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Does active portfolio management create value? An evaluation of fund managers' decisions

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Does Active Portfolio Management Create Value?

An Evaluation of Fund Managers' Decisions

Stefan Engström*

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Abstract

In this paper, I obtain new measures of the value of active portfolio management by forming replicating portfolios. These measures allow for a separate evaluation of fund managers' strategic and tactical decisions. I also obtain new evidence on the value of trading by decomposing it into long-term trading decisions, short-term trading decisions, and trading that is the result of regulatory restrictions. Contrary to previous evidence, this paper supports the value of active portfolio management and finds a positive alpha measure for the average fund manager. Moreover, the results show a positive relation between the value created and trading activity.

Keywords: Mutual Funds, Portfolio Evaluation, Performance Attribution, Trading.

JEL Classifications: G11, G12, G23.

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I. Introduction

Does active portfolio management create value? The extensive literature that evaluates the performance of mutual funds suggests that the average fund does not outperform relevant benchmarks. Hence, based on this evidence, the answer to the question would be *no*. However, we need a more thorough analysis of fund managers' decisions in order to answer that question. This analysis should include an examination of what fund managers really do and, in particular, attempt to shed light on their trading decisions, since these decisions are the distinguishing features of active and passive portfolio management.

Previous evaluations of fund managers' skills have decomposed fund performance into stock selectivity and market timing ability, based on the methods developed in Treynor and Mazuy (1966) and Henriksson and Merton (1981). These methods estimate fund managers' skills by time series regressions, where aggregate data on portfolio returns are used. One obvious drawback of these methods is that the aggregation of asset returns might hide important information.

Recent studies have therefore analyzed fund performance based on observed portfolio holdings. Grinblatt and Titman (1989a) and Grinblatt and Titman (1993) are two of the first articles in this field. Still today, only a few studies of this kind exist since such detailed data are not easily available. However, two recent articles, Chen, Jagadeesh, and Wermers (2000) and Wermers (2000), extend our knowledge of the value of active portfolio management examining U.S. data on mutual funds' portfolio holdings. Interestingly, they find, contrary to many previous studies, evidence to support the value of active mutual fund management. Chen, Jagadeesh, and Wermers (2000) show that stocks that fund managers buy perform significantly better than stocks they sell during a one-year period. The evidence in Wermers (2000) shows that fund managers who trade more are better at stock-picking than managers who trade less. Similarly, Dahlquist, Engström, and Söderlind (2000) show that the performance of Swedish mutual funds is positively related to the funds' trading activity.

In this paper, we will take one step further in the analysis of the value of active portfolio management and trading. First, I introduce new measures of the value of active portfolio management. These measures follow the recent developments in the literature and require data on the funds' portfolio holdings. Using such data, I replicate a passive strategy for each fund that also meets the regulatory restrictions of the funds and use these portfolios as benchmarks. One advantage of using a replicating portfolio or strategic portfolio as the benchmark on an individual level is that it eliminates the problems of finding a benchmark that is suitable for all funds. Moreover, this replicating portfolio also allows for a detailed analysis of performance by obtaining separate performance measures of the fund manager's strategic asset allocation decisions and tactical decisions. I define strategic decisions as investment decisions that last for more than one year. The performance of the strategic decisions is measured as the performance of one-year buy-and-hold portfolios (the strategic portfolio). Hence, tactical decisions refer to changes in the strategic portfolio during the year. Second, in contrast to previous studies that analyze aggregate trading, I extend the evidence by decomposing trading activity attributable to three components. One component captures long-term trading decisions, i.e., changes in the strategic portfolio. Another component captures short-term trading decisions, i.e., deviations from the strategic portfolio during the year. The third component is regulatory trading. This trading occurs as a result of regulatory restrictions, which forces the fund to diversify by limits on the weight of any single stock in the portfolio.

