

Restrictive Effect of Fund Self-Purchase Behavior on Managerial Risk-taking: An Empirical Examination

Zhiping Jiang

College of Economics and Management,
Sichuan Normal University,
Chengdu, 610101, China
jiangzhiping@sicnu.edu.cn

Songran Li

College of Economics and Management,
Sichuan Normal University,
Chengdu, 610101, China
lisongran@yeah.net

Abstract—The managerial fund self-purchase behavior contributes to building the "benefit and risk-sharing" mechanism between fund investors and fund managers. This paper examines the actual data of China's mutual fund market, and our empirical investigation of the relationship between Chinese fund managerial self-purchase behavior and risk-taking behavior indicates that the managerial self-purchasing behavior weakens their risk-taking tendency. And at the same time, investment managers become more prudent and responsible for their customers.

Keywords—*Mutual Fund; Risk-Taking; Self-Purchase Behavior*

I. INTRODUCTION

It is a common phenomenon that fund managers are more willing to take risks and prefer risk-taking decision in China's securities market. Lacking of a fair and sound risk-sharing mechanism among fund managers, fund investors and fund companies is the fundamental reason why minimizing risk-taking behavior becomes more and more difficult. Because of the inconsistency of residual control rights and ownership of fund assets, the behavior of fund managers to gain performance growth by letting fund investors bear high risks in their investment has actually become a rational choice for fund managers. Therefore, it is necessary to explore the risk-sharing mechanism among the three parts. Fund self-purchase behavior is that fund managers use their own wealth to purchase the fund shares managed by them. The purpose is to realize the benefit-sharing between fund managers and fund investors. At the same time, fund self-purchase behavior also provides a good sample for the establishment of risk-sharing mechanism between fund managers and fund investors. The main question we want to answer in this paper is: Does the self-purchase behavior of fund managers in China help to realize the effective restraint on the risk-taking behavior of fund managers?

Many empirical tests on European and American fund markets mostly support that self-purchasing behavior of funds has a good restraint effect on risk-taking behavior of fund managers. However, the maturity and investor structure of Chinese mutual fund market is quite different from those of European and American markets. Based on the actual data of

China's mutual fund market, we will make an empirical test in accordance with the mainstream methods. Our task is to empirically test the relationship between the self-purchase behavior of funds and the risk-taking behavior of Chinese fund managers.

II. THEORETICAL ANALYSIS

Fund self-purchase is a kind of behavior that fund managers use their own funds to purchase funds under the same fund company. The self-purchase behavior of funds binds the interests of fund managers and fund investors to a certain extent, and establishes a mechanism of "benefit sharing and risk sharing" between fund investors and fund managers. In addition to the fund company purchases its own funds, the fund company's practitioners (mainly fund managers) use their personal funds to purchase the funds managed by them. In June 2012, China Securities Regulatory Commission (CSRC) issued the Regulations on Matters Relevant to Fund Employees' Investment in Mutual funds (Draft for Opinions). It encouraged fund practitioners to buy their own funds with a view to binding the interests of fund practitioners and the interests of the investors, thus affirming the role of fund self-purchase at the institutional level. China Securities Regulatory Commission also requires that fund practitioners hold fund shares for a period of not less than six months and that senior managers, heads of investment and research departments and fund managers hold self-purchasing fund shares for not less than one year.

There are two main motivations for fund self-purchase: one is "information transmission" motivation. Through the self-purchasing behavior of the fund, we can send a signal to the market, especially to the investors of the fund, indicating that the fund managers are optimistic about the future performance of the fund, and convey confidence to other investors of the fund, so as to attract more investors to participate in the purchase of the fund. The second is "profit" motivation. In this case, there is no difference between the motivation of fund self-purchase and that of other investors. They hope to realize the value-added and preservation of their own funds through fund investment. Of course, most of the time, these two motives may exist simultaneously. Fund managers, by purchasing their own funds, send positive signals to investors, attract more investors

This research was financially supported by the project of humanities and social science base, Sichuan Science and Technology Finance and Venture Finance Center, of Sichuan Provincial Education Department of China.

to buy, and expand the scale of fund assets, thereby increasing the income of fund managers. At the same time, if the fund manager chooses the right time to buy his own fund and chooses his own fund, then the fund he invests will get a good return, which will bring real benefits to the fund manager. Of course, if the timing and choice of the fund are improper, this kind of self-purchase behavior may also damage the self-interest of the fund manager.

The self-purchasing behavior of fund realizes the bundling of the interests of fund managers and fund investors to a certain extent. Fund managers have formed a "risk-sharing" mechanism with fund investors in investment decision-making. When making risk-taking decisions, fund managers must consider the possible damage to their own interests caused by risk-taking behavior, instead of transferring all the "costs" of risk-taking behavior. To fund investors, from the theoretical level, fund self-purchase behavior should have a good restraint effect on fund managers' risk-taking behavior.

