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共同基金管理人事異動伴隨投資組合變動:私有訊息效果或聲譽考量?

Portfolio Change Following Management Turnover: Private Information or Reputation Concern of Mutual Fund Managers?

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Abstract

This article discuss when a mutual fund manager change and the new manager change the fund's portfolio massively that is because of private information effect or reputation concern? This article uses Taiwan Funds Association providing data which contain all the funds' data in Taiwan as our sample and uses Cremers's (2009) Active share model and Daniel's (1997) CS model to do analysis. The results show that the behavior above is based on private information effect and that the return would have a significant raise in six months.

Key words: Mutual fund, Private information effect, Reputation concern, Portfolio change

1. introduction

According to the Securities Investment Trust and Consulting Association of the R.O.C. (SITCA), the investment and consulting business, security dealer and futures in Taiwan are at a total amount of 186 and have issued 626 mutual funds with 11 categories and the total size up to 2 trillion 958.1billion NT dollars.

Mutual funds depend on manager's expertise to manage investor's asset by diversifying investment targets and changing the portfolio to achieve the optimal portfolio allocations for the minds of managers in order to gain excess return. On the other hand mutual fund could also disperse the common risk that individual investors cannot achieve (Hsu, 2004). Nowadays information flow massively, message exchange rapidly and people's education have been evaluated. The financial management concept has changed than it used to be. Depositing money in the bank is not the only way to earn the revenue and mutual fund has then become a popular investment for profit.

As mutual fund getting popular, the performance of fund manager attracts much more attention. Whether the mutual fund's performance is outstanding or not depends on manager's active management behavior. This paper wants to discuss when a fund has changed its fund manager and the new manager change the former portfolio is because new manager get (1) private information or just because of (2) reputation concern?

Private Information effect-Among Fama's efficient market hypothesis that financial markets

can be divided into strong, semi-strong and weak efficient market, representing under different conditions, information that can be reflected in the degree of market prices. When price cannot complete response information, the manager transform portfolio is due to the third party's information.

Reputation concern-Mutual fund's performance is an important tool to measure the manager's management ability. When the fund manager has changed, if the portfolio has not massively transformed, the benefit generate from the former portfolio would be recognized as the former manager's contribution. On the other hand, poor performance of the former portfolio might influence the present manager's reputation, so new manager changes the holdings massively would make the relationship between the mutual fund and the former manager to the lowest.

From the argument above, we want to know whether the fund manager has changed; the new manager would change the portfolio. We try to use the Active Share theory (Cremer, 2006) to verify the share of portfolio holdings differ from six month ago. After that, we discuss the relationship between the differences in fund portfolio holdings and the fund performance.

Fama (1972) believe that fund manager have two way to earn excess return when operating the fund. One is stock selection which reflect manager could purchase better stock through its research team to get information advantage and the outperform strategy that manager uses. The other kind is Market timing which means manager can accurate forecast the market trend and has sensitive judgment of when to buy or sell.

This paper select the CS(Characteristic Selectivity) model from Daniel, Grinbelatt, Titman, Wermers (1997) to measure the mutual fund's return in seeking whether the fund managers have stock selecting ability to support that the manager's action of those abilities based on private information . By verifying that ability, we could come out a conclusion that whether a new fund manager change his fund's portfolio is based on the information that consistent with the private information effect or reputation concern.

2. Literature Review and Hypothesis Development

In this paper, we want to know when a fund manager has changed what force him to change the fund's holdings. Does the manager get information advantage or simply reputation concern?

We knew that fund with passive investment strategy basically is to imitate the market or an index. The passive investment strategy is based on the argument that the markets are efficient. When information comes out, the information is generally reflected in the market price without delay (Burton, 2003). However, we find many mutual funds that use active investment strategy and we consider the markets are still not efficient enough and there are reasons for manager to manage his mutual fund actively. We believe that managers have some private information advantage to outperform the market. The information advantage makes the manager easier to understand the market's condition and to purchase the stocks that are undervalued or that are still profitable. We consider that the information advantage is based on the third party's message or the report that manager received from his own research team. With the information advantage, manager would change his portfolio and raise the fund performance in order to beat the market.

