Marmara Üniversitesi
İ.İ.B.F. Dergisi
YIL 2009, CİLT XXVI, SAYI 1

THE RELATIONSHIP BETWEEN EXPENSE RATIO AND NET ASSET VALUE (NAV) RETURN: THE CASE OF TURKISH INVESTMENT COMPANIES

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Abstract

This paper investigates the relationship between expense ratio and net asset value (NAV) return of investment companies in Turkey on a panel data basis. Using the available data of 21 investment companies in the years 2001 and 2002, regression equations are estimated. Results indicate that total expense ratio and net asset value (NAV) are negatively related. Breaking down the total expense ratio into non-advisory expense ratio and advisory expense ratio the relationship is further investigated. We find that net asset value (NAV) return is negatively related with non-advisory expense ratio, while it is positively related with advisory expense ratio. Our results indicate that investment companies whose portfolios are dominated by equity achieve higher net asset value (NAV) return than other investment companies. Another finding is that internally managed investment companies achieve higher net asset value (NAV) return than externally managed investment companies. Estimating the regressions again by excluding six investment companies with extremely high expense ratios results in improved statistical significance of the results.

Key Words: *Investment company, closed-end fund, net asset value (NAV) return, total expense ratio, advisory expense ratio, non-advisory expense ratio*

Özet

Bu makalede, panel veri analizi yardımıyla Türkiye'deki yatırım ortaklıklarının net varlık değeri getirileri ile gider oranları arasındaki ilişki araştırılmaktadır. 21 yatırım ortaklığının 2001 ve 2002 yıllarındaki mevcut verileri kullanılarak regresyon denklemleri

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kurulmuştur. Sonuçlar, toplam gider oranı ile net varlık değerinin birbirleriyle negatif olarak ilişkili olduğunu göstermektedir. Bu makalede ayrıca, toplam gider oranı danışmanlık dışı ve danışmanlık gider oranı şeklinde ayrıma tabi tutularak, bunların net varlık değeri ile aralarındaki ilişki de araştırılmaktadır. Çalışmada net varlık değeri getirisinin danışmanlık dışı gider oranıyla arasında negatif ilişki olduğu buna karşılık danışmanlık gider oranıyla arasında ise pozitif ilişki olduğu bulunmuştur. Sonuçlar, hisse senedi ağırlıklı portföylere sahip yatırım ortaklıklarının diğer yatırım ortaklıklarından daha yüksek net varlık değeri getirisi elde ettiklerini göstermektedir. Elde edilen diğer bir bulgu da içten yönetilen yatırım ortaklıklarının dıştan yönetilen (portföy yönetim şirketi veya yatırım danışmanlığı şirketi kullanan) yatırım ortaklıklarına kıyasla daha yüksek net varlık değeri getirisi sağladıklarıdır. Aşırı derecede yüksek gider oranlarına sahip yatırım ortaklıkları çıkarılarak regresyon denklemlerinin yeniden kuruduğundaı, sonuçların istatistiksel olarak daha anlamlı hale geldiği görülmektedir..

Anahtar Kelimeler: *Yatırım ortaklığı, net varlık değeri getirisi, toplam gider oranı, danışmanlık gider oranı, danışmanlık dışı gider oranı*

1. Introduction

The fact that expenses affect fund returns has attracted the attention of researchers, and studies on fund's expense structures have recently become popular. Since the investor of a fund receives a return after the expenses of the fund are deducted from the fund income, a fund's expense ratio is an important determinant of how well the fund performs. Therefore, a fund's expense ratio should be regarded as a criterion by the investor for choosing a fund to invest in. Money magazine recommended that a closed-end fund with a high expense ratio should not be invested in[3].

There are two main types of funds that invest in the instruments of other institutions and manage these investments for profit, namely open-end funds and closed-end funds. An open-end fund sells its shares directly to the investor and redeems them at net asset value in the event that an investor wishes to sell them. On the other hand, the shares of a closed-end fund are not redeemed by the fund at net asset value but they are traded in a secondary market where the prices are determined by supply and demand. Holder of a closed-end fund's shares can sell them at a price that occur below or above net asset value of the fund. The shares of an open-end fund are in the form of "certificate of participation", which gives its holder contractual rights, while the shares of a closed-end fund are in the form of "stock", which gives its holder ownership (shareholder) rights. The term "closed-end fund" is used for closed-end investment company in the U.S.A, while the term "investment trust" is used for it in the U.K. Since the Turkish equivalent of the term includes the word "incorporated" in Turkish, we are inclined to use the term "closed-end investment company" for Turkey in this study. However, it should also be noted that Capital Markets Board of Turkey uses the term "Investment Trust" for closed-end investment companies on the English Language version of its web site. Capital Markets Board classifies closed-end investment companies as "securities investment trusts", "real

[3] D. K. Malhotra and R. W. McLeod, "Closed-End Fund Expenses and Investment Selection", **The Financial Review**, 41, 2000, p.86.

estate investment trusts" and "venture capital investment trusts" on the board's web site. In Turkey mutual funds are examples of open-end funds, while investment trusts are closed-end investment companies whose stocks are traded on İstanbul Stock Exchange (ISE). In this study, we use the term "investment company" to represent securities investment trust hereafter. While there are studies on closed-end funds that include the funds in Turkey, they seem to include Turkey as one of the emerging markets or part of a multi-country study. On the other hand, although a study[4] solely on Turkish closed-end funds exists, it does dot cover the relationship between expense ratio and fund performance. Within this respect, our study differs from other studies on Turkish closed-end funds. This study examines the relationship between the expense ratio and performance, measured by net asset value return of "investment companies" in Turkey. By breaking the expense ratio into two components (advisory expense ratio and non-advisory expense ratio), the relationship is further analyzed. Whether the relationship differs depending on the portfolio management style (internally managed versus externally managed) and the dominant type of financial instrument in the portfolio of the investment company is also investigated.

