

Real Estate Closed-end Funds and Exchange Traded Funds: A Style Analysis and Return Attribution

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## SUMMARY

This research examines the performance of real estate closed-end funds and exchange traded funds using style analysis and attribution analysis which are return-based methods. The style analysis determines the fund's exposure to different asset classes and is used to evaluate the fund's portfolio compositions. Attribution analysis measures performance in terms of managerial skill. A sample of monthly net asset values returns and market returns for the years 1993-2009 is used. The asset classes to determine exposure are the Association of Real Estate Investment Trusts (NAREIT) equity, mortgage, hybrid indexes, and 1-month T-bill as a proxy for cash. We conclude that real estate closed-end funds and exchange traded funds invest primarily in equity assets and we find no evidence that either of the managers possess any forecasting skill as showed by the attribution return analysis. We do find perceived managerial ability in closed-end funds attribution analysis when using market returns as proxy of investor sentiment toward managerial skill.

*Keywords:* real estate closed-end funds, style analysis, fund exposure, mutual funds, portfolio management

## INTRODUCTION

Investors come to the mutual fund industry looking for diversification, professional management, liquidity, economies of scale, and clear objectives among other benefits. But most important they have realistic goals of capital preservation and appreciation, growth of income and return maximization. Once investors decide to buy some type mutual fund, they have literally thousands of funds to choose from, each with different characteristics. Table 1 shows the number of funds, asset classes, and total net assets for the major types of mutual funds.

Table 1. Summary statistics of mutual fund industry

Type of mutual fund	Number of funds *	Major Asset classes*	Total net assets*
Closed-end fund	658	4	\$209,982 millions
Open-ended funds	7,569	6	\$11,817 billions
Exchange-traded funds	923	4	\$991,990 millions

\*Statistics as of December, 2010 Source: Investment Company Institute at <http://www.ici.org>

Return-based performance evaluation of funds is used to determine in which funds investor should invest according to their objectives and level of risk. Style analysis is a return-based performance evaluation tool proposed by Sharpe (1998, 1992). It is a multifactor model that determines a fund's effective asset mix with respect to a set of asset classes. Once the fund's exposure to the asset classes is determined, an attribution analysis which determines the portfolio performance in terms of managerial skill can be obtained. This type of analysis has the advantage

of using realized returns that are readily available so knowing the exact portfolio composition is not necessary. The results of the style and attribution analyses can, not only be used by investors, but also by fund managers to determine the ideal asset allocation.

The main objective of this research is to analyze the performance of real estate closed-end funds (RECEF) and real estate exchange traded funds (REETF) using a rolling style analysis and attribution analysis. Both RECEF and REETF are investment companies with a portfolio of financial instruments whose shares are traded on a stock exchange, and they both try to track a particular objective which could be growth, income or a particular sector for closed-end funds or an index for exchange traded funds. The main differences between the two types of funds are that CEF are actively managed while ETF are passively managed. CEF cannot redeem shares with the fund itself while ETF allow redemption in kind for large investors trading blocks of 50,000 shares or more. The redemption in kind helps maintain the price of the ETF very close to their net asset value. On the contrary CEF mostly trade at a discount or premiums, discounts being the norm.

Real estate closed-end funds invest primarily in equity securities of US and foreign companies belonging to the real estate industry. ETFs invest in securities of companies that are engaged in the U.S. real estate industry and included within real estate indexes such as the FTSE NAREIT Equity REITs Index.

Although the performance evaluation of open-ended mutual funds that invest in real estates and that of Real Estate Investment Trusts (REITS) has been extensively, see Fisher and Goetzmann (2005), Rodriguez (2007), Philbot and Peterson (2006), Lin and Yung (2007), among

others, a very limited amount of research, if any has been conducted for RECEF and REETF .

This research will make an important contribution to the CEF and ETF, the real estate portfolio management, and the fund performance literatures. To our knowledge, a style analysis and return attribution analysis has not been performed before for RECEF and REETF.