The value of active portfolio management is explored by analyzing 112 Swedish equity mutual funds during the five-year period from 1996 to 2000. Examining Swedish mutual funds offers two main advantages. First, the Swedish data are comprehensive, and consequently allow for a detailed examination while eliminating a number of pitfalls. For instance, the funds have a homogeneous investment objective, and the sample consists of virtually all the funds that have existed during the sample period. Hence, there is no survivorship bias. Second, evaluations of Swedish funds can enrich the existing literature

with out-of-sample evidence since they are exposed to similar institutional settings as U.S. funds.

We distinguish between funds investing in the broad Swedish stock market (Sweden funds) and those focusing on small companies (Small Cap funds). Contrary to U.S. evidence, the results show that both Sweden funds and Small Cap funds perform well in relation to the benchmark model. The high performance of Sweden funds is attributed to strategic decisions. In contrast, the average Small Cap fund's strategic portfolio fails to outperform the benchmark model. However, given the significant difference between the returns of the Small Cap funds and their strategic portfolios, we conclude that these managers create performance by making tactical decisions. This paper, like many earlier studies, finds a positive relation between fund performance and trading activity, but the results show that this is due to a positive relation between tactical performance and trading activity. Moreover, this positive relation is based on voluntary trading, since the results indicate that managers make inferior trading decisions when they are forced to trade.

The remainder of this paper is organized as follows. Section II gives an overview of the literature on performance evaluation and the value of active portfolio management. A description of the Swedish mutual fund industry, the sample of funds, and benchmarks used in this study are presented in Section III. The funds' performance and its components are evaluated in Section IV. In Section V, different measures of performance are examined in a cross-sectional setting against different measures of trading activity. Finally, Section VI presents the conclusions.

II. Evaluating Fund Performance

This section gives an overview of methodological development in performance evaluation. It also presents the new measures of the value of active portfolio management.

A. Traditional Measures

Performance evaluation of mutual funds has its roots in the 1960s. Treynor (1965), Sharpe (1966), and Jensen (1968) developed the first evaluation techniques and Jensen's alpha has become the most widely used measure in the literature. It is measured as the intercept from a regression of the return, in excess of the risk-free rate, of the managed portfolio on the excess return of a benchmark portfolio. However, this measure is known to suffer from a statistical bias when fund managers successfully time the market. The implication is that successful timers can be assigned a negative performance. In response to the statistical bias problem, Grinblatt and Titman (1989b) propose a new measure, the Positive Period Weighting measure, which does not suffer from this bias. Other developments have concerned the choice of benchmarks. Lehmann and Modest (1987) were the first to adapt the APT to performance evaluation and show how evaluation is affected by the choice of benchmark model. The importance of choosing the correct factor in the Jensen single factor model has also been demonstrated in Elton et al. (1993) who extend the single factor model used in Ippolito (1989) into a multi-factor model and show that the result is reversed.

The Jensen measure has traditionally been unconditional in the sense that historical average returns are used to estimate expected performance. Hence, it does not account for time-varying expected returns and risk. Ferson and Schadt (1996) extend the traditional measure of performance by using predetermined information variables. This conditional measure of performance allows for time-varying expected returns and risk. The Fearson-Schadt measure is obtained by the regression

$$R_{it} - R_{ft} = \alpha_i + \beta_{i0} (R_{bt} - R_{ft}) + \beta'_{i1} q_{t-1} (R_{bt} - R_{ft}) + \varepsilon_{it} \qquad (1)$$

where R_{it}, R_{bt}, and R_{ft} are the return of fund i, the benchmark, and the risk-free asset, respectively. The intercept α_i, is Jensen's alpha measure or the systematic pricing error. This deviation from the benchmark model, if it is positive negative), can be interpreted as superior

(inferior) performance. The beta coefficient measures the exposure to the benchmark and is a measure of the fund's systematic risk. The predetermined information variables are denoted q_{t-1}. Each information variable has zero mean. The ε_{it} is a fund-specific error term.

