行政院國家科學委員會補助專題研究計畫 - 成果報告

計畫名稱：投資期間、函數型態與共同基金之評估：靜態與動態之分析
Investment Horizon, Functional Form and Mutual Fund Evaluation: Static vs. Dynamic Approach

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Ⅰ. 中英文摘要及關鍵詞(keywords)

（一）計畫中文摘要

計畫名稱：投資期間、函數型態與共同基金之評估: 靜態與動態之分析
關鍵詞：投資期間、函數型態、共同基金、基金評估、靜態分析、動態分析

不論對個人或法人投資者而言，共同基金都是最重要的投資方式之一；因此，共同基金績效的評估始終是財務學上最重要的研究標的之一。此研究計畫的目的在將本人以往研究之成果加以整合並普及化(見參考資料)。第一階段先發展一個總括性的函數型態模型來評估共同基金的績效。第二階段再以這個總括性的函數型態模型進行調查各種投資期間組合對基金績效表現的影響，利用 2883 種基金的每個月資料來研究各個投資期間的基金表現。最後，利用跨期 CAPM 模型對上述之資料進行共同基金績效之評估。換言之，此研究以靜態及動態兩種方式來評估共同基金之績效表現。

（二）計畫英文摘要

Title: Investment Horizon, Functional Form and Mutual Fund Evaluation: Static vs. Dynamic Approach
Key Words: Investment Horizon, Functional Form, Mutual Fund Evaluation, Static Approach, Dynamic Approach

Mutual fund is one of the most important investment products for both individuals and institutional investors. Therefore, mutual fund performance evaluation is one of the most important research topics in finance. The main purpose of this research is to integrate and generalize my previous important research results [see Lee, Cheng F. 1976; Lee, Cheng F. 1977; Fubozzi, Frank J. (1980); Lee, Cheng F., Chunchi Wu, and K.C. John Wei, 1990; Lee, Cheng F. and Shafiqur Rahman 1990; Lee, Cheng F. and Shafiqur Rahman, 1994, and Chang Jow-ran, Mao-wei Hung and Cheng F. Lee 2002].

In this research, firstly I develop a generalized functional form model for mutual performance evaluation. Secondly, this generalized functional form is used to investigate the impact of investment horizon on the performance of mutual funds. To do this, monthly data of 2883 mutual funds are used to study the investment horizon on mutual fund performance. Finally, generalized α and β are calculated to study dynamic nature of mutual fund performance measures. In sum, this study uses both static and dynamic models to evaluate mutual performance.

I. 報告內容

The main results of this project include two parts as follows:

Part One: Generalized Functional Form for Alternative Mutual Fund Returns

Abstract

Based upon the paper by Fabozzi, Francis and Lee [1980, JQFA], we investigate the generalized functional form relationship for 23 alternative mutual funds in terms of the monthly data during 1992 to 2002. Implications of the functional form for mutual fund performance are analyzed in detailed. New performance measures are also explored. Further research suggestions are also discussed.

A. Introduction

Based on the theory of the pricing of capital assets developed by Sharpe [1964], Lintner [1965] and Mossin [1966], Professor Jensen Formulated a return-generating model to measure portfolio performance [1968] in a subsequent paper, Professor Jensen [1969] investigated the impact of the investment horizon on the functional form of the model. Lee [1976] has proposed a generalized specification of the model to resolve this problem. Alternative estimation methods for testing the linearity of the model in terms of time-series data have also been suggested by Lee. Moreover, the stability of the beta coefficient over time and the impact of the market's condition on both the alpha (or Jensen's measure of Performance [1968]) and beta of the model have come under scrutiny in financial research.(1) Fabozzi, Francis and Lee has used generalized functional form approach to investigate the mutual performance measure for 10 large growth funds, 22 smaller growth funds, 11 income funds, 13 balanced funds and 30 diversified common stock funds.

The main purpose of this paper is to update and extend the scope of mutual fund in terms of Fabozzi, Fancis and Lee's model. Some new empirical implications are investigated in detailed. The paper is organized as followed; the second section of the paper defines the generalized return-generating model. The third section describes the data in detailed; the fourth section presents the empirical results. Finally, in section five, results of the paper are summarized and some concluding results are discussed.

B. The Generalized Rate of Return-Generating Model

Following Lee [1976], the generalized model used to investigate the mutual fund rates of return-generating process without error term can be defined as:

$$R_{jt}^{*} - R_{ft}^{*} = \alpha_j + \beta_j \, [R_{mt}^{*} - R_{ft}^{*}] \qquad (1)$$

where:

$R_{jt}^{*} = (R_{jt}^{\lambda} - 1) / \lambda$,

$R_{ft}^{*} = (R_{ft}^{\lambda} - 1) / \lambda$,

$R_{mt}^{*} = (R_{mt}^{\lambda} - 1) / \lambda$,

λ = the functional form parameter,

R_{jt} = 1 + the rate of return for the j^{th} mutual fund in period t,

R_{mt} = 1 + the market rate of return in period t,

R_{ft} = 1 + the risk-free rate of interest in period t,

β_j = the systematic risk for the j^{th} mutual fund, and

α_j = the intercept term for the j^{th} mutual fund.

Equation (1) can be rewritten as:

$$R_{jt}^{*} = \alpha_j + (1 - \beta_j) \, R_{ft}^{*} + \beta_j \, R_{mt}^{*}. \qquad (2)$$

Equation (2) is a constrained or restricted regression. The relationship is similar to that of Zarembka [14, pp. 502-504]. Equation (1) reduces to the linear function form if λ is equal to unity.[1] If the function form parameter λ approaches zero, then equation (1) reduce to

$$(\log R_{jt} - \log R_{ft}) = \alpha_j + \beta_j \, (\log R_{mt} - \log R_{ft}). \qquad (3)$$

The estimated β_j is Jensen's instantaneous systematic risk and the estimated α_j is the Jensen's performance measure in equation (3).

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[1] That is, $(R_{jt} - R_{ft}) = \alpha_j + \beta_j \, (R_{mt} - R_{ft})$.

III. Impact of the Functional Form on the Parameters of the Model: Some Analytical Results

Based upon Taylor's expansion, we have

$$e^{\log z} = 1 + \log z + \frac{\lambda}{2!}(\log z)^2 + \frac{1}{3!}(\log z)^3 + ...$$

Equation (1) implies that

$$\frac{Y_t^{\lambda} - 1}{\lambda} = \frac{1}{\lambda}[1 + \lambda \log Y_t + \frac{1}{2!}(\lambda \log Y_t)^2 + ... - 1]$$

$$= \log Y_t + \frac{\lambda}{2!}(\log Y_t)^2 + \frac{\lambda^2}{3!}(\log Y_t)^3 + ... \qquad (4)$$

where $Y_t = R_{jt'} R_{mt}$ *or* R_{ft}

Equation (3) implies that $(Y_t^{\lambda} - 1)/\lambda$ can be approximated by $\log Y_t$ if the higher order terms are trivial. The conditions for the higher order terms to be trivial are: 1) λ approaches zero; and 2) the higher order terms of $\log Y_t$ are small. The latter condition depends upon the observation period. If monthly returns are used, then the higher order terms of $\log Y_t$ are generally small. Therefore, the $\hat{\alpha}_j$ and $\hat{\beta}_j$ estimated from $\log Y_t$ will not be significantly different from those estimated from $(Y_t^{\lambda} - 1)/\lambda$.

Following Zarembka [14, p.503], the intercept of equation (1) can be defined as

$$\frac{\alpha_j^{*\lambda} - 1}{\lambda} \quad \textit{for} \quad \textit{some} \quad \alpha_j^*. \qquad (5)$$

If either λ approaches zero or α_j^* is small, then, following equation (4) , we can argue that (5) is approximately equal to $\log \alpha_j^*$, where $\log \alpha_j^*$ is the Jensen performance measure for the logarithmic-linear model.

Jensen [5, p.394] investigated the impact of the intertemporal instability of beta on the model. Here we shall consider the implication of the functional form on the beta coefficient in terms of an elasticity framework.

