Evaluation of Active Hong Kong Equity Funds Performance

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Abstract: Equity funds are the most popular type of mutual funds. As the "leader" of China's investment and wealth management market, whether it is a specific market sector, a particular stock exchange, foreign or domestic markets, income or growth stocks, high or low risk, there are various types and characteristics of equity funds to match every risk situation and investment objective that investors may have. The development of equity funds has driven the development of China's economy and capital markets. Hong Kong, as one of the most well-developed equity funds system in China, how institutional and individual investors invest in the Hong Kong equity fund market is a topic worth discussing.

This paper measures the performance of Hong Kong unit trust funds during the period from 2008 to 2017. We use the Hong Kong tracker fund as the benchmark. The Sharpe-ratio, Jensen's alpha, Treynor-ratio and single index model are used to evaluate the performance. The empirical results show that the equity funds outperform in the Hong Kong market. Based on the result, a recommendation can be made that investors are better off randomly choosing an active fund rather than a passive fund in general.

1. Introduction

A large literature studied the mutual fund performance in American and European markets while it is necessary to do some research about the mutual fund performance in the Asian market to extend the horizon of fund performance study. Besides, comparing with other Asian markets, Hong Kong mutual fund market is highly market-driven and develops well in recent years. Therefore, the data is more reliable and easily available. Moreover, we are interested in Hong Kong financial market which is influenced by both UK and Mainland China. Accordingly, we decided to study the performance of Hong Kong unit trust funds in the last ten years.

This paper aims to evaluate the performance of Hong Kong unit trust funds and suggest investors how to choose between actively managed mutual funds and passive funds base on the empirical result. The research aims to examine the performance of thirty active Hong Kong unit trust funds during the period from 2008 to 2017 relative to the performance of the tracker fund of Hong Kong which base on the Hang Seng Index. According to past literature reviews, we applied Sharpe-ratio, Jensen's alpha and Treynor-ratio these three ratios to evaluate the performance of Hong Kong unit trust funds. The result of our empirical work implicates that the average Hong Kong equity fund get higher excess returns than passive funds.

The paper is organized as follows. In section 2, the literature review about previous empirical findings would be present. In section 3 and 4, including the explanation of data collection and methodology introduction. The results of the empirical work are wrote in section 5. Finally, we came to a conclusion.

2. Literature Background

2.1. Theoretical Context

Over the past 50 years, models have been established to measure the performance of mutual funds. Jack Treynor, William Sharpe, and Michael Jensen have improved the mean-variance method for CAPM applications (Bodie, 2014). Based on CAPM, Jack Treynor (1966) proposed the Treynor ratio, which links excess returns beyond the risk-free rate with the additional risks assumed. William F. Sharpe (1966) developed Roy's ratio (1952), using a risk-free rate in the numerator, and using the standard deviation of excess returns in the denominator, called the Sharpe ratio. It is usually used to rate the performance of a portfolio or mutual fund manager. Michael Jensen (1968) argues that the expected return on assets is positively correlated with the beta value of asset risk, while the theoretical expected return on high-risk assets is higher than that of low-risk assets. Since then, these three basic ratios have been widely used to measure the performance of mutual funds.

To adjust the risk, Treynor, Sharpe and Jensen used a CAPM return. Sharpe (1963) explains the impact of risk on mutual funds and establishes a single index model that measures stock risks and returns. Sharp (1964), Lintner (1965), and Black (1972) developed CAPM, indicating that stock returns are linear with systemic risk across the stock market. This means that the expected return on the stock is only related to market systemic risk that supports a single index model. So, this paper uses a single-index model for regression.

2.2. Empirical Findings

Hongkong was once colonised by Britain, so the research literature on the British market is meaningful for our research. Black and Timmermann (1998) measured 2300 UK open-ended mutual funds over a 23-year period to evaluate the performance of UK mutual funds market. Black and Timmermann (1998) employ multi-factor model and follow Jensen's measure, while they find the UK mutual funds underperform in the UK market. Furthermore, to measure the performance efficiently, Black and Timmermann (2002) reviews and appraises the benchmarks which the UK investors used currently. They pointed out that benchmarks can help measure the performances, but the impact of fee structures cannot be ignored. Based on this finding, Black and Timmermann (2005) analyse 247 foreign equity held by UK pension funds during the period from 1991 to 1997. The result shows that the pension funds also have negative performance in the international market. It is even greater than UK pension funds' underperformance in the UK market.