B. Measures with Characteristic-Based Benchmarks

A large number of studies provide evidence on asset pricing anomalies, and show that the cross-sectional pattern of stock returns can be explained by characteristics such as size, past returns, and book-to-market ratios. Daniel and Titman (1997) show that it is the characteristic rather than the covariance structure of returns that explain the cross-sectional variation in stock returns.

Daniel et al. (1997) develop new measures of mutual fund performance based on the evidence in Daniel and Titman (1997). These new performance measures are obtained from a characteristic-based benchmark model. Moreover, Daniel et al. (1997) decompose performance into Average Style (AS), Characteristic Selectivity (CS), and Characteristic Timing (CT). The AS measure shows whether the returns earned by the fund are due to a tendency to hold stocks with certain characteristics. A CS measure of zero tells us that the average performance of a fund could have been replicated by simply purchasing stocks with the same size, book-to-market, and momentum characteristics as the stocks that the fund held. Finally, the CT measure is positive if the fund manager has been successful at timing the different investment styles.

C. Measures without General Benchmarks

Traditional performance evaluation methods, which measure portfolio performance in relation to benchmarks, have been the subject of considerable criticism. As Roll (1978) points out, it is difficult to distinguish between portfolio performance and benchmark inefficiency.

Moreover, Elton et al. (1993) show that the choice of benchmark can significantly affect the conclusions of a performance evaluation.

In this light, an interesting development in the literature is performance measurement without general benchmarks. Grinblatt and Titman (1993), for example, measure performance by multiplying the twelve-month change in portfolio weight by the following month's return on that stock.[1]

D. New Measures

Previous performance evaluation measures have mainly focused on aggregate portfolio performance. This performance has been decomposed into selectivity and market timing based on the methods developed in Treynor and Mazuy (1966) and Henriksson and Merton (1981). This paper will extend the literature by decomposing performance and attribute it to fund manager's strategic and tactical decisions. To enable performance to be decomposed, a passive replicating portfolio needs to be constructed, and this replicating portfolio requires data on the fund's portfolio holdings.

The performance of strategic decisions captures a manager's ability to make long-term investment decisions, that is, investment decisions that last one year. One way of measuring strategic performance is to take snap-shots of the portfolio and evaluate a passive strategy of this portfolio, i.e. a replicating portfolio. In contrast, tactical performance captures a manager's ability to make short-term investment decisions, that is, investment decisions during the year. One way of measuring tactical performance is to evaluate how the active decisions that the manager makes during a year affect the risk and returns in the portfolio.

[1] They compute the portfolio change measure by using both 1-quarter and 4-quarter lagged portfolio weights. However, they focus on the measures from the 4-quarter lagged portfolio weights setting since 1-quarter lagged portfolio weights only generate measures close to zero. This might be due to the fact that the funds do not change their portfolios very much during a quarter.

This can be done by conducting an evaluation of the returns of the managed portfolio in excess of the replicating portfolio.

The first step in the calculation of these performance measures is to form a replicating portfolio for each fund. This portfolio is calculated by investing according to the observed portfolio weights and holding on to these assets until new portfolio weights are observed. However, some trading might occur in the replicating portfolio between the observations of true portfolio weights. This trading occurs when (1) an asset ceases to exist in the market (for instance, as a result of a buy-out) and (2) when the replicating portfolio does not fulfill the regulations of mutual funds (i.e., when the weight of a single asset becomes too large). When this trading occurs, the weights of the other assets increase in a manner that keep the relative weights between them constant. After a certain period of time (for instance a quarter or a year), new portfolio weights are observed and the replicating portfolio is rebalanced according to these weights.

Compared with previous studies, this replicating portfolio is a more realistic proxy of a passive managed fund, since it fulfils the same conditions as the true fund. For instance, Grinblatt and Titman (1989a) constructed similarly, a hypothetical portfolio based on observed portfolio holdings. Their approach is based on quarterly portfolio holdings and a monthly rebalancing of the assets. They calculate the hypothetical portfolio by summing the portfolio weights that have been multiplied by the monthly excess returns of securities. However, this hypothetical portfolio does not fulfill the same conditions as a true fund.

