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Life Insurance Companies as Investment Managers: New Implications for Consumers

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This paper examines the attractiveness of the equity portfolios of life insurance companies as an alternative investment to mutual funds. In particular, this study analyzes the risk-adjusted investment performance of the stock portfolios of life insurance companies, attributable to their stock selection and market timing abilities. Using conventional measures of risk-adjusted portfolio performance, we find that life insurance companies exhibit performance similar to mutual funds. The evidence suggests that the life insurance companies, like their mutual fund counterparts, fail to exhibit differential stock selection or market timing abilities that are statistically significant. While the risk-adjusted investment performance of the two investment vehicles is similar, the variable annuity contracts of life insurance companies may offer an edge over mutual funds due to their ability to defer taxes.

I. Introduction

The investment performance of mutual fund portfolios has been the subject of extensive empirical investigation in the finance literature. According to several different studies, the average risk-adjusted performance of mutual funds rarely outperforms the market [see, for example, Sharpe (1966), Jensen (1968), Carlson (1970), and Shawky (1982)]. In addition to the analysis of the risk-adjusted performance, a number of studies have examined the ability of mutual fund managers to time bull and bear market cycles and react accordingly. Ideally, a portfolio manager should increase the systematic risk of the portfolio in anticipation of a market upturn and decrease the beta prior to a market downturn. However, the results of studies undertaken by Treynor and Mazuy (1966), Fabozzi and Francis (1979), Veit and Cheney (1982), Chang and Lewellen (1984), Henriksson (1984) and Feri, Oberlhelman, and Roenfeldt (1984) find no evidence that mutual fund managers are able to successfully time

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market changes and to alter their betas in anticipation of differential market conditions. Consequently, the results of these studies indicate that collectively mutual fund managers are unable to outperform a passive 'buy and hold' investment strategy.

Studies which evaluate the investment performance of institutional investors other than mutual funds are more limited in number. The available evidence from these studies suggests that the performance of non-mutual fund institutional investors is no better than that of mutual funds. For example, Schlarbaum (1974) found that the risk-adjusted performance of 20 property-casualty insurance companies was significantly below the market averages for the 1958-1967 time period. In another study, Bogle and Twardowski (1980) compared the investment performance of four categories of institutional investors—banks, investment advisors, insurance companies, and mutual funds for a variety of time periods ending in 1977. Their results indicated that the mutual funds achieved the best performance, followed by investment advisors, and then insurance companies, with banks achieving the poorest relative results. However, in their study, Bogle and Twardowski only compared the frequency distributions of returns for each category of institutional investors and did not adjust for the level of systematic risk. Their conclusion is thus flawed since financial theory suggests that the evaluation of investment managers should encompass measures of both risk and return.

The purpose of this paper is to provide evidence regarding the risk-adjusted investment performance of life insurance companies and to examine whether their investment performance is materially different from that of mutual funds. Historically, common stocks have been a small percentage of the total assets held by this group of investors. Because life insurance policies contain contractual guarantees for specified dollar amounts, bonds, rather than stocks, have been a major investment medium for these firms. Moreover, in the past, there existed legal provisions which limited investments in common stock on the part of life insurance companies. However, legislation in most states now permits life insurance companies to maintain separate investment accounts for a given pension plan or group of plans. These plans maintain their assets in an account separate from the company's other assets. Separate accounts are allowed a greater latitude in making equity investments than insurance company investments in general.

In addition to examining the risk-adjusted performance of this category of institutional investor in the context of Jensen's Abnormal Performance Index, this study will also consider whether life insurance companies exhibit differential stock selection or market timing abilities in bull and bear markets. Accordingly, this study will make a contribution to the finance literature in two primary ways. First, in contrast to Schlarbaum's study which analyzed property-casualty insurance companies, this analysis will examine the investment performance of life insurance companies.[1] Second, this will be the first study

to provide evidence regarding the macro-market timing abilities of a category of institutional investors other than mutual funds by comparing the systematic risk coefficient in bull and bear markets. These results, considered in conjunction with the tax deferral aspects of the life insurance company investments, will determine the competitiveness of these investment vehicles vis-à-vis mutual funds.