2. Brief Information on Investment Companies in Turkey

Although appearance of the first investment company in Turkey dates back to 1973, when Eczacıbaşı Investment Holding was established, Capital Markets Board made the arrangements for the establishment of investment companies in 1992. Following an ordinance by the Capital Market Boards of Turkey on July 31 1992, the first investment company in Turkey was founded in March 1993. Due to recurring financial crises in the 1990s (1994 and 1999) and the crisis of February 2001 the progress of investment companies in Turkey has been considerably slowed down. As seen in Table 1, the number of investment companies in Turkey has remarkably stable became in the late 1990s and the early 2000s. The number increases considerably in the most recent years. The increase in the total net asset value of investment companies seems to have lost pace in the fist three years of 2000s due the effects of financial crises. However, the year 2003 marks the start of a considerable rising period which has been continuing so far. The number of investment companies and the total net asset value are still not sufficient. Nevertheless, the sector should be expected to develop as The Turkish Economy continues to grow with remarkable growth rates in a stable way and the investment attitudes and customs of Turks changes towards developing capital markets.

[4] N. Güner and Z. Önder, "Investor Sentiment and Closed-End Fund Puzzle in An Emerging Market", **Global Finance Conference**, **Proceedings**, 2001.

Table 1: Number of Investment Companies and Net Asset Values By Year

Year	Number of İnvestment companies as of December	Total Net Asset Value (NAV) in Million Dollars
1998	17	66
1999	21	160
2000	21	117
2001	22	89
2002	22	85
2003	22	160
2004	23	234
2005	26	364
2006	30	382
2007 (March)	31	419

Source: Capital Markets Board of Turkey, http://www.spk.gov.tr/HaberDuyuru/aylikbulten/2007/Mart/aylik_istatistik_bulteni_2007_Mart.xls#'V-4-3'!A1 (May 10, 2007).

3. Literature on Closed-End Fund Performance

The main differences between closed-end fund's and open-end fund's are about the management style and pricing of the shares. Investors of an open-end fund's refer to the fund's when they want to sell the shares that they own. An open-end fund's shares are redeemed by the fund's itself[5]. Therefore, open-end funds must maintain a certain level of cash and liquidity of underlying assets able to meet the redemption demands of the investors which are uncertain due to changing market conditions. The shares of closed-end funds are traded on the secondary market. Since they are not obliged to fulfill redemption demands of the investors, closed-end funds are not engaged in liquidity as much as open-end funds. Another difference is the determination of price of the shares. Prices of shares (stocks) of closed-end funds are determined by supply and demand in the secondary market and therefore usually deviate from net asset value. Prices of shares (certificates of participation) of open-end funds are determined by net asset value. Net asset value (NAV) of a fund is defined as the market value of the securities less the liabilities, all divided by the number of shares outstanding[6]. The shares (stocks) of closed-end funds trade at a discount or premium to the net asset value. The mismatch between the share price and net asset value of closed-end funds have been studied as an anomaly in the finance literature. The deviation of the share price of a closed-end fund usually takes the form of a discount and therefore studies on closed-end funds are clustered around the discount issue. The widespread discount in the share price of closed-end funds is attributed to various reasons such as miscalculation of NAV, agency costs, tax timing, segmented markets and behavior of individual investors. Although many hypotheses are suggested to explain the discount in closed-end investment fund's and no consensus seems to be reached in the literature.

[5] M. K. Bers and J. Madura, "The Performance Persistence of Closed-End Funds", **The Financial Review**, 35, 2000, p.36.
[6] E. Dimson and C. M. Kozerski, "Closed-End Funds. A Survey", **Financial Markets, Institutions and Instruments**, 8 (2), 1999, p.1.

Due to the differences between open-end funds and closed-end-funds, closed-end funds are usually thought to display more performance persistence than open-end funds. Bers and Madura (2000a)[7] attribute this persistence potential of closed-end funds to four reasons. First, the portfolios managed by closed-end fund managers are much more stable than those managed by open-end fund managers. Second, there is a lower need of closed-end fund managers to liquidate securities for redemption purposes than the open-end fund managers. Third, by forming portfolios consisting largely of illiquid securities, closed-end fund managers can achieve performance persistence. Fourth, the fact that closed-end fund managers may not attempt to increase the size of their portfolio as open-end fund managers do, they can focus on long-term horizon and display more performance persistence than open-end fund managers who are under the pressure of achieving short term performance. In their study covering the period of 1976-1996 Bers and Madura (2000a)[8] find that, in terms of net asset value returns, closed-end funds display a larger degree of performance persistence than open-end funds. In another study where the likely relationship between performance persistence and fund specific factors like size, goal, management fees, turnover are examined, Bers and Madura (2000b)[9] find that, in terms of both NAV return and share price return, closed-end funds with lower expense ratios have more performance persistence than that of closed-end funds with higher expense ratios. Using a large sample of UK-listed closed-end funds Gemmill and Thomas (2006)[10] examines whether corporate governance, measured by the size/composition of the board and pattern of blockholdings, has an impact on fund's management fees and the discount, both of which drive the performance of the fund. After allowing for the differences in sectors invested, such as European securities, Japanese securities, small company securities, they find that closed-end funds with higher management fees tend to have worse performance than the closed-end funds with lower management fees.

Majority of the closed-end funds manage their investments externally. An externally managed fund pays the investment management company or financial advisor a fee for the service received on security selection, portfolio management, etc. Due to lower expenses, resulting from not having an outside investment advisory company, internally managed closed-end funds may be expected to achieve superior investment performance. Allen and French (2006)[11] find that internally managed closed-end funds display superior performance than externally managed closed-end funds for investment horizons of 10 years or more. In another study Akhigbe and Madura (2001)[12] focus on closed-funds that placed seasoned equity offerings between 1983 and 1996 and find that on the basis of announcement period cumulative abnormal returns (CAR), there is an negative relationship

[7] Bers and Madura, **op. cit.**, p.36.
[8] **Ibid.**, p.45.
[9] M. K. Bers and J. Madura, "Why Does Performance Persistence Vary Among Closed-End Funds?", **Journal of Financial Services Research**, 17 (2), 2000, p.143.
[10] G. Gemmill and D. C. Thomas, "Impact of Corporate Governance on Closed-end Funds', **European Financial Management**, 12 (5), 2006, pp.725-733.
[11] W. D. Allen and D.W. French, "The Performance of Closed-End Investment Companies: Internal vs. External Management", **FMA Annual Meeting**, Salt Lake City, Working paper, October 2006, pp.13-15.
[12] A. Akhigbe and J. Madura, "Motivation and Performance of Seasoned Offerings by Closed-End Funds, **The Financial Review**, 38, 2001, p.104,113.

between the expense ratio and share price return. In other words their findings indicate that the market reaction to seasoned equity offerings of closed-end funds with high expense ratios is more negative than the reaction to closed-end funds with low ratios. On the other hand the findings of another study examining the effect of fund manager change in closed-end funds on the return of the fund, indicate a relationship in the opposite direction. Using a final sample of 102 closed-end funds, based on announcement period cumulative abnormal returns, Rowe and Davidson III (2000)[13] find that the market reacts more positively to fund manager changes in closed-end funds with high prior expense ratios than the fund manager changes in closed-end funds with low prior expense ratios. They also find that international equity funds and corporate bond funds earn more negative returns than domestic equity funds drawing attention to the differences in performance attributed to the portfolio composition of funds.