In the reality, people treasure their reputation. In many ways, people purchase the merchandise may base on its reputation and so does purchasing mutual funds. When a fund has changed its manager, the new manager would recognize the existing portfolio is the former manager's contribution. So the new manager would change the fund's portfolio because the manager does not want the former portfolio's performance would influence his reputation. We consider that the differences in the fund's holdings won't have private information on the performance in the short time due to the reputation concern.

From the argument above we come out the hypothesis as follow:

H0 (reputation concern): The differences in fund's holdings won't have significant effect on the fund performance

H1 (private information effect): The differences in fund's holdings will have positive effect on the fund performance

If the null hypothesis is rejected, we may conclude that differences in fund portfolio's holdings would have positive effect on fund performance, which is consistent with the private information effect. If the results do not reject the null hypothesis, we may conclude that the differences in fund portfolio's holdings won't have significant effect on the fund performance, which is consistent with the reputation concern.

In order to verify the relationship between the differences in fund's holdings and the fund performance, we read the past literature trying to measure this situation. And we find out that by examining the relationship between the active management and the fund performance that matches my condition. In the traditional way to measure active management which means the stock selection has large deviation from the index portfolio is tracking error volatility. However, Cremers(2009) established a new way to examine active management labeled Active Share. He uses both approaches in his study. Active Share is the way to compare mutual fund's portfolio to its benchmark index's holding. He decompose mutual fund in two parts. One is pure position in the benchmark index, while the other one is a zero-net-investment long-short portfolio. When the fund portfolio subtracts the index and divided by 2, the overlap of the benchmark index will be eliminated and the rest part will be the long-short position which is the part Active Share mainly to measure. When an Active Share shows zero, it means the fund portfolio is imitating the index. As the Active Share getting higher, the long-short investment part gets more different from the index and the more active management it is. In his result, with the highest Active Share, the fund would outperform their benchmark by 2.00 % - 2.71% while with the lowest Active share, the fund do poor performance with 0.06% and even worse after expenses, underperforming by -1.41% to -1.76% per year. From that result, we can realize the Active Share has relationship between the

differences in fund's holdings can affect the fund's performance. In the hypothesis above, the fund performance we used is the new portfolio's alpha subtracts the former portfolio's alpha. We further wants to support that the better of the performance is due to the information.

A lot of the literatures in the past construct models to measure the performance of the Fund's portfolio in order to analyze whether fund manager have the ability to operate the mutual fund. Among those models, private information effect might be an important factor. Beginning with Fama's(1972) study discuss the manager's operating ability in stock selection and market timing, many scholar are based on his argument to develop relative research. (Chen, 2007)

Daniel et al.(1997) use company size, book to market ratio and prior year return to categorize the data, selecting from 1975~1994 with over 2500 mutual funds. And create the benchmark with the same method to analyze CRSP data base. He added Carhart(1997)'s four factor model and use CS(Characteristic Selectivity)、CT(Characteristic Timing)、AS(Average Style)、GT(Grinblatt and Titman,1993) to analyze the data.

The CS measure is based on size (market value of equity), book-to-market ratio, and momentum (the prior year return of the stock). When CS measure comes out zero, the performance of a fund could have been replicated and a positive and significant CS measure shows that a manager had additional selectivity ability. To capture the ability of timing the market, the CT measure examine that fund manager can generate excess return by changing portfolio weight when those stock are the most profitable. The AS measure mainly to eliminate abnormal returns due to timing the characteristics by lagging weights and benchmark portfolios by one year. The sum of CS, CT and AS measures equals the total fund return. The GT model is mainly talk about the manager may have superior predict ability from the market and can appropriately change the portfolio to earn higher return. Using models above, the results show that the entire fund's manager did not have significant market timing ability but have stock selecting ability.

Hsu (2004) use Taiwan 68 mutual funds as sample to do the performance analysis. The study show that the fund's managers in Taiwan have better market timing ability but poor performance

in stock selecting ability. Also the study has found that the tradeoff relationship between stock selecting ability and market timing ability.