The results of this study suggest that the investment performance of life insurance companies is similar to mutual funds on a risk-adjusted basis, assuming comparable tax treatment. On average, the equity funds of life insurance companies do not appear to display significantly positive stock selection abilities. Moreover, we do not find statistically significant differentials in market timing abilities in bull and bear markets. However, the evidence also suggests that the life insurance companies do not significantly underperform the market averages either, which is in contrast to previous findings for property-casualty companies. Thus, the findings in this paper suggest that life insurance company products should become more competitive with mutual funds in the future given the superiority of separate accounts from a tax perspective.

The remainder of this paper is organized as follows. Section II provides a discussion of tax advantages and institutional characteristics of life insurance companies' variable annuity contracts. Section III discusses the statistical techniques and empirical models used to test for stock selection and market timing abilities, and describes the data used in this study. Section IV presents the empirical results of these models. Finally, Section V provides a summary and major conclusions.

II. Tax Advantages and Institutional Characteristics of Life Insurance Company Funds

As noted above, separate accounts are the funding vehicles for life insurance companies' equity oriented variable annuity contracts. The separate account for a variable annuity is a unit investment trust that invests at asset values in the shares of a particular equity portfolio. Both mutual funds and variable annuities provide professional management of a securities portfolio. Both charge the investor for the costs of investment management and administration. Like the majority of mutual funds, most variable annuities also levy a sales charge.

The tax consequences of the two investment vehicles are quite different, however. Unlike mutual funds, variable annuities do not act as conduits. Congress enables investors to invest in the annuity contracts of life insurance companies without having to pay taxes on the dividends and capital gains until the money is withdrawn. Earnings thus accumulate during the life of the annuity on a taxed deferred basis. This arrangement differs from investment in non-

tax qualified mutual funds, where any gain is taxed in the year it is earned, even if the gain is reinvested.[2] On the other hand, the gain in the value of the annuitant's account is not taxed as ordinary income until the payout period.

Other characteristics of the variable annuity contracts may, however, partially offset the tax advantages. The liquidity of the contracts is poor since IRS penalties and insurance company surrender charges are imposed for early withdrawals. The IRS imposes a 10% penalty charge on any withdrawals prior to age 59½. In addition, surrender charges initially can total as much as 10% of the investment, declining to zero usually through the fifth or sixth year of the contract. While variable annuities have high expenses—typically 2% of assets versus 1% for mutual funds—the difference in expenses relates to "mortality risk," the possibility that the annuitant lives beyond what the actuarial charts anticipated.

Overall, the aforementioned tax and institutional characteristics appear to favor life insurance annuity contracts vis--vis mutual funds. As a result, the growth in variable annuity contracts offered by life insurance companies has been substantial. At year end 1988, 71 insurance companies were offering 391 different investment portfolios. The assets invested in variable annuity separate accounts totaled nearly $26 billion at year end 1988. This compares with 38 insurance companies offering 66 different investment accounts having total assets of $2.4 billion at year end 1978.

III. Market Performance: Methodology and Data

In a seminal paper, Jensen (1968) used the framework of the Capital Asset Pricing Model to investigate the investment performance of mutual funds over the 1945-1964 period. In this work, Jensen developed the Abnormal Performance Index (α), which represents the additional return earned on a portfolio after adjusting for systematic risk. The abnormal performance index is estimated by regressing the excess returns of the portfolio on the excess returns of the market[3]:

$$(R_{p,t} - R_{f,t}) = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + \epsilon_t \tag{1}$$

where $R_{p,t}$ the return on a given portfolio at time t; $R_{f,t}$ is the risk free rate of return at time t; $R_{m,t}$ is the average return on the market portfolio at time t; β_p is the beta coefficient measuring the covariance of portfolio returns with market returns; and ϵ_t is the random error term (with usual properties). A statistically significant positive value for α_p can be viewed as evidence of a superior risk-adjusted performance, whereas a significant negative value is indicative of inferior risk-adjusted performance. Furthermore, the coefficient of determination (R^2) from the regression equation provides a measure of the diversification of the portfolio.