This research study contributes to the understanding of the performance of CEF returns for real estate funds. With the style and attribution analysis we can determine if the fund's portfolio has the right mix of financial assets and it also serves as an evaluation of managerial skill. Trying to determine managerial skill is important because one of the many benefits often cited for investing in mutual funds is professional management. CEF discounts are extensively studied because of the implication the occurrence of the discount has on the efficient market hypothesis. Those studies are centered on finding possible explanations for the discount. Other areas of CEF, especially the study of real estate funds, so far, have been neglected.

## **REVIEW OF LITERATURE**

Style analysis is proposed by Sharpe (1988, 1992). He argues that asset allocation can explain part of the variability in a portfolio's return. To perform a style analysis fund's returns are regressed against a set of asset classes which represent a passive portfolio with the same style. The style should minimize the variance of the difference between the fund's returns and the return of the passive portfolio. Once the style analysis is performed, return attribution is determined by comparing returns to one or more benchmarks.

Style analysis and return analysis have been extensively studied for REITS. Although REITS shares are traded in the markets as those of CEF, they differ in that REITS own and often operate illiquid real estate assets, CEF only hold financial assets. There are also differences in the way they operate, taxes, dividend payment among others. Young and Annis (2002) perform attribution analysis in a sample of REITS and find no clear distinction between stock selection and sector allocation. Benefield, Anderson and Zumpano (2007) study the effects of different market proxies in performance rankings for REITS. They find that rankings are insensitive to market proxy.

Domian and Reichenstein (2009) perform style analysis in high yield bonds. They argue the high yield bonds are hybrid assets consisting of both bonds and stocks and this should be a major consideration in asset allocation.

Chiang, Kozhevnikov, Lee, and Wisen (2008) study real estate mutual funds and find that they do not outperform their benchmarks. Lin and Yung (2007) analyze the performance of real estate mutual funds using style analysis. They find that growth managers outperform value managers. Rodriguez (2007) performs attribution analysis in a sample of real estate mutual funds. He finds that real estate mutual funds do not exhibit abnormal forecasting ability. Philpot and Peterson (2006) find that team-managed funds tend to have lower returns than solo-managed funds. O'Neal and Page (2000) also find real estate mutual funds do not exhibit positive abnormal returns. On the other hand, Gallo, Lockwood and Rutherford (2000) perform allocation analysis and find the real estate mutual funds outperformed the Wilshire Real Estate Securities Index.

The discount of CEF has been studied extensively. See Cherkes, Sagi, and Stanton (2009), Berk and Stanton (2007), Glen and Patrick (2004) among many. There are few papers that study CEF performance using returns. Among them Bers and Madura (2000) study whether past performance of CEF could predict future performance i.e. performance persistence. They find evidence that net asset values performance persistence and market price performance persistence for each type of closed-end, bond and equity funds fund over 12-, 24-, and 36-month holding periods exists. Anderson, Coleman, Frohlich, and Steagall (2001) addressed the return generating process of closed-end country funds using a multifactor model. They show that returns of country funds traded in the US are more affected by market returns in their target markets than by returns of US market.

Richard and Wiggins (2000) examined whether premiums/discounts in closed-end country funds, contained information about future fund NAV returns. They concluded that country closed-end fund premiums and discounts contained valuable information about future NAV performance after controlling for foreign market return and exchange rate fluctuations. They also found that premium/ discounts also forecasted the return on the underlying foreign market.

Lin, Rahman and Jung (2008) study the relationship of REIT returns with investor sentiment using changes in CEF discounts as proxy for investor sentiment. Their results show that REIT returns are related to investor sentiment. When investors are optimistic (pessimistic), REIT returns become higher (lower). The results seem to robust when conventional control variables are considered.

Chan, Hendershott, and Sanders (1990) investigate REIT returns using a multifactor Arbitrage Pricing model with macroeconomic factors. They test the relationship of REIT returns to changes in the discount on closed-end stock fund. They conclude that the closed-end stock fund discount is significant when regressed along with macro factors on REIT returns, but becomes insignificant when regressed with mimicking portfolios.