Lee (1999) has more detail discussion in market timing ability. In the study he divides market timing ability in two parts which is active ability and passive ability. The active ability is more important and relative than the passive. Analyzing the data from 1986~1987 38 mutual funds, the result found that no matter the risk premium is positive or not, manager have timing ability. And manager has timing ability in the bull market instead of the bear market.

From the above we consider that manager's stock selecting ability and market timing ability can be used to support the fund's performance is related to the information. We then select the CS model to measure it and support our research. So we may examine the relationship between the CS model and the Active Share.

In this paper, we use CS models to measure the fund's performance is based on information and use the Active Share to measure the fund's differences in holdings. If the Active Share has positive effect on the stock selecting ability means manager have information to make the call of changing the portfolio, which is consistent with the private information effect. Otherwise, we believe it is consistent with the reputation concern.

3. Methodology

3.1 Data

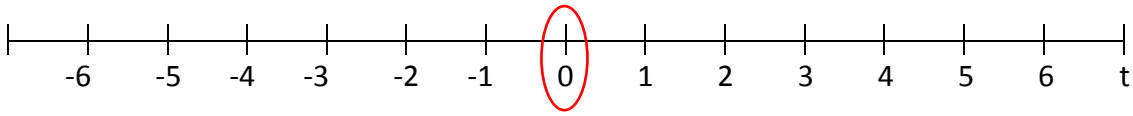
We obtain our data from Bank union that compile mutual fund statistic in Taiwan from 2004 to 2012 as our sample. In nine years, we totally acquire XXX mutual funds as our study samples. Amount these mutual funds, we capture the events that the mutual fund has manager turnover. In the last, we total acquire 419 events as our ultimate samples in different mutual funds in nine years. We also use the TEJ data base to obtain all the individual equities' monthly return in Taiwan from 2004 to 2012 to calculate the CS model.

3.2 Model

Our goal is to study when mutual fund has manager turnover, the new manager changes the mutual fund's portfolio massively is due to private information effect or reputation concern. Therefore we define the time when manager turnover happened as the event point and we capture the prior and the next six month mutual fund's data to calculate the Active share. At the meanwhile, we found there are some cases that event point would happen several times in a short time. We cannot find out all the reason, however, we find some cases is due to pregnancy. So we exclude the events that happen several times in six month and save the first one and we get 419 events in the last as our samples. First, we use the Active Share model and do little changes as follow:

$$\text{Active Share}_{i,t}=\frac{1}{2}\sum_{j=1}^{n}|w_{fund\ i,j,t}-w_{fund\ i,j,t-7}| \qquad t= 1, 2 \dots 6 \qquad (1)$$

Where $w_{fund\ i,j,t}$ is the portfolio weights of asset J in the fund i at event month t and $w_{fund\ i,j,t-7}$ are the portfolio weights of the asset J in the fund i at event month t-7. Next, we use timeline as follow to explain those relationships of the time point. We set t=0 as the event point and we use the weight of stock at t=6 distract the same stock in the same fund at the time t= -1 and so on. And the sum divided by 2 can eliminate the overlap and get the full Active Share. For an example, if you originally 10 stocks and you change 8 stocks remain 2 stocks the same. Then your active share will be 80%.



After calculating, we get six Active shares in six different time point and we average these six Active share to get the following formula:

$$AS_{a,i}=\frac{1}{6}\sum_{t=1}^{6} Active\ Share_{\ i,t} \qquad (2)$$

We then use the average Active share comparing to the average return difference to seek the relationship is based on private information effect or reputation concern. The model we use as follow:

$$\mathrm{ADF}_i=ß_0+ß_1\mathrm{AS}_{a,i}+ß_2(\text{NTNA difference})_i+ß_3(\text{expense difference})_i$$
$$+ß_4(\text{fund age})_i+ß_5(\text{Year dummy})_i+\varepsilon_i \quad (3)$$