Fama (1972) has noted that the performance of mutual funds depends upon the ability of fund managers in two areas: (1) selectivity, i.e., selecting individual securities and (2) market timing. Jensen's measure as outlined in Equation 1, however, ignores the possibility of market timing activity since β_p is assumed to be stable over time.[4] Therefore, this study also employs a model developed by Fabozzi and Francis (1979) which incorporates both micro forecasting (i.e., selectivity) and macro-market timing abilities.

To test whether an insurance company portfolio's alpha intercept and/or beta terms differ significantly during bull and bear market periods, we employ the following regression equation[5]:

$$(R_{p,t} - R_{f,t}) = \alpha_p + \alpha_p' D_t + \beta_p(R_{m,t} - R_{f,t}) + \beta_p'[D_t \cdot (R_{m,t} - R_{f,t})] + \epsilon_t \quad (2)$$

where D_t is a dummy variable which is unity if the period t is a bull market and zero otherwise. The coefficient α_p' is a measure of the differential abnormal return on the portfolio due to the manager's security selection ability, whereas β_p' provides a measure of the differential level of systematic risk in bull versus bear markets.[6] To determine if the alpha and beta parameters are equal in bull and bear markets, we examine whether the corresponding differential coefficients (α_p' and β_p') are significantly different from zero.

Although the coefficients from the least squares (OLS) estimation of Equation 2 provide consistent parameter estimates, there may be a problem with heteroscedasticity in the error term (ϵ_t) which causes the parameter estimates to be inefficient. Therefore, we use the weighted least squares (WLS) regression analysis, as suggested by Henriksson (1984), to correct for heteroscedasticity.[7] Since the 40 insurance company funds used in this study are certainly not independent of one another, we also employ a seemingly unrelated regression (SUR) model to test the market timing and stock selection ability for the sample as a whole. However, since the explanatory variables in all the 40 regressions, under any one specification, are the same, the WLS results are identical with SUR estimates.[8] Thus, we refer only to WLS when reporting our results.

Two different measures of bull and bear markets are employed in the empirical tests. The first is *Forbes* magazine's definition of bull and bear markets which is based on general market trends. The second measure simply categorizes any month in which the market return is positive as a bull market and any month in which the market return is less than or equal to zero as a bear market.

The sample used in this study consists of 40 equity-oriented investment funds managed by life insurance companies with complete monthly return data for the 11-year period from October 1974 through September 1984. The specific funds included in the sample are displayed in Appendix A. The returns for each

insurance company portfolio are obtained from Computer Directions Advisors (CDA), and include both dividend income and capital appreciation. We confine ourselves to the 1974-1984 period as the data for the more recent period are not readily available from CDA for research purposes. The value-weighted Standard & Poor's 500 stock index is employed as the proxy for the market portfolio. The yields on Treasury bills having approximately one month to maturity are obtained from Ibbotson Associates (1986) and these serve as the measure of the risk-free rate of return.

IV. Market Performance: Empirical Results

Initially, we estimate the regression specification used by Jensen (1968):

$$(R_{p,t} - R_{f,t}) = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + \epsilon_t \quad (1)$$

which ignores the possibility of market timing activity and does not distinguish between bull and bear markets. The results using Equation 1 are summarized in Table 1. Although α_p is, on average, positive, it is statistically insignificant for 30 out of the 40 insurance company funds at the 5% level of significance. Moreover, only six of the portfolios have a statistically significant positive α_p at the 95% level of confidence—four funds are significantly negative at this level of confidence. At the 99% level of confidence, the number of funds with a statistically significant positive α_p drops to three, and one fund remains significantly negative. Therefore, the results provide little evidence of a superior risk-adjusted performance by the insurance companies' portfolio managers when market timing is ignored. However, the results suggest that life insurance companies offer superior investment performance as compared to property-casualty insurance companies since Schlarbaum (1974) found that the latter group significantly underperformed the market averages over the 1958-1967 period.