Managerial equity incentives are generally considered as an important mechanism to eliminate principal-agent conflicts^[1]. When the fund manager invests his personal wealth in the fund managed by him, the fund manager will have to bear the possible downside risk of the fund together with the investors. Therefore, the self-purchase of the fund helps to reduce the convexity of the structure of investors capital flow options and further weaken the investment risk motivation of the fund manager. Based on the public data of American mutual fund market in 2005, Khorana and Evans found that the more managers hold the fund share, the better their investment performance, indicating that self-purchase of funds is beneficial to stimulate the working potential of fund managers and increase the interests of fund investors^[2-3]. Ma and Tang examined the self-purchase behavior of fund managers from the perspective of their investment risk-taking behavior^[4]. They concluded that fund managers who have more shares of the fund are less likely to take risks in their investment. Especially in the face of the annual championship drive of the fund industry, fund self-purchase behavior helps to prevent fund managers at the end of the year from taking additional high risks. Cao Xing analyzed the influence of China's fund self-purchase behavior on the investment behavior of fund managers^[5]. Teng Lili examined the governance effect of fund self-purchase on China's fund misconduct behavior from the perspective of fund governance^[6]. From the above literature, we can see that the effect of fund self-purchase on Chinese fund managers' risk-taking behavior needs to be further tested^[7].

III. EMPIRICAL TEST

A. Sample Selection

We select all open-end stock fund from RESSET financial database, excluding the index funds and QDII funds with passive investments mainly in overseas markets, and need 12 months rolling regression to adjust fund performance. The unbalanced panel data model used in the empirical study requires at least two cross-sections. More than 140 sample funds are required to be established by September 2016 at the latest. Since the announcement data of self-purchased funds are

generally reported in a half-year cycle, the sample time is set to be 18 half-years (108 months) from January 2010 to December 2018. The fund data mainly include the net value of the fund, the return of the net value of the reinstated fund, the total net value of the fund at the end of the period, the time when the fund was established, etc. The stock market data used for calculating the relative risk of funds and risk-adjusted returns are from CSMAR Stock Database, which mainly includes the daily closing data of CSI300 Index and the monthly returns of all stocks of Shanghai and Shenzhen A-share. The data of fund self-purchase is collected by hand. First, 140 samples of open-end stock funds need to be tracked are identified. Then, for each fund, the self-purchase and redemption data of the fund during the period from 2010 to 2018 are collected. When the fund company carries out self-purchase and redemption for its funds, it will issue a bulletin on fund investment with inherent funds or similar announcements, such as the announcement of sponsoring capital subscription with company's inherent capital, which is mainly collected through Hexun Fund Network (<http://funds.hexun.com/>). Some of which are from Tiantian Fund (<http://fund.eastmoney.com/>), Sina Finance and Economics (<http://finance.sina.com.cn/>) and Tencent Finance (<http://finance.qq.com/>).

B. Variable Design

Referring to the definitions of Ma and Tang (2014), we measure the self-purchase behavior of funds in three ways.

- Self-purchasing virtual variables *BUY*. A fictitious variable indicating whether a fund has ever purchased itself, if a fund has purchased itself in the current period, its value will be "1". If the fund has not purchased itself in the current period, its value will be "0". The design of this variable mainly examines the overall impact of the event of the fund purchasing itself.
- Self-purchased share balance *BuyShare*. When there is no share held by the fund manager, the value of this variable is 0. When the fund buys itself, the value of this variable is the share held by the fund manager in the current period. It should be noted that the self-purchasing share of the fund is a concept of stock, which indicates that in a certain period, the fund still has all the remaining fund shares belonging to the fund manager. Unlike some existing literature, we adopt the stock method of fund self-purchase balance rather than investigating the current share of fund self-purchase. It mainly considers that the influence of fund self-purchase behavior should be a cumulative and continuous impact, rather than a single impact in the current period of self-purchase. This design is more in line with the test of fund self-purchase on fund managers' risk-taking behavior contract.
- Self-purchase ratio *ShareRatio*. The size of the self-purchase share of the fund may be affected by the size of the fund itself. Generally speaking, the self-purchase share of the larger fund is larger, and the self-purchase share of the smaller fund is smaller. The self-purchase ratio of the fund can eliminate the influence of the size

of the fund on the self-purchase size. The specific calculation formula is as follows:

$$ShareRatio_{i,t} = BuyShare_{i,t} / TotalShare_{i,t} \quad (1)$$

In equation (1), $BuyShare_{i,t}$ is the balance of fund i 's self-purchasing share in t period, and $TotalShare_{i,t}$ indicates the total share of fund i in t period.