In equation (6), the elasticity associated with R_{mt} from equations (1) and (2) is given.

$$\eta_t = \frac{\partial R_{jt}}{\partial R_{mt}}(\frac{R_{mt}}{R_{jt}}) = \beta_j(\frac{R_{mt}}{R_{jt}})^{\lambda} \qquad (6)$$

If λ approaches zero, then the estimated beta is the elasticity between $(\log R_{jt} - \log R_{ft})$ and $(\log R_{mt} - \log R_{ft})$. If λ is significantly different from zero, then the elasticity is a function of R_{mt}, R_{jt} and λ. Since R_{mt} / R_{jt} may vary over time, η_t may not be intertemporally stable. If the ratio between the market return, R_{mt}, and return for the j^{th} fund, R_{jt}, which will be denoted by k, is used to used to estimate the elasticity η_t, then we can analyze the bias associated with η_t as follows:

(A) λ is positive
 (i) if k > 1, then the elasticity obtained from equation (3)underestimates the η_t.
 (ii) if k < 1, then the elasticity obtained from equation (3) overestimates the η_t.

(B) λ is negative
 (i) if k > 1, then the elasticity obtained from equation (3) overestimates the η_t.
 (ii) if k > 1, then the elasticity obtained from equation (3) underestimates the η_t.

C. Description of Data

Monthly data of 22 mutual funds during January 1993- June 6, 2002 are collected from CRSP Tape to do the generalized functional form analysis. This 22 mutual fund are 1. Aggressive growth 2. Balanced, 3. High quality bonds, 4. High-yield bonds, 5. Global bonds, 6. Global equity, 7. Growth and income, 8. Ginnie Mae funds, 9. Government securities, 10. International equities, 11. Income, 12. Long-term growth, 13. Tax-free money market fund, 14. Government securities money market fund, 15. High quality municipal bound fund, 16. Single-state municipal fond fund, 17. Taxable money market fund, 18. High-yield money market fund, 19. Precious metals. 20. Sector funds, 21. Total return, 22. Utility funds. Other detailed information for these 22 mutual fund are described in Table 1.

D. Empirical Result

First, Based upon equation (1), we estimate the functional form parameter, λ, then we based upon equation (3), we estimate the beta , the estimated lambda and beta and other related information for different mutual funds. Summary measures for all the 22 different kinds of mutual funds are presented in Table A-1 through Table A-22 in Appendix A. Last column of each table J-B represents Jarque-Bera statistic which are used to test the normal distribution of each estimate.

To determine the functional form parameter, R_{jt}, R_{mt} and R_{ft} were transformed in accordance with equation (1) using λ's between -5 and 5 at intervals of .1[2]. Hence, 101 different regressions were estimated for each fund. For each regression, the logarithmic maximum likelihood value, given by equation (7), was computed. The functional form value that corresponds to the highest value for L max (λ) is then the optimal value, $\hat{\lambda}$.

$$L \ \max(\lambda) = -n \log \sigma_e(\lambda) + (\lambda - 1)\sum_{t=1}^{n} \log R_{jt} + cons\tan t \qquad (7)$$

where n is the sample size and $\sigma_e(\lambda)$ is the estimated regression residual standard error of equation (2). Summary measures for the optimal $\hat{\lambda}$ are shown in rows one of Tables A1 - A22 in Appendix A, while the distribution of $\hat{\lambda}$ is summarized in the first column of Table 3. The mean and median optimal $\hat{\lambda}$ for the 2883 funds were 2.5084 and 4.1950, respectively.

Using the likelihood ratio, an approximate 95 percent confidence region for the optimal $\hat{\lambda}$ for each fund can be obtained from equation (8).

$$L \ \max(\hat{\lambda}) - L \ \max(\lambda) < 1/2X_1^2(.05) = 1.92 \qquad (8)$$

A 95 percent confidence interval was computed for each mutual fund and these intervals were used to determine whether the functional relationship is significantly different from one and/or zero. The results are summarized in columns 2 through 5 in Table 3. 220 funds exhibited a functional relationship the different significantly from both the linear and logarithmic linear form. For 117 funds the hypothesis that the functional form was logarithmic-linear was rejected. The linear form was rejected for 140 funds.

The market elasticity was calculated in accordance with equation (6). This equation shows that the market elasticity can be decomposed into the following two components: (i) the beta coefficient estimated using equation (2); and, (ii) an adjustment factor for period i given by $(\frac{R_{mt}}{R_{jt}})^{\lambda}$. The third row of Table 1 presents summary measures for the estimated beta coefficient using equation (2). The fifth row presents the average market elasticity which was computed for an individual fund as follows:

[2] The range was made large enough so that a global maxima would be achieved rather than a local maxima for L max (λ) as defined in equation (7). Equation (2) was estimated instead of equation (1) because of the complexity of the maximum likelihood function for equation (1).

$$\overline{\eta} = (\sum_{t=1}^{114} n_t)/114 = (\hat{\beta}_j \sum_{t=1}^{114} k_t^{\hat{\lambda}})/114$$

To test whether the estimate lambda is significantly different from 1 and 0, we present the distribution table of estimated lambda for each mutual fund. For example, in Table 3, column 4, there are 2397 estimated lambda. They are not different from 1 and 0. In column 5, indicates that there are 220 estimated lambda, which are different from 1 and 0. In column 6, indicates that there are 117 estimated lambda, which are different from 0 but not 1. In column 7, indicates that there are 149 estimated lambda, which are different from 1 but not 0.

$$(\hat{\beta}_j / \overline{\eta}) - 1$$

$$\overline{K}[= (\sum_{t=1}^{114} R_{mt} / R_{jt})/114]$$

$$(\log R_{jt} - \log R_{ft}) = \alpha_j + \beta_j(\log R_{mt} - \log R_{ft}) + \gamma_j(\log R_{mt} - \log R_{ft})^2 \quad (9)$$

$$R_{jt} = [R_{ft}^{\lambda}(1-\beta_j) + R_{mt}^{\lambda}\beta_j]^{1/\lambda}$$

$$\log R_j = \beta_j(\log R_{mt} - \log R_{ft}) + \gamma_j(\log R_{mt} - \log R_{ft})^2 + \textit{higher order terms}$$

where $\gamma_j = \frac{1}{2}\lambda\beta_j(1-\beta_j)$

E. Summary Conclusion and Remark

Based upon generalized investment horizon type of CAPM which was derived by Lee [1976,1977], Fubozzi [1980], Lee et al. [1990], we used monthly data of 2884 mutual funds to estimate generalized α and β. In addition, we also found that there are significantly in estimated λ's among 22 types of mutual funds. In conclusion, the generalized functional form is important in evaluate the performance of different type of mutual fund.

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TABLE 1 – Classification of Mutual Funds

	Code	Description	Number of Fund
1	AG	Aggressive growth	199
2	BL	Balanced	77
3	BQ	High quality bonds	221
4	BY	High-yield bonds	57
5	GB	Global bonds	48
6	GE	Global equity	57
7	GI	Growth and income	199
8	GM	Ginnie Mae funds	72
9	GS	Government securities	138
10	IE	International equities	136
11	IN	Income	59
12	LG	Long-term growth	240
13	MF	Tax-free money Market fund	217
14	MG	Government securities money market fund	167
15	MQ	High quality municipal bound fund	171
16	MS	Single-state municipal bond fund	413
17	MT	Taxable money market fund	192
18	MY	High-yield money market fund	19
19	PM	Precious metals	16
20	SF	Sector funds	84
21	TR	Total return	78
22	UT	Utility funds	22

TABLE 2 – Beta and Alpha for Different Types of Mutual Funds

	Code	Beta from eq.(1)	Beta from eq.(3)	Alpha from eq.(1)	Alpha from eq.(3)
1	AG	1.0190	1.0090	-0.0021	-0.0016
2	BL	0.5962	0.5953	-0.0005	-0.0003
3	BQ	0.0458	0.0445	0.0009	0.0009
4	BY	0.2407	0.2572	-0.0008	-0.0010
5	GB	0.1006	0.1089	-0.0003	-0.0004
6	GE	0.7830	0.7664	-0.0023	-0.0017
7	GI	0.8698	0.8712	-0.0004	-0.0005
8	GM	0.0225	0.0203	0.0008	0.0007
9	GS	0.0168	0.0138	0.0010	0.0008
10	IE	0.7846	0.7824	-0.0035	-0.0035
11	IN	0.6812	0.6787	0.0007	0.0007
12	LG	0.9922	0.9935	-0.0004	-0.0019
13	MF	-0.0005	-0.0002	-0.0017	-0.0017
14	MG	0.0001	0.0001	-0.0004	-0.0004
15	MQ	0.0345	0.0335	0.0005	0.0003
16	MS	0.0392	0.0380	0.0006	0.0004
17	MT	0.0004	0.0003	-0.0004	-0.0004
18	MY	0.0377	0.0372	0.0006	0.0005
19	PM	0.4850	0.4651	-0.0063	-0.0039
20	SF	0.8914	0.8989	0.0013	0.0007
21	TR	0.5422	0.5371	-0.0004	-0.0003
22	UT	0.5916	0.5963	-0.0016	-0.0019