Despite a general belief that high expense ratios decrease the performance of funds, in their study covering the period of 1989-1996 Malhotra and McLeod (2000)[14] find that the expense ratio and NAV return of a closed-end fund are not consistently related in one direction. Their findings indicate that there is a negative relationship between the expense ratio and NAV return for 3 of the 8 years in the sample and a positive relationship for 3 other years in the sample. Within this respect, it should be noted that the composition of the expenses of a fund may play a vital role in affecting the performance of the fund. Increasing daily operating expenses of a fund would unlikely to yield higher performance, whereas paying a higher fee for the services received from a better investment advisory company would yield higher performance. Although on open-end funds, a study on expense ratio is worth mentioning within this respect. Using a single cross-sectional regression based on 10 year averages of fund returns and expense ratios for the years 1982 through 1991, Malkiel (1995)[15] examines the relationship between a fund's total expense ratio and its performance. He finds that a fund's total expense ratio and its performance are negatively related. By breaking the expense ratio into two components, he also examines the expense ratio-performance relationship of open-end funds. He finds a negative relationship between non-advisory expense ratio and performance but no clear positive relationship between advisory expense ratio and performance.

4. The Data

This paper investigates the relationship between the expense ratio and net asset value (NAV) return of "investment companies" in Turkey. The paper uses panel data on 21 of the 22 securities investment companies that existed in the years 2001 and 2002. Although the same 22 companies existed in the years 2001 and 2002, one of the companies that existed in 2001 did not exist in 2000, leading us not being able to calculate NAV return of that company for the year 2001. For the sake of performing analysis on a balanced panel, we choose to work with the investment companies for those we can calculate NAV returns and on which data are available both for the years 2001 and 2002. Although the excluded

[13] W. W. Rowe and W. N. Davidson III, "Fund Manager Succession in Closed-End Mutual Funds", **The Financial Review**, 35, 2000, pp.59-72.
[14] Malhotra and McLeod, **op. cit.**, pp.100-103.
[15] B. G. Malkiel, "Returns from Investing in Equity Mutual Funds 1971 to 1991", **The Journal Of Finance**, 50 (2), 1995, pp.568-570.

"investment company" has expense ratio data for the years 2001 and 2002, it is not possible to calculate NAV return (%) for the year 2001 without a NAV for the year 2000. Our initial intention was to perform a panel data analysis using data on the securities investment companies for the years 2003 through 2006, being the most recent years. However, the search to find expense data for these recent years proved difficult, since on its web site the Capital Markets Board of Turkey has the data on the breakdown of the expenses of investment companies for only the years 2001 and 2002. An application to the Board via an electronically filled out and sent form through its web site has revealed that the investment companies have not been sending this detailed information to the Board on the breakdown of their expenses since 2002. Therefore, the lack of data for the other years confines us to do our analyses using data only for the years 2001 and 2002. The data on investment companies were obtained through the web site of Capital Markets Board of Turkey. Portfolio composition and net asset value (NAV) data from the monthly bulletins of investment companies and breakdown of expenses were all obtained through the web site of the Capital Markets Board of Turkey. On the web site of the board net asset value (NAV) per share is calculated as follows:

$$NAVPer.S. = \frac{PortfolioValue + LiquidAssets + Accounts.Receiv. - AccountsPayable}{SharesOutstanding}$$

5. Variables Included in The Study

This paper not only investigates the relationship between total expense ratio and performance of investment companies, but also examines whether the breaking down of expense ratio into two components as advisory expense ratio and non-advisory expense ratio leads to a difference in the relationship. Therefore two regression models are estimated, one for the relationship between total expense ratio and net asset value (NAV) return and one for the relationship between the two components of expense ratio and NAV return. To determine whether the portfolio composition of the "investment companies" and whether the portfolio is internally or externally managed affect the relationship between expense ratio and NAV return, dummy variable versions of the two regression models are considered. The portfolios of investment companies consist of three major instruments namely; stocks, debt securities and reverse repurchasing. To account for the portfolio composition of the "investment companies", three dummy variables are considered initially. Since the dummy variables takes the value of 1 and 0 and the values of three dummy variables complement each other to 1 (unity), the sum of the values of the three dummy variables would equal a column of ones leading to multicollinearity[16]. Therefore, a dummy variable for reverse repurchasing is excluded from the regression models to avoid perfect multicollinearity. The effect of reverse repurchasing is observed via a constant in the regression models. By the same token, to account for internally versus externally managed portfolios one dummy variable, not two, is included in the regression models and dummy variable versions are obtained. Each main regression has two different versions with dummy variables. Since there are two main regressions; one for total expense ratio and one for the components of total expense ratio, eventually a total of four regression models are estimated for the expense ratio-NAV return relationship.

[16] P. Kennedy, **A Guide to Econometrics**, 5th Ed., Blackwell Publishing, 2003, p.249.

Since the paper covers the years 2001 and 2002 on a panel data basis, a total number of 42 observations (2x21) for each variable is used. Followings are the definitions of variables used:

NAVR = Net asset value return computed as

EXR = Total expense ratio

ADEXR = Advisory expense ratio.

NADEXR= Non-advisory expense ratio.

DEQ = whether the highest percentage share in the portfolio of the investment company belongs to stocks or not. It takes the value of 1, if the highest percentage share belongs to stocks and zero if it does not belong to stocks.

DDEBT = whether the highest percentage share in the portfolio of the investment company belongs to government debt securities or not. It takes the value of 1, if the highest percentage share belongs to government debt securities and zero if it does not belong to government debt securities.