Table I gives the descriptive statistics of the above three variables. The average value of the virtual variable BUY is 0.3252, which means that 33% of the sample funds have self-purchase behavior during the observation period, which indicates that fund self-purchase behavior has been actively practiced by fund companies. From the absolute size of fund self-purchase shares, fund managers hold an average of 11 million shares of self-purchase funds, holding the largest share of funds, even up to 280 million shares, indicating that some fund companies buy a number of self-purchase funds. Of course, in terms of the absolute number of fund self-purchase shares, fund managers have a larger range of self-purchase, but compared with the average net assets of mutual funds, the relative proportion of fund self-purchase is still relatively small. The data in Table I shows that the average holding amount of fund self-purchase accounts for only 1% of the total assets of the fund, and of course, some funds have a large number of affiliated fund companies. Self-purchase, the largest proportion of self-purchase up to nearly 40%, this large proportion of self-purchase in the total size of small pocket funds may occur.

TABLE I. DESCRIPTIVE STATISTICS OF FUND SELF-PURCHASE VARIABLES

	Ave	Std	Min	Max	Obs
<i>BUY</i>	0.3252	0.4686	0	1	1399
<i>BuyShare</i> (million)	11.02	27.68	0	282.11	1399
<i>ShareRatio</i>	1%	2.92%	0	39.83%	1399

C. Models and Results

Previous literature studies have shown that fund self-purchase behavior seems to have a greater impact on fund risk-adjusted-performance. What causes this phenomenon? Could it be that fund self-purchase behavior leads to a lower risk level of the fund, which leads to a greater increase in fund performance after risk adjustment? Next, we study the relationship between the self-purchase behavior of funds and the risk level of funds in the later period, in order to answer this question.

We establish an unbalanced panel data model between the self-purchase behavior of the fund and the risk level of the fund, which shows the risk level of the fund i in the t -period. $RISK_{i,t}$ indicates the risk level of fund i in the t period, which is measured by total risk and active risk respectively. $Performance_{i,t}$ uses the original return rate of fund and Tna indicate the size of the fund expressed by the net assets of the fund. Age is the number of quarters since the foundation of the fund. $FamilyTna$ is the general regulation of the fund managed by the fund company to which the fund belongs. $NetFlow$ is the

net flow of funds, $TimeEffect$ is the time effect. Specific models are as follows:

$$Risk_{i,t} = \beta_0 + \beta_1 OwnerShip_{i,t-1} + \beta_2 Performance_{i,t-1} + \beta_4 Age_{i,t-1} + \beta_3 FamilyTna_{i,t-1} + \beta_6 NetFlow_{i,t-1} + TimeEffects + \varepsilon_{i,t} \quad (2)$$

Table II shows the regression results of the effect of fund self-purchase behavior on the overall risk of the fund. Firstly, from model I, the coefficient of the variables of fund self-purchase behavior is negative and highly significant at the level of 1%, which is in line with expectations. Because the fund company invests its own funds to participate in fund investment, it realizes the risk-sharing mechanism between fund managers and fund investors in theory, which will make fund managers more cautious in fund investment and have a subjective motivation to choose a lower level of risk in investment. Taking model I of Table II as an example, as for funds purchased by themselves in the previous year, their annual risk level would be reduced by about 1.15% compared with those funds that did not purchase by themselves. The economic significance of this magnitude, in reality, is also obvious. In model II, the coefficient of fund self-purchasing share balance is still negative. Statistical significance test shows that the more fund self-purchasing share, the more cautious fund managers may be in their investment, which will choose to reduce the overall risk level of the fund. In model III, the coefficient expressed by the self-purchase ratio of funds is still negative, but the statistical significance is not high. This phenomenon is mainly due to sample selection. The history of self-purchase of funds in China is not long and the data are limited. The most important thing is that the amount of self-purchase of funds is still too small relative to the total size of funds. The self-purchase ratio of most funds in the sample is very small. Thus, the estimation results will be affected to some extent.

TABLE II. REGRESSION RESULTS OF FUND SELF-PURCHASE AND FUND OVERALL RISK

	BUY	BuyShare	ShareRatio
Model	I	II	III
<i>Ownership</i>	-0.0115*** (0.0046)	-0.0001** (0)	-0.0509 (0.0767)
<i>Performance</i>	0.2696*** (0.0777)	0.2693*** (0.0775)	0.2755*** (0.0774)
<i>Tna</i>	-0.0053* (0.0032)	-0.0059* (0.0033)	-0.0058* (0.0034)
<i>Age</i>	-0.0513*** (0.0023)	-0.0518*** (0.0022)	-0.0527*** (0.0022)
<i>FamilyTna</i>	-0.0059* (0.0045)	0.0082* (0.0045)	0.0081* (0.0046)
<i>NetFlow</i>	0.0078** (0.0035)	0.0077** (0.0035)	0.0079** (0.0035)
<i>TimeEffects</i>	Yes	Yes	Yes
<i>Cons</i>	0.0267 (0.0246)	0.0248 (0.0247)	0.0245 (0.0247)
<i>R-2</i>	0.7316	0.7317	0.7315
<i>OBS</i>	994	994	994

Robust standard deviations are in parentheses. ***, ** and * denote significance at the 1%, 5%, and 10% levels, respectively. OBS is the number of sample observations, and R-2 is the goodness of fit of the model.