TABLE 3 – Functional Form Analyses for Different Types of Mutual Funds

	Code	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
1	AG	199	121	26	9	43
2	BL	77	61	9	4	3
3	BQ	221	214	6	0	1
4	BY	57	44	5	7	1
5	GB	48	33	15	0	0
6	GE	57	35	13	1	8
7	GI	200	119	45	20	16
8	GM	72	70	2	0	0
9	GS	138	138	0	0	0
10	IE	136	94	14	13	15
11	IN	59	38	14	5	2
12	LG	240	150	37	25	28
13	MF	217	216	1	0	0
14	MG	167	167	0	0	0
15	MQ	171	163	1	6	1
16	MS	413	393	3	16	1
17	MT	192	192	0	0	0
18	MY	19	17	1	1	0
19	PM	16	5	1	0	10
20	SF	84	57	11	3	13
21	TR	78	53	16	2	7
22	UT	22	17	0	5	0
	Total	2883	2397	220	117	149

TABLE 4 – Summary Analysis of λ, α, and β

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	2.5080	4.1950	5.0000	-4.0000	2.9492	366.4
2	Absolute value of Lambda	3.4382	4.1950	5.0000	0.0000	1.7788	363.0
3	Beta from eq.(1)	0.3625	0.0492	1.9409	-0.9624	0.4448	382.9
4	Beta from eq.(3)	0.3615	0.0477	1.9988	-0.9933	0.4438	376.7
5	Ave. Market Elasticity	0.3639	0.0513	1.9473	-0.9503	0.4454	383.2
6	Alpha from eq.(1)	-0.0004	0.0000	0.3513	-0.0367	0.0071	526000000.0
7	Alpha from eq.(3)	-0.0005	-0.0001	0.0086	-0.0310	0.0025	61214.5
8	Difference in Beta [3-4]	0.0010	0.0005	0.1512	-0.1958	0.0200	36702.7
9	absolute diff. in Beta l3-4l	0.0090	0.0021	0.1958	0.0000	0.0179	51926.8
10	difference in alpha [6-7]	0.0001	0.0000	0.3538	-0.0067	0.0066	927000000.0
11	absolute diff. in alpha l6-7l	0.0005	0.0001	0.3538	0.0000	0.0066	940000000.0
12	Bias in using beta from eq.(3)	-0.0857	-0.0388	158.4862	-180.1793	4.7414	162000000.0

Note: J-B represents Jarque-Bera

APPENDIX A

TABLE A-1
SUMMARY MEASURES OF AG

	Mean	Median	Max.	Min.	Std. Dev.	J-B
1 lambda	0.3121	-0.1500	5.0000	-3.6300	1.8666	10.1530
2 Absolute value of Lambda	1.4880	1.2500	5.0000	0.0200	1.1648	24.3627
3 Beta from eq.(1)	1.0190	1.0378	1.7523	-0.1256	0.3213	5.9753
4 Beta from eq.(3)	1.0090	1.0396	1.8792	-0.1266	0.3028	5.6975
5 Ave. Market Elasticity	1.0201	1.0380	1.7749	-0.1273	0.3207	5.9279
6 Alpha from eq.(1)	-0.0021	-0.0020	0.0080	-0.0367	0.0057	1126.4820
7 Alpha from eq.(3)	-0.0016	-0.0013	0.0066	-0.0310	0.0047	1620.8310
8 Difference in Beta [3-4]	0.0100	0.0041	0.1440	-0.1269	0.0394	2.7229
9 absolute diff. in Beta l3-4l	0.0317	0.0266	0.1440	0.0004	0.0255	76.0022
10 difference in alpha [6-7]	-0.0005	-0.0001	0.0060	-0.0060	0.0018	8.4209
11 absolute diff. in alpha l6-7l	0.0014	0.0011	0.0060	0.0000	0.0012	89.4645
12 Bias in using beta from eq.(3)	-0.0038	-0.0046	0.1678	-0.1064	0.0389	18.4222

TABLE A-2
SUMMARY MEASURES OF BL

	Mean	Median	Max.	Min.	Std. Dev.	J-B
1 lambda	1.42	1.76	5.00	-4.00	2.44	1.83
2 Absolute value of Lambda	2.32	1.90	5.00	0.08	1.59	5.96
3 Beta from eq.(1)	0.5962	0.5823	1.1372	0.3691	0.1236	67.3049
4 Beta from eq.(3)	0.5953	0.5779	1.0740	0.3637	0.1221	28.4918
5 Ave. Market Elasticity	0.5992	0.5855	1.1367	0.3716	0.1231	63.1351
6 Alpha from eq.(1)	-0.0005	-0.0006	0.0035	-0.0058	0.0018	1.3785
7 Alpha from eq.(3)	-0.0003	-0.0005	0.0038	-0.0038	0.0017	1.2638
8 Difference in Beta [3-4]	0.0009	0.0004	0.0633	-0.0369	0.0108	726.3556
9 absolute diff. in Beta l3-4l	0.0062	0.0043	0.0633	0.0001	0.0089	1752.1700
10 difference in alpha [6-7]	-0.0002	-0.0001	0.0011	-0.0027	0.0005	394.4705
11 absolute diff. in alpha l6-7l	0.0003	0.0003	0.0027	0.0000	0.0004	1487.9400
12 Bias in using beta from eq.(3)	-0.0067	-0.0037	0.0272	-0.0552	0.0162	4.6288

TABLE A-3
SUMMARY MEASURES OF GM

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	3.00	4.69	5.00	-4.00	2.70	65.83
2	Absolute value of Lambda	3.70	4.69	5.00	0.10	1.61	33.35
3	Beta from eq.(1)	0.0458	0.0360	0.3021	-0.0137	0.0470	1148.69
4	Beta from eq.(3)	0.0445	0.0318	0.2995	-0.0136	0.0485	1008.94
5	Ave. Market Elasticity	0.0468	0.0370	0.3008	-0.0136	0.0473	1047.54
6	Alpha from eq.(1)	0.0009	0.0009	0.0039	-0.0016	0.0006	67.03
7	Alpha from eq.(3)	0.0009	0.0008	0.0032	-0.0012	0.0006	23.69
8	Difference in Beta [3-4]	0.0013	0.0020	0.0081	-0.0329	0.0046	5833.31
9	absolute diff. in Beta l3-4l	0.0030	0.0024	0.0329	0.0000	0.0037	9283.05
10	difference in alpha [6-7]	0.0001	0.0000	0.0007	-0.0004	0.0001	997.86
11	absolute diff. in alpha l6-7l	0.0001	0.0001	0.0007	0.0000	0.0001	2564.54
12	Bias in using beta from eq.(3)	-0.8873	-0.0850	3.7432	-180.1793	12.1226	435551.90

TABLE A-4
SUMMARY MEASURES OF BY

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	1.35	1.52	5.00	-4.00	2.90	3.66
2	Absolute value of Lambda	2.71	2.89	5.00	0.02	1.67	4.18
3	Beta from eq.(1)	0.2407	0.2392	0.3932	0.0767	0.0548	6.22
4	Beta from eq.(3)	0.2572	0.2586	0.3754	0.0834	0.0579	6.28
5	Ave. Market Elasticity	0.2444	0.2421	0.3905	0.0799	0.0548	6.52
6	Alpha from eq.(1)	-0.0008	-0.0009	0.0019	-0.0049	0.0013	4.47
7	Alpha from eq.(3)	-0.0010	-0.0010	0.0017	-0.0063	0.0014	19.33
8	Difference in Beta [3-4]	-0.0165	-0.0115	0.0209	-0.0784	0.0221	3.05
9	absolute diff. in Beta l3-4l	0.0205	0.0160	0.0784	0.0002	0.0184	7.06
10	difference in alpha [6-7]	0.0002	0.0001	0.0014	-0.0001	0.0002	303.82
11	absolute diff. in alpha l6-7l	0.0002	0.0001	0.0014	0.0000	0.0002	385.49
12	Bias in using beta from eq.(3)	0.0533	0.0402	0.2431	-0.0581	0.0701	3.72