Abdel-Kader and Qing (2007) measure the risk-adjusted performance of thirty Hong Kong mutual fund compared with the Hong Kong market benchmark. Abdel-Kader and Qing (2007) employ three- factor models to estimate the return and use Treynor and Mazuy's (1966) quadratic model to evaluate timing ability. Abdel-Kader and Qing (2007) conclude that the Hong Kong mutual funds have underperformance compare with the market.

Sharpe (1991) pointed out that actively managed dollar out-perform the average passively dollar. Malkiel (2003) supports the similar conclusion that passive investment management under-performance in all market. Malkiel (2003) does his research under the Efficient Markets Hypothesis. However, the markets cannot be completed effectively. In different markets, whether actively managed mutual funds perform better than passive funds or not, it remains to be proven by empirical evidence.

3. Data

The total monthly data set used in this article is supplied by the Thomson Eikon Datastream system. The series of monthly adjusted-price between July 2008 and December 2017 were used to represent the value of portfolios for individual Hong Kong Equity unit trusts.

The selected funds were based on the following constraints. Firstly, the funds were established before the 2008. Secondly, the mutual funds are active in the examining period (July 2008 to December 2017). Thirdly, only Hong Kong unit trusts primarily investing in equity with sufficient

information are classified. There are 112 observations fitted the constrictions, and only 10 funds died in this period. So, we ignore the survivor bias as well. For each fund, we calculate the simple rate of return (based on formula 1) from adjust-price and employ it to examine the risk- adjusted performance of Hong Kong Equity unit trusts.

$$R_t = \frac{P_t - P_{t-1}}{P_t} \tag{1}$$

Where P_t is the adjusted-price of the fund in month t, P_{t-1} is the adjusted-price of the fund in the previous month, R_t is the simple rate of return in month t.

Moreover, in order to solve the problem of the repetition of fund performance, we randomly choose 30 funds from 112 funds as the sample used in this study. The selected 30 funds all use HKD as their currency so in this study we ignore the influence of exchange rate among different currencies.

The benchmark for the market portfolio performance used in this article is the Hong Kong Hang Seng Index which reveals approximately 70% of the total capitalisation of the Hong Kong Stock Exchange. It is typical and widely accepted in public. The Tracker Fund of Hong Kong as an index fund (passive-management) successfully tracked the Hang Seng Index. It was supported by the evidence from empirical analysis such as high positive correlation (0.992) between variables, and both the coefficient and measure of fitness of the OLS regression are very close to 1. Because the market indices cannot be directly traded, the market return was computed from the index fund as the approximation of its benchmark. Besides, we choose HK three-month treasury bill rate as the risk-free rate to conduct the further analysis.

4. Research Methodology

In this study, we mainly focus on three measures published by Jack Treynor, William Sharpe and Michael Jensen separately to evaluate HK equity mutual fund performance.

4.1. Sharpe's Measure.

Sharpe's measure (Sharpe, 1966) divides the sample average excess return by its standard deviation during the selected period (formula 2), which can be used to represent the linear reward to total volatility trade-off. It assumes that the monthly return is identically independently distributed and the mean, variance or other indicators of sample remain stable in the future. The Sharpe ratio is easy to be computed from the monthly data by calculating the mean and standard deviation of the excess return of active mutual funds.

$$Sharpe_{monthly} = \frac{\bar{r}_p - \bar{r}_f}{\sigma_p} \tag{2}$$

To annualized the monthly Sharpe ratio, it is widely accepted to use arithmetic average rate of return as the annual estimation (formula 3).

$$Sharpe_{annually} = \frac{(\bar{r}_p - \bar{r}_f) \times 12}{\sigma_p \times \sqrt{12}} = Sharpe_{monthly} \times \sqrt{12} \tag{3}$$

4.2. Treynor's Measure.

Compared with the Sharpe's measure, it is also used to conduct the excess return per unit of risk. But Treynor (1966) prefers the systematic risk (β) that fund faced instead of the total risk (S.D.) in Sharpe's.

