as other investment advisers.

As of May 2012, there are about 30,888 private funds that have registered with the SEC and they estimate that 2,500 advisers will report their information, 93% of which are based in the United States (US). Of those domiciled outside the US, the SEC estimates 51% will be UK-based, 20% are in a domicile labeled as ‘other’, with the remainder split between Hong Kong, Canada, Switzerland, Singapore and the Cayman Islands”. For this research, most of the offshore Asian hedge funds were registered in Cayman Island under section 4 (3) of the Mutual Funds Law.

## 2 LITERATURE REVIEW

In [18], author used 139 monthly data on Fund of Fund House (FoFH) provided by MondoHedge for a period of November 2003 – December 2007, where they examined the impact of both market variables and funds’ own characteristic for Italian hedge funds. They applied the same performance measurement methods as above article. Their findings showed that Italian FoFH returns were in a weak manner. The Italian hedge funds seemed to be exposed to European, Emerging markets, and Japanese stock markets. While, U.S Bond Market negatively affects the hedge funds. Instead of that, they found that performance fees and notice days have a negative impact on fund performance.

In [11], the author explored the development of hedge funds data bases during the 2007 – 2009 financial crises. The sample size of 8,935 hedge funds obtained from Lipper TASS Hedge Fund Database. These researchers concluded that fund of hedge fund data was less biased compared to single hedge fund data. However, the impact of survivorship and backfilling biases increased during the financial crisis. Another finding was the high attrition rate has negative impact on the quality and representativeness of hedge funds data due to the liquidation bias. Thus, it can be a signed that investor interest had shifted significantly toward liquid hedge fund styles.

In [12], the authors identified a common latent liquidity factor, which was the driver of observable and commonly used liquidity proxies across asset classes. The time frame covered from October 2003 until February 2009 which obtained from Datastream. The analysis carried out using two methodologies that were state space modeling (SSM) and principal component analysis (PCA). The finding indicated that, there was a significant negative impact on hedge funds return towards increases of illiquidity. On the other hand, there was a strong relationship between global risk factors and hedge fund returns which described that industry’s claim to deliver pure manager alpha.

Stulz R.M. (2007), evaluated the performance of the historical hedge funds from other researchers in 15 years ago. In this article, researchers described in the history of the hedge funds, its characteristics, funds organization and the risk exposed towards hedge funds. Researchers stated that the collapsed of hedge fund generated large losses for the investors. In view of that, SEC urged fund manager to register with them in order to protect an investment interest. Based on the article, researcher expected that the hedge fund industry as a whole will perform less well over the next ten years as compared to the last ten years and this industry will become more institutionalized and regulated. However, regulation should leave alone financial innovators who dream of new strategies and find savvy and well-funded investors to bet on them. Without such financial innovators, capital markets will be less efficient.

It seems that the performance studies of hedge funds can be measured by using all the methodologies used in the above literatures. In addition, all the findings definitely give more understanding of hedge fund’s characteristics. In summary, the above studies help to give an overview of the hedge funds as a globally, and this study will focus specifically in Asia as well as its attractiveness to the international investors.

### 3 DATA AND METHODOLOGY

The objective of this research is to evaluate the performance of hedge fund in Asia. The secondary data on hedge funds were obtained from the Bloomberg database; there are two segments of data; market variables and fund's own characteristics. Market variables are presented by the yield of 3-month Treasury bills. For the funds' own characteristic are categorized as turnover, fund age, net asset value (price) and expense ratio. In this study, we used age of the fund as a proxy for tenure due to unavailability of data.

This data was extracted on daily basis started from the first date they were traded on the respective stock market. The sample data consists both of hedge fund and FOHF. The number of funds that are considered for each country are as follows, Hong Kong (259 funds), Japan (44 funds), Singapore (36 funds), China (6 funds) and Malaysia (2 funds). The data for 3-month Treasury bills was obtained from each country's Central Bank. Daily returns were computed for a period of January 2006 until April 2012.