TABLE A-5
SUMMARY MEASURES OF GB

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	0.98	1.37	5.00	-4.00	3.92	6.4256
2	Absolute value of Lambda	3.73	4.00	5.00	0.29	1.45	7.0383
3	Beta from eq.(1)	0.1006	0.0836	0.2926	-0.4139	0.1409	78.9736
4	Beta from eq.(3)	0.1089	0.0851	0.4240	-0.4473	0.1617	44.0417
5	Ave. Market Elasticity	0.1035	0.0847	0.3057	-0.4088	0.1428	66.1191
6	Alpha from eq.(1)	-0.0003	-0.0002	0.0032	-0.0062	0.0019	14.3871
7	Alpha from eq.(3)	-0.0004	-0.0002	0.0030	-0.0043	0.0015	0.9261
8	Difference in Beta [3-4]	-0.0083	-0.0003	0.0333	-0.1414	0.0325	253.9727
9	absolute diff. in Beta l3-4l	0.0144	0.0030	0.1414	0.0003	0.0302	311.4996
10	difference in alpha [6-7]	0.0001	0.0001	0.0023	-0.0029	0.0009	66.9274
11	absolute diff. in alpha l6-7l	0.0005	0.0002	0.0029	0.0000	0.0007	76.2673
12	Bias in using beta from eq.(3)	0.0129	-0.0004	0.6994	-0.2483	0.1617	116.7812

TABLE A-6
SUMMARY MEASURES OF GE

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	-0.93	-1.13	4.17	-4.00	2.15	2.17
2	Absolute value of Lambda	1.97	1.69	4.17	0.04	1.25	4.12
3	Beta from eq.(1)	0.7830	0.8011	1.1007	0.2287	0.2154	4.80
4	Beta from eq.(3)	0.7664	0.7971	1.0702	0.2351	0.1953	6.28
5	Ave. Market Elasticity	0.7821	0.7999	1.0944	0.2267	0.2144	4.85
6	Alpha from eq.(1)	-0.0023	-0.0017	0.0040	-0.0085	0.0033	3.06
7	Alpha from eq.(3)	-0.0017	-0.0013	0.0037	-0.0078	0.0030	2.16
8	Difference in Beta [3-4]	0.0166	0.0045	0.0919	-0.0656	0.0350	2.50
9	absolute diff. in Beta l3-4l	0.0281	0.0192	0.0919	0.0002	0.0265	10.16
10	difference in alpha [6-7]	-0.0006	-0.0001	0.0014	-0.0037	0.0011	11.74
11	absolute diff. in alpha l6-7l	0.0008	0.0004	0.0037	0.0000	0.0009	29.54
12	Bias in using beta from eq.(3)	-0.0129	-0.0029	0.0906	-0.0934	0.0396	0.57

TABLE A-7

SUMMARY MEASURES OF GI

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	1.31	1.44	5.00	-4.00	2.53	8.35
2	Absolute value of Lambda	2.39	2.14	5.00	0.01	1.54	15.13
3	Beta from eq.(1)	0.8698	0.8755	1.6648	0.3029	0.1854	25.54
4	Beta from eq.(3)	0.8712	0.8806	1.7711	0.2910	0.1898	64.30
5	Ave. Market Elasticity	0.8721	0.8748	1.7164	0.3052	0.1868	43.72
6	Alpha from eq.(1)	-0.0004	-0.0003	0.0071	-0.0183	0.0027	980.57
7	Alpha from eq.(3)	-0.0005	-0.0004	0.0068	-0.0228	0.0029	3384.30
8	Difference in Beta [3-4]	-0.0014	0.0008	0.0517	-0.1064	0.0151	2102.69
9	absolute diff. in Beta l3-4l	0.0089	0.0054	0.1064	0.0000	0.0123	5920.97
10	difference in alpha [6-7]	0.0001	0.0000	0.0046	-0.0023	0.0006	7993.08
11	absolute diff. in alpha l6-7l	0.0003	0.0001	0.0046	0.0000	0.0005	13268.77
12	Bias in using beta from eq.(3)	-0.0016	-0.0007	0.0536	-0.0464	0.0143	42.71

TABLE A-8

SUMMARY MEASURES OF GM

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	3.28	5.00	5.00	-4.00	3.19	35.96
2	Absolute value of Lambda	4.44	5.00	5.00	0.17	1.05	151.23
3	Beta from eq.(1)	0.0225	0.0252	0.0602	-0.0093	0.0177	2.46
4	Beta from eq.(3)	0.0203	0.0228	0.0559	-0.0115	0.0168	2.24
5	Ave. Market Elasticity	0.0234	0.0264	0.0632	-0.0095	0.0184	2.37
6	Alpha from eq.(1)	0.0008	0.0009	0.0019	-0.0006	0.0006	2.14
7	Alpha from eq.(3)	0.0007	0.0008	0.0019	-0.0005	0.0005	1.62
8	Difference in Beta [3-4]	0.0022	0.0026	0.0072	-0.0066	0.0022	31.91
9	absolute diff. in Beta l3-4l	0.0027	0.0027	0.0072	0.0000	0.0016	1.97
10	difference in alpha [6-7]	0.0000	0.0000	0.0006	-0.0001	0.0001	534.55
11	absolute diff. in alpha l6-7l	0.0001	0.0000	0.0006	0.0000	0.0001	922.81
12	Bias in using beta from eq.(3)	0.1040	-0.1222	13.6552	-0.8718	1.7110	9264.16

TABLE A-9
SUMMARY MEASURES OF GS

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	2.85	5.00	5.00	-4.00	3.18	36.22
2	Absolute value of Lambda	4.01	5.00	5.00	0.05	1.45	42.34
3	Beta from eq.(1)	0.0168	0.0155	0.0702	-0.0137	0.0167	16.26
4	Beta from eq.(3)	0.0138	0.0114	0.0695	-0.0153	0.0150	62.84
5	Ave. Market Elasticity	0.0174	0.0160	0.0702	-0.0136	0.0170	12.78
6	Alpha from eq.(1)	0.0010	0.0008	0.0044	-0.0009	0.0008	194.94
7	Alpha from eq.(3)	0.0008	0.0007	0.0042	-0.0009	0.0007	316.93
8	Difference in Beta [3-4]	0.0029	0.0036	0.0107	-0.0055	0.0034	6.49
9	absolute diff. in Beta l3-4l	0.0039	0.0038	0.0107	0.0001	0.0021	4.08
10	difference in alpha [6-7]	0.0001	0.0001	0.0008	-0.0002	0.0001	108.39
11	absolute diff. in alpha l6-7l	0.0001	0.0001	0.0008	0.0000	0.0001	345.00
12	Bias in using beta from eq.(3)	-0.4456	-0.2694	3.2733	-17.1550	1.6344	36531.27

TABLE A-10
SUMMARY MEASURES OF IE

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	-0.58	-0.66	3.90	-4.00	1.70	1.42
2	Absolute value of Lambda	1.48	1.34	4.00	0.02	1.01	12.10
3	Beta from eq.(1)	0.7846	0.7525	1.2122	0.3411	0.1634	7.99
4	Beta from eq.(3)	0.7824	0.7300	1.3391	0.3454	0.1838	36.99
5	Ave. Market Elasticity	0.7865	0.7501	1.2115	0.3397	0.1679	11.07
6	Alpha from eq.(1)	-0.0035	-0.0035	0.0044	-0.0114	0.0033	0.36
7	Alpha from eq.(3)	-0.0035	-0.0032	0.0046	-0.0123	0.0036	2.79
8	Difference in Beta [3-4]	0.0022	0.0061	0.1211	-0.1958	0.0454	188.22
9	absolute diff. in Beta l3-4l	0.0285	0.0172	0.1958	0.0001	0.0354	281.98
10	difference in alpha [6-7]	0.0000	-0.0003	0.0085	-0.0037	0.0020	201.11
11	absolute diff. in alpha l6-7l	0.0013	0.0006	0.0085	0.0000	0.0015	371.19
12	Bias in using beta from eq.(3)	-0.0075	-0.0066	0.1276	-0.1131	0.0400	19.81

TABLE A-11
SUMMARY MEASURES OF IN

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	2.23	2.53	5.00	-3.09	2.37	4.32
2	Absolute value of Lambda	2.78	2.78	5.00	0.04	1.68	4.66
3	Beta from eq.(1)	0.6812	0.6876	1.0274	0.2657	0.1448	1.12
4	Beta from eq.(3)	0.6787	0.6833	0.9912	0.2538	0.1471	1.00
5	Ave. Market Elasticity	0.6838	0.6902	1.0261	0.2648	0.1447	1.28
6	Alpha from eq.(1)	0.0007	0.0004	0.0074	-0.0032	0.0022	10.42
7	Alpha from eq.(3)	0.0007	0.0007	0.0066	-0.0031	0.0020	3.42
8	Difference in Beta [3-4]	0.0025	0.0007	0.0858	-0.0259	0.0170	224.18
9	absolute diff. in Beta l3-4l	0.0101	0.0059	0.0858	0.0001	0.0139	548.87
10	difference in alpha [6-7]	0.0000	0.0000	0.0010	-0.0007	0.0003	17.81
11	absolute diff. in alpha l6-7l	0.0002	0.0001	0.0010	0.0000	0.0002	35.55
12	Bias in using beta from eq.(3)	-0.0084	-0.0027	0.0326	-0.1196	0.0247	144.42