DREP = dummy variable for reverse repurchasing is not included in the relevant regression models for the above mentioned reason and examined via the constant of the regression model.

$$\frac{\text{NAV Per Share}_t}{\text{NAV Per Share}_{t-1}} - 1$$

DEXT = whether the "securities investment company" is externally managed or not. It takes the value of 1 if the trust employs an outside portfolio management or investment advisory company and zero if it is internally managed.

DINT = dummy variable for internally managed trusts is not included in the relevant regression models for the above mentioned reason and examined via the constant of the regression model.

6. Regression Models

There are two main regression models, one for the relationship between the total expense ratio and net asset value (NAV) return and one for the relationship between the two components of total expense ratio and NAV return. To account for the portfolio composition and the style of portfolio management (internally vs. externally) of the investment companies, two versions with dummy variables for each main regression are formed. Followings are the four regression models:

$$NAVR_{it} = \beta_1 EXR_{it} + \beta_2 DEQ_{it} + \beta_3 DDEBT_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (1a)$$

$$NAVR_{it} = \beta_1 ADEXR_{it} + \beta_2 NADEXR_{it} + \beta_3 DEQ_{it} + \beta_4 DDEBT_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (1b)$$

$$NAVR_{it} = \beta_1 EXR_{it} + \beta_2 DEXT_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (2a)$$

$$NAVR_{it} = \beta_1 ADEXR_{it} + \beta_2 NADEXR_{it} + \beta_2 DEXT_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

(2b)

Regression 1a is designed to examine the relationship between the total expense ratio and NAV return, accounting for the portfolio composition (equity, government debt securities and reverse repurchasing) via dummy variables. Regression 1b is designed to examine the relationship of NAV return with advisory expense ratio and non-advisory expense ratio, accounting for the portfolio composition (equity, government debt securities and reverse repurchasing) via dummy variables. Regression 2a is designed to examine the relationship between the total expense ratio and NAV return, accounting for the portfolio management style (internally vs. externally) via a dummy variable. Regression 2b is designed to examine the relationship of NAV return with advisory expense ratio and non-advisory expense ratio, accounting for the portfolio management style (internally vs. externally) via a dummy variable. The subscript i = 1, 2, …….., 21 stands for individual companies, while t = 1, 2 stands for the years 2001 and 2002. Cross-section fixed effects, resulting from unobserved explanatory variables that change from one investment company to another but do not change over time, are represented by α_i.. Time fixed effects, resulting from unobserved explanatory variables that change from one period to another but do not change across investment companies, are represented by λ_t. Finally, εit represents the error term. Note that the above regression models are the fixed effects versions and the random effect versions would have α (with no subscript) and u_i instead of α_i and λ_t. In that case u_i would represent investment company specific random element.

7. Tests of Fixed Effects and Random Effects

To determine either the fixed effects or the random effects treatment is appropriate for the regression models, tests of fixed effects and random effects should be implemented. Correlation among the unobserved explanatory variables and the observed explanatory variables are permitted through the fixed effects regression models (be cross-section fixed or time fixed). If the unobserved explanatory variables are strictly uncorrelated with the observed explanatory variables, then it might be appropriate to treat the regression model as a random effects model, where cross-section specific constant terms (a different constant term for each cross-section unit) are randomly distributed across cross sectional units[17]. Modern econometrics regard "random effect" as synonymous with zero correlation between the observed explanatory variables and unobserved explanatory variables[18]. Fixed effects tests and Haussman random effects tests are performed to decide whether fixed effects or random effects model is appropriate in estimating the regression models.

7.1. Tests of Fixed Effects

Cross section fixed effects regression model treats α_1, α_2,…., α_n, (α_i), as unknown intercepts to be estimated, one for each cross-section unit, investment company in our case. In the time fixed effects regression model variables that are constant across units but vary

[17] W. H. Greene, **Econometric Analysis**, New Jersey, 5th Ed., Prentice Hall, Inc., 2003, p.293,299.
[18] J. M. Wooldridge, **Econometric Analysis of Cross Section and Panel Data**, The MIT Press, London, 2002, p.252.

over time are controlled for, just as cross-section fixed effects regression model treats intercepts as varying across units[19].

In our study, the null and alternative hypotheses of tests of fixed effects are as follows;

Cross Section Fixed Effects Test

H_0: $\alpha_i = \alpha$,for all i = 1,….,21 (no cross-section fixed effect)

H_1: $\alpha i \neq \alpha$,for all i = 1,….,21 (cross-section fixed effect)

Time Fixed Effects Test

H_0: $\lambda_t = \lambda$, for all t = 2001, 2002 (no time fixed effect)

H_1: $\lambda_t \neq \lambda$, for all t = 2001, 2002 (time fixed effect)

7.2. Hausman Test for Random Effects

Hausman Test for Random Effects is based on comparing the slope estimates of random effects regression model and fixed effects regression model[20].

The null and alternative hypotheses of Hausman Test for Random Effects are as follows;

Hausman Test for Random Effects

H_0: fixed effects estimates and random effects estimates are equal (random effect)

H_1: fixed effects estimates and random effects estimates are different from each other (no random effect)

8. Fixed Effects and Random Effects Test Results

Tables 2 through 5 depict fixed effects and random effects test results for equations 1a, 1b, 2a and 2b respectively. Table 2 depicts the results of the fixed effects and random effects tests for Equation 1a, designed to examine the relationship between the total expense ratio and NAV return, accounting for the portfolio composition (equity, government debt securities and reverse repurchasing) via dummy variables.

[19] J. S. Stock and M. W. Watson, **Introduction to Econometrics**, Addison Wesley Publications, 2003, p.279,283.
[20] Greene, **op. cit.**, p.302; Wooldridge, **op. cit.**, p.288.