The methods used in this study are Sharpe Ratio, Treynor Index, Classical CAPM (Single Index Model), extension of 3-Factor Model Fama and French and 4-Factor Model of Carhart. This is to be in line with the methodology used by other researchers in evaluating the hedge fund performance. The result was compared within these models to examine their performance consistency. Then, the regression analysis was carried out to identify the factors contributing to the funds' performance in each country.

The Sharpe Ratio, which is the measurement of return per unit of total risk, is the best understood performance measure. Higher Sharpe ratio indicates better performance. Treynor Index gives a measure of return per unit of market risk (systematic risk) that an investment earns. The higher the index, the greater excess returns generated by a portfolio.

Each individual hedge fund is evaluated by regressing single factor CAPM models to estimate the value of Jensen's alpha, which measures the degree to which managers are earning significant returns after accounting for market risk or beta (Jensen, 1968). In addition, the performance of hedge funds was further examined by using 3- factor CAPM (Fama and French, 1992) and 4 – factor CAPM (Carhart, 1997). This is because many earlier studies found that the single index model is not adequate in explaining the mutual fund performance (Fama and French, 1992). Thus, the Multifactor Models are able to further explain the risk and return behavior of hedge funds.

#### 3.1 Risk Measurement

A key component of the risk management process is risk assessment, which involves the determination of the risks surrounding a business or investment. In this study, the risk analysis covers the standard deviation ( $\sigma$ ) and beta ( $\beta$ ). The standard deviation will be used in Sharpe Ratio and the beta value will be used in Treynor Index.

Standard Deviation ( $\sigma$ )

Standard deviation measures the difference of the average return of a specific investment. A high standard deviation indicates a high degree of risk.

Where;

$$\sigma = \frac{\sqrt{\sum (R_p - \bar{R}_p)^2}}{n} \quad (1)$$

$R_m$  = Return of the fund  
 $\bar{R}_p$  = Average daily return  
 n = Number of observation

Beta ( $\beta$ )

Beta is a measure of the volatility or systematic risk of a security or a portfolio in comparison to the market as a whole. It is used in the CAPM. It is calculated by using regression analysis by regressing the returns of each fund on the returns of the market portfolio as below:

$$\beta = \frac{Cov(R_p, R_m)}{Var R_m} \quad (2)$$

Where;

$R_p$  = Daily return of the fund  
 $R_m$  = Daily return on market  
 $Var R_m$  = Variance of the market

A beta of 1 indicates that the security's price will move with the market. A beta less than 1 means that the security will be less volatile than the market. A beta of greater than 1 indicates that the security's price will be more volatile than the market.

**3.2 Performance Measurement for Hedge Fund.**

In order to measure the funds' performance, this study takes into consideration of changes in the funds' unit price during the period. The daily percentage returns on the index and individual funds are calculated based on the following formula.

Model 1: Return on Index

$$R_t = \ln \left[ \frac{Index_t}{Index_{t-1}} \right] \times 100 \tag{3}$$

Where;

$R_t$  = Return of the index  
 $Index_t$  = Closing index at time  $t$   
 $Index_{t-1}$  = Closing index at time  $t - 1$

Model 2: Return on fund

$$R_t = \ln [Price_t / Price_{t-1}] \times 100 \tag{4}$$

Where;

$R_t$  = Return of fund  
 $Price_t$  = Closing price at time  $t$   
 $Price_{t-1}$  = Closing price at time  $t - 1$

Below are the methods used in evaluating the performance of hedge fund.