TABLE A-12
SUMMARY MEASURES OF LG

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	0.84	0.61	5.00	-3.93	2.19	7.95
2	Absolute value of Lambda	1.88	1.55	5.00	0.00	1.39	22.08
3	Beta from eq.(1)	0.9922	0.9923	1.7653	0.0432	0.2484	6.48
4	Beta from eq.(3)	0.9935	0.9964	1.8008	0.0407	0.2451	8.57
5	Ave. Market Elasticity	0.9948	0.9961	1.7730	0.0462	0.2489	6.34
6	Alpha from eq.(1)	-0.0004	-0.0020	0.3513	-0.0227	0.0231	508535.80
7	Alpha from eq.(3)	-0.0019	-0.0017	0.0065	-0.0234	0.0036	337.55
8	Difference in Beta [3-4]	-0.0013	0.0002	0.1512	-0.0954	0.0279	254.60
9	absolute diff. in Beta l3-4l	0.0178	0.0104	0.1512	0.0000	0.0215	716.79
10	difference in alpha [6-7]	0.0016	0.0001	0.3538	-0.0057	0.0229	556550.60
11	absolute diff. in alpha l6-7l	0.0022	0.0004	0.3538	0.0000	0.0228	558523.30
12	Bias in using beta from eq.(3)	-0.0002	-0.0002	0.1414	-0.1175	0.0261	467.38

TABLE A-13
SUMMARY MEASURES OF MF

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	3.82	5.00	5.00	-4.00	3.03	243.81
2	Absolute value of Lambda	4.85	5.00	5.00	0.83	0.43	10843.00
3	Beta from eq.(1)	-0.0005	-0.0006	0.0037	-0.0024	0.0007	322.72
4	Beta from eq.(3)	-0.0002	-0.0002	0.0043	-0.0022	0.0006	2303.45
5	Ave. Market Elasticity	-0.0005	-0.0007	0.0036	-0.0026	0.0007	258.61
6	Alpha from eq.(1)	-0.0017	-0.0017	-0.0012	-0.0021	0.0002	1.48
7	Alpha from eq.(3)	-0.0017	-0.0018	-0.0013	-0.0021	0.0002	1.36
8	Difference in Beta [3-4]	-0.0003	-0.0004	0.0005	-0.0007	0.0003	188.90
9	absolute diff. in Beta l3-4l	0.0004	0.0004	0.0007	0.0000	0.0001	30.41
10	difference in alpha [6-7]	0.0000	0.0000	0.0000	0.0000	0.0000	131.54
11	absolute diff. in alpha l6-7l	0.0000	0.0000	0.0000	0.0000	0.0000	7.91
12	Bias in using beta from eq.(3)	-0.8130	-0.5568	10.4811	-17.2266	2.0807	7922.58

TABLE A-14
SUMMARY MEASURES OF MG

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	4.60	5.00	5.00	-4.00	1.83	2713.59
2	Absolute value of Lambda	4.93	5.00	5.00	0.82	0.38	50477.08
3	Beta from eq.(1)	0.0001	0.0002	0.0020	-0.0022	0.0004	538.72
4	Beta from eq.(3)	0.0001	0.0001	0.0020	-0.0024	0.0004	722.63
5	Ave. Market Elasticity	0.0001	0.0002	0.0020	-0.0022	0.0004	436.90
6	Alpha from eq.(1)	-0.0004	-0.0004	0.0000	-0.0012	0.0002	1.08
7	Alpha from eq.(3)	-0.0004	-0.0004	0.0000	-0.0012	0.0002	1.12
8	Difference in Beta [3-4]	0.0000	0.0000	0.0003	-0.0002	0.0001	38.14
9	absolute diff. in Beta l3-4l	0.0001	0.0000	0.0003	0.0000	0.0001	136.92
10	difference in alpha [6-7]	0.0000	0.0000	0.0000	0.0000	0.0000	382.90
11	absolute diff. in alpha l6-7l	0.0000	0.0000	0.0000	0.0000	0.0000	1220.99
12	Bias in using beta from eq.(3)	1.6050	-0.0403	158.4862	-3.8490	13.3451	93962.11

TABLE A-15
SUMMARY MEASURES OF MQ

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	4.45	5.00	5.00	-4.00	1.61	1546.48
2	Absolute value of Lambda	4.63	5.00	5.00	0.42	0.98	665.06
3	Beta from eq.(1)	0.0345	0.0354	0.0762	-0.0024	0.0175	0.64
4	Beta from eq.(3)	0.0335	0.0342	0.0742	-0.0027	0.0172	0.45
5	Ave. Market Elasticity	0.0360	0.0372	0.0801	-0.0025	0.0182	0.78
6	Alpha from eq.(1)	0.0005	0.0006	0.0024	-0.0009	0.0005	6.40
7	Alpha from eq.(3)	0.0003	0.0003	0.0022	-0.0009	0.0005	5.22
8	Difference in Beta [3-4]	0.0011	0.0011	0.0042	-0.0057	0.0013	325.83
9	absolute diff. in Beta l3-4l	0.0013	0.0012	0.0057	0.0000	0.0010	99.92
10	difference in alpha [6-7]	0.0002	0.0002	0.0004	-0.0002	0.0001	9.79
11	absolute diff. in alpha l6-7l	0.0002	0.0002	0.0004	0.0000	0.0001	6.22
12	Bias in using beta from eq.(3)	-0.0596	-0.0743	1.3602	-0.2790	0.1248	68932.33

TABLE A-16
SUMMARY MEASURES OF MS

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	4.61	5.00	5.00	-4.00	1.40	13395.08
2	Absolute value of Lambda	4.77	5.00	5.00	0.13	0.68	6188.54
3	Beta from eq.(1)	0.0392	0.0403	0.0818	-0.0032	0.0113	62.78
4	Beta from eq.(3)	0.0380	0.0386	0.1197	-0.0022	0.0117	671.00
5	Ave. Market Elasticity	0.0410	0.0422	0.0855	-0.0032	0.0119	61.98
6	Alpha from eq.(1)	0.0006	0.0007	0.0023	-0.0007	0.0004	12.07
7	Alpha from eq.(3)	0.0004	0.0005	0.0062	-0.0008	0.0005	28574.53
8	Difference in Beta [3-4]	0.0011	0.0013	0.0051	-0.0649	0.0034	1826316.00
9	absolute diff. in Beta l3-4l	0.0016	0.0013	0.0649	0.0000	0.0033	2029576.00
10	difference in alpha [6-7]	0.0002	0.0002	0.0005	-0.0039	0.0002	1191694.00
11	absolute diff. in alpha l6-7l	0.0002	0.0002	0.0039	0.0000	0.0002	1210543.00
12	Bias in using beta from eq.(3)	-0.0772	-0.0757	0.9565	-1.0123	0.0816	187451.70

TABLE A-17
SUMMARY MEASURES OF MT

	Mean	Median	Max.	Min.	Std. Dev.	J-B
1 lambda	4.13	5.00	5.00	-4.00	2.65	463.06
2 Absolute value of Lambda	4.88	5.00	5.00	1.50	0.40	7207.87
3 Beta from eq.(1)	0.0004	0.0004	0.0023	-0.0073	0.0008	18622.09
4 Beta from eq.(3)	0.0003	0.0003	0.0020	-0.0061	0.0007	9791.87
5 Ave. Market Elasticity	0.0004	0.0004	0.0024	-0.0077	0.0008	19742.25
6 Alpha from eq.(1)	-0.0004	-0.0004	0.0001	-0.0016	0.0002	187.29
7 Alpha from eq.(3)	-0.0004	-0.0004	0.0001	-0.0016	0.0002	198.33
8 Difference in Beta [3-4]	0.0000	0.0000	0.0003	-0.0012	0.0001	20286.67
9 absolute diff. in Beta l3-4l	0.0001	0.0000	0.0012	0.0000	0.0001	40705.30
10 difference in alpha [6-7]	0.0000	0.0000	0.0001	0.0000	0.0000	50860.04
11 absolute diff. in alpha l6-7l	0.0000	0.0000	0.0001	0.0000	0.0000	99049.90
12 Bias in using beta from eq.(3)	-0.2288	-0.0953	2.9890	-22.9903	1.8230	133309.90