$$Treynor_{monthly} = \frac{\bar{r}_p - \bar{r}_f}{\beta_p} \tag{4}$$

Where β is the coefficient of the excess market return in the time-series OLS regression (formula 5) based on CAPM. e_t is the tracking error, revealing the unpredictable gap between the expectation and the real excess return.

$$r_{Pt} - r_{ft} = \alpha + \beta(r_{Mt} - r_{ft}) + e_t \tag{5}$$

The annualized Treynor's measure is:

$$Treynor_{annually} = \frac{\bar{r}_p - \bar{r}_f}{\beta_p} \times 12 = Treynor_{monthly} \times 12 \tag{6}$$

4.3. Jensen's Measure.

Jensen alpha (Jensen, 1969) is the coefficient of the constant in last regression model (formula 5). It demonstrates the overperformance of the mutual funds to the expected average return predicted by CAPM. In general, it is an absolute value which we can directly use to rate a funds' management:

$$Jensen_{monthly} = \alpha = \bar{r}_p - \left[\bar{r}_f + \beta(r_{Mt} - r_{ft})\right] \tag{7}$$

And the annualized measure is:

$$Jensen_{annually} = \alpha \times 12 = Jensen_{monthly} \times 12 \tag{8}$$

For this study, we have merged the 30-fund data to describe the total distribution of funds' performance. Then we compute the further empirical analysis on each mutual fund to rate its performance by the three basic measures motioned above.

5. Empirical Results

The overall performance of the thirty equity funds in Hong Kong is shown in Table 1 compared with the benchmark. It is observed that the overall active fund has a higher excess return along with a lower standard deviation and beta. Jenson alpha of active funds is 2.5% which means managers of equity funds in Hong Kong market gain 2.5% premium return per annum on average based on the risk-adjusted measure during capital appreciation. The Sharpe-ratio (0.211) and Treynor-ratio (5.493%) of the overall active funds are both higher than passive index fund (0.101 and 2.304% respectively) which indicates that actively managed funds may have higher excess return than passive fund when taking the same risk. All of the three basic measures come to the same conclusion that the performance of active funds is better than passive index fund in general.

Table 1 The overall performance of the thirty equity funds in Hong Kong.

Fund	Average Annual Rate of Return	Standard Deviation	Beta	Treynor-ratio	Sharpe-ratio	Jenson (1 Factor)
Average Actively Managed Fund	7.00%	21.03%	0.806	5.49%	0.21	0.025
Passive Index Fund (Benchmark)	4.88%	22.89%	1.00	2.304%	0.101	0.00

The distribution of the performance of the thirty funds is illustrated in Figure 1. It indicates that twenty-seven of the thirty sample funds, at the percentage of 90%, have outstanding performance compared with the benchmark. Only three actively manage equity funds, F24: AIA MPF PRM VAL CHOICE-GRTR CHINA EQTY, F12: MANULIFE GLOBAL SELECT MPF-EUROPEAN