Table 2: Fixed Effects and Random Effects Test Results for Equation 1a

Equation 1a: EXR and Portfolio Composition Dummies (DUMEQ & DUMDEB)				
Panel A: Fixed Effects Test		Statistic	d.f	Prob.
Cross-section F		1.092523	(20,17)	0.4309
Cross-section Chi-square		34.713286	20	0.0217
Period F		13.246993	(1,17)	0.0020
Period Chi-square		24.199704	1	0.0000
Cross-section/Period F		2.039405	(21,17)	0.0702
Cross-section/Period Chi-square		52.846591	21	0.0001
Panel B: Hausman Test				
Test Summary		Chi-Sq Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random		0.946177	3	0.8143
Cross-section Random Effects Test Comparisons				
Variable	Fixed	Random	Var(Diff.)	Prob.
EXR	0.009236	-0.008559	0.000603	0.4685
DUMEQ	0.093433	0.090804	0.014207	0.9824
DUMDEB	-0.142432	0.038395	0.150830	0.6415

Panel A of Table 2 depicts the fixed effects test results for Equation 1a. Panel A indicates different implications for cross-section fixed effects and period fixed effects. The null hypotheses that there are no period fixed effects and no cross-section/period fixed effects in the data are rejected at significance levels of at most 10 % (prob. = 0.0702). However, the null hypothesis that there are no cross-section effects in the data can not be rejected (prob. = 0.4309). Therefore, the results imply that there are no cross-section fixed effects, while there are period fixed effects in Equation 1a. However, in order to come to a sound decision on whether fixed effects or random effects specification is appropriate, we also run "Hausman Test For Random Effects" for equation 1a. Panel B depicts the random effects test results for Equation 1a. Since the number of cross-sections in our study (21) is not as many as the period random effects specification requires, Hausman test for only cross-section random effects is performed for Equation 1a.

As can be seen in the Panel B of Table 2, the summary result and test comparison results are consistent with each other. According to the test summary the null hypothesis that there are cross-section random effects in Equation 1a, can not be rejected (prob. = 0.8143). Test comparisons indicate that the null hypotheses that fixed effects coefficient estimates and random effects coefficient estimates are equal to each other can not be rejected either. Therefore, cross-section random effects specification is appropriate in Equation 1a. Evaluating the results of Table 2, we decide to use cross-section random effects and period fixed effects specification in estimating the regression equation for the

relationship between total expense ratio (EXR) and NAV return, accounting for the portfolio composition (equity, government debt securities and reverse repurchasing) via dummy variables.

Table 3 depicts the results of the fixed effects and random effects tests for Equation 1b, designed to examine the relationship of NAV return with advisory expense ratio and non-advisory expense ratio, accounting for the portfolio composition (equity, government debt securities and reverse repurchasing) via dummy variables. Panel A of Table 3 depicts the fixed effects test results for Equation 1b. Panel A indicates different implications for cross-section fixed effects and period fixed effects. The null hypotheses that there are no period fixed effects and no cross-section/period fixed effects in the data are rejected at significance levels of at most 10 % (prob. = 0.0723). However, the null hypothesis that there are no cross-section effects in the data can not be rejected (prob. = 0.5013). Therefore, the results imply that there are no cross-section fixed effects, while there are period fixed effects in Equation 1b. However, in order to come to a sound decision on whether fixed effects or random effects specification is appropriate, we also run "Hausman Test For Random Effects" for equation 1b. Panel B of Table 3 depicts the random effects test results for Equation 1b. Since the number of cross-sections in our study (21) is not as many as the period random effects specification requires, Hausman test for only cross-section random effects is performed for Equation 1b.

Table 3: Fixed Effects and Random Effects Test Results for Equation 1b

Equation 1b: ADEXR, NADEXR and Portfolio Composition Dum. (DUMEQ & DUMDEB)				
Panel A: Fixed Effects Test		Statistic	d.f	Prob.
Cross-section F		1.006987	(20,16)	0.5013
Cross-section Chi-square		34.221780	20	0.0247
Period F		13.941299	(1,16)	0.0018
Period Chi-square		26.319302	1	0.0000
Cross-section/Period F		2.059828	(21,16)	0.0723
Cross-section/Period Chi-square		54.989958	21	0.0001
Panel B: Hausman Test				
Test Summary		Chi-Sq Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random		3.411218	4	0.4915
Cross-section Random Effects Test Comparisons				
Variable	Fixed	Random	Var(Diff.)	Prob.
ADEXR	0.047395	0.024664	0.001855	0.5977
NADEXR	0.017042	-0.012188	0.000683	0.2633
DUMEQ	0.090108	0.071758	0.015797	0.8839
DUMDEB	-0.103188	0.075837	0.159896	0.6544

Panel B of Table 3 reveals that the summary result and test comparison results are consistent with each other. According to the test summary the null hypothesis that there are cross-section random effects in Equation 1b, can not be rejected (prob. = 0.4915). As far as the test comparisons are concerned, the null hypotheses that fixed effects coefficient estimates and random effects coefficient estimates are equal to each other can not be rejected either. Therefore, cross-section random effects specification is appropriate in Equation 1b. Evaluating the results of Table 3, we decide to use cross-section random effects and period fixed effects specification in estimating the regression equation for the relationship of NAV Return with the advisory expense ratio (ADEXR) and non-advisory expense ratio (NADEXR), accounting for the portfolio composition (equity, government debt securities and reverse repurchasing) via dummy variables.

Table 4 depicts the results of the fixed effects and random effects tests for Equation 2a, designed to examine the relationship between the total expense ratio and NAV return, accounting for the portfolio management style (internally vs. externally) via a dummy variable.

Table 4: Fixed Effects and Random Effects Test Results for Equation 2a

Equation 2a: EXR and Portfolio Management Style Dummy (DUMEXT)				
Panel A: Fixed Effects Test		Statistic	d.f	Prob.
Period F		21.407805	(1,38)	0.0000
Period Chi-square		18.767257	1	0.0000
Panel B: Hausman Test				
Test Summary		Chi-Sq Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random		0.741213	1	0.3893
Cross-section Random Effects Test Comparisons				
Variable	Fixed	Random	Var(Diff.)	Prob.
EXR	0.011622	-0.008320	0.000537	0.3893

Panel A of Table 4 depicts the fixed effects test results for Equation 2a. Since cross-section fixed effects specification and period random effects specification are not allowed with equation 2a, only cross section random and period fixed effects could be tested. Panel A reveals the test results in favor of period fixed effects specification. The null hypotheses that there are no period fixed effects in the data are rejected (prob. = 0.0000). Therefore, the results imply that there are period fixed effects in Equation 2a. In order to come to a sound decision we also run "Hausman Test For Random Effects" for equation 2a. Panel B depicts the random effects test results for Equation 2a. Due the low number of cross-sections in our study (21), period random effects specification is not allowed. Hence, Hausman test is performed for only cross-section random effects in Equation 2a.