**3.3 Sharpe Ratio and Treynor Index.**

For this study, two classical performance measurement methods namely Sharpe Ratio (1966) and Treynor Index (1965) are employed to evaluate the performance of hedge fund and FOHF. The detail on each of the model is explained as below:

Model 1: Sharpe Ratio

It is a traditional performance measurement developed by William F. Sharpe to measure the risk adjusted performance for each level of risk taken. It is calculated by subtracting the risk-free rate from annualized returns and dividing the result by the standard deviation of returns. The greater a portfolio's Sharpe ratio, the better its risk adjusted performance has been.

$$S = \frac{\bar{R}_p - \bar{R}_f}{\sigma_p} \tag{5}$$

Where;

$\bar{R}_p$  = Average of daily return of the fund  
 $\bar{R}_f$  = Average risk - free rate  
 $\sigma_p$  = Standard deviation of return for portfolio

Model 2: Treynor Index

Treynor Index measures the fund's excess return from each unit of systematic risk. It measures the fund's excess return where fund's rate of return subtract the risk - free rate of return per unit of risk by using beta as the measure of risk as opposed to the standard deviation of the fund's return. This is the different between Sharpe Ratio and Treynor Index. However, their function is the same to measure the risk adjusted performance of portfolio. The higher the index, the greater excess returns generated by portfolio.

$$T = \frac{\bar{R}_p - \bar{R}_f}{\beta_p} \quad (6)$$

Where;

$\bar{R}_p$  = Average of daily return of the fund

$\bar{R}_f$  = Average risk - free rate

$\beta_p$  = Beta of fund

These two models are widely and commonly used in any research in evaluating the portfolio performance. There are simple and yet provided meaningful information on the portfolio characteristic against the market benchmark, which is the market index in this study.

### 3.4 Capital Assets Pricing Model (CAPM)

#### Model 1: Jensen's Alpha (1968)

The general idea behind this model is that investors need to be compensated in two ways; time value of money and risk. The time value of money is represented by the risk-free rate and compensates the investors for placing money in any investment over a period of time. While risk is explained as the amount of compensation the investors need for taking an additional risk.

The CAPM stated that the expected return of a security or a portfolio equals the rate on a risk – free security plus a risk premium. If the expected return does not meet the required return, then the investment should not be undertaken. For very well - diversified portfolio, nonsystematic risk tends to go zero and the only relevant risk is systematic risk measured by Beta. A high Beta expected to give a higher return than low Beta because they are more risky and provide the lower return. However, over long periods of time, they should on the average produce higher return.

$$R_{pt} - R_{ft} = \alpha_{it} + \beta_{it} (R_{mt} - R_{ft}) + \varepsilon_{it} \quad (7)$$

Where;

$R_{pt}$  = Return of fund

$R_{ft}$  = Return on risk-free rate

$\alpha_{it}, \beta_{it}$  = intercept and the slope of the regression respectively

$R_{mt}$  = Return on market

$R_{mt} - R_{ft}$  = Excess return

$\varepsilon_{it}$  = error term

The intercept of this equation,  $\alpha_i$  commonly called Jensen's alpha (1968) where it is usually interpreted as a measure of under-performance relative to the market proxy.

#### Model 2: Fama-French three - factor model (1993).

According to Fama and French (1993), beta does not seem to be enough in explaining the cross sectional variations of average returns, thus size and market-to-book ratio are added to CAPM method to capture the effect of size, leverage, book-to-market equity and earnings price ratio. These factors are significant to explain the cross-section of average return. Fama and French added two factors to CAPM to reflect a portfolio's exposure to average return variables:

$$R_{pt} - R_{ft} = \alpha_{it} + \beta_{1t} (R_{mt} - R_{ft}) + \beta_{2t} (SMB) + \beta_{3t} (HML) + \varepsilon_{it} \quad (8)$$

Where;

*SMB = (Small Minus Big) the difference between average return on portfolio of small stocks and average return on portfolio of large stocks.*

*HML = (High Minus Low) is the difference between average return on portfolio of high book-to-market stocks and average return on portfolio of low book-to-market stocks. These factors are constructed using value-weighted portfolios formed on size book-to-market ratio.*

The construction of Small Minus Big and High Minus Low as below:

i) Small Minus Big (SMB)

