HOW PERSISTENT HAS BEEN THE CANADIAN EQUITY FUNDS' PERFORMANCE? SOME EMPIRICAL EVIDENCE

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ABSTRACT

The objective of this paper is to test claims of consistently superior performance by many Canadian equity fund managers. A contingency table analysis is carried out using 15-year annual data from 1981 to 1995. There is no evidence to support the claims of persistence. These findings are consistent with the efficient market hypothesis. Since prices, at all times, reflect the intrinsic values of all underlying assets, no agent can outperform the market or each other on a consistent basis. The main implication is that mutual funds should focus on competing on the basis of quality of service rather than stock-picking and market-timing ability of the management. Richer fund selection menu, low management expenses, and enhanced tax benefits should also be important considerations. These findings also testify the popularity of index-based funds.

Key Words: Persistence, Equity Funds, Empirical Evidence

JEL Classifications: C12, C20, G20

I. INTRODUCTION

There has been a phenomenal growth in the popularity of mutual funds as a vehicle of investment in the last several decades. Many investors, who have no interest in an active participation, can benefit from investing in these funds. Moreover, mutual funds offer investors a convenient means of diversifying their investment. By investing in stocks, bonds, and various money market instruments, investors can lower the risk while maximizing returns. This is important as different asset groups and sector-specific funds, such as metals and minerals, energy, and technology, etc., tend to perform differently over different time horizons and cyclical phases. Similarly, investors can participate in various markets around the world by selecting funds which specialize in regional funds. The benefit of this kind of geographic diversification stems from the fact that different markets tend to perform differently because world economies are not completely synchronized in terms of business cycle.

The benefits of investing through mutual funds are well-recognized, as evidenced by their phenomenal growth. Traditionally, mutual funds have represented actively managed funds. But the proliferation of various types of indexed funds is a relatively recent phenomenon. Their popularity seems to fly in the face of claims of superior performance by managed fund managers. Ansari (1996), using 15-year annual data from 1981 to 1995 on 38 Canadian equity

mutual funds, showed that there is no statistically significant difference in their performance. However, that paper did not address the consistency of performance issue, i.e., the claim by many mutual fund managers that their funds have consistently beaten the market over a period of time. The main objective of this paper is to test the claims of consistently superior performance by many active fund managers. Thus, the current paper is an extension of the 1996 paper. In order to draw meaningful conclusions, we have chosen to use the same 15- annual data as used in the 1996 paper. The methodology consists of statistical tests employing contingency table analysis. The results fail to support the claims of consistently superior performance. The rest of the paper is organized as follows. Section two presents a brief discussion of the efficient market hypothesis. In section three we discuss the methodology, data, and the empirical findings. Section four consists of some concluding remarks.

II. THE EFFICIENT MARKET HYPOTHESIS AND CLAIMS OF SUPERIOR PERFORMANCE

One of the most common claims made by many mutual fund managers is that, due to their superior management, they have been able to produce an average rate of return far in excess of their competitors. They go on to claim that they have produced these superior results on a consistent basis, implying persistence in their performance. In this section we address the claim of superior performance in the context of efficient market hypothesis. In the following section, we will empirically test the validity of the claim.

It is worth mentioning that claims of consistently superior performance violate the basic tenets of the efficient market hypothesis.[1] According to the efficient market hypothesis no one can outperform the market on a consistent basis. Since stock prices fully reflect all the relevant information, no one can have more luck than others in picking winners or predicting the market. The theory of the random walk, which represents a version of this efficient market hypothesis, recognizes that neither information gathering nor information processing is a perfect science.[2] Thus, at any given point in time, price may diverge from the intrinsic value of an asset. But because of randomness in the behavior of prices, these deviations will tend to cancel out. Moreover, because information gathering and information processing is not costless, the marginal cost of security analysis will tend to offset its marginal benefit. As a result, no agent can systematically benefit from following any rule or strategy.

