

# Empirical Study under the Encouraging Model to Managerial Fees of Social Security Fund Investment

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## Abstract

The essay mainly explores the relationship of current fees, last period fees, size and the return of investment in 102 social security funds. It starts from the Encouraging Model and comes to the conclusion that the factor current fees and last period fees impact the return of investment positively. On the contrary, it finds that the size of fund impact the return of investment negatively.

## Keywords

Encouraging Model, Social Security Fund Investment, Panel Regression

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## 1. Introduction

The principal of agency problem mainly discusses the fact that how to develop a reasonable contract or contractual mechanisms to motivate the agency to achieve the goals of the client. It assumes that everyone in reality is rational and each of the rational individual will pursue the maximized interests under a certain condition. For example, one person himself/herself would like to seek the maximized utility and one enterprise would like to seek its maximized profit. Theoretically speaking, if a rational proxy has the same goal with a rational client, the rational proxy would provide the ideal result to his client even under the information asymmetry. But their goals conflict in most situations in reality. In addition, the deviation of their goals and the information asymmetry will lead more agency costs to achieve the proxy to realize the clients' demand and goals. Therefore, here comes the problem, how much of the managerial fees can achieve the proxy agency to realize the clients' goal?

The agency problem exists in fund investment management commonly. In China, the social security fund is

composed of pension fund, company annuity and national social security fund. Besides the pension fund, the other two have stepped in the stock market investment process. Considering the weak universality of the company annuity, this essay chooses the national social security fund as the study sample. The different between the national social security fund and other funding is that the investment aim of national social security fund is to realize the value preservation and appreciation. In a word, the investment risk appetite is prudent.

There are two kinds of agency relations in investment process, the relationship between the policyholder and the client and the relationship between the client and the fund manager. The essay will conduct an empirical study in managerial fees and encouraging system under agency models between client and the fund manager due to the single client system applied in China. According to China Securities Regulatory Commission Fund [2001] No. 43, the managerial fees in China is accounted by the rate of fixed asset. Additionally, in official document National Social Security Fund Investment Management Interim Measures, it also stipulates that the social security fund investment managers could collect annual managerial fees not more than 1.5% of the social security fund's net asset value. That is to say, if the fund net asset is one billion Yuan<sup>1</sup>, the managers can get 15 million Yuan managerial fees after a year without any profit income. If the net asset encounters a loss of 20% after one year, the fund manager can still get 12 million Yuan managerial fees without any other risk and pressure. Under such a policy, it is ineffective to encourage the fund managers to seek more interests in side of the client. Therefore, this essay intends to find that whether the managerial fee encourages the fund managers to seek the maximized interest in behalf of clients and whether it applies a reasonable rate to pick up the managerial fees on agency theory.

## 2. Literature Review

The previous researches towards social security fund investment abroad are more abundant than that in China. Christoffersen [1] asserts the fund manager would like to adjust the managerial fee to achieve better performance in fund investment in order to attract more funds income. Golec and Starks [2] set the manager encouraging model based on risk prediction and then they find that if the fees collected by the raising net asset rate or other reward-related pay-back would impel the managers to perform better. In addition, they also mention that a proper managerial fee would drive managers to work hard to raise the interest of investment and it is confirmed the return of fund is positively related to the managerial fee. Moreover, Edwin [3] conducts an empirical study by collecting US mutual fund data from 1990 to 1999 and he finds that the funds with some encouraging provision performs better than others because the encouraging provisions impel managers to make reasonable portfolio.

In China, the researches towards social security fund contain the normative study and the empirical study. In the normative study, Yu Hong [4] points out the fact that Chinese investment market develops slow and immature. On the one hand, the fund investment institutions reflect far behind the market sign changes and on the other hand the clients are lack of investment information. Thus, it is difficult to achieve the clients' maximized profit. The convincing fact is that the market risk and the moral risk could be the most significant investment risks when in investment process from continuously illegal cases [5]. In the empirical study, Sun Lu [6] constructs an annuity trustee incentive model by exploring the characteristics of Chinese annuity and the agent motivation theory. In the meantime, she points out the key factor of risk control in fund investment is the explicit incentive. Based on the agency theory, Li Qingming [7] builds a fund manager encouraging model under different situations and concludes the best risk-undertaking level and a best encouraging level. It is convinced that the fund scale and fund performance affect managerial fee in year of 2000 and 2001, but after 2002, the significance is inconspicuous [8].