Different performance measures are computed once we have the individual fund's replicating portfolio. The first measure can be computed as the difference between the fund's return and the return on the corresponding replicating portfolio. This difference can be interpreted as the value (in terms of returns) created by the fund manager's active decisions. The implication of a positive (negative) value is that the fund manager has sold inferior (superior) assets in comparison with the assets bought. Let us call this value the *return value* (RV) of active portfolio management.

The fund's replicating portfolio also allows us to evaluate the fund manager's strategic and tactical decisions on a risk-adjusted basis. We obtain a performance measure of strategic decisions by evaluating the replicating portfolio using Jensen's alpha measure. Hence, the unconditional strategic performance is estimated by the intercept in the regression

$$R_{Rit} - R_{ft} = \alpha_{Si} + \beta_{Si} (R_{bt} - R_{ft}) + \varepsilon_{Sit} \quad (2)$$

where R_{Rit} is the return on the replicating portfolio of fund i at time t. In addition, the subscript S refers to strategic decisions; thus α_{Si} refers to the performance of the strategic decisions and β_{Si} refers to the risk in the strategic portfolio. Moreover, $R_{bt} - R_{ft}$ refers to the return on the benchmark in excess of the risk-free asset at time t. In a similar setting, we compute the performance of the fund manager's tactical decisions. This performance is computed by evaluating the fund's return in excess of the replicating portfolio. Tactical performance is estimated by the intercept in the regression

$$R_{it} - R_{Rit} = \alpha_{Ti} + \beta_{Ti} (R_{bt} - R_{ft}) + \varepsilon_{Tit} \quad (3)$$

where $R_{it} - R_{Rit}$ is the return on the zero investment portfolio or the return on fund i in excess of its replicating portfolio. In addition, the subscript T refers to tactical decisions; thus α_{Ti} refers the performance of the tactical decisions and β_{Ti} refers to the risk in the tactical portfolio. Both the evaluation of fund manager's strategic decisions and their tactical decisions can be computed in a conditional setting, following Ferson and Schadt (1996), (see equation 1). This allows for time-varying expected returns and risk.

III. Swedish Mutual Funds

The Swedish mutual fund industry has grown and developed rapidly during the second half of the 1990s. Total assets managed by this industry has grown from SEK 207 billion in 1995 to SEK 898 billion in the end of 2000 (during this period, the price of one U.S. dollar has been between SEK 8 and 10). Moreover, there has been a level shift in net flows. Prior to 1997, this industry experienced positive or negative flows of a few SEK billion per year. Since 1997, the net flows have been 10 times larger than in previous years. In the year 2000, Sweden introduced a new pension system that forces the Swedish workforce to invest in mutual funds. This system will ensure net inflows of about SEK 13 billion per year. Panel A of Table 1 provides more details about the Swedish mutual fund industry.

Compared with investors in many other countries, Swedish mutual fund investors have a strong preference for equity funds. About 70% of total assets in the Swedish fund industry is invested in equity funds. Traditionally, Swedes have mainly invested in funds with an investment objective on countries or regions. However, recent trends have shown an increased interest in passively managed funds, hedge funds, and funds with an investment objective on specific industries, such as technology and pharmaceuticals.

Regulations concerning investment policies have been harmonized across the European Union,[2] and are followed by virtually all of the mutual funds within the Swedish industry. The UCITS terms in Europe are very similar to the U.S. 1940 Act defining diversification,[3] whose terms most mutual funds in the U.S. meet.

[2] The UCITS terms were introduced in 1985 (Undertakings for Collective Investments in Transferable Securities). These terms state that the funds are not allowed to hold a single stock worth more than 10% of their total assets. Moreover, they are only allowed to hold stocks worth more than 5% of their total assets to a maximum of 40% of total assets.