The stocks are divided into two portfolios, i.e. small (S) market value and big (B) market value. This formed the SMB factor. SMB refers to the difference in return between a small capitalization portfolio and a large capitalization portfolio.

ii) High Minus Low (HML)

For book-to-market value (BM) factor, the earlier two (2) small and big market value portfolio is further divided into three portfolios which are high (H), medium (M), and low (L) based on the breakpoints for the top 30% (High), middle 40% (Medium) and bottom 30% (Low) of the value of book-to-market for respective stock markets. This produced six (6) size/BM portfolios (S/H, S/M, S/L, B/H, B/M, B/L). The daily value-weighted returns are estimated on the six (6) portfolios. Book-to-market value is defined as below:

*Book-to-market value = book value of a firm(9)*

*Market value*

Model 3: Carhart four-factor model (Carhart, 1997)

The Carhart four – factor model adds momentum effect into Fama and French 3 - factor model as an additional risk factor. The one year momentum irregularity was introduced by Jegadeesh and Titman (1993). This is due to the inability of 3-factor model by Fama and French (1993) to explain the cross sectional variations in momentum sorted portfolio returns (Fama and French, 1996). The momentum irregularity is market inefficiency due to slow reaction to information (Jegadeesh and Titman, 1993).

$$R_{pt} - R_{ft} = \alpha_{it} + \beta_{1t} (R_{mt} - R_{ft}) + \beta_{2t} (SMB) + \beta_{3t} (HML) + \beta_{4t} (MOMENTUM) + \epsilon_{it} \quad (10)$$

Where;

*MOMENTUM = average return on the two prior return portfolios minus the average return on the two low prior return portfolio (see Carhart, 1997)*

The construction of momentum effect as below:

The momentum effect is constructed by taking the difference of equal-weighted average returns of stocks with the highest 30% trading days lagged one day minus the equal-weighted average returns of stocks with the lowest 30% trading days lagged one day.

### 3.5 Persistence and Performance

There have been a number of studies that measure the persistency of performance especially in real estate mutual funds (Lin C.Y and Yung, 2004 and Brown and Goetzmann, 1995). Most of the studies found that the performance in a period can be used for predicting performance in the next period. The persistency measurement will look into the consistency of REIT's performance. Using Single and Multifactor Capital Asset Pricing Models, the relative performance of REIT in given country is calculated and the information from this model (error term, alpha) is used to forecast whether past data can provide a constant result in the future. Thus next two models examine the statistical autocorrelation of the performance in order to test for persistency (Carhart, 1997 and Lin C.Y and Yung, 2004).

$$\epsilon_{it} = b_t + \sum_{j=1}^J \alpha_{jt} \epsilon_{it-j} + \mu_{it} \quad (11)$$

Where

$$\varepsilon_{it} \text{ is obtained from a linear } K \text{ factor model for } r_{it} \text{ (excess return of fund } i, \text{ that is } (R_{it} - R_{ft}) \tag{12}$$

$$\varepsilon_{it} = c_{0i} + \sum_{k=1}^K c_{kt} f_{kt} + \varepsilon_{it} \tag{13}$$

$\varepsilon_{it}$  is the residual resulting from the regression Models 1 to 3.  $b_t$  is the constant term,  $\sum_{j=1}^J \alpha_{jt} \varepsilon_{it}$  is the lagged term up to  $J$  periods and  $\mu_{it}$  is the error term.

The hypothesis is:

$H_0 = \text{all } \alpha \text{ is zero}$

$H_A = \alpha \text{ is nonzero}$

The null hypothesis implies that the  $\alpha$  s should be zero, which is when the market is efficient. Under the alternative hypothesis, the  $\alpha$  s should be nonzero. This alternative hypothesis is to prove the nonzero correlation in the individual fund. If the  $\alpha$  s estimated from different days is independent, a t-Statistic can be computed for each of the  $J$  set of  $\{\hat{\alpha}_{j1}, \hat{\alpha}_{j2}, \dots, \hat{\alpha}_{jT}\}$ .