In conclusion, researches towards social security fund investment in domestic or abroad has gained achievements. However, most of the researches design encouraging models exploring management situation from the agency theory and seldom consider whether the encouraging indicators are reasonable. Therefore, this essay starts from this point to conduct an empirical study to examine functions of managerial fees in nowadays.

## 3. Research Design and Results

### 3.1. Data Collection

Bosera Asset Management Co., Ltd. is one of the largest fund houses in China, with its pension fund assets un-

<sup>1</sup>Yuan is the monetary unit of China, or sometimes marked as RMB.

der management ranked in top tier. Authorized by the National Council of Social Security Fund, Boseram manages part of the National Social Security Fund portfolios. The essay chooses the social security fund 102 portfolio from Boseram and filters eight funding which are holding over one year as the study sample. The eight funding corporations are Chongqing Department Store (600729<sup>2</sup>), Daya Technology (000910), Huafa Stock (600325), Swan A (000418), Haida Group (002311), Huaqiao City A (000539), Weixin new-technology (002491) and Aokang International (603001) respectively. This essay chooses the eight funding data from 2012 to 2013 quarterly and finally comes the unbalanced panel data because of few missing data in Aokang International (603001).

### 3.2. Descriptive Analysis

The dependent variable in this study is the funding rate of return (ROE) and the independent variables are proportion of tradable shares possession (PCS), the current managerial fee (FEE) and the previous managerial fee (LFEE). The variables FEE and the LFEE comes out as LNFEED and LNLFEED after natural logarithm processing in order to elimination of the influence of dimension. The descriptive statistics of variables are shown in the following **Table 1**. The **Table 2** below has given the statistics result of each factor quarterly, and among them the LNLFEED means the managerial fee at previous quarter. It is clear that variables experience a trend from rising at first and then dropping down.

### 3.3. Unit Root Test

Even though the sample experience a short period, the econometric theory shows that almost economic indicators, especially the panel data, are non-stationary. Therefore, it is necessary to conduct the unit root test before regression in case the spurious regression results. It is also called the stationary tests. Considering the difference of unit root test between panel data and time series data, it applies the Levin, Lin & Chut and ADF test. The results are shown in the **Table 3**.

In **Table 3**, the (c, t) in test form means whether it exists the intercept term respectively. The zero mean no

**Table 1.** Descriptive statistics of variables.

	Obs	Mean	Median	Maximum	Minimum	Std. Dev.
ROE	64	8.390469	7.35	22.68	0.14	6.101258
PCS	60	1.77663	1.8571	3.4464	0.2878	0.901554
LNFEED	60	3.257702	3.274523	4.449786	1.183719	0.781281
LNLFEED	59	3.207748	3.19891	4.449786	0.881782	0.817264

**Table 2.** Mean value of variables quarterly.

Obs	ROE	PCS	LNFEED	LNLFEED
2012Q1	3.53625	1.540028571	3.101506049	2.852142011
2012Q2	7.05625	1.788642857	3.231950994	3.101506049
2012Q3	10.57625	1.875785714	3.322729458	3.231950994
2012Q4	14.56875	2.006542857	3.442849588	3.322729458
2013Q1	2.735	1.7040875	3.17273824	3.442849588
2013Q2	6.09125	1.8297	3.24998222	3.17273824
2013Q3	9.69375	1.83605	3.277139552	3.24998222
2013Q4	12.86625	1.6452625	3.271246358	3.277139552

<sup>2</sup>The numbers in the brackets means the stock exchange code in China's Stock Exchange markets.

**Table 3.** Results of unit root test.

Variable	LLC	ADF Test	Test Form (c,t)	Results
ROE	-5.84217 (0.0000)	26.0732 (0.0530)	(c, 0)	Stationary
PCS	-190.145 (0.0000)	42.4526 (0.0003)	(c, 0)	Stationary
LNFEED	-545.588 (0.0000)	64.9645 (0.0000)	(c, 0)	Stationary
LNLFEED	-6.83299 (0.0000)	34.9503 (0.0015)	(c, 0)	Stationary

PS: The value in bracket under LLC is the adjoint probability  $p$ .

but others mean yes. In addition, the  $p$  is the indicator which judges the stationarity. Traditionally, If the  $p > 0.1$ , the data series is not stationary, and on the contrary, if the  $p < 0.1$ , it is convinced that the series is stationary. From **Table 3**, it is explicit that the variable ROE, PCS, LNFEED and LNLFEED are stationary under the 0.1 significance. Namely, all the variables can be used to the regression directly.