TABLE A-18
SUMMARY MEASURES OF MY

	Mean	Median	Max.	Min.	Std. Dev.	J-B
1 lambda	4.88	5.00	5.00	3.11	0.44	167.21
2 Absolute value of Lambda	4.88	5.00	5.00	3.11	0.44	167.21
3 Beta from eq.(1)	0.0377	0.0379	0.0513	0.0102	0.0098	4.29
4 Beta from eq.(3)	0.0372	0.0375	0.0494	0.0098	0.0096	5.59
5 Ave. Market Elasticity	0.0394	0.0397	0.0524	0.0107	0.0102	4.71
6 Alpha from eq.(1)	0.0006	0.0006	0.0013	-0.0004	0.0005	1.17
7 Alpha from eq.(3)	0.0005	0.0005	0.0011	-0.0005	0.0004	1.58
8 Difference in Beta [3-4]	0.0005	0.0007	0.0019	-0.0008	0.0008	0.50
9 absolute diff. in Beta l3-4l	0.0008	0.0008	0.0019	0.0001	0.0005	0.96
10 difference in alpha [6-7]	0.0001	0.0001	0.0002	0.0000	0.0001	1.13
11 absolute diff. in alpha l6-7l	0.0001	0.0001	0.0002	0.0000	0.0001	1.13
12 Bias in using beta from eq.(3)	-0.0577	-0.0596	-0.0162	-0.0959	0.0199	0.08

Note: J-B represents Jarque-Bera.

TABLE A-19

SUMMARY MEASURES OF PM

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	-0.61	-0.69	0.55	-1.41	0.53	0.80
2	Absolute value of Lambda	0.70	0.69	1.41	0.06	0.40	0.32
3	Beta from eq.(1)	0.4850	0.4891	0.6075	0.3335	0.0872	1.14
4	Beta from eq.(3)	0.4651	0.4502	0.6051	0.3245	0.0897	0.97
5	Ave. Market Elasticity	0.4849	0.4888	0.6079	0.3325	0.0879	1.13
6	Alpha from eq.(1)	-0.0063	-0.0059	-0.0012	-0.0147	0.0037	2.35
7	Alpha from eq.(3)	-0.0039	-0.0022	-0.0005	-0.0121	0.0035	3.94
8	Difference in Beta [3-4]	0.0199	0.0210	0.0621	-0.0216	0.0197	0.06
9	absolute diff. in Beta l3-4l	0.0233	0.0220	0.0621	0.0027	0.0152	2.40
10	difference in alpha [6-7]	-0.0024	-0.0026	0.0026	-0.0067	0.0023	0.35
11	absolute diff. in alpha l6-7l	0.0029	0.0027	0.0067	0.0003	0.0017	0.71
12	Bias in using beta from eq.(3)	-0.0420	-0.0445	0.0292	-0.1170	0.0369	0.03

TABLE A-20

SUMMARY MEASURES OF SF

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	0.55	0.33	5.00	-4.00	1.89	0.49
2	Absolute value of Lambda	1.49	1.13	5.00	0.04	1.27	12.28
3	Beta from eq.(1)	0.8914	0.7790	1.9409	0.2228	0.4053	17.91
4	Beta from eq.(3)	0.8989	0.7752	1.9988	0.2092	0.4159	18.55
5	Ave. Market Elasticity	0.8935	0.7833	1.9473	0.2234	0.4055	17.98
6	Alpha from eq.(1)	0.0013	0.0013	0.0108	-0.0090	0.0041	0.71
7	Alpha from eq.(3)	0.0007	0.0015	0.0086	-0.0141	0.0038	35.94
8	Difference in Beta [3-4]	-0.0075	-0.0020	0.0642	-0.1352	0.0273	145.65
9	absolute diff. in Beta l3-4l	0.0168	0.0083	0.1352	0.0003	0.0228	326.91
10	difference in alpha [6-7]	0.0006	0.0003	0.0068	-0.0038	0.0019	7.59
11	absolute diff. in alpha l6-7l	0.0015	0.0010	0.0068	0.0000	0.0014	47.02
12	Bias in using beta from eq.(3)	0.0019	0.0010	0.1275	-0.1057	0.0323	75.70

TABLE A-21

SUMMARY MEASURES OF TR

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	-0.24	-0.67	5.00	-4.00	2.67	4.21
2	Absolute value of Lambda	2.29	1.98	5.00	0.02	1.37	5.29
3	Beta from eq.(1)	0.5422	0.5898	1.2131	-0.9624	0.3238	400.81
4	Beta from eq.(3)	0.5371	0.5926	1.1964	-0.9933	0.3261	437.33
5	Ave. Market Elasticity	0.5433	0.5943	1.2102	-0.9503	0.3221	394.67
6	Alpha from eq.(1)	-0.0004	-0.0002	0.0040	-0.0082	0.0021	33.04
7	Alpha from eq.(3)	-0.0003	-0.0003	0.0045	-0.0074	0.0018	15.52
8	Difference in Beta [3-4]	0.0051	0.0023	0.0453	-0.0167	0.0125	25.92
9	absolute diff. in Beta l3-4l	0.0089	0.0052	0.0453	0.0001	0.0102	69.19
10	difference in alpha [6-7]	-0.0002	0.0000	0.0011	-0.0030	0.0006	314.13
11	absolute diff. in alpha l6-7l	0.0004	0.0002	0.0030	0.0000	0.0005	821.59
12	Bias in using beta from eq.(3)	-0.0097	-0.0067	0.0463	-0.1248	0.0260	96.10

TABLE A-22

SUMMARY MEASURES OF UT

		Mean	Median	Max.	Min.	Std. Dev.	J-B
1	lambda	0.91	0.12	3.44	-1.52	1.47	1.93
2	Absolute value of Lambda	1.22	0.58	3.44	0.01	1.22	2.61
3	Beta from eq.(1)	0.5916	0.5265	1.3532	0.1456	0.2571	9.96
4	Beta from eq.(3)	0.5963	0.5258	1.3435	0.1363	0.2648	8.05
5	Ave. Market Elasticity	0.5949	0.5262	1.3520	0.1473	0.2590	9.20
6	Alpha from eq.(1)	-0.0016	-0.0013	0.0018	-0.0065	0.0021	2.87
7	Alpha from eq.(3)	-0.0019	-0.0014	0.0009	-0.0079	0.0022	5.70
8	Difference in Beta [3-4]	-0.0047	-0.0003	0.0097	-0.0690	0.0172	72.36
9	absolute diff. in Beta l3-4l	0.0087	0.0021	0.0690	0.0001	0.0154	104.04
10	difference in alpha [6-7]	0.0003	0.0000	0.0018	-0.0004	0.0006	5.14
11	absolute diff. in alpha l6-7l	0.0004	0.0001	0.0018	0.0000	0.0005	9.34
12	Bias in using beta from eq.(3)	-0.0025	0.0008	0.0482	-0.0749	0.0217	26.01

Appendix B

Table B-1
DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF AG

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	0	0	0	0	0
-3.99 to -3.00	4	0	4	0	0
-2.99 to -2.00	12	0	8	0	4
-1.99 to -1.00	35	3	8	0	24
-0.99 to -0.50	28	13	1	0	14
-0.49 to -0.01	26	24	1	0	1
0	0	0	0	0	0
0.01 to 0.49	20	20	0	0	0
0.50 to 0.99	10	10	0	0	0
1.00 to 1.99	22	21	0	1	0
2.00 to 2.99	14	12	0	2	0
3.00 to 3.99	24	18	0	6	0
4.00 to 4.99	1	0	1	0	0
5.00	3	0	3	0	0
Total	199	121	26	9	43

Table B-2

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF BL

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	2	0	2	0	0
-3.99 to -3.00	2	1	0	0	1
-2.99 to -2.00	2	1	0	0	1
-1.99 to -1.00	5	4	0	0	1
-0.99 to -0.50	7	7	0	0	0
-0.49 to -0.01	6	6	0	0	0
0	0	0	0	0	0
0.01 to 0.49	6	6	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	18	18	0	0	0
2.00 to 2.99	9	9	0	0	0
3.00 to 3.99	6	5	0	1	0
4.00 to 4.99	3	1	2	0	0
5.00	11	3	5	3	0
Total	77	61	9	4	3

