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Systemic Risk, Idiosyncratic Risk and Mutual Fund Flows

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Abstract

Is risk-taking behavior of Fund managers to consider for their own benefit maximization? Based the unbalanced panel data of 2004-2012 in China fund market, we empirically examine the relation between fund risk and fund managers reward. The results show that the fund choosing higher risk will not bring decreasing investment cash flow, and the investors generally show a "reward" attitude to high-risk funds. Furthermore, we find fund managers reward is a result of taking greater systemic risk.

Keywords

Systemic Risk, Idiosyncratic Risk, Risk-Taking, Fund Managers Reward

1. Introduction

Fund managers, in their investment decision, often choose different risk portfolio to change the risk level of mutual fund [1]. Our concern is that whether this fund manager's risk-taking behavior is a result of selfishness? Fund managers, by choosing fund risk, whether can bring their greater rewards?

Fund managers rewards are positively related to the fund's net asset value they managed, and the scale of fund net value mainly depends on fund investors' cash flow [2]. Therefore, we use the fund investors' cash flow as a proxy for fund managers' reward. For its own or fund investors interests consideration, fund managers often , by choosing a higher beta stock portfolio, improving the industry concentration degree of securities and reducing the number of stocks , raise mutual funds risk level [3]. Some research have found that the fund manager does not lead to better performance for fund investors returns [4], we mainly, from the perspective of fund managers self-interest, examine whether fund risk-taking behavior can bring greater compensation for fund managers.

2. The data and Variable

By taking the data of China's fund market of RESSET fund database[1]. Sample of open-end equity funds in China, because of this study is the risk-taking behavior of fund managers, thus excluding passive index funds, QDII

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[1]www.resset.cn

funds and specific industries funds. The time period of samples is from the first quarter of 2004 to the fourth quarter of 2012, a total of nine year, 36 quarter, the largest section using the unbalanced panel data is up to 140.

This paper uses *NetFlow*, the new money flow fund investors on behalf of the fund manager rewards, the difference of the fund total net assets between two quarters before and after. Fund performance , with quarterly original performance Raw and risk factors adjusted performance F1, F3 and F4.The corresponding fund risk is divided into: (1) the overall risk *VolRawYearly*, is fund volatility of raw returns. (2) active risk *VolExcessR300Yearly*, use volatility of fund performance relative to the HS300 index to represent the tracking error . (3) systemic risk *SysRisk*. (4) idiosyncratic risk *IdoRisk*. Other variables include: *TNA*, expressed in net asset value of the fund at the end of the quarter. *Age*, the age of fund, with past quarter number since the establishment of this fund. *FamilyTna*, the total TNA of a fund family. *AggNFlows*, the total cash flow of the specefic quarter.

3. The Fund Risk and Investors Cash Flow

3.1. Overall Risk and Active Risk

Volatility of fund performance are used to indicate overall risk fund, and active risk is defined as the volatility of market's benchmark index tracking error [5]. First, we use each fund and HS300 index of weekly return to calculate the fund relative to the HS300 index of the tracking error: $ER_{i,t} = R_{i,t}\text{-}HS300_t$ then put the sample standard deviation of the tracking error as the initiative of funds in the first quarter risk measurement: $VolExcessR300Yearl_{i,T} = Std (ER_{i,t})$. **Figure 1** shows the overall risk and active risk time series of sample funds during 2004-2012. It can be seen that the overall risk of fund in the 2008 financial crisis has a significant rise, while funds active risk in the whole sample period keep a relatively stable trend.

This paper set up the following model to examine the investors of capital flow and the previous fund risk bearing behavior of the relationship between:

$$NetFlow_{i,t} = \alpha_0 + \beta_1 Risk_{i,t-1} + \gamma_1 Performance_{i,,t-1} + \gamma_2 Tna_{i,t-1} + \gamma_3 Age_{i,t-1}$$
$$+ \gamma_5 AggNFlows_{i,t} + TimeEffects_{i,t} + \varepsilon_{i,t} \tag{1}$$

Model (1), respectively using *VolRawYearly* overall risk and active risk *VolExcessR300Yearly*, the retunr Performance is expressed in the past 12 months the average fund return. The interpretation of the other control variables are given in part 2 of this article. If investors hold the denial manner to fund risk-taking behavior, the open-end fund investors will choose to vote with their feet, evacuation their investment funds, leading to fund as a net outflow fund, in the late before the corresponding Risk coefficient β_1 accords with negative. On the other hand, if the β_1 symbol is positive, it means that managers of risk-taking behavior can attract more investors' money, so fund managers own reward will crease.