[3] The terms state that as to 75% of the assets of the fund, the fund cannot acquire more than 10% of the voting securities of any issuer *and* cannot invest more than 5% of total fund assets in any one issuer.

A. Sample of Funds

The sample of funds consists of all open-end mutual funds that have invested in the Swedish market during the time period 1996 to 2000. Hence, the sample is not contaminated by survivorship bias. All the funds are actively managed and meet the UCITS terms. We divide the funds according to investment objectives into two groups, Sweden and Small Cap funds. There are 97 Sweden funds, which invest in the broad Swedish stock market and 15 Small Cap funds, which mainly invest in Swedish firms with a small market capitalization.

The median size of Small Cap funds has grown from SEK 127 to SEK 622 million during the sample period. Sweden funds are much bigger but they have not experienced the same growth. The median size of these funds has grown from SEK 500 to SEK 1,000 million during the sample period. The average management fee is 1.5% per year for Small Cap funds and 1.4% per year for Sweden funds. Since Small Cap funds trade more than Sweden funds, their investors are charged on average *another* 0.1% per year.

The average turnover (minimum of purchases and sales over average assets) for Small Cap funds and Sweden funds is 79% and 65% per year, respectively (see Panel B of Table 1). This overall turnover can be decomposed attributed to the motive behind the trade. Overall trading has been decomposed into long-term trading, short-term trading, and regulatory trading. Long-term trading captures the fund manager's trading decisions that are related to changes in the strategic portfolio, when the investment horizon becomes longer than one year. Short-term trading refers to trading activities that involve stocks that are both bought *and* sold during one year. Regulatory trading refers to the forced trading activities that are the result of regulations.

Hence, the minimum number of stocks a diversified U.S. mutual fund and a European (UCITS) mutual fund must own are 16.

Interestingly, the higher trading observed for Small Cap funds is due to long-term trading decisions.[4] In other words, their portfolio of stocks changes much more between the years than that of Sweden funds. However, the short-term trading by Small Cap funds and Sweden funds is similar. In contrast, Sweden funds are to a larger extent forced to trade due to regulatory limits. Moreover, there is a positive time-trend in overall trading activities. That is, the average turnover measure increases every year. The average turnover for all funds (both Sweden and Small Cap funds) was 0.54 in 1996 and 0.77 in 1999.

Figure 1 shows how different trading activities is related to overall trading. We observe that funds that engage in the least overall trading activities mainly conduct long-term trading. This implies that these funds' trading activities mainly aim to rebalance their strategic portfolios. Figure 1 also shows that these funds' short-term trading is below zero. However, trading activity cannot be negative, and this negative measure only implies that the funds have been exposed to positive or negative net flows. These flows create an opportunity for the fund to rebalance the portfolio without affecting the overall turnover measure. Moreover, we can see a positive relation between long-term trading and overall trading; that is, the most active funds are involved in slightly more long-term trading than less active funds. However, the biggest difference between more active funds and less active funds is that more active funds engage to a much larger extent in short-term trading. Figure 1 also shows that average regulatory trading is not related to overall trading.

Weekly data of the funds' net asset values (NAV) were obtained from the Trust database of *Findata*. Reinvested dividends are included in the NAV and there is no tax dilution. All fund characteristics are obtained from annual reports except long-term trading, short-term trading, and regulatory trading, which are computed measures from the funds' annual portfolio holdings. The funds' portfolio holdings are obtained from annual reports.[5]

[4] Long-term trading, short-term trading, and trading that is the result of regulations are computed measures. Section 5 describes how they are computed.

[5]I thank Morningstar for their help in putting together part of the data.