The average β_p for the life insurance companies' portfolios is .9138, which indicates that the insurance companies undertake less systematic risk than the market as a whole. However, this figure is higher than the beta coefficient of .8013 found by Schlarbaum for property-casualty companies over the 1958-1967 time period. This suggests that life insurance companies are less risk-averse than property-casualty companies. The R^2 of .7735 suggests that the life insurance companies' portfolios are well diversified.

As indicated earlier, the above analysis ignores the market timing activity undertaken by investment managers and fails to distinguish between bull and bear markets. To examine the separate contributions from micro stock selection and macro market timing, the regression equation specified in Equation 2 is estimated.

TABLE 1.
Regression Results Without Using Bull-Bear Dummies
(1974:10-1984:9)
$R_{p,t} - R_{f,t} = \alpha_p + \beta_p(R_{m,t} - R_{f,t}) + \epsilon_t$

	Estimates with heteroscedasticity correction (WLS)	
Parameter	*Mean (SDD)*	*Range (Min, Max)*
α_p	.0381 (.1478)	(-.4960, .4196)
β_p	.9138 (.0448)	(.6225, 1.242)
Adj R^2	.7735	(.5135, .9179)
Test criterion	*Number of funds:*	
Reject $\alpha_p = 0$ at 5%	6($\alpha_p > 0$)	4($\alpha_p < 0$)
Reject $\alpha_p = 0$ at 1%	3($\alpha_p > 0$)	1($\alpha_p < 0$)
$\alpha_p > 0$	23	
$\beta_p > 1$	11	

Using *Forbes'* definition of bull and bear markets, the results for Equation 2 based on WLS are displayed in Table 2. Twenty-six of the insurance companies had a positive alpha differential. However, the alpha differential was significantly positive for only four of the insurance companies at the 95% level of confidence. Moreover, none of the insurance company portfolios exhibited a statistically significant alpha differential at the 99% confidence level. Thus, the stock selection abilities of the portfolio managers do not appear to have been materially different in bull versus bear markets.

Using *Forbes'* definition, twenty of the portfolios had a positive beta differential. Only one insurance company had a statistically significant increase and one had statistically significant decrease in beta at the 95% confidence level. Thus, the results based on *Forbes'* definition do not provide evidence for the hypothesis that insurance company portfolio managers are able to successfully alter their levels of systematic risk in anticipation of differential market conditions.

The results using the second definition, in which a positive return on the market is classified as a bull market and a negative return a bear market, are displayed in Table 3. The alpha differential is significantly positive for nine portfolios at the 95% level of confidence. However, only three of the portfolios display a statistically significant alpha differential at the 99% confidence level. Thus, the results provide only a weak support for differential stock selection abilities in bull versus bear markets based upon the above definition of market conditions.

Using the second definition, a positive beta differential was found for twenty-eight of the portfolios. However, only one of the insurance companies

TABLE 2.
Regression Results Using Bull-Bear Dummies Based on Forbes' Definition of Bull Market (General Market Trends Determining Bull/Bear Market) (1974:10-1984:9)

$$R_{p,t} - R_{f,t} = \alpha_p + \alpha_p' D_t + \beta_p(R_{m,t} - R_{f,t}) + \epsilon_p'[D_t \cdot (R_{m,t} - R_{f,t})]$$