Zhou (2010) argues that the introduction of ETFs reduces informed traders' information advantages, so there should be less information asymmetry in the ETFs markets than in the markets for the underlying individual securities. To estimate the information asymmetry, he uses market liquidity, adverse selection cost and trade informativeness. Consistent with the hypotheses, he finds lower information asymmetry in the ETFs markets than in the market of their underlying individual securities. ETFs markets are more liquid and have lower adverse selection costs and lower trade informativeness compared with their underlying individual securities.

Adjei (2009) studies the performance persistence in exchange traded funds. He finds that 38% of an average ETF's total risk is diversifiable risk and the medium blend ETFs are the least diversified. He also reports no significant differential performance between ETFs and the S&P 500 index. He finds weak evidence of performance persistence on both the half-year and the year horizons.

Ackert and Tian (2008) investigate the performance of U.S. and country exchange traded funds currently traded in the United States. They find that while the U.S. funds are priced closely to their net asset values, the country funds are not and exhibit large, positive autocorrelations in

fund premium. They find that the mispricing of country funds is related to momentum, illiquidity, and size effects.

Rompotis (2010) investigates the bid-ask spread of the German actively and passively managed Exchange Traded Funds (ETFs). Passive ETFs are found to have higher average spread than active ETFs. The bid-ask spread is persistent through time cross-sectionally and it is negatively related to volume. He also finds that the absolute value of ETFs' premium positively affects the bid-ask spread.

## **DATA AND PROPOSED EMPIRICAL METHODS**

The samples consists of real estate closed-end funds and exchange traded closed-end funds. Table 1 presents the breakdown of the samples. Monthly net asset value (NAV) returns and monthly market returns of closed-end funds are obtained for 1994-2009 from the Center for Research in Security Prices U.S. Stock Databases (CRSP) and Bloomberg Data Services. The market returns of exchanged traded funds are for the period 1998 to 2009.

The style analysis depends on the selection of adequate benchmarks or indices as asset classes. Since RECEF and REETF invest primarily on real estate financial assets, the assets classes will be taken from the National Association of Real Estate Investment Trusts (NAREIT). Specifically this study uses the Financial Times Stock Exchange (FTSE) NAREIT Equity Index, the FTSE NAREIT Mortgage Index and FTSE NAREIT Hybrid Index. Also included is the return for 1 month Treasury Bills as a proxy for cash.

In order to perform the style analysis proposed by Sharpe (1988, 1992), first the exposure of the funds to different asset classes are determined using:

where  $R_{it}$  = monthly total return for each fund  $i$   
 $w_{ij}$  = exposure of each fund  $i$  to asset class  $j$   
 $R_{jt}$  = monthly total return for index  $j$  (asset classes)  
 $\epsilon_{it}$  = residual component of fund's return.

Two constraints are applied to this formula:

The style analysis finds the set of style index weights which minimizes the tracking error between the resulting benchmark and the portfolio, with the constraint of zero or positive weights whose sum equals one. In order to account for possible changes in the style profile over time, a 24 month rolling window is used to calculate the style weights.

After the exposures to the different classes are determined, the attribution analysis can be performed by applying the following formula:

where  $A_{it}$  = attribution return at time  $t$   
 $R_{it}$  = monthly total return for each fund  $i$  at time  $t$   
 $w_{ij}$  = exposure of each fund  $i$  to asset class  $j$  at time  $t$   
 $R_{jt}$  = monthly total return for index  $j$  (asset classes) at time  $t$

A positive attribution return results when a manager's asset allocation scheme improves performance when compared to the buy and hold strategy of the previous 24 month window. Following Bers and Madura (2000) the analysis of closed-end funds is performed for both NAV returns and market returns. For exchange traded funds only the market returns are used since they trade very close to NAV.

### **RESULTS AND CONCLUSIONS**

Tables 2,3, and 4 show the average style weights using a 24 month rolling window. The analysis of the three returns show that equity is the main exposure with percents of 76, 57 and 61% respectively. The ETF show a 21% of exposure to cash which seems high considering for funds that track indices. ETF usually have to hold some cash from the dividend in equity investments they hold. Since the indices which ETF follow usually do not include cash in their portfolios, the cash in the ETF could lead to a tracking error which basically means the fund cannot follow the index precisely.