In a paper, using a 15-year data on annual returns, Ansari (1996) found no evidence to support the claims of superior performance. The results from a one-factor analysis of variance did not find any significant statistical difference between mean rates of return of the 38 funds included in the study. More interestingly, the test failed to substantiate the claim of superior performance even when the test was run using the single best-performing and the single worst-performing funds. In view of the fact that the best-performing fund had an annual average rate of return of 13.17 per cent compared to the worst-performing fund which had an average annual return of 6.67 per cent, the finding of no significant statistical difference between the mean performances of the two funds appears to be counter intuitive. Why is it that, even when the best-performing fund had an average rate of return twice that of the worst-performing fund, the test failed to reject the null hypotheses of equal mean? The answer lies in the fact that

averages do not take into account the magnitude of the peaks and valleys in their performance. To illustrate this, we consider three hypothetical funds, namely, fund A, fund B, and fund C. Hypothetical annual rates of return and other calculations are shown in Table 1. As the table shows, fund A has a uniform rate of return of 10 per cent. Thus, a $100 investment in this fund would have increased to $133.1 at the end of three years. Fund B has an average annual rate of return of 17 per cent. The value of a $100 investment in this fund would have increased to $132.6. Thus, despite the fact that fund B has an average rate of return which is 70 per cent higher than fund A, there is virtually no difference in the value of investment at the end of the period. This is because, fund B's performance has been highly volatile and uneven. Finally, fund C, which has an average annual rate of return of 15 per cent, has resulted in a net decline in the investment value to $93. Thus, even though fund C has and average annual rate of return which is 50 per cent higher than fund A, it has lost 7 per cent of its original investment. In a nutshell, a fund's average rate of return does not tell the whole story. The magnitude of the peaks and valleys in a fund's performance constitutes the other important part of the story.

Table 1
Rates of return on three hypothetical funds

	Rate of return				
Fund	*Year 1*	*Year 2*	*Year 3*	*Average*	*Value of Investment*
Fund A	10	10	10	10	$133.1
Fund B	50	-35	36	17	$132.6
Fund C	55	-60	50	15	$93.0

III. TEST OF PERSISTENCE: A CONTINGENCY TABLE ANALYSIS

There has emerged a vast literature on the subject of persistence over the years. The results of the empirical tests have been mostly mixed.[3] Difference in methodology, definition of rates of return, and sample periods, are some of the factors, which can explain these diverse results. The objective here is not to critique these studies, but to present results from a simple test of persistence in the Canadian equity mutual funds' performance by using the contingency table approach.

Data

All data used in this study are taken from the survey of mutual funds published in the February 1 issue of the Globe and Mail, Report on Business. These rates represent per centage change in the value of the investment for a one-year period. They are net of management fees, but sales fees or any management fees charged directly to investors are not deducted. Only those funds that satisfy the following three criteria have been included in this study. First, the fund must be specializing in the Canadian equity investment. This is considered essential because performance can vary across markets. Second, funds must have a complete data for the full 15 years period. This is considered essential to address the issue of consistency over two or more periods. Third, only one of the several funds of a given firm has been included. This is because

all funds of a given company are assumed to have the same management style. In all, 38 funds have satisfied these criteria.[4]

Methodology

In order to test significant persistence in funds' performance, we carry out the standard contingency table analysis using the formula,

$$\text{Chi-square} = \sum \frac{(O_i - E_i)^2}{E_i} \qquad \qquad \dots(1)$$

where O_i is the observed frequency and E_i is the expected frequency in each cell. The computed value follows a Chi-square distribution with (r-1) (c-1) degrees of freedom, r and c being number of rows and columns, respectively. The null hypothesis for this test is that winners (losers) in the subsequent period are independent of winners (losers) in the previous period.

For the purpose of testing claims of persistent performance, we divide the entire sample period into sub-periods as follows. First, we divide it into two sub-periods. The first sub-period covers from 1981 to 1988, while the second covers from 1989 to 1995. Second, we have divided the sample period into three sub-periods: 1981-1985, 1986-90, and 1991-95. TSE 300 has been used as the benchmark for defining winners and losers. Thus, funds earning higher rates return than TSE 300 are classified as winners and those with lower returns as losers.