B. Benchmarks

Two benchmarks are used in the evaluation: the 'General market' and 'Small Firms'. The General market is a value-weighted index that covers all the stocks listed on the Stockholm Stock Exchange (SSE). This index does not allow weights above 10% for a single firm, which is the same as the regulations that apply to mutual funds. During the five-year sample period, the total return on the General Market was 170% or 19% per year in excess of the risk-free interest rate that is approximated by the 7-day STIBOR. The value-weighted Small Firms index consists of all firms traded on the SSE with a market value of less than SEK 10 billion.[6, 7] Interestingly, the return on the Small firm's index has been lower than on the General market: 130% during the sample period or 16% per year in excess of the risk-free interest rate. Panel C in Table 1 provides more details on the benchmarks. Weekly return data that include reinvested dividends were obtained from the Trust database of *Findata*.

IV. Fund Performance and Attribution Analysis

In this section, we evaluate the fund managers' decisions by considering five measures, which are described in Section II.A and II.C. The measures are:

1. the funds' return in excess of the risk-free interest rate,
2. the funds' return in excess of their replicating portfolio (RV),
3. aggregate performance (Jensen's alpha measure following Ferson and Schadt (1996)),

[6] The maximal market capitalization varies over time, 10 billion SEK is a global maximum and was observed in the beginning of the year 2000.

[7] I thank Anders Andersson and Paul Söderlind for their help in putting together the index.

4. performance of fund managers' strategic decisions, and

5. performance of fund managers' tactical decisions.

The second measure shows if the fund managers' active trading decisions have improved the returns for their investors. Since fund managers change their portfolios slowly, we compare the funds' return with a replicating portfolio that is rebalanced annually. Due to the same reason, Grinblatt and Titman (1993) also use annual portfolio holdings (instead of quarterly holdings) in their examination of U.S. mutual funds. The replicating portfolio is computed using weekly stock returns that are obtained from *Datastream*. The costs to pursue this passive strategy would amount to less than 0.05% per year for an investor of moderate size.

The third, fourth, and fifth measures are computed using weekly return data for the funds and the two benchmarks, 'General market' and 'Small firms'. Moreover, I use the level of the yield curve and past market returns as information variables in equation (1).

A. Empirical Results

In this section, we examine the performance of Sweden and Small Cap funds. The empirical results are reported in Table 2. All results are annualized, that is, an alpha of 1% means that the fund has outperformed the benchmark portfolio by 1% per year.

We start by examining the funds' annual return in excess of the risk-free asset on an annual basis. Table 2 shows that both Small Cap funds and Sweden funds have provided their investors with significant excess return. The annual excess return during the sample period varies between -2% and 48% for Small Cap funds and between -11% and 46% for Sweden funds. Both Sweden funds and Small Cap funds have, on average, provided their investors with the extreme excess return of 20% per year during the sample period. However, the extreme performance disappears when we compare the return of the funds with their corresponding replicating portfolio. The return value of trading (RV) is positive every single

year for Small Cap funds if we add back fees and transaction costs. Managers of Small Cap funds made profitable trading decisions, since, on average, they increased the return of the fund by more than 3% net of fees, compared with their replicating portfolio. This high performance, however, is due to the extreme stock market in 1999, the year of the IT boom. Fund managers of Small Cap funds took advantage of the many profitable opportunities, and hence obtained an extreme performance that year. In contrast fund managers of Sweden funds have made inferior trading decisions and their average RV measure is -3% per year.

Departing from the above measures, we also evaluate the funds' performance on a risk-adjusted basis following Ferson and Schadt (1996). The aggregate performance measured as alpha (α) is strongly positive for both Small Cap and Sweden funds. On average, Small Cap funds and Sweden funds performance is 3.2% and 1.7% better than the benchmark model, respectively. These performance figures are very high since the fees and commissions are deducted from the funds' returns. In other words, the gross performance is 1.6% higher per year. Further, the alpha measures are also high compared with previous studies. Dahlquist, Engström, and Söderlind (2000) find that the average Swedish equity fund's alpha is close to zero during 1993 to 1997. Moreover, Engström (2003) also examine the Swedish mutual fund industry and find evidence that is in line with the main literature when evaluating mutual funds that invest in European equity. This result suggests that average fund under perform the benchmark by the level of fees.