The higher percentages of exposure to the hybrid index for closed-end funds can be due to the fact that closed-end funds since they do not follow a precise index have more latitude to include different types of assets in their portfolios. This is not the case with ETF which besides the cash, usually try to follow specific index. Also we have to take into account that closed-end funds are considered actively managed while ETF are passively managed. Thus CEF managers might be willing to change the mix of assets in their portfolios more than ETF managers.

Table 2. CEF NAV Style Weight

Variable	N	Mean	Std Dev	Minimum	Maximum
equity	16	0.7644939	0.1730763	0.3655462	0.9252541
mortgage	16	0.0415399	0.0353412	-1.09133E-17	0.1570840
hybrid	16	0.1043531	0.0708299	0.0247673	0.2859534
cash	16	0.0896130	0.1220256	-5.81928E-19	0.4345201

Table 3. CEF Market Price Style Weight

Variable	N	Mean	Std Dev	Minimum	Maximum
equity	22	0.5749139	0.2336019	0.1148541	0.8607053
mortgage	22	0.0788172	0.0570699	-1.09133E-17	0.2541516
hybrid	22	0.1983541	0.1480008	0.0500016	0.5690856
cash	22	0.1479149	0.1046970	-1.12847E-36	0.3628028

Table 4. ETF Style Weights

Variable	N	Mean	Std Dev	Minimum	Maximum
equity	28	0.6123665	0.3453755	-2.2452E-22	1.0000000
mortgage	28	0.0995911	0.2218702	-6.03761E-12	0.8806598
hybrid	28	0.0685229	0.0927117	-3.61316E-12	0.3940256
cash	28	0.2195196	0.2938252	-1.26806E-20	1.0000000

The results for the attribution analysis can be found in table 5. It shows the percentage of funds with positive and negative attribute returns and descriptive statistics for closed end funds and exchange traded funds. A positive attribution return results when a manager's asset allocation scheme improves performance when compared to the buy and hold strategy.

Table 5. Attribution Returns

	CEF NAV Returns	CEF Market Returns	ETF Market Returns
Mean	-0.006090	0.003253	-0.000920
Standard Deviation	0.006174	0.006082	0.017877
Median	-0.004390	0.005196	0.000104
Maximum	0.001462	0.012969	0.050410
Minimum	-0.020800	-0.008970	-0.061740
Number of Positives	1	15	13
Number of Negatives	14	6	12

When we look at the CEF NAV returns the mean attribution return is negative and only 1 of the 15 funds exhibits a positive attribution. We find no evidence of managerial forecasting ability in closed-end funds.

We also examine perceived managerial ability using daily market returns. We argue that since individual investors are the primary owners of closed-end funds, market returns incorporate the investor sentiment toward managerial ability. If CEF investors believe that the fund manager is not adding any value, they cannot withdraw their money as they would do in an open end fund, instead they will drive the fund's market price down and vice-versa. This proposition is supported by the research of Berk and Stanton (2007), Glenn and Patrick (2004), Ferguson and Leistikow (2001), Bers and Madura (2000), Richard and Wiggins (2000), and Chay and Trzcinka (1999), among others. We use daily market returns as a proxy for perceived managerial ability and evaluate the manager's performance with the same style model and attribution analysis used for the NAV returns. For closed-end funds market returns we have an average positive attribution return and this occurs in 15 of the 21 funds in the sample for a 71% of attribution

returns. This means that 71% of the CEF managers can make asset allocation that improves the funds's performance as perceived by the market returns.

For ETFs, 13 of the 25 funds in the sample have a positive attribution return, but mean attribution return is negative. Considering that ETF are passively managed and try to follow precisely an index, managers do not exercise that much asset allocation changes unless the index tracked changes.

We conclude that real estate closed-end funds and exchange traded funds invest primarily in equity assets and we find no evidence that either of the managers possess any forecasting skill as showed by the attribution return analysis. We do find perceived managerial ability in closed-end funds attribution analysis when using market returns as proxy of investor sentiment toward managerial skill.

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