

Study on Timing and Selectivity of China's Hybrid Mutual Funds

An Empirical Study

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ABSTRACT

With the development of China's financial market, hybrid mutual funds have been favoured by the market because of their features of diversified investment objects, moderate risk and objective return rate of fund assets. This paper aims to analyze the management ability of China's hybrid mutual funds, particularly stock selection and timing ability. On this basis, the paper employs Jensen alpha model and Treynor-Mazuy Model (T-M model) to assess fund managers' stock selection and timing abilities respectively. It empirically implements Jensen's alpha and T-M model to samples of 415 China's existing hybrid mutual funds. The empirical results indicate that a) most of the mutual fund managers own strong stock selection abilities during the sample period but weak timing abilities; b) some of them have the abilities to select stocks outperformed the market as well as to time the market; c) the above abilities are positively related to the fund size in China's hybrid mutual fund market. Hybrid mutual funds in China have become an increasingly popular investment target and this paper helps to assess the performance of this financial instrument quantitatively.

Keywords: Hybrid mutual fund, Stock selection ability, Timing ability.

1. INTRODUCTION

Up until the end of the first quarter in 2018, the number of national open-ended investment funds, including FOF (fund of fund) had reached 4531 and the net asset size was 1.9 trillion USD, which became one of the first tiers in the world.

From 2015 to 2018, the stock market in China had experienced the bull market, the bear market and volatile market, which had made a great impact on market participants. Therefore, it is essential to analyse the overall performance of China's hybrid mutual funds.

In assessing the performance of the mutual fund managers, the ability of selecting outstanding stocks and timing the market are extremely essential. For market participants, the strong selection and timing abilities of the mutual fund managers can bring merits to personal investors, fund companies and fund managers themselves as well.

Thus, this paper applies empirical studies on all the existing hybrid mutual funds from 2015 to 2018, mainly focusing on fund managers' abilities of stock selection and market timing.

2. RESEARCH LITERATURE AND MODELS

2.1 Review of Foreign Theoretical Research

In western developed countries, benefit from the well-developed fund assessment system, the theories and models of evaluating the fund managers' stock selection and timing ability were developed.

2.1.1 Theories and Models of Stock Selection Evaluation

Jack L. Treynor (1965) firstly pointed out a risk-adjusted return measure, Treynor ratio, which investors can adjust investments' returns for

systematic risk. The Sharpe ratio introduced by William F. Sharpe (1966) is a measure of risk/return. It is used to compare a portfolio's excess return to its standard deviation of returns. Michael C. Jensen (1968) suggested Jensen's alpha, which is a risk-adjusted performance measure that represents the average return on a portfolio or investment, above or below that predicted by the capital asset pricing model (CAPM), given the portfolio's or investment's beta and the average market return.

The above three are the classic performance evaluation methods. In the past decade, some scholars started using data envelopment analysis (DEA) including Lamb(2011) and Kadan (2014).

2.1.2 Theories and Models of Market Timing Assessment

Based on Jensen's alpha, Jack L. Treynor (1966) and Kay Mazuy (1966) introduced T-M model to evaluate fund managers' timing and selecting abilities. Henriksson (1981) and Merton (1981) developed H-M model, which allows changeable beta coefficient, to assess fund managers' abilities to select outstanding stocks and time the market. In the past years, Herrman et al. (2013) found out that the timing abilities of fund managers would not have great impact on fund performance; Frijns et al. observed that growth funds tend to be more conservative and income funds tend to be more aggressive.

Due to the late development of China's mutual fund market, the researches on mutual funds are not as sufficient as in the western markets. Bai (2010) found strong empirical connection between fund managers' timing abilities and the fund sizes. Yi (2016) observed relatively high correlation between timing abilities of fund managers and fund performance in growth funds. Yang Huawei et al. (2018) found that the size timing ability of funds should be assessed in a bull market while the market timing ability in a bear market.

2.2 Theories and Models Employed

Based on the above research literature, this paper employed Jensen's alpha to assess the stock selection abilities of fund managers and T-M model to analyse their timing abilities. Considerations for employing Jensen's alpha are as follows:

First, Jensen's alpha measures the excess return of the investment which fits the objective of active

hybrid mutual funds, that is, to exceed the market return.

Second, Jensen's measure can indicate the relative performance of funds to the market performance, which is different from other measures/index.

Third, Jensen alpha is the most widely adopted measurement of fund performance.

The main consideration for adopting T-M model to evaluate the timing ability is that T-M model modifies from Jensen's alpha and therefore it can assess both the stock selecting ability and the market timing ability.

First, the more reasonable the fund portfolio is, the greater the market return is. They have a positive linear relationship.

Second, T-M model, improved on the basis of single factor Jensen's model, has both the stock selection and timing ability.

3. EMPIRICAL APPLICATION OF JENSEN'S ALPHA MODEL

3.1 Sample Selection and Source of Data

The following principles are adopted due to the practical limitations of the market.