Where ADF_i is the fund i 's average (1) three months (2)six months (3) one year's return subtract the former portfolio's average return to get a difference value , $\mathrm{AS}_{a,i}$ is the fund i 's average active share from the six month.(NTNA_i difference) is the fund i 's total net assets difference between the six months total net assets in average before the event point and the average total net assets in six months after the event happened. ($\text{expenses difference})_i$ is the fund i 's expenses differences between the six months' average expense before the event and the average expenses in six months after the event happened.$(\text{fund age})_i$ is the fund i 's operating period. (Year dummy) is a dummy variable that we want to control the time effect to the dependent variable. ε_i is the residual term.

After that, in order to strengthen our study by using the manager's stock selecting ability that is related to the differences in portfolio holdings, we then use Daniel et al. (1997) CS model in our research.

$$CS_{i,t}=\sum_{j=1}^{N}\widetilde{w}_{i,j,t-1}(\tilde{R}_{i,j,t}-\tilde{R}_t^{b_{i,j,t-1}}) \quad (4)$$

Where $\widetilde{w}_{i,j,t-1}$ Is the stock j 's weight of the portfolio in fund i at month t-1, $\tilde{R}_{i,j,t}$ Is the fund i 's return at month t, $\tilde{R}_t^{b_{i,j,t-1}}$ is the fund i 's benchmark's, which decided at the time t-1, return at time

t . We subtract the return of stock j of the fund I to the industrial return which the stock j belongs to and then multiply the stock j's weight at time before one month. We use TEJ data base to obtain every equity and industrial data in Taiwan to calculate. We believe that using CS model to replace the fund's return difference could reflect whether the relationship between portfolio changes and the return difference even better to support my study. As the part of CS, we calculate the CS before the event and after the event separately. Like calculating the return difference, we use (1) three months (2) six months (3) a year data to calculate CS. So we will have six CS_imeasures for each fund before the event time t as the pre funds and six CS_imeasures for each fund after the event time t as the post funds. We then calculate the six CS_i measure for an average CS_i. We use CSa_i as the pre six month's average CS_i and CSb_i as the post six month's average CS_i.After that we compute the CS difference as the performance difference by using CSb_i subtract CSa_i and we use the symbol of $CSDIFF_i$ as follow:

$$CSDIFF_i = CSb_i - CSa_i \tag{5}$$

We then combine equation (3) and (5) for (6):

$$CSDIFF_i = ß_0 + ß_1 AS_{a,i} + ß_2(\text{NTNA difference})_i + ß_3(\text{expense difference})_i + ß_4(\text{fund age})_i + ß_5(\text{Year dummy})_i + \varepsilon_i \tag{6}$$

By examining the relationship above, we can verify that the differences in portfolio's holding that the manager adjusts would have effect on each measurement that is consistent with the private information effect or reputation concern.

4. Results

In table 1 shows the different type mutual fund's statistics. Among those mutual funds, we can discover that the Active shares of the type of AA2, AB2 and AH1 are quite low. AA2 is cross-border equity fund, AB2 is cross-border balanced fund and AH1 is ETFs. Those funds with some foreign holdings won't have significant portfolio change and so does the ETFs. The other type of mutual funds' Active share represents higher numbers over 60%. In this table, we can roughly discover some relationship between Active shares and return difference. The higher the Active share gets higher return difference, however, the relationship is not valid and accurate and we need further examinations to identify.

Next in the table 2, we can discover the mutual fund's Active share would be 55% in average and that means in average managers would change 55% of their holdings. In the part of return, at first glance, the ex-ante returns are 38% in average but the post return drop down to the 31%. So we might consider the result would consistent with the reputation concern, however, the result need to be accurate.

In order to seek the further accurate results, we get mutual funds' return, expense and size difference between the event before and after and then separate Active share into quintile to examine those data above. Quintile five is the highest group of Active share. Table 3 shows that when Active share in the higher quintile, the return difference has a positive and liner relationship.