Is there any difference between different risk measurement methods? We use the fund tracking error volatility to represent

the level of fund initiative risk *ActiveRisk*. Table III shows the influence of fund self-purchase behavior on fund's later-stage initiative risk level. The coefficients of the three models are still negative. It shows that the conclusion that fund self-purchase behavior causes the decline of fund's later-stage risk level is still valid. Especially the coefficients of model II and model III are statistically significant at the level of 5%. It shows that with the increase of fund's self-purchase intensity (the absolute share of self-purchase). With the increase of the number or the proportion of self-purchase to the net value of the fund, the level of the fund's initiative risk has also decreased to a certain extent. After the self-purchase, the level of the fund's initiative risk has decreased, which indicates that the fund managers show a more cautious attitude in investment.

TABLE III. REGRESSION RESULTS OF FUND SELF-PURCHASE AND FUND INITIATIVE RISK LEVEL

	BUY	BuyShare	ShareRatio
Model	I	II	III
<i>Ownership</i>	-0.0059 (0.0038)	-0.0001** (0)	-0.3036*** (0.1084)
<i>Performance</i>	0.2833*** (0.085)	0.2856*** (0.0849)	0.2838*** (0.0844)
<i>Tna</i>	-0.0099*** (0.0036)	-0.0099*** (0.0036)	-0.0121*** (0.0036)
<i>Age</i>	-0.0062 (0.0077)	-0.0069 (0.0076)	-0.0071 (0.0076)
<i>FamilyTna</i>	-0.0285*** (0.0049)	-0.0285*** (0.0049)	-0.0273*** (0.0049)
<i>NetFlow</i>	0.0045 (0.0038)	0.005 (0.0038)	0.0039 (0.0038)
<i>TimeEffects</i>	Yes	Yes	Yes
<i>Cons</i>	0.3832*** (0.0401)	0.3826*** (0.0401)	0.3908*** (0.0401)
<i>R-2</i>	0.5619	0.5627	0.5647
<i>OBS</i>	994	994	994

Robust standard deviations are in parentheses. ***, ** and * denote significance at the 1%, 5%, and 10% levels, respectively. OBS is the number of sample observations, and R-2 is the goodness of fit of the model.

IV. CONCLUSION

The managerial fund self-purchase behavior plays a positive role in restraining the risk-taking behavior since it builds a risk-sharing relation between fund managers and fund investors. It plays an important role to restrain the risk-taking behavior of fund managers. Our empirical results show that managers prefer to choose low-risk level for the fund with self-purchasing behavior, which indicates that fund self-purchasing behavior plays an effective role in restraining the risk-taking decision. And owing to the introduction of "risk-sharing" mechanism, fund managers become more prudent and responsible for their investment decision. By comparing the influence of managerial self-purchase behavior on risk-taking level, we find that the fund self-purchase behavior of China's mutual funds is not only an advertising slogan of fund companies but also a fair and effective mechanism which greatly induce the setting up of "benefit-sharing" as well as "risk-sharing" relationship between fund managers and fund investors.

REFERENCES

- [1] Jensen M. C., Meckling W. H. Theory of the firm: Managerial behavior, agency costs and ownership structure[J]. *Journal of financial economics*, 1976, 3(4): 305-360
- [2] Khorana A, Servaes H, Wedge L. Portfolio manager ownership and fund performance[J]. *Journal of Financial Economics*, 2007, 85(1): 179-204
- [3] Evans A L. Portfolio manager ownership and mutual fund performance[J]. *Financial Management*, 2008, 37(3): 513-534
- [4] Ma L, Tang Y. Portfolio manager ownership and mutual fund risk taking[C]. AFA 2013 San Diego Meetings Paper. 2014
- [5] Cao Xing, Qin Yaohua. Research on Management Fee Incentive of Fund Managers under Fixed Cost Structure [J]. *Financial Management Theory and Practice*, 2013, 34 (5): 107-111(in Chinese)
- [6] Teng Lili, Wei Fei, Liang Quanxi. Manager-based governance effects of investment funds: theoretical analysis and empirical evidence [J]. *Investment Research*, 2013, 12:005(in Chinese)
- [7] Boguth O, Simutin M. Leverage constraints and asset prices: Insights from mutual fund risk taking[J]. *Journal of Financial Economics*, 2018, 127(2): 325-341.