First, the selected funds should be continuously running during January 2015 to December 2018, which meant its net asset value and accumulated total net value were valid and the fluctuation of the net asset value follows the market.

Second, the benchmark of the mutual funds should also be valid from January 2015 to December 2018, and the indices should be obtainable and computable.

Third, the selected funds should be active security investment funds, including but not limited to structured fund, Listed Open-Ended Fund (LOF), Exchange Traded Fund (ETF, as long as the fund is actively managed by the fund manager.

After selection, 415 hybrid mutual funds meet the above three limitations and become samples of the empirical application. The 415 funds then have been grouped into 4 groups based on their sizes. The details about grouping can be seen in "Table 1".

Table 1. Grouping of funds

Group	Fund size (in RMB 100M)	Number of funds
I	Over 25 (including 25)	37
II	5-25 (including 5, excluding 25)	148
III	1-5 (including 1, excluding 5)	140
IV	Under 1 (excluding 1)	99
Total		415

For better empirical application, this paper selects one week Shanghai Interbank Offered Rate (Shibor1w) to be the risk-free rate. Meanwhile, the return of the saving proportion in the benchmark also uses one week SHIBOR (Shibor1w). The data of funds is obtained from an official fund website called Tiantian Fund.

This paper employs Jensen's alpha to assess fund managers' stock selection ability. The expression is as follows.

$$(r_i - r_f) = \alpha + \beta_i(r_m - r_f) \quad (1)$$

with:

α - Jensen's alpha,

r_i - fund return,

r_f - risk-free rate,

r_m - market return.

If the alpha is significantly positive, the fund manager is able to select the stocks outperformed the market, and the vice versa.

3.2 Empirical Findings on China's Hybrid Mutual Funds from 2015 to 2018

In the paper, fund samples are grouped on the basis of day unit and year unit and analyzed prospectively. According to statistics, 415 funds are based on day unit and 9 funds based on year unit. This paper employs Jensen's alpha to assess the sample funds individually.

Based on the theory of "Table 1", the paper assesses each group, as shown in "Table 2".

Table 2. α value summary of selected funds

Group	$\alpha \geq 0$ (Number of Funds)	$\alpha < 0$ (Number of Funds)	Total
I	32	4	36
II	114	31	145
III	111	27	138
IV	66	30	96
Total	323	92	415

3.3 Empirical Result Analysis

3.3.1 Overall Analysis

"Table 2" illustrates that, among all the hybrid mutual funds in China, most fund managers show stock selection abilities, which means they are able to select stocks outperformed the market. As a whole, the alpha value of 323 (out of 415) funds are significantly positive. That is, 77.83% of the fund managers can select stocks that generate excess return.

Down to each group, the numbers of funds with significantly positive alpha value are 32, 114, 111 and 66 in group I, II, III, IV respectively. The percentage of funds generates excess return, that is,

with significantly positive alpha value, in each group is 88.89%, 78.62%, 80.43% and 68.75%.

Therefore, due to the above illustration, the hybrid mutual funds as a whole show strong correlation between alpha values and fund sizes. That means, the larger the fund size, the higher excess return can be generated by fund managers. This may due to the change of stock selection abilities between fund managers and the investors tend to invest in funds of higher return. However, a small proportion of funds are an exception of the above conclusions. Therefore, we consider that stock selection activities and abilities differ considerably over fund sizes.

3.3.2 Individual Analysis

From 2015 to 2018, 77.83% (323 out of 415) hybrid mutual funds outperformed their benchmark, which meant their return was higher than the market expectation.

Down to each group, the numbers of funds with significantly positive alpha value are 32, 114, 111 and 66 in group I, II, III, IV respectively. The percentage of funds generates excess return, that is, with significantly positive alpha value, in each group is 88.89%, 78.62%, 80.43% and 68.75%.

Therefore, the results seem to suggest that the larger the fund size, the higher the alpha value is and hence the higher the excess returns can be generated. However, not all the funds fit in the above suggestion. Hence, we consider that detailed analysis to the funds is needed.

Based on the above, we concentrate on the alpha values of each of the funds and observe that the fund with highest alpha value 0.01028592 is called Hua'an Ecology Mutual Fund (code: 000294). It shows extraordinary stock selection ability and generates highest excess return among all the hybrid mutual funds in China in the period 2015 to 2018. On contrast, the lowest alpha value is -0.00154147 and the fund with this value is called Yifangda Resources Mutual Fund (code: 110025). Its return is significantly under the market expectation.

4. EMPIRICAL APPLICATION OF T-M MODEL

4.1 Sample Selection and Source of Data

The sample selection rule and the data resource are the same with the above model. The risk-free rate is still using the one week SHIBOR

(Shibor1w). The expression of T-M model is as follows.

$$R_p - R_f = a + b(R_m - R_f) + c(R_m - R_f)^2 + ep \quad (2)$$

With:

R_p -the return of the fund;

R_m -market return;

R_f -risk-free rate;

a, b and c-regression coefficient;

e_p -residual.