Panel B of Table 4 reveals that the summary result and test comparison results are consistent with each other. According to the test summary the null hypothesis that there are cross-section random effects in Equation 2a, can not be rejected (prob. = 0.3893). As far as

the test comparisons are concerned, the null hypotheses that fixed effects coefficient estimates and random effects coefficient estimates are equal to each other can not be rejected either. Therefore, cross-section random effects specification is appropriate in Equation 2a. Evaluating the results of Table 4, we decide to use cross-section random effects and period fixed effects specification in estimating the regression equation for the relationship between total expense ratio (EXR) and NAV return, accounting for the portfolio management style (internally vs. externally) via a dummy variable.

Table 5 depicts the results of the fixed effects and random effects tests for Equation 2b, designed to examine the relationship of NAV return with advisory expense ratio and non-advisory expense ratio, accounting for the portfolio management style (internally vs. externally) via a dummy variable.

Table 5: Fixed Effects and Random Effects Test Results for Equation 2b

Equation 2b: ADEXR, NADEXR and Portfolio Management Style Dummy (DUMEXT)				
Panel A: Fixed Effects Test		Statistic	d.f	Prob.
Period F		24.670166	(1,37)	0.0000
Period Chi-square		21.457060	1	0.0000
Panel B: Hausman Test				
Test Summary		Chi-Sq Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random		3.090625	2	0.2132
Cross-section Random Effects Test Comparisons				
Variable	Fixed	Random	Var(Diff.)	Prob.
ADEXR	0.051666	0.023731	0.001627	0.4885
NADEXR	0.019384	-0.012472	0.000591	1.1899

The fixed effects test results for Equation 2b are depicted in Panel A of Table 5. Since cross-section fixed effects specification and period random effects specification are not allowed with equation 2b, only cross section random and period fixed effects could be tested. The test results in Panel A are in favor of period fixed effects specification. The null hypotheses that there are no period fixed effects in the data are rejected (prob. = 0.0000). Therefore, the results imply that there are period fixed effects in Equation 2b. In order to come to a sound decision we also run "Hausman Test For Random Effects" for equation 2b. Panel B of Table 5 depicts the random effects test results for Equation 2b. Period random effects specification is not allowed in Equation 2b, just the same as in Equation 2a . Hence, Hausman test is performed for only cross-section random effects in Equation 2b.

Panel B of Table 5 reveals that the summary result and test comparison results are consistent with each other. The null hypothesis that there are cross-section random effects in Equation 2b, can not be rejected (prob. = 0.2132). As far as the test comparisons are concerned, the null hypotheses that fixed effects coefficient estimates and random effects coefficient estimates are equal to each other can not be rejected either. Therefore, cross-

section random effects specification is also appropriate in Equation 2b. Evaluating the results of Table 5, we decide to use cross-section random effects and period fixed effects specification in estimating the regression equation for the relationship of NAV return with advisory expense ratio and non-advisory expense ratio, accounting for the portfolio management style (internally vs. externally) via a dummy variable.

9. The Relationship Between Expense Ratios and NAV Return

Based on the effects specifications determined previously, four regression models using the whole sample (21 securities investment companies) are estimated. Two of the models are designed to investigate the relationships between expense ratios and NAV return accounting for the portfolio composition (equity, government debt securities and reverse repurchasing). The other two are designed to investigate the relationship between expense ratios and NAV return, accounting for the portfolio management style (internally vs. externally). In Panel A of Table 7 through Table 10, the results of the four regression equations estimated using all the observations are depicted. In Panel B of Table 7 through 10, the results of the four regression equations estimated using 15 of the total 21 observations are depicted. Excluded from the samples are the investment companies with extremely high total expense ratios which we believe to have affected the significance of the results negatively. The rationale behind re-estimating the equations with the exclusion of 6 observations may be tracked from table 6. Table 6 depicts descriptive statistics for both the whole group and the group with excluded observations. The range of the total expense ratio for the investment companies in Turkey is fairly large. A maximum total expense ratio of 39.2 % is extremely large by any standards. Extremely large total expense ratios of some investment companies may be attributed to the mis-management of these specific trusts. As seen in Panel A of Table 6, mean total expense ratio (EXR) is 17.98 %, while the median is 15.45 % meaning that total expense ratio of 21 investment companies is positively skewed. For the sake of making the series more symmetrical and less dispersed, 6 investment companies with mean expense ratios (2001 & 2002 Combined) of higher than 25 % are excluded. As seen in Panel B, when 15 investment companies are taken into account, the series become more symmetrical and less dispersed with mean and median more close to each other and standard deviation reduced by half (from 10.03 to 5.13).

Table 6: Descriptive Statistics for Total Expense Ratio (EXR) of the Whole Group and the Group with Excluded Observations

Panel A: The Whole Group (21 Securities İnvestment companies)					
	Mean	Median	Max.	Min.	St. Dev.
The Year 2001	19.12717	16.75314	39.20839	3.045111	10.27966
The Year 2002	16.83534	13.69631	37.86864	5.226227	9.895800
2001 & 2002 Combined	17.98125	15.45511	39.20839	3.045111	10.03301
Panel B: The Group with Excluded Observations (15 Securities İnvestment companies)					
	Mean	Median	Max.	Min.	St. Dev.
The Year 2001	13.59388	15.61565	20.25908	3.045111	5.535787
The Year 2002	11.70464	11.91631	24.04182	5.226227	4.690936
2001 & 2002 Combined	12.64926	13.46872	24.04182	3.0445111	5.132273

After making the series more symmetrical and less dispersed by excluding 6 of the initial observations, fixed effects and random effects tests were performed again for all of the four regression equations. Exclusion of 6 observations does not make any difference in the original effects specifications. Therefore, regression equations with 15 observations are estimated using the original effects specifications.

Table 7 through Table 10 display the regression results for both the whole group and the group with excluded observations in Panel A and Panel B of each table, respectively.