The estimates results of model (1) are given in **Table 1**. Overall, adopting both overall risk and active risk, the sign of β_1 isn't negative. There has no minus means fund risk-taking behavior at least not lead investors to pull away. Further observation found that active risk *VolExcessR300Yearly* coefficient is 0.6726, and highly significant
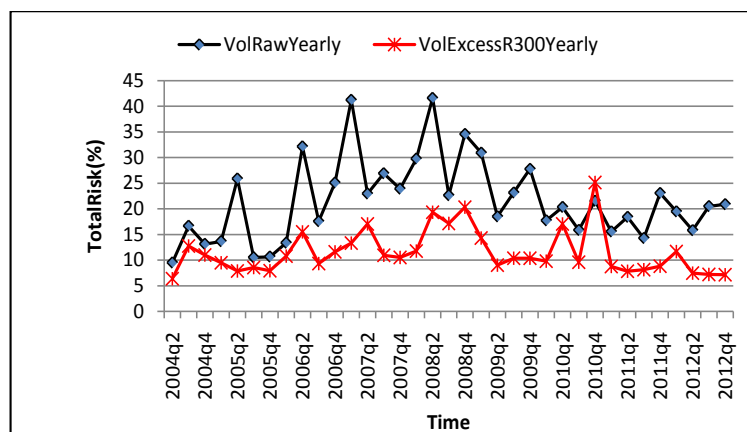

Figure 1. Time series of fund overall risk and active risk.

at the 1% level. From the angle of economic significance, in the case of other factors unchanged, fund manager at every 1% increase in the risk actively, will bring 0.67% new capital of investors that are also highly significant in terms of economy. It suggests that the fund initiative risk-taking behaviour is indeed brought better returns for fund managers, their risk-taking is worth. Observing other control variables, the fund performance performance coefficient Performance is positive, suggests that investors prefer to good fund performance; Fund size *TNA* and fund age *Age* coefficients is negative and highly significant, showed that fund investors prefer to choose the smaller and younger fund. These results are consistent with previous literature research conclusion, also conform to the general expected.

3.2. Systemic Risk and Idiosyncratic Risk

Next, in this paper, the fund risk is decomposed into systemic risk and idiosyncratic risk, further investigating the relationship between the fund risk and fund Managers Reward. **Figure 2** shows the sample fund time series of systemic risk and idiosyncratic risk. It can be seen, idiosyncratic risk during the sample period on fund performance is stable, and always maintain in low level, while the level of fund systemic risk in the period 2008-2009 has a significant rise, which corresponds with the 2008 global financial crisis, China's financial market systemic risk has a substantial rise.

The regression model is still based on the model (1), risk *Risk* here is decomposed into systemic risk and idiosyncratic risk. Among them, according to the single factor and three factors of performance differently, one factor *SysRiskF*1 systemic risk and systemic risk and systemic risk *SysRiskF*3 three factor two ways to measure, idiosyncratic risk using single factor idiosyncratic risk *IdoRiskF*1 idiosyncratic risk and three factors *IdoRiskF*3 said in one of two ways. The empirical results given in **Table 2**, the systemic risk in the corresponding model I
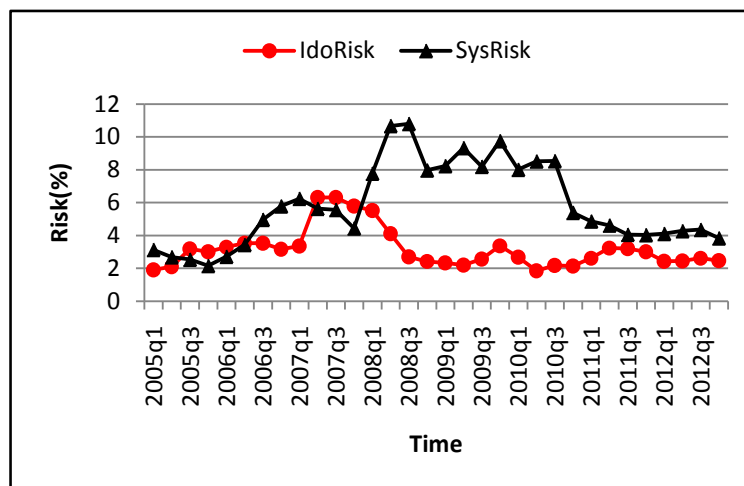