The regression analysis capture the idea that high correlation may indicate correlated exposures to underlying sources of risk, which in turn might raise likelihood of a crisis when a shock hits the financial markets.

#### 4 Analysis and Findings

**Table 2.** Descriptive Statistics

Country	Mean Return (%)	Std. Dev of Return	Market Index Mean Daily Return (%)
Malaysia	-7.825	17.27	0.040
China	8.501	13.87	0.06
Singapore	1.059	5.71	0.01
Japan	-3.083	11.01	0.06
Hong Kong	2.306	12.35	0.02

Malaysia (FBMKLCI), China (Shanghai Index), Singapore (Strait Times Singapore), Japan (Nikkei 225), Hong Kong (Hap Seng Index).

##### 4.1 Descriptive Statistics

Table 2 shows the descriptive statistics for Asian hedge funds and stock market index. In Malaysia and Japan, the return of hedge funds shows a negative value and below the market return, for a period of 2006 till April 2012. However, China, Singapore and Hong Kong reports higher mean return compared to mean daily return of stock market index. This finding indicates that on average hedge funds in Malaysia and Japan are less attractive compared to the market while China, Singapore and Hong Kong are more attractive.

##### 4.2 Sharpe ratio and Treynor Index

Table 3 shows the Sharpe and Treynor index. Sharpe ratio displays that all the indices are negative and below the market index. Therefore, it can be agreed that hedge funds in the five countries are less attractive than the market. However Treynor index indicates that hedge funds in China, Japan and Hong Kong have better performance than the market while hedge fund in Singapore and Malaysia are worse off than the market.

**Table 3** Summary of Sharpe Ratio/ Treynor Index Results

Country	Fund Average Return		Average Stock Market Index
	Sharpe Ratio	Treynor Index	
Malaysia	-0.389	-10.062	0.037
China	-1.219	21.736	0.055
Singapore	-1.243	-280.904	0.010
Japan	-0.937	117.814	-0.030
Hong Kong	-0.614	16.566	0.020

Malaysia (FBMKLCI), China (Shanghai Index), Singapore (Strait Times Singapore), Japan (Nikkei 225), Hong Kong (Hap Seng Index).

### 4.3 Capital Assets Pricing Model (CAPM)

Table 4 reports the estimated Jensen’s alpha for each individual hedge fund and FOHF using 3 evaluation models which are the traditional CAPM, 3-Factor Fama and French and 4-Factor of Carhart. Jensen’s alpha, which is the intercept is interpreted as a measure of outperformance or underperformance relative to the chosen benchmark. Alpha also measures the degree to which investors are earning a significant return after accounting for market risk.

The findings show that the Jensen’s alpha for classical CAPM for all countries are negative, indicating hedge funds in these countries are underperformed compared to the market. Using 3-Factor model, the results indicate that China has a positive Jensen’s alpha while the rest of the countries have negative value. In the 4-factor model the results indicate that China and Hong Kong have positive Jensen’s alpha while Japan, Singapore and Malaysia have negative values. We may conclude that the hedge funds in China and Hong Kong perform better than the market while Malaysia, Singapore and Japan perform worse off than the market.

**Table 4** Summary of Jensen’s alpha for Hedge Funds and FOHF with different models

Fund Average Return			
Country	Classical CAPM	3-Factor Model	4-Factor Model
Malaysia	-2.282	-2.282	-2.282
China	-2.673	0.342	1.93
Singapore	-1.943	-258.436	-258.84
Japan	-2.978	-2271.867	-2272.048
Hong Kong	-3.871	-4.026	18.608

**Table 5** Summary of Jensen’s Alpha distribution

Alpha Distribution			
Country	Classical CAPM	3-Factor Model	4-Factor Model
Malaysia	0/0/2	0/0/2	0/0/2
China	0/0/6	1/0/5	2/0/4
Singapore	0/0/34	13/0/21	13/0/21
Japan	0/0/41	2/0/39	2/0/39
Hong Kong	44/4/177	45/4/176	46/5/174

Alpha distribution, ‘+’, ‘0’, and ‘-’ signs refer to positive alpha, zero alpha and negative alpha.