	Estimates with heteroscedasticity correction (WLS)	
Test characteristics	*Mean (SD)*	*Range (Min, Max)*
α_p	-.0423 (.2465)	(-.7677, .3954)
α_p'	.1421 (.3212)	(-.3992, .8836)
β_p	.9024 (.0858)	(.6179, 1.353)
β_p'	.0070 (.1025)	(-.2343, .2801)
Adj R^2	.7757	(.5099, .9208)
	Number of funds:	
Reject $\alpha_p' = 0$ at 10%	$7(\alpha_p' > 0)$	$0(\alpha_p' < 0)$
Reject $\alpha_p' =$ at 5%	$4(\alpha_p' > 0)$	$0(\alpha_p' < 0)$
Reject $\alpha_p' =$ at 1%	$0(\alpha_p' > 0)$	$0(\alpha_p' < 0)$
Reject $\beta_p' =$ at 10%	$3(\beta_p' > 0)$	$4(\beta_p' < 0)$
Reject $\beta_p' =$ at 5%	$1(\beta_p' > 0)$	$1(\beta_p' < 0)$
Reject $\beta_p' =$ at 1%	$0(\beta_p' > 0)$	$0(\beta_p' < 0)$
$\alpha_p' > 0$	26	
$\beta_p' > 0$	20	

exhibited a significantly positive increase in beta during bull market periods at both the 95% and 99% confidence levels. Therefore, the results do not suggest that insurance company managers are able to successfully time the market.

While the results are sensitive to the definition of bull and bear market conditions, we find some support for the hypothesis that life insurance companies exhibit differential stock selection abilities, but not market timing abilities in bull versus bear markets.[9] Thus, the results reported in this paper provide further support for the efficient market hypothesis and confirm the efficacy of a passive 'buy and hold' investment strategy for another category of institutional investors.

Taken as a whole, the evidence presented in this paper is consistent with the findings of Fabozzi and Francis (1979) for mutual fund portfolios. This suggests that life insurance company portfolios are competitive with mutual funds on the basis of risk-adjusted measures of portfolio performance, *assuming comparable tax treatment* for the two investment vehicles. However, as noted in Section II, the variable annuity contracts of life insurance companies permit individual investors to defer the taxation of dividends and capital gains until the payout period. Therefore, on an *after-tax basis*, the returns on the life

TABLE 3.
Regression Results Using Bull-Bear Dummies Based on Market Movements
(Bull: $R_{m,t} > 0$, Bear: $R_{m,t} \leq 0$)
(1974:10-1984:9)

$$R_{p,t} - R_{f,t} = \alpha_p + \alpha_p' D_t + \beta_p (R_{m,t} - R_{f,t}) + \epsilon_p' [D_t \cdot (R_{m,t} - R_{f,t})] + \epsilon_t$$

	Estimates with heteroscedasticity correction (WLS)	
Test characteristics	*Mean (SD)*	*Range (Min, Max)*
α_p	-.1925 (.3550)	(-1.986, .8853)
α_p'	.2770 (.4358)	(-.7960, 2.399)
β_p	.8511 (.0995)	(.2709, 1.271)
β_p'	.0654 (.1312)	(-.3785, .2882)
Adj R^2	.7722	(.5372, .9180)
	Number of funds:	
Reject $\alpha_p' = 0$ at 10%	10($\alpha_p' > 0$)	0($\alpha_p' < 0$)
Reject $\alpha_p' =$ at 5%	9($\alpha_p' > 0$)	0($\alpha_p' < 0$)
Reject $\alpha_p' =$ at 1%	3($\alpha_p' > 0$)	0($\alpha_p' < 0$)
Reject $\beta_p' =$ at 10%	3($\beta_p' > 0$)	1($\beta_p' < 0$)
Reject $\beta_p' =$ at 5%	1($\beta_p' > 0$)	1($\beta_p' < 0$)
Reject $\beta_p' =$ at 1%	1($\beta_p' > 0$)	0($\beta_p' < 0$)
$\alpha_p' > 0$	25	
$\beta_p' > 0$	28	

insurance companies' equity portfolios appear to be favorable in comparison to those achieved on mutual funds if the contract holders do not withdraw funds prior to age 59½.

IV. Summary and Conclusions

This paper provides evidence regarding the risk-adjusted investment performance of a previously unexamined category of institutional investors—life insurance companies. Using Jensen's measure, the results provide little evidence of superior risk-adjusted performance by the life insurance companies over the 1974-1984 period. However, in contrast to property-casualty companies, life insurance companies do not significantly underperform the market averages either.