After we discover the relationship, we begin to import our data into the model to examine. In table 4, we use (1) three months (2) six months and (3) one year value of return difference to do the regression analysis. In three columns, the results reveal that, in 10% significant level, Active shares have significant and positive effect. These results reject our null hypothesis and consistent with the private information effect.

Furthermore, we want to strengthen our study, we use Daniel's (1997) CS model into our model

to replace the return difference and get table 5. As we can see the Active shares have positive and significant effect on CS during three months and six months. However, in one year, the Active share won't have significant results.

5. Conclusion

In table 3, after we discover that Active share has positive and liner relationship with return difference, we verifies when mutual fund has manager turnover and the new manager massively change portfolio is based on private information as the table 4 shows. The result shows that not only in the short term of three months but also till one year would have significant pay back. In table 5 also shows the same result, however, it won't work in one year period. Thus, we consider that when investor found a mutual fund has manager turnover followed with massive portfolio changes, investor might invest that fund. In the robust result shows that investor would have positive return in six months because of the private information effect.

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Table1

Different type of mutual funds' statistics

Here is the basic statistics of different type of funds. AA1 is domestic equity fund, AA2 is cross-border equity fund, AB1 is domestic balanced fund, AB2 is cross-border balanced fund and AH1 is domestic ETF. Active share is the degree that manager changes his portfolio and the unit is percentage. The expense difference is mutual fund's expenses differences between ex-ante event and post event expenses and the unit is a thousand NT dollars. Size difference is mutual fund's total net assets difference between the six months' total net assets in average before the event and the average total net assets in six months after the event happened and the unit is one million NT dollars. Return difference is mutual fund's six months' average return before event point subtracts six months' average return after event point and the unit is percentage. Age is mutual fund's duration and the unit is year.

Type*	N	Variable	Mean	Median	Std	Max	Min
AA1	258	Active share	0.69	0.70	0.11	0.91	0.26
		Expense difference	-104	16	2,418	11,847	-16,523
		Size difference	-54	-59	638	3,143	-3,412
		Return difference	0.81	0.31	5.22	16.37	-10.67
		age	10.86	11.17	4.41	23.59	.58
AA2	89	Active share	0.19	0.11	0.18	0.69	.0002
		Expense difference	334	-69	2,224	9,864	-4,954
		Size difference	14	-58	1,039	4,721	-3,218
		Return difference	-0.41	-0.76	4.31	15.60	-9.88
		age	4.90	3.33	4.61	22.5	0.08
AB1	40	Active share	0.66	0.66	0.14	0.90	.39
		Expense difference	-416	-154	1,027	824	-4,649
		Size difference	-268	-71	697	271	-3,972
		Return difference	-0.22	-0.15	2.01	5.69	-5.31
		age	7.47	6.45	5.57	22.43	0.33
AB2	13	Active share	0.33	0.23	0.27	0.78	0.008
		Expense difference	187	-113	1,774	5,797	-1,957
		Size difference	-0.8	-107	718	2,284	-802
		Return difference	-0.46	-0.52	1.18	2.05	-3.1
		age	4.91	4.92	4.20	17.17	1.25
AH1	19	Active share	0.26	0.24	0.12	0.5	0.12
		Expense difference	76	-19	821	2,789	-1,042
		Size difference	-102	-57	3,223	7,520	-10,825
		Return difference	-1.02	-1.95	5.63	18.85	-7.94
		age	2.86	2.83	1.77	5.92	0.16

Table 2

Mutual funds' basic statistics

Here we show all the mutual fund samples' basic statistics without subdividing into many types. Active share is the degree that manager changes his portfolio and the unit is percentage. Ex-ante return is fund's average return before event and post return is after and so do the expense and size. Age is mutual fund's duration. The unit of return is percentage and the unit of expense and size is one million NT dollars. The age unit is year.