Table B-3

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF BQ

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	12	10	1	0	1
-3.99 to -3.00	3	3	0	0	0
-2.99 to -2.00	3	3	0	0	0
-1.99 to -1.00	7	7	0	0	0
-0.99 to -0.50	1	1	0	0	0
-0.49 to -0.01	3	3	0	0	0
0	0	0	0	0	0
0.01 to 0.49	8	8	0	0	0
0.50 to 0.99	10	10	0	0	0
1.00 to 1.99	19	19	0	0	0
2.00 to 2.99	16	16	0	0	0
3.00 to 3.99	16	16	0	0	0
4.00 to 4.99	24	24	0	0	0
5.00	99	94	5	0	0
Total	221	214	6	0	1

Table B-4

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF BY

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	3	2	0	0	1
-3.99 to -3.00	3	3	0	0	0
-2.99 to -2.00	5	5	0	0	0
-1.99 to -1.00	2	2	0	0	0
-0.99 to -0.50	1	1	0	0	0
-0.49 to -0.01	4	4	0	0	0
0	0	0	0	0	0
0.01 to 0.49	3	3	0	0	0
0.50 to 0.99	3	3	0	0	0
1.00 to 1.99	9	8	0	1	0
2.00 to 2.99	3	3	0	0	0
3.00 to 3.99	8	7	0	1	0
4.00 to 4.99	3	2	0	1	0
5.00	10	1	5	4	0
Total	57	44	5	7	1

Table B-5

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF GB

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	9	9	0	0	0
-3.99 to -3.00	5	3	2	0	0
-2.99 to -2.00	3	3	0	0	0
-1.99 to -1.00	3	3	0	0	0
-0.99 to -0.50	2	2	0	0	0
-0.49 to -0.01	1	1	0	0	0
0	0	0	0	0	0
0.01 to 0.49	1	1	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	1	1	0	0	0
2.00 to 2.99	1	1	0	0	0
3.00 to 3.99	1	1	0	0	0
4.00 to 4.99	3	1	2	0	0
5.00	18	7	11	0	0
Total	48	33	15	0	0

Table B-6

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF GE

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	7	0	7	0	0
-3.99 to -3.00	5	1	4	0	0
-2.99 to -2.00	7	4	2	0	1
-1.99 to -1.00	11	5	0	0	6
-0.99 to -0.50	5	5	0	0	0
-0.49 to -0.01	2	2	0	0	0
0	0	0	0	0	0
0.01 to 0.49	4	4	0	0	0
0.50 to 0.99	6	6	0	0	0
1.00 to 1.99	5	5	0	0	0
2.00 to 2.99	2	2	0	0	0
3.00 to 3.99	2	1	0	0	1
4.00 to 4.99	1	0	0	1	0
5.00	0	0	0	0	0
Total	57	35	13	1	8

Table B-7

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF GI

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	6	0	5	0	1
-3.99 to -3.00	2	0	1	0	1
-2.99 to -2.00	13	0	4	0	9
-1.99 to -1.00	25	21	0	0	4
-0.99 to -0.50	10	9	0	0	1
-0.49 to -0.01	11	11	0	0	0
0	0	0	0	0	0
0.01 to 0.49	10	10	0	0	0
0.50 to 0.99	10	10	0	0	0
1.00 to 1.99	30	28	0	2	0
2.00 to 2.99	22	19	0	3	0
3.00 to 3.99	21	11	3	7	0
4.00 to 4.99	16	0	9	7	0
5.00	24	0	23	1	0
Total	200	119	45	20	16

Table B-8

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF GM

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	10	10	0	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	1	1	0	0	0
-0.99 to -0.50	0	0	0	0	0
-0.49 to -0.01	1	1	0	0	0
0	0	0	0	0	0
0.01 to 0.49	0	0	0	0	0
0.50 to 0.99	1	1	0	0	0
1.00 to 1.99	1	1	0	0	0
2.00 to 2.99	2	2	0	0	0
3.00 to 3.99	5	5	0	0	0
4.00 to 4.99	2	2	0	0	0
5.00	49	47	2	0	0
Total	72	70	2	0	0

Table B-9

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF GS

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	17	17	0	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	2	2	0	0	0
-1.99 to -1.00	4	4	0	0	0
-0.99 to -0.50	2	2	0	0	0
-0.49 to -0.01	1	1	0	0	0
0	0	0	0	0	0
0.01 to 0.49	3	3	0	0	0
0.50 to 0.99	2	2	0	0	0
1.00 to 1.99	9	9	0	0	0
2.00 to 2.99	7	7	0	0	0
3.00 to 3.99	9	9	0	0	0
4.00 to 4.99	6	6	0	0	0
5.00	76	76	0	0	0
Total	138	138	0	0	0

Table B-10

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF IE

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	4	0	4	0	0
-3.99 to -3.00	8	0	7	0	1
-2.99 to -2.00	12	1	2	0	9
-1.99 to -1.00	34	29	0	0	5
-0.99 to -0.50	16	16	0	0	0
-0.49 to -0.01	17	17	0	0	0
0	0	0	0	0	0
0.01 to 0.49	7	7	0	0	0
0.50 to 0.99	12	12	0	0	0
1.00 to 1.99	14	9	0	5	0
2.00 to 2.99	10	3	1	6	0
3.00 to 3.99	2	0	0	2	0
4.00 to 4.99	0	0	0	0	0
5.00	0	0	0	0	0
Total	136	94	14	13	15

Table B-11

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF IN

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	0	0	0	0	0
-3.99 to -3.00	1	0	0	0	1
-2.99 to -2.00	4	2	1	0	1
-1.99 to -1.00	2	2	0	0	0
-0.99 to -0.50	0	0	0	0	0
-0.49 to -0.01	5	5	0	0	0
0	0	0	0	0	0
0.01 to 0.49	3	3	0	0	0
0.50 to 0.99	4	4	0	0	0
1.00 to 1.99	7	7	0	0	0
2.00 to 2.99	6	6	0	0	0
3.00 to 3.99	8	6	1	1	0
4.00 to 4.99	10	1	5	4	0
5.00	9	2	7	0	0
Total	59	38	14	5	2

Table B-12

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF LG

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	0	0	0	0	0
-3.99 to -3.00	4	0	2	0	2
-2.99 to -2.00	18	2	6	0	10
-1.99 to -1.00	32	20	1	0	11
-0.99 to -0.50	21	18	0	0	3
-0.49 to -0.01	17	16	0	0	1
0	1	1	0	0	0
0.01 to 0.49	24	23	0	0	1
0.50 to 0.99	18	18	0	0	0
1.00 to 1.99	33	27	0	6	0
2.00 to 2.99	29	21	1	7	0
3.00 to 3.99	16	4	4	8	0
4.00 to 4.99	17	0	13	4	0
5.00	10	0	10	0	0
Total	240	150	37	25	28

Table B-13

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF MF

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	28	27	1	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	0	0	0	0	0
-0.99 to -0.50	1	1	0	0	0
-0.49 to -0.01	0	0	0	0	0
0	0	0	0	0	0
0.01 to 0.49	0	0	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	0	0	0	0	0
2.00 to 2.99	0	0	0	0	0
3.00 to 3.99	0	0	0	0	0
4.00 to 4.99	0	0	0	0	0
5.00	188	188	0	0	0
Total	217	216	1	0	0

Table B-14

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF MG

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	7	7	0	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	0	0	0	0	0
-0.99 to -0.50	1	1	0	0	0
-0.49 to -0.01	0	0	0	0	0
0	0	0	0	0	0
0.01 to 0.49	0	0	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	0	0	0	0	0
2.00 to 2.99	0	0	0	0	0
3.00 to 3.99	0	0	0	0	0
4.00 to 4.99	0	0	0	0	0
5.00	159	159	0	0	0
Total	167	167	0	0	0

Table B-15

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF MQ

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	2	1	0	0	1
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	2	2	0	0	0
-1.99 to -1.00	1	1	0	0	0
-0.99 to -0.50	1	1	0	0	0
-0.49 to -0.01	0	0	0	0	0
0	0	0	0	0	0
0.01 to 0.49	2	2	0	0	0
0.50 to 0.99	1	1	0	0	0
1.00 to 1.99	3	3	0	0	0
2.00 to 2.99	5	5	0	0	0
3.00 to 3.99	5	5	0	0	0
4.00 to 4.99	12	12	0	0	0
5.00	137	130	1	6	0
Total	171	163	1	6	1