### 3.4. Cointegration Test

In principle, if the result of unit root test shows that all variables are stationary, the regression can be conducted directly. However, considering the significant is 5%, it is better to do the Cointegration Test. In the database form the Eviews 6.0 [9], we use the Kao Residual Cointegration Test. The hypothesis is that there is no cointegration among the variables. If the  $p < 0.05$ , the hypothesis is refused, otherwise, if the  $p > 0.05$ , it can be accepted. The result of this test is released in following **Table 4**. The  $p = 0.0104 < 0.05$  and it is convinced that there is cointegration among the variables.

### 3.5. Panel Regression

In order to explore the influence of PCS, LNFEED and LMLFEED in the fund ROE, this essay construct a regression model:

$$ROE_{it} = \beta_0 + \beta_1 PCS_{it} + \beta_2 LnFEED_{it} + \beta_3 LnLFEED_{it} + \mu_{it}$$

Meanwhile, it uses the Generalized Least Square Method (EGLS) in case the influence of heteroscedasticity in panel data. After the test process by Eviews 6.0, it would choose the mixed OLS model or fixed effects model or random effects model when pass the F Test and Hausman Test.

From **Table 5**, it is obvious that the  $p = 0.0000$  in the F test and the  $p = 0.0109$  in the Hausman Test. So it can be concluded that the hypothesis is refused and it should construct a fixed effects model. According to the fixed effects model result, the regression model is significant ( $F = 17.03392$ ,  $p = 0.000000 < 0.01$ ), the regression coefficients of PCS, LNFEED and LNLFEED are not zero and the determination coefficient adjusted in samples is 0.734358. It shows that the model fits well. In addition, LNFEED and LNLFEED affect ROE positively. What is more, the coefficient of LNFEED and LNLFEED are 14.91366 and 1.108968 respectively, which explains that the managerial fees has a strong influence in the fund rate of return and the influence of current managerial fee is more than that in previous. However, the coefficient of PCS is  $-5.932632$ . It reveals that the proportion of tradable shares possession has a negative effect in fund rate of return.

## 4. Conclusion

This essay studies the influence between funding managerial fees and funding rate of return. It comes out the result that current managerial fees and previous managerial fees affect the funding rate of return positively. But on the contrary, the proportion of tradable shares possession has inhibitory effect toward the rate of return. When facing frequent illegal cases in social security fund, it should solve the problem from the encouraging factor in agency, like moral, honor and legal encouraging. In the meanwhile, the bigger scale of funding is not conducive to the managers to make maximized interest by the side of clients. Therefore, it is better for the managers to choose the disperse and diverse portfolio in social security fund investment.

**Table 4.** Result of cointegration test.

	t-Statistic	Prob.
ADF	-2.310424	0.0104
Residual variance	0.039344	
HAC variance	0.033783	

**Table 5.** Panel model and estimated results.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.78468***	10.64862	-3.172681	0.0026
PCS	-5.932632***	2.182092	-2.718781	0.0091
LNFEED	14.91366***	4.485815	3.324626	0.0017
LNLFEED	1.108968**	0.422132	2.627061	0.0115
Fixed Effects (Cross)				
CQBH--C	8.287510			
DYKJ--C	2.017374			
HFGF--C	-12.50835			
XTEA--C	-0.314939			
HDJT--C	1.579822			
HQCA--C	-16.95733			
WXXC--C	14.10840			
AKGJ--C	10.10004			
Panel Model	Statistic	d.f.	Prob.	
F Test	12.028493	(7,48)	0.0000***	
Hausman Test	11.166420	3	0.0109**	
R-squared	0.780159	Mean dependent var		20.11546
Adjusted R-squared	0.734358	S.D. dependent var		48.48165
S.E. of regression	4.619282	Sum squared resid		1024.213
F-statistic	17.03392	Durbin-Watson stat		2.016639
Prob (F-statistic)	0.000000***			

\*\*\*1%, \*\*5%, \*10%.

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