Table 5 summarizes the distribution of Jensen’s alpha for each country. Using the 4-Factor model, the results show that Hong Kong has 46 positive alphas, 5 zero alphas and 174 negative alphas. Other countries that have positive alphas are Singapore, China and Japan. Positive alphas indicate that hedge funds in these countries outperformed the market.

### 4.4 Persistence and Performance

The hedge funds persistence during period of 2006 till April 2012 are focused on the outperformed countries in this study that are China and Hong Kong. The persistency measurement will look into the consistency of hedge funds’ performance. The hypothesis for persistence and performance is:

$$H_0: \text{all } \alpha \text{ is zero}$$

$$H_1: \alpha \text{ is non-zero}$$

Table 6 reports the persistence performance of hedge funds in China where all the alpha values are not zero. This values are confirmed by the F-statistics that sums the alphas for the first 2 lags and lag number 3 and 4 (refer to the last two columns in Table 6). As the F-statistic for zero alpha are all significant, thus we can reject the null hypothesis. Therefore, we can conclude that on the average, the hedge funds in China are persistence for the next four consecutive days.

Table 7 shows the persistence performance of hedge funds in Hong Kong where all alpha is not zero. The F-test confirms that we shall reject the null hypothesis of zero alpha for the sum of lags 1 to lag 3. Lag 1 demonstrates that alphas are significant at the one percent level, while, lag 2 and 3 show that they are significant at the five percent level. This findings show a strong evidence that past performance of Hong

Kong's hedge funds affects the future performance. The performance of Hong Kong' hedge funds from January 2006 till April 2012 can be used to explain the performance for the next 3-day period.

**Table 6** Persistence of Hedge Fund –China

Dependent Variable	$\hat{\alpha}_1$	$\hat{\alpha}_2$	$\hat{\alpha}_3$	$\hat{\alpha}_4$	$\Sigma\alpha_t$	F-Test of Zero Coefficients	
						Lags 1 to 2	Lags 3 to 4
Classical CAPM	0.039*	10.600*	2.049*	0.096*	12.784	0.994	0.526
3-Factor Model	1.746*	6.295*	2.324*	1.382*	11.747	0.012	0.032
4-Factor Model	9.891*	7.039*	1.530*	0.386*	18.846	0.012	0.033

\*Significant at 0.01 level

**Table 7** Persistence of Hedge Funds Performance – Hong Kong

Dependent Variable	$\hat{\alpha}_1$	$\hat{\alpha}_2$	$\hat{\alpha}_3$	$\hat{\alpha}_4$	$\Sigma\alpha_t$	F-Test of Zero Coefficients
						Lags 1 to 3
Classical CAPM	0.198***	0.334**	0.633**	0.388	1.553	0.012
3-Factor Model	0.221***	0.450**	0.514**	0.395	1.580	0.019
4-Factor Model	0.282***	1.339**	1.333**	0.985	3.939	0.786

\*\* Significant at the 0.05 level    \*\*\* Significant at the level 0.1 level

## 5 Conclusion

This study has evaluated the hedge funds performance in five countries which are among the top leaders in Asian financial industry. They are Malaysia, Singapore, Japan, China and Hong Kong. Based on the analysis, we can conclude that hedge fund performance in Asian countries have potential of growth especially in China and Hong Kong.

## 6 Future Research

The work presented in this paper could be extended in a number of ways, firstly we can prioritize the hedge fund investment strategies using TOPSIS model as shown in[24].

Using the methods proposed in [3] we intend to measure and evaluate the performance of portfolios of the companies involve in the hedge fund.