Results

Results of the two period analysis are presented in Table 2. As the table shows, of the 38 funds included in this sample, 25 have come out winners and 13 losers in period one. The pattern clearly has reversed in the second sub-period when only 12 funds have come out winners compared to 26 funds, which have come out losers. Looking at the diagonal numbers, only 6 funds have come out winners in both periods, while 7 funds have come out losers in both periods. The lack of persistence in their performance is apparent from the reversal of the numbers representing winners and losers and the small number of winners in both periods.[5] The critical value of the Chi-square at the five per cent level with one degree of freedom is 3.84. Since the computed value of 1.94 is well within the acceptance region, we cannot reject the null hypothesis of independence.[6] Thus, there is no statistical evidence to support the claims of persistence in performance of the Canadian equity funds. Funds which have done well in period one have

Table 2
Contingency results from sample divided into two sub-periods

		Period 2		
		Winners	*Losers*	*Total*
Period 1:	Winners	6	19	25
		(7.89)	(17.11)	
	Losers	6	7	13
		(4.11)	(8.89)	
	Total	12	26	38

tended to do poorly in period two, while funds which have done poorly in period one have tended to do well in period two.

In order to test the robustness of these results we have repeated the exercise by dividing the sample period into three five-year periods. We have applied a contingency table analyses to test the null hypotheses of statistical independence between period one and two, two and three, and one and three. Results are shown in Table 3. Since the computed value of zero is less than critical value of the Chi-square at the five per cent level with one degree of freedom (3.84), we cannot reject the null hypothesis of independence between period one and two. Similarly, since the computed value of .2 and .9 are well within the acceptance region, the null hypothesis of statistical independence between period two and three and between period one and three also cannot be rejected.[7] To sum, the findings that there is no statistical evidence to support the claims of persistence in performance of the Canadian equity funds are robust to the methods of classifying the sub-periods.

Table 3
Contingency results from sample divided into three sub-periods

A. Period one and two:

		Period 2		
		Winners	*Losers*	*Total*
Period 1:	Winner	13	16	29
		(12.97)	(16.03)	
	Losers	4	5	9
		(4.03)	(4.97)	
	Total	17	21	38

B. Period two and three:

		Period 3		
		Winners	*Losers*	*Total*
Period 2:	Winner	6	11	17
		(5.37)	(11.63)	
	Losers	6	15	21
		(6.63)	(14.37)	
	Total	12	26	38

C. Period one and three:

		Period 3		
		Winners	*Losers*	*Total*
Period 1:	Winner	8	21	29
		(9.16)	(19.84)	
	Losers	4	5	9
		(2.84)	(6.16)	
	Total	12	26	38

IV. CONCLUDING REMARKS

In this paper we attempted to test whether the Canadian equity mutual funds' performance show any evidence of persistence. The test, based on a 15-year data on annual returns, failed to find any evidence of persistence. The findings are robust to the methods of classifying the sub-periods. These results are consistent with the efficient market hypotheses according to which no agent can profit systematically on a consistent basis. This has important implication for both the mutual fund industry and the investors. The practice of claiming superior performance based on the stock-picking and market-timing ability of the management does not seem to be realistic. A more prudent policy should emphasize superior service rather than superior management. Firms should also concentrate on providing richer fund selection, low management expenses, and enhanced tax benefits. Potential investors should also pay more attention to these features rather than to claims of superior management. Finally, these findings seem to bode well for the indexed funds' industry in the future.

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Notes

1. Fama (1970) provides and excellent review of the literature on efficient market hypothesis.

2. Fama (1995) contains an excellent non-technical discussion of the random walks theory.

3. Some of the previous studies which have found persistence include Grinbatt and Titman, (1988); Lehmann and Modest, (1987); Brown and Draper, (1983); Hendricks, Patel, and Zeckhauser, (1993); and Goetzman and Ibbotson, (1994). Those which have failed to establish persistence include Jensen, (1968); Kritzman, (1983); Dunn and Theisen, (1983); Elton, Gruber, and Rentzler, (1990); Krueger and Callaway, (1995); Carhart, (1997); and Droms and Walker, (2001).

4. The sample may suffer from a selection bias because it does not account for those funds which failed to survive either because unsuccessful funds simply disappeared or they were merged with other successful funds.

5. This was also confirmed by a simple correlation analysis of average rates of return on 38 funds between the first period and the second period. The computed correlation coefficient was small (-.06), indicating no statistical significance at any reasonable level.

6. Since the expected frequency is less than five, the requirement of a large sample size is not satisfied, which may undermine the validity of the Chi-square distribution. This also applies to some of the other results presented in Table 3.

7. These results are also confirmed by a simple correlation analysis on average rates of return on 38 funds between period one and two (.30), period one and three (-.07), and period two and three (.13). None of these coefficients were found to be statistically significant.

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