Using a dummy variable regression model developed by Fabozzi and Francis, this paper also conducts a joint test for the presence of differential stock selection and market timing abilities on the part of the life insurance funds during bull and bear market periods. In general, the findings indicate that the stock selection and market timing abilities of life insurance companies do not differ during bull and bear markets. Thus, the findings indicate that life

insurance companies are unable to outperform a passive 'buy and hold' investment strategy.

These results are similar to those obtained in previous studies of mutual fund portfolios. Thus, on the basis of risk-adjusted investment performance alone, both life insurance and mutual fund portfolios yield similar returns. However, as life insurance contracts offer the opportunity for individual investors to defer taxes, these investment vehicles may offer an edge over mutual funds when performance is considered on an after-tax basis.

APPENDIX A
SAMPLE OF LIFE INSURANCE COMPANY INVESTMENT FUNDS

Company Name	*Description*
Aetna Life Insurance	Separate Acc. 1
Aetna Life Insurance	Separate Acc. 2
Bankers Life Co.	Separate Acc. A Fund
Confederation Life	American Common Stock
Connecticut General Life	Separate Acc. 3
Connecticut General Life	Separate Acc. A
Connecticut Mutual Life CM	Equity (SA-C)
First Variable Life	Fund A
First Variable Life	Fund B
General American Life	Verco Fund
Guardian Insur. & Annuity	Variable Acc. 1
Home Life	Equity Fund
Jefferson Std. Life	Sep. Acc. A-Growth Div.
Life Insur. Co. Virginia	Separate Acc. A
Maccabees Mutual Life	Separate A Fund
Massachusetts Mutual	Separate Inv. Acc. A
Metropolitan Life	Separate Acc. 1
Metropolitan Life	Separate Acc. 5
Minnesota Mutual Life	Separate Acc. A
Minnesota Mutual Life	Separate Acc. B
Minnesota Mutual Life	Separate Acc. C
Mutual Benefit Life	Variable Acc. 1
Mutual of New York	Pooled Acc. 2 Fund
New England Mutual Life	Sep. Equity Securities
New England Mutual Life	Sep. Capital Growth
North American Life	Nalco Inv. Funds U.S.
Pacific Mutual Life	Equity Sep. Acc. 1
Phoenix Mutual Life	Comb. Sep. Acc. A
Pilot Life	Sep. Acc. A-Growth Div.

Company Name	*Description*
Provident Mutual Life	Separate Acc. 1 Fund
Prudential Insur.	VCA-5
Prudential Insur.	VCA-9
Security Benefit Life	Series E-1
Security Benefit Life	Series I-1
State Mutual Amer.	Sep. Inv. Acc. A
Travelers Insur.	Sep. Acc. A
Travelers Insur.	Sep. Acc. B
Travelers Insur.	Sep. Acc. C
Union Central Life	Pooled Equity Sep. Acc.
United of Omaha	Var. Fund-A

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Notes

1. Note that because the risks insured by life insurance companies are more predictable than those insured by property and casualty insurance companies, the investment strategies undertaken by the two groups of insurance companies may differ. In particular, life insurance companies have lower liquidity requirements and a greater tolerance for loss of principal than property-casualty companies.
2. This is true for individual investors. However, institutional investors, such as pension plans, are not subject to taxation on the returns on their invested assets.
3. It may be noted that composite measures of portfolio performance based on the Capital Asset Pricing Model are not without problems. Roll (1978) has argued that the theoretical market portfolio should include other risky assets in addition to common stocks. Thus, the choice of benchmark indices, such as the S&P 500, may lead to ambiguous results regarding performance measurement. Stambaugh (1982), however, has indicated that the empirical findings of tests of the CAPM do not appear to be very sensitive to the composition of the market portfolio.
4. The portfolio beta may change even if the manager does not change the risk of the portfolio. First, the betas of individual securities may themselves not be intertemporally stable. Second, changes in the relative market value weights of the individual securities will in turn lead to a change in the portfolio beta.
5. We use evidence from bull and bear markets to assess market timing abilities on the part of investment managers. An alternative approach to examining market timing abilities is discussed in Henriksson (1984).
6. In contrast to Fabozzi and Francis (1979), we estimate Equation 2 in risk-premium form. The results are, however, unlikely to be materially different from those based on the specification employed by Fabozzi and Francis.
7. See Henriksson (1984) for details of the methodology.
8. See Johnston's *Econometrics Methods* for a discussion of conditions under which WLS and SUR results become identical.