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## REFERENCES

1. Abugri. BA, Dutta. S, "Emerging market hedge funds: Do they perform like regular hedge funds?", The Journal of International Financial Markets, Institutions & Money 2009; 19: 834 – 849.
2. Asness. C, Krail. R, Liew. J, "Do hedge funds hedge?", The Journal of Portfolio Management 2001.
3. Bagherzadeh. M, Kermanian. M, "Comparative Survey on Financial Performance of Companies before and After Public Offering in Tehran Stock Exchange", Management Research Report 2014; 2(5): 265-217.

4. Bali. TG, Brown. SJ, Caglayan. MO, “Do hedge fund’s exposures to risk factors predict their future returns?”, *The Journal of Financial Economics* 2011;101:36 – 68.
5. Cave. A, Hubner. G, Sougne. D, “The market timing skills of hedge funds during the financial crisis”, *The Journal of Managerial Finance* 2012; 38 (1): 4 – 26.
6. Capocci. D, Hubner. G, “Analysis of hedge fund performance”, *The Journal of Empirical Finance* 2004: 11: 55 – 89.
7. David. ES, “Registered investment adviser compliance in a hedge fund environment”, *The Journal of Investment Compliance* 2005; 6 (2): 20 – 29.
8. Eling. M, Faust. R, “The performance of hedge funds and mutual funds in emerging markets”, *The Journal of Banking & Finance* 2010; 34: 1993 – 2009.
9. Jegadeesh. N, Titman. S, “Return of buying winners and selling losers: Implication for stock market efficiency”, *The Journal of Finance* 2003; 48:65 – 91.
10. Jensen. MC, “The Performance of Mutual Funds in period 1945 – 1964”, *The Journal of Finance* 1968; 23(2): 389 – 416.
11. Kaiser. D, Haberfelner. F, “Hedge fund biases after the financial crisis”, *The Journal of Managerial Finance* 2012; 38 (1): 27 – 43.
12. Kessler. S, Scherer. B, “Hedge funds return sensitivity to global liquidity”, *The Journal of Financial Markets* 2011;14:301 – 322.
13. Lhabitant. FS, “Assessing market risk for hedge funds and Hedge fund portfolios”, *The Journal of Risk Finance* 2001; 2(4): 16 – 32.
14. Modigliani. F, Modigliani. L, “Risk adjusted performance – how to measure it and why”, *The Journal of Portfolio Management* 1997; 23 (2): 45 – 57.
15. O’Malley. TJ, “An overview of adviser act and requirement for Hedge fund managers”, *The Journal of Investment Compliance* 2004; 5(1): 50 -56.
16. Ross. SA, “The arbitrage theory of capital asset pricing”, *Journal of Economic Theory* 1976; 13: 341 – 360.
17. Sabbaghi. O, “Hedge fund return volatility and co-movement: recent evidence” *The Journal of Managerial Finance* 2012; 38 (1): 101 – 119.
18. Sharpe. WF, “Capital asset prices: A theory of market equilibrium under conditions of risk”, *The Journal of Finance* 1964; 19(3): 425 – 442.
19. Steri. R, Giorgino. M, Viviani. D, “The Italian hedge funds industry: An empirical analysis of performance and persistence”, *The Journal of Multinational Financial Management* 2009; 19: 75 – 91.
20. Stulz. RM, “Hedge Funds: Past, Present and Future”, *The Journal of Economic Perspectives* 2007; 21 (2): 175 – 194.
21. Sullivan. EJ, “A brief history of the Capital Asset pricing Model”, *APUBEF Proceedings – Fall 2006*.
22. Tudor. D, Cao. B, “The absolute returns of hedge funds”, *The Journal of Managerial Finance* 2012; 38 (3): 280 – 302.
23. Tsuchschmid. NS, Wallerstein. E, Zaker. S, “Hedge fund replication in turbulent markets”, *The Journal of Managerial Finance* 2012; 38(1): 67 – 81.
24. Yazdani. M, “Prioritizing Investment in Stock, Forex and Future Markets Using Fuzzy Topsis Method”, *Management Research Report* 2014; 2(5): 176-183.