Table 7: Regression Results for Equation 1a (EXR and Portfolio Composition Dummies)

Panel A: Regression Results for Equation 1a with All Observations Included				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 42 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.144310	0.113141	1.275488	0.2101
EXR	-0.008559	0.007742	-1.187757	0.2425
DUMEQ	0.090804	0.088218	1.029315	0.3100
DUMDEB	0.038395	0.243906	0.157418	0.8758
Weighted Statistics				
R^2	0.392268	Durbin-Watson Statistic		1.949038
Adjusted R^2	0.326567	Prob. (F Statistic)		0.241823
Panel B: Regression Results for Equation 1a with 6 Extremely High Observations Excluded				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 30 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.103455	0.051600	2.004961	0.0559
EXR	-0.010887	0.002750	-3.958879	0.0006
DUMEQ	0.170304	0.058277	2.922315	0.0073
DUMDEB	0.100943	0.268607	0.375802	0.7102
Weighted Statistics				
R^2	0.435032	Durbin-Watson Statistic		1.901895
Adjusted R^2	0.344637	Prob. (F Statistic)		0.005117

Panel A of Table 7 depicts regression results for Equation 1a with all observations included. Negative sign of the regression coefficient of total expense ratio (EXR) implies that total expense ratio (EXR) and net asset value (NAV) return are negatively related, in conformance with the expectations. However, the coefficients of neither total expense ratio nor portfolio composition dummies are statistically significant (prob. values of 0.2101, 0.2425, 0.3100 and 0.8758). The model as a whole is not statistically significant either (prob. value of 0.241823). Therefore as mentioned before, it is worth estimating the equation with extreme 6 observations excluded and re-examine the relationship. Regression results for Equation 1a with 6 observations excluded are depicted in Panel B of Table 7.

When extreme observations are excluded, the negative relationship between total expense ratio (EXR) and net asset value (NAV) return still prevails, but this time with strong statistical significance (prob. 0.0006). One percent increase (or decrease) in the total expense ratio is expected to result in approximately one percent decrease (or increase) in net asset value (NAV) return! Panel B indicates that the dummy variables for equity and reverse repurchasing represented by DUMEQ and C, respectively, are statistically significant (prob. values of 0.0073 and 0.0559). Statistically significant coefficient of DUMEQ indicates that investment companies in which equity holdings dominate the portfolio earn more positive (or less negative) NAV returns than the investment companies in which debt securities or reverse repurchasing dominates the portfolio. Note that the model as a whole becomes statistically significant too (prob. 0.005117)

Table 8: Regression Results for Equation 1b (ADEXR, NADEXR and Portf. Comp. Dum.)

Panel A: Regression Results for Equation 1b with All Observations Included				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 42 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.096198	0.001833	1.356934	0.1728
ADEXR	0.024664	0.024735	0.997156	0.3253
NADEXR	-0.012188	0.007777	-1.567181	0.1258
DUMEQ	0.071758	0.080684	0.889373	0.3797
DUMDEB	0.075837	0.172153	0.440520	0.6622
Weighted Statistics				
R^2	0.413017	Durbin-Watson		1.939075
Adjusted R^2	0.331491	Prob. (F Statistic)		0.488125
Panel B: Regression Results for Equation 1b with 6 Extremely High Observations Excluded				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 30 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.091407	0.132111	-0.691896	0.4956
ADEXR	0.110792	0.019424	5.703857	0.0000
NADEXR	-0.021812	0.007633	-2.857711	0.0087
DUMEQ	0.170669	0.057055	2.991322	0.0063
DUMDEB	0.104911	0.335877	0.312351	0.7575
Weighted Statistics				
R^2	0.643293	Durbin-Watson		2.012990
Adjusted R^2	0.568979	Prob. (F Statistic)		0.000085

Panel A of Table 8 depicts regression results for Equation 1b with all observations included. Positive sign of the coefficient of advisory expense ratio (ADEXR) implies a positive relationship with it and NAV return. Negative sign of the regression coefficient of non-advisory expense ratio (NADEXR) implies that non-advisory expense ratio and net asset value (NAV) return are negatively related, in conformance with the expectations. However, Panel A indicates that the coefficients of neither advisory expense ratio nor non-advisory expense ratio nor portfolio composition dummies are statistically significant

(prob. values of 0.1728, 0.3253, 0.1258, 0.3797 and 0.6622). The model as a whole is not statistically significant either (prob. value of 0.488125). Regression results for Equation 1b with 6 observations excluded are depicted in Panel B of Table 8. When extreme observations are excluded, the positive relationship between advisory expense ratio (ADEXR) and NAV Return and the negative relationship between non-advisory expense ratio (NADEXR) and NAV Return become statistically significant (prob. values of 0.0000 and 0.0087). Increased (or decreased) advisory expense ratio increases (or decreases) and increased (or decreased) non-advisory expense ratio decreases (or increases) NAV Return of investment companies. This finding conforms to the expectation that better managed portfolios via higher advisory expenses paid by the investment company, might result in better NAV performance of investment companies. Panel B indicates that the dummy variable for equity represented by DUMEQ is statistically significant (prob. value of 0.0063). Statistically significant coefficient of DUMEQ indicates that investment companies in which equity holdings dominate the portfolio earn more positive (or less negative) NAV returns than the investment companies in which debt securities or reverse repurchasing dominates the portfolio. Note that the model as a whole becomes statistically significant too (prob. 0.000085)

Table 9 and Table 10 displays the regression results for the likely relationship of expense ratios with NAV Return, accounting for the portfolio management style via a dummy variable.

Panel A of Table 9 depicts regression results for Equation 2a with all observations included. Negative sign of the regression coefficient of total expense ratio (EXR) implies that there is a statistically significant (prob. value of 0.0293) relationship between total expense ratio (EXR) and net asset value (NAV) return, when portfolio management style is accounted for by a dummy variable. The dummy variable for internally managed trusts represented by the intercept C is statistically significant (prob. value of 0.0000) and indicates that internally managed investment companies earn more positive (or less) negative NAV Return than externally managed investment companies. The model as a whole is statistically significant (prob. value of 0.000267). Regression results for Equation 2a with 6 observations excluded are depicted in Panel B of Table 9. When extreme observations are excluded, the statistically significant negative relationship between total expense ratio (EXR) and net asset value (NAV) return still prevails. Explanatory power of the total expense ratio on NAV return improves. Note that coefficient of determination rises from 0.39 to 0.42 when 2a is estimated again excluding the extreme observations. Panel B of Table 9 indicates that the dummy variable for internally managed investment companies represented by C, is statistically significant at 10% level. Internally managed investment companies earn more positive (or less) negative NAV Return than externally managed investment companies.