EQUITY, F28: HANG SENG PROPERTY EQ. , have worse performance than passive funds.
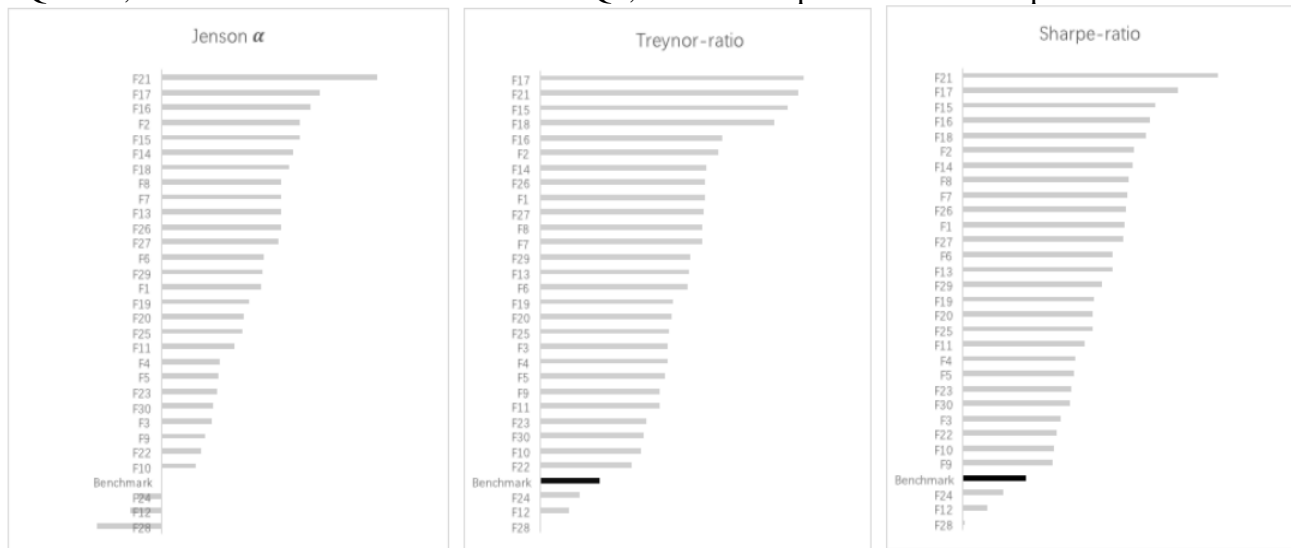

Figure 1 The distribution of the performance of the thirty funds

The results of our research are not consistent with the findings of several previous empirical works. Most of the previous researchers focusing on the UK or the USA market conclude that the sample funds have worse performance than the market in general. It can be explained by Jenson (1968), that limited excess return of fund can be accessed from active management and will be covered by marketing costs, transaction fees and management fees etc. (Jenson, 1968). Comparing with the conclusion made by Abdel-Kader and Qing (2007), we get an opposite result. It may be caused by the difference of sample period and fund style.

By contrast, Malefo et al. (2016) made a similar conclusion to ours that actively management of mutual funds can get better rewards in South Africa market. Speculation can be made that the over performance of funds reflects managers' selectivity and timing ability.

According to our research results, if investors want to invest in the Hong Kong market and randomly choose an actively managed fund, their chances of choosing a performance better than the fund are 90%. From this perspective, we can give advice. It is best for investors to randomly choose an actively managed fund instead of choosing a passive fund. However, there are still uncertainties in the qualifications of existing funds. Although this possibility is low, investors will choose to perform underperforming funds. In contrast, passive funds have deterministic returns and risks based on market indices, reflecting less uncertainty. In addition, for individual investors, different utility and personal preferences can affect the randomness of fund selection. If investors randomly choose mutual funds, the results may not meet their personal preferences.

6. Conclusions

To help investors make decisions between active and passive funds. We sampled 30 equity funds from the Hong Kong market from 2008 to 2017 and evaluated the performance of these funds based on three basic indicators: Sharpe-ratio, Jensen's alpha and Treynor-ratio. The study found that the overall performance of active equity funds is better than passive funds. Therefore, when investors randomly choose a stock fund from the Hong Kong market, they are more likely to choose a fund that exceeds performance. Although random selection may not meet the preferences of some investors, it is still a better option for most investors.

The limitations of this empirical work can be divided into three aspects. First, when selecting samples from the database, we found that not all funds existed throughout the study period. Our approach to dealing with these dead funds is excluded from the population. This survival bias leads to higher returns on funds because of the neglect of "rotten apples". In addition, the impact of cash flows is ignored when calculating fund returns. Second, through the regression beta model, a single index model is used to describe the relationship between mutual fund returns and systemic risk.

However, the single-index CAPM model may have overlooked some aspects in determining the risk premium. A better option is to use FAMA and France (1993)'s three-factor model to take into account company size and book value when quantifying systemic risk. Third, use the historical data of the fund to evaluate the performance of the fund and provide advice for investors to choose mutual funds. However, the ratios we calculate can only represent the past performance of the fund, and it is not known if their future performance will change.

In short, although our research has certain limitations, we have evaluated Hong Kong's stock mutual funds and made recommendations on the selection of funds. Future research can focus on funds of different investment types or geographical regions. In addition, the method can be optimized by considering more factors. In addition, there is a need to discuss in depth issues such as the excess of funds or the reasons for poor performance.

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