9. Both Kon (1983) and Henriksson (1984) find that there is negative correlation between measures of security selection and market timing (of mutual funds). Jagannathan and Korjaczyk (1986) proposed that such a negative correlation could spuriously arise as a result of investing in options or levered securities. However, our sample of life insurance companies did not exhibit this negative correlation.

REFERENCES

Bogle, J., and J. Twardowski. 1980. "Institutional Investment Performance Compared," *Financial Analysts Journal*, 36(1): 33-41.

Carlson, R. 1977. "Aggregate Performance of Mutual Funds 1948-1967," *Journal of Financial and Quantitative Analysis*, 5(1): 1-32.

Chang, E., and W. Lewellen. 1984. "Market Timing and Mutual Fund Performance, *Journal of Business*, 57(1): 57-72.

Fabozzi, F., and J.C. Francis. 1979. "Mutual Fund Systematic Risk for Bull and Bear Markets: An Empirical Investigation, *Journal of Finance*, 34(5): 1243-1250.

Fama, E. 1972. "Components of Investment Performance," *Journal of Finance*, 27(3): 551-567.

Ferri, M., H.D. Oberhelman, and R. Roenfeldt. 1984. "Market Timing and Mutual Fund Portfolio Composition," *Journal of Financial Research*, 7(2): 143-150.

Francis, J.C. 1988. *Management of Investments*, 2nd edition. New York: McGraw Hill.

Henriksson, R. 1984 "Market Timing and Mutual Fund Performance: An Empirical Investigation," *Journal of Business*, 57(1) Part 1: 73-96.

Ibbotson Associates. 1986. *Stocks, Notes, Bonds and Bills*. Chicago.

Jagannathan, R., and R.A. Korajczyk. 1986. "Assessing the Market Timing Performance of Managed Portfolios," *Journal of Business*, 59(2) Part 1: 217-235.

Jensen, M. 1968. "The Performance of Mutual Funds in the Period 1945-1964," *Journal of Finance*, 23(2): 389-416.

Johnston, J. *Econometrics Methods*. New York: McGraw-Hill.

Kon, S.J. 1983. "The Market-Timing Performance of Mutual Fund Managers," *Journal of Business*, 56(3): 323-347.

Life Insurance Fact Book. 1984. Washington, DC: American Council of Life Insurance.

Roll, R. 1978. "Ambiguity when Performance is Measured by the Securities Market Line," *Journal of Finance*, 33(4): 1051-1069.

Schlarbaum, G. 1974. "The Investment Performance of the Common Stock Portfolios of Property-Liability Insurance Companies," *Journal of Financial and Quantitative Analysis*, 9(1): 89-106.

Sharpe, W. 1966. "Mutual Fund Performance," *Journal of Business*, 39(1) Part 2: 119-138.

Shawky, H. 1982. "An Update on Mutual Funds: Better Grades," *Journal of Portfolio Management*, 8(2): 29-34.

Stambaugh, R. 1982. "On the Exclusion of Assets from Tests of the Two Parameter Model: A Sensitivity Analysis," *Journal of Financial Economics*, 10(3): 237-268.

Treynor, J., and K. Mazuy. 1966. "Can Mutual Funds Outguess the Market?" *Harvard Business Review*," 43(1): 131-136.

Veit, E.T., and J. Cheney. 1982. "Are Mutual Funds Market Timers?" *Journal of Portfolio Management*, 8(2): 35-42.