Table 9: Regression Results for Equation 2a (EXR and Portf. Management Style Dummy)

Panel A: Regression Results for Equation 2a with All Observations Included				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 42 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.196343	0.030768	6.381335	0.0000
EXR	-0.008320	0.003674	-2.264572	0.0293
DUMEXT	0.049785	0.148253	0.335812	0.7389
Weighted Statistics				
R^2	0.390479	Durbin-Watson		1.991718
Adjusted R^2	0.342359	Prob. (F Statistic)		0.000267
Panel B: Regression Results for Equation 2a with 6 Extremely High Observations Excluded				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 30 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.221425	0.116060	1.907847	0.0675
EXR	-0.010565	0.005076	-2.081306	0.0474
DUMEXT	0.030012	0.259247	0.115768	0.9087
Weighted Statistics				
R^2	0.422484	Durbin-Watson		1.972949
Adjusted R^2	0.355848	Prob. (F Statistic)		0.002263

Regression results for Equation 2b with all observations included are depicted in Panel A of Table 10. According to the signs of the coefficients, NAV Return is positively related to advisory expense ratio (ADEXR) and negatively related to non-advisory expense ratio (NADEXR). However, the coefficient of advisory expense ratio is not statistically significant (prob. value of 0.4336), while the coefficient of non-advisory expense ratio is statistically significant (prob. value of 0.0121). The dummy variable for internally managed trusts represented by the intercept C is statistically significant (prob. value of 0.0021) and indicates that internally managed investment companies earn more positive (or less) negative NAV Return than externally managed investment companies. Regression results for Equation 2b with 6 observations excluded are depicted in Panel B of Table 10. When extreme observations are excluded, the positive relationship between advisory expense ratio (ADEXR) and NAV Return become statistically significant (prob. value of 0.0050). The

negative relationship between non-advisory expense ratio (NADEXR) and NAV Return is still statistically significant (prob. value of 0.0000). Note also that the relationships become stronger in magnitude with higher coefficients in absolute value. However, the dummy variable for internally managed trusts represented by the intercept C still implies that internally managed investment companies earn more positive (or less) negative NAV Return than externally managed investment companies, but the coefficient becomes statistically insignificant (prob. value of 0.5568). Note that the model as a whole is still statistically significant (prob. 0.000053)

Table 10: Regression Results for Equation 2b (ADEXR, NADEXR and Portfolio Management Style Dummy)

Panel A: Regression Results for Equation 2b with All Observations Included				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 42 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.154973	0.046763	3.314012	0.0021
ADEXR	0.023731	0.029975	0.791672	0.4336
NADEXR	-0.012472	0.004726	-2.638842	0.0121
DUMEXT	0.037121	0.074137	0.500709	0.6195
Weighted Statistics				
R^2	0.414371	Durbin-Watson		1.992762
Adjusted R^2	0.351060	Prob. (F Statistic)		0.000435
Panel B: Regression Results for Equation 2b with 6 Extremely High Observations Excluded				
Dependent Variable: NAVR Method: Panel EGLS (Cross-Section Random Effects) Total Panel (Balanced) Observations: 30 White Cross-Section Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.066474	0.111619	0.595544	0.5568
ADEXR	0.111617	0.036212	3.082333	0.0050
NADEXR	-0.023305	0.000628	-37.13738	0.0000
DUMEXT	-0.078651	0.136575	-0.574881	0.5698
Weighted Statistics				
R^2	0.617384	Durbin-Watson		2.047295
Adjusted R^2	0.556166	Prob. (F Statistic)		0.000053

10. Conclusion

This paper investigates the relationship between the expense ratio and net asset value (NAV) return of the investment companies in Turkey. In order to investigate the relationship, two main regression models, one for the relationship between the total expense ratio and net asset value (NAV) return and one for the relationship between the two components of total expense ratio and NAV return are considered on a panel data basis. Breaking down the expense ratio into two components as advisory expense ratio and non-advisory expense ratio makes sense in that expenses undertaken for the sake of managing the portfolios of funds better might improve performance and non-advisory expenses might not improve performance. To account for the portfolio composition and the style of portfolio management (internally vs. externally) of the investment companies, two versions with dummy variables for each main regression are formed resulting in four regression equations.

The results of the regression models with all the observations imply that the expected relationships exist between expense ratios and net asset value return. Two regression equations that account for portfolio composition with dummy variables indicate that the relationships of NAV Return with total expense ratio and non-advisory expense ratio are negative whereas the relationship with advisory expense ratio is positive. However, these relationships are not statistically significant. The existence of some investment companies with extremely high expense ratios, seem to cause these statistical insignificances in the results of the regression models estimated using the data of all 21 investment companies. Therefore four original regression equations are estimated again by excluding six of the investment companies that have extremely high expense ratios. When the two regression equations that account for portfolio composition with dummy variables are estimated again excluding six extreme observations, negative relationships of NAV Return with total expense ratio and non-advisory expense ratio and the positive relationship with advisory expense ratio become statistically significant. As far as the portfolio composition is concerned, the results indicate that investment companies whose portfolios are dominated by equity obtain greater (more positive or less negative) NAV Return than the other investment companies. When the two regression equations that account for portfolio management style with a dummy variable are considered, negative relationships of NAV Return with total expense ratio and non-advisory expense ratio and the positive relationship with advisory expense ratio are still prevalent. Regardless of whether six extreme observations are excluded, negative relationships of NAV Return with total expense ratio and non-advisory expense ratio are statistically significant. However, the positive relationship of NAV return with advisory expense ratio is insignificant in the regression equation estimated with all the observations, whereas it becomes significant in the regression equation estimated with six observations excluded. The results of the regressions that account for portfolio management style reveal that internally managed investment companies obtain greater (more positive or less negative) NAV Return than externally managed investment companies.

As a result, our findings indicate that NAV Return of investment companies is negatively related with total expense ratio and non-advisory expense ratio, whereas it is positively related with advisory expense ratio. Although he uses, α measure for risk

adjusted fund performance, our results bear resemblance with Malkiel[21] where he finds negative relationship of an equity mutual fund's net performance between total expense ratio and non-advisory expense ratio, and positive relationship with advisory expense ratio. As far as the effect of portfolio management style is concerned our results are similar to Allen and French's (2006: 13-15) study[22] where they find that internally managed closed-end funds display better performance than externally managed closed-end funds for long investment horizons.

[21] Malkiel, **op. cit.**, p.555,568.
[22] Allen and French, **op. cit.**, pp.13-15.

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