Table B-16

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF MS

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	8	4	3	0	1
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	1	1	0	0	0
-0.99 to -0.50	0	0	0	0	0
-0.49 to -0.01	0	0	0	0	0
0	0	0	0	0	0
0.01 to 0.49	2	2	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	4	4	0	0	0
2.00 to 2.99	5	5	0	0	0
3.00 to 3.99	21	21	0	0	0
4.00 to 4.99	27	27	0	0	0
5.00	345	329	0	16	0
Total	413	393	3	16	1

Table B-17

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF MT

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	16	16	0	0	0
-3.99 to -3.00	2	2	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	1	1	0	0	0
-0.99 to -0.50	0	0	0	0	0
-0.49 to -0.01	0	0	0	0	0
0	0	0	0	0	0
0.01 to 0.49	0	0	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	0	0	0	0	0
2.00 to 2.99	0	0	0	0	0
3.00 to 3.99	0	0	0	0	0
4.00 to 4.99	0	0	0	0	0
5.00	173	173	0	0	0
Total	192	192	0	0	0

Table B-18

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF MY

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	0	0	0	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	0	0	0	0	0
-0.99 to -0.50	0	0	0	0	0
-0.49 to -0.01	0	0	0	0	0
0	0	0	0	0	0
0.01 to 0.49	0	0	0	0	0
0.50 to 0.99	0	0	0	0	0
1.00 to 1.99	0	0	0	0	0
2.00 to 2.99	0	0	0	0	0
3.00 to 3.99	1	1	0	0	0
4.00 to 4.99	1	1	0	0	0
5.00	17	15	1	1	0
Total	19	17	1	1	0

Table B-19

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF PM

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	0	0	0	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	3	0	1	0	2
-0.99 to -0.50	8	0	0	0	8
-0.49 to -0.01	2	2	0	0	0
0	0	0	0	0	0
0.01 to 0.49	2	2	0	0	0
0.50 to 0.99	1	1	0	0	0
1.00 to 1.99	0	0	0	0	0
2.00 to 2.99	0	0	0	0	0
3.00 to 3.99	0	0	0	0	0
4.00 to 4.99	0	0	0	0	0
5.00	0	0	0	0	0
Total	16	5	1	0	10

Table B-20

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF SF

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	1	0	1	0	0
-3.99 to -3.00	1	0	0	0	1
-2.99 to -2.00	6	2	1	0	3
-1.99 to -1.00	7	3	0	0	4
-0.99 to -0.50	8	6	0	0	2
-0.49 to -0.01	9	8	0	0	1
0	0	0	0	0	0
0.01 to 0.49	11	11	0	0	0
0.50 to 0.99	10	10	0	0	0
1.00 to 1.99	16	15	0	0	1
2.00 to 2.99	4	1	0	3	0
3.00 to 3.99	7	1	6	0	0
4.00 to 4.99	3	0	2	0	1
5.00	1	0	1	0	0
Total	84	57	11	3	13

Table B-21

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF TR

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	10	1	8	0	1
-3.99 to -3.00	4	2	2	0	0
-2.99 to -2.00	8	4	1	0	3
-1.99 to -1.00	15	11	2	0	2
-0.99 to -0.50	5	5	0	0	0
-0.49 to -0.01	4	3	0	0	1
0	0	0	0	0	0
0.01 to 0.49	1	1	0	0	0
0.50 to 0.99	4	4	0	0	0
1.00 to 1.99	10	10	0	0	0
2.00 to 2.99	6	6	0	0	0
3.00 to 3.99	3	2	0	1	0
4.00 to 4.99	5	2	3	0	0
5.00	3	2	0	1	0
Total	78	53	16	2	7

Table B-22

DISTRIBUTION FOR THE FUNCTIONAL FORM PARAMETER LAMBDA OF UT

Optimal LD	NO.	Not different from zero and one	Different from one and zero	Different from zero but not one	Different from one but not zero
-5	0	0	0	0	0
-4.99 to -4.00	0	0	0	0	0
-3.99 to -3.00	0	0	0	0	0
-2.99 to -2.00	0	0	0	0	0
-1.99 to -1.00	1	1	0	0	0
-0.99 to -0.50	1	1	0	0	0
-0.49 to -0.01	9	9	0	0	0
0	0	0	0	0	0
0.01 to 0.49	1	1	0	0	0
0.50 to 0.99	1	1	0	0	0
1.00 to 1.99	3	2	0	1	0
2.00 to 2.99	3	2	0	1	0
3.00 to 3.99	3	0	0	3	0
4.00 to 4.99	0	0	0	0	0
5.00	0	0	0	0	0
Total	22	17	0	5	0

Part Two: 台灣與美國共同基金績效分析之比較

A Comparison between Taiwan and U.S. Mutual Fund Performance

本部分研究成果已編輯為國立交通大學財務金融所九十三年六月畢業之黃曉芸同學碩士論文，詳細內容可於網上查詢，其摘要及目錄如下:

研究生：黃曉芸 (Shiao-Yun Huang)
指導教授：李正福教授、林建榮教授 (Dr. Cheng-few Lee & Dr. Jian-rung Lin)

摘要:

國內論文探討共同基金績效的不下少數，但由於資料蒐集或變數處理上的問題，都只侷限在單一市場（台灣或美國）之探討，較少同時研究兩國或多國共同基金表現之文章。這使得國內研究若想與國外實證比較時，就只能參考過去的文獻。因此，本研究以台灣及美國開放式股票型基金為研究主題。藉由選用同樣的樣本期間與模型，討論兩個發展迥異市場中的共同基金整體績效表現、選股能力及擇時能力之差異。

實證結果驗證了，股票市場組成結構會造成同樣是共同基金，但處於不同之國家，整體績效表現就會不同。台灣股市以散戶為主，對擁有較多資訊的法人來說，打敗市場並非難事。美國股市則以法人為主，所以僅有少數基金之表現可以超越市場。選股能力部分，台灣共同基金幾乎不存在著選股能力，甚至出現一些反向的選股能力。相反的，擇時能力幾乎是美國基金的基本配備。三年期與五年期下大概有四分之一的基金具有此項能力，十年期之實證結果也有十分之一的基金有之。擇時能力部分，台灣雖然只有少數基金具備擇時能力，但卻無基金會因錯估大盤走勢而作出錯誤的風險調整。然而，美國雖然有擇時能力之基金在絕對數量上與台灣差不多，但相對佔樣本之比例就小很多。此外，經理人對大盤錯估情形相當嚴重(在五年期實證結果發現的，三年期並不存在)。因此，在擇時能力之衡量上台灣基金是表現的比美國好的。

關鍵字：台灣、美國、共同基金、整體績效、選股能力、擇時能力

Abstract:

The investment performance of mutual fund has been extensively studies in the finance literature. Because of the problems about data collection and variables treatment, few of researches analysed two national mutual fund performance at the same time. If we want to compare domestic empirical results with other countries, we just consult references. So, this study uses the same sample periods and the same models to examine empirically differences of overall performance, selectivity ability, and market-timing ability of equity funds between two markets which developed so differently, Taiwan and the United States.

Results indicated that composition of stock market could affect performance of mutual fund. Taiwan stock market was mainly composed of individual investors. So, institution investors (mutual funds) which have superior information would beat market index easily. Few mutual funds took advantage over market in American because U.S. stock market was mainly composed of institution investors.Regarding selectivity ability, Taiwan mutual funds didn't have positive selectivity ability, but some had negative selectivity ability. On the contrary, selectivity ability was the U.S. mutual fund's basic outfit. One-fourth mutual funds had this ability in the three-year-period and five-year-period results. One-tenth mutual funds had this ability in the ten-year-period result. Regarding market-timing ablility, a small number of Taiwan mutual funds had positive market-timing ability. No Taiwan mutual funds made inappropriate risk adjustment because of wrong forcast of market movement. Although the absolute amount of U.S. mutual funds and Taiwan mutual funds which have positive market-timing ability was the same, U.S. mutual funds took less proportion of sample relatively. Futhermore, U.S. mutual fund managers seriously forcasted market movement incorrectly. (demonstrated in five-year-period result) Hence,Taiwan mutual fund performed better than U.S. mutual funds with regard to market-timing ability.

Key word:Taiwan, the United States, Mutual Fund, Overall Performance, Selectivity Ability,

Market-Timing Ability

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II. 計畫成果自評

本計畫研究成果第一部分”Generalized Functional Form for Alternative Mutual Fund Returns”將於九十三年底前完成論文寫作，並投稿於 *Journal of Financial Quantitative Analysis* 或 *Journal of Financial Research*。第二部分的學生碩士論文 - ”台灣與美國共同基金績效分析之比較”，將改寫為期刊論文並投稿於 *Journal of Finance Study* 或 *證券市場發展季刊*。