Figure 2. Fund systemic risk and idiosyncratic risk time series.

Table 1. The relation between overall risk ,active risk and investors flow.

NetFlow	*VolRawYearly*		*VolExcessR*300*Yearly*	
Risk	0.9916** (0.4299)	0.8372 (0.5847)	0.4112* (.2286)	0.6726*** (0.2050)
Performance		4.5845*** (1.0230)		4.3161*** (0.8057)
TNA		−66.7603*** (15.7644)		−66.4912*** (15.7203)
Age		−1.0915** (0.5350)		−1.4125*** (0.4542)
AggNFlows		3.0995*** (0.7820)		3.2133*** (0.8344)
R-2	0.1119	0.2417	0.1285	0.2217
OBS	2612	2212	2612	2212

Table 2. Systemic risk, idiosyncratic risk and net flow of funds.

NetFlow	*SysRiskF*1	*SysRiskF*3	*IdoRiskF*1	*IdoRiskF*3
ModelNum	**I**	**II**	**III**	**IV**
Risk	1.1777 (0.6694)	0.8474 (0.7220)	−18.4629[**] (7.9731)	−24.3378[**] (11.7634)
Performance	3.8256[***] (0.9785)	3.7379[***] (0.9698)	3.8525[***] (0.9743)	3.8225[***] (0.9544)
TNA	−59.4848[***] (17.0349)	−59.1885[***] (16.9962)	−58.4542[***] (17.1286)	−59.0005[***] (17.1243)
Age	−1.4108[**] (0.5888)	−1.4631[**] (0.6056)	−1.5759[***] (0.5586)	−1.6067[***] (0.5680)
AggNFlows	3.4340[***] (0.9939)	3.3248[***] (0.9610)	3.3808[***] (0.9624)	3.3301[***] (0.9448)
R-2	0.2114	0.2102	0.2118	0.2108
OBS	2067	2072	2072	2072

and model II, risk *Risk* coefficient were not significant. In model III and IV, idiosyncratic risk coefficients are negative at a significant at 5% significance level, show that the fund manager's choice of idiosyncratic risk behavior is not recognized with investors. Investors choose fund idiosyncratic risk to vote with their feet, a significant net outflow of funds, the fund's choice of idiosyncratic risk behavior will bring negative returns to fund managers. And in terms of systemic risk, fund manager rewards show the relationship between positive ratio and risk, but the relationship doesn't get statistical test scores. The other control variables of regression results in **Table 2** are similar to **Table 1**, and conform to the general expected, so we don't describe specifically.

4. Conclusion

The risk-taking behavior of fund managers in the investment decision-making, will have a direct impact on both fund investors benefits and fund managers own returns. This paper, based the China fund market unbalanced panel data of 2004-2012, begin an empirical research on the relationship between the fund risk and the fund manager rewards. Research results show that the fund manager's risk-taking behavior of fund managers attracts more net flow, the higher the risk of the fund, in the later, it can bring greater rewards to fund managers. The fund risk, further decomposed into systemic risk and idiosyncratic risk two dimensions research, has shown that fund manager's choice of idiosyncratic risk is not affected by fund investors, which will not bring rewards for fund managers, fund managers reward is mainly from its choice of systemic risk.

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