	Event number	Mean	Std	Max
Active share	419	0.5530	0.2569	0.91
Ex-ante return	419	0.3825	2.4818	6.39
Post return	419	0.3106	2.3217	5.62
Ex-ante expense	419	4.2158	4.6480	37.78
Post expense	419	4.1922	4.5354	27.21
Ex-ante size	419	1808	2112	16447
Post size	419	1748	2076	12510
age	419	8.73	5.3	23.59

Table 3

Mutual fund basic statistics with Active share in quintile

We divide Active share into quintile seeking the relationship of these variables. Return dif is fund's six months' average return before event point subtracts six months' average return after event point and the unit is percentage. We use the same method calculating the mutual fund's expense and size to get the expense difference as expense dif and size difference as fund size dif. The unit of expense is a thousand NT dollars and size is a million NT dollars. Age is the fund's duration and the unit is year.

Active share Quintile	N	Variable	mean	Std	min	max
1	83	Return dif	-5.46	1.63	-10.67	-3.32
		Expense dif	140	2,676	-16,523	9,864
		Fund size dif	-12	804	-3,412	4,506
		Fund age	9.52	5.24	0.16	21.43
2	84	Return dif	-2.03	0.73	-3.31	-0.8
		Expense dif	-124	2,398	-10,390	11,847
		Fund size dif	-104	929	-2,923	4,721
		Fund age	7.29	5.06	0.49	18.09
3	84	Return dif	-0.76	0.47	-0.82	0.78
		Expense dif	-137	2,559	-12,914	6,569
		Fund size dif	-454	1,171	-3,972	7,520
		Fund age	8.48	5.61	0.25	23.59
4	84	Return dif	1.78	0.63	0.80	3.03
		Expense dif	-100	1,444	-4,954	5,797
		Fund size dif	-185	1,309	-10,825	2,284
		Fund age	8.18	5.22	0.24	22.50
5	83	Return dif	7.493	4.31	3.048	18.8591
		Expense dif	63	1,744	-5,689	4,516
		Fund size dif	60	594	-1,430	3,143
		Fund age	10.29	4.89	0.16	21.43

Table 4

Regression analysis with mutual fund's monthly return

We use mutual fund's monthly return to calculate the return difference as our dependent variable in our model and run the regression as follow. Three months, half year and year represents how many months that we obtain the funds return data to calculate the return difference.

	Three months		Half year		Year	
	ß	Pr>t	ß	Pr>t	ß	Pr>t
Intercept	-0.641	.51	-0.113	.89	1.190*	.05
	(-0.65)		(-0.13)		(1.93)	
Active Share	2.503**	.03	1.94*	.05	1.247*	.08
	(2.15)		(1.93)		(1.72)	
Expense	-0.009	.55	-0.0008	.94	-0.003	.67
	(-0.59)		(-0.06)		(-0.42)	
Fund Size	0.004**	.03	0.002	.30	0.002	.14
	(2.09)		(1.03)		(1.47)	
Fund Age	0.003	.94	0.007	.87	-0.016	.63
	(0.07)		(0.15)		(-0.48)	
Year Dummy	Controlled		Controlled		Controlled	
R^2	0.0697		0.0983		0.2543	
F	4.01***		5.13***		13.92***	

Table 5

Regression analysis with CS model

We use CS model to replace the mutual fund's return difference as our dependent variable in our model and run the regression. Three months, half year and year represents how many months that we obtain the funds' monthly data to calculate CS.

	Three months		Half year		Year	
	ß	Pr>t	ß	Pr>t	ß	Pr>t
Intercept	-0.101	.86	-0.104	.82	0.124	.86
	(-0.18)		(-0.22)		(0.18)	
Active Share	2.507***	.002	1.614***	.004	0.749	.35
	(3.01)		(2.85)		(0.92)	
Expense	0.002***	.001	0.002***	.0003	0.003*	<.001
	(3.31)		(3.68)		(3.52)	
Fund Size	0.001	.88	0.002	.98	-0.003	.03
	(0.15)		(0.02)		(-2.1)	
Fund Age	-0.018	.48	-0.015	.47	-0.041	.18
	(-0.71)		(-0.72)		(-1.31)	
Year Dummy	Controlled		Controlled		Controlled	
R^2	0.0903		0.1617		0.2543	
F	4.32***		7.54***		13.92***	