After the regression, if the a value is significantly above zero, then the fund manager performs ability to select excess return stocks. On contrast, if the a value is significantly below zero, then the return of the fund is under the market expectation.

The second coefficient we examine is c value, which shows the market timing ability of the mutual fund manager. If the c value is significantly positive, then the fund manager owns the ability to time the market, or vice versa. Therefore, T-M model can assess both the fund manager's stock selection ability and market timing ability. In the regression results of T-M model, we focus more on the market timing ability of fund managers as we already discussed stock selection ability in the above Jensen's alpha model.

4.2 Empirical Findings on Timing Ability of China's Hybrid Mutual Funds from 2015 to 2018

This paper regresses all the 415 hybrid mutual funds through T-M model. "Table 3" shows the c values of all the regression results of the funds in each group.

Table 3. C value summary

Group	$c \geq 0$ (Number of funds)	$c < 0$ (Number of funds)	Total
I	12	24	36
II	45	100	145
III	45	93	138
IV	29	67	96
Total	131	284	415

4.3 Empirical Findings

4.3.1 Overall Analysis

"Table 3" groups the number of funds with c value greater than or equal to zero and the c value less than zero. We can observe that 31.57% (131 out of 415) with c value greater than or equal to zero.

In each of the group, the percentage of c value not less than zero is 33.33% in group I, 31.03% in group II, 32.61% in group III and 30.21% in group IV.

We choose to exclude four outliers because their c values are too high and will significantly affect the further analysis of c value. The outliers are Changcheng Anxin Return Mutual Fund (200007) with c value 7823.60, Dacheng Jingyi Stable Income Mutual Fund (000695) with c value 19470.73, Boshi Flexible Asset Allocation Mutual Fund (050022) with c value 54950.80 and Anxininfa Optimisation Mutual Fund (000433) with c value 88041.51.

Based on the overall results of c value, we can observe that the larger the fund size, the larger the c value is, that is, the stronger the timing ability. The reason is that the larger the scale of the fund, the more stocks, bonds and other products it can invest in, and the better it can avoid risks and avoid major losses in the face of systemic risks. However, different funds have different special situations, which need to be analyzed specifically.

4.3.2 Individual Analysis (Funds Based on Day Unit)

From 2015 to 2018, 31.57% (131 out of 415) hybrid mutual funds outperformed their benchmark, which meant their timing abilities were higher than the market expectation.

Down to each group, the numbers of funds with significantly positive alpha value are 12, 45, 45 and 29 in group I, II, III, IV respectively. The percentage of funds generates excess return, that is, with significantly positive alpha values, in each group is 33.33%, 31.03%, 32.61%, 30.21%

Therefore, the results seem to suggest that the larger the fund size, the higher the c value is and hence the stronger timing ability. The results are similar to those of the overall analysis mentioned above. However, different funds should be evaluated specifically.

As for individual fund, in the 2015-2018 period, among the 415 hybrid funds based on day unit, the fund with highest c value 21.56650538 is Fuguo Hi-tech Industry Mix (code: 100060). Haifutong Income Growth (code: 519003) with c value — 55.18581504 is the fund whose stock selection ability is much worse than the market expectation.

5. CONCLUSION

For investors, a full understanding of the stock selection ability and timing ability of fund managers is helpful to make investment choices. This paper applies empirical studies on the stock selection ability and timing ability of domestic hybrid funds from 2015 to 2018. It applies Jensen's alpha and T-M model to assess stock selection ability and timing ability respectively. The sample funds are grouped by two, day based unit and year based unit for regression analysis. The regression analysis draws the following conclusions.

First, from 2015 to 2018, over 70% of the domestic hybrid funds selected have better stock selection abilities than the market expectation while such abilities differ greatly.

Second, from 2015 to 2018, over 60% of the domestic hybrid funds selected have worse timing abilities than the market expectation while such abilities differ greatly.

Third, the proportion of funds with good stock selection ability and timing ability is 27.36%, reflecting that domestic hybrid funds tend to be mature. Yet, the proportion is small and the funds still need to improve their performance abilities, especially timing abilities

Fourth, in general, the larger the fund size, the stronger the stock selection ability and timing ability are. That is, there is a positive correlation. However, this view is not universal and needs to be analyzed according to the actual situations of the fund.

According to the above conclusions and the actual situations of the market, this paper proposes the following suggestions from the perspectives of researchers, fund management companies and investors.

As for researchers, firstly, they should explore more about the stock selection ability and timing ability of each fund and the relationship between them and other factors. Secondly, they should consider more about the fund size.

As for fund management companies, firstly, they should cultivate stronger fund management abilities of fund managers. Secondly, they should pay attention to expanding and maintaining the sizes of existing funds.

As for investors, firstly, they should choose those domestic hybrid funds with outstanding stock selection abilities and timing abilities. Secondly, they should give priority to larger funds.

AUTHORS' CONTRIBUTIONS

Yu Wu is responsible for experimental design, analyzing data and writing the manuscript. Liangchen Zhang contributed to revising and editing. Bailin Yang collected data and ran the regressions.

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