An examination each year separately reveals that the average performance of Small Cap funds is positive for every single year. In contrast, the average performance for Sweden funds is not as pervasive; it is negative in some years and positive in others. Figure 2 shows the distribution of the aggregate annual performance for both Small Cap and Sweden funds. We see that many funds perform close to zero, but the distribution is positively skewed.

The aggregate alpha measure can be decomposed into a strategic alpha that is the performance of fund manager's strategic decisions, and a tactical alpha that is the performance of the fund manager's tactical decisions (see Section II.C). The results show that managers of Small Cap funds have made good tactical decisions. Their average tactical

performance, gross of fees, is positive every single year. The performance of their tactical decisions is 3.2% per year, net of fees, from 1996 to 2000. Contrary to the tactical decisions, their strategic decisions do not contribute to an increased aggregate performance. On average the performance of Small Cap fund managers' strategic decisions is 0.1% per year. In contrast, fund managers of Sweden funds have made, on average, good strategic decisions. The average performance of their strategic decisions is 3.2% per year and the corresponding performance of their tactical decisions is -1.4% per year during the sample period. It is, however, important to remember that the fee charged and commissions paid by the fund are deducted from the funds' tactical decisions. This means that the gross performance of the tactical decisions is 1.6% higher, which explains the negative performance for Sweden funds. Figure 3 shows the distribution of annual alphas of the funds' strategic and tactical decisions before fees and transaction costs. We can see that both strategic and tactical decisions are on average add value but the distributions also show that we mainly have positive outliers.

Figure 4 shows a scatter plot of the relation between the funds' strategic and tactical performance. The correlation between strategic and tactical alpha is about -0.5 each year during the sample period. Hence, fund managers tend to be good at either strategic or tactical decision making. However, we observe quite a few funds in 'losers-corner', bottom-left of the figure, that neither conduct good strategic nor tactical decisions.

As mentioned before, Jensen's performance measure suffers from a statistical bias when the fund manager is a successful market-timer. To check how this bias might have affected this evaluation, I estimate fund managers timing ability by using the methods in Treynor and Mazuy (1966), and Henriksson and Merton (1981). The results show that the fund managers possess neither a positive nor a negative timing ability. Hence, the performance measures are robust.

V. Measuring the Value of Trading

In this section, we evaluate fund performance in a cross-sectional setting against measures of trading activity. This evaluation will expand the existing evidence on the value of trading by considering components of trading, which are related to the motive behind it. Two previously used measures of overall trading activity along with three components of trading are used in the cross-sectional study. The measures of trading activity in the cross-sectional study are:

(i) *Commission*. This measure is total commissions paid by the fund during a year divided by average assets, which can be viewed as a measure of the funds' *total trading activities*.

(ii) *Turnover*. This measure captures the funds' *total trading activities not caused by flows*. It is measured as the minimum of purchases and sales over average assets.

(iii) *Long-term trading*. This component captures the fund manager's trading attributable to strategic asset allocation decisions. Hence, this component is measured as the fraction of the strategic portfolio that is new and is measured by

$$LT_T = \sum_{i(T)} \max\left(w_{i,T,T} - w_{i,T,T-1}, 0\right), \tag{4}$$

where company *i*'s weight in the portfolio at time *T* is denoted by $w_{i,T,T}$. In a similar manner $w_{i,T,T-1}$ is the weight of company *i* at time *T* in the strategic portfolio that was bought at *T*-1.This study uses annual data of the portfolio weights, which means that there is one year between *T* -1 and *T*. Hence, we compute the difference between the individual weights of the stock holdings at the end of the year less the

corresponding weights at the beginning of the year that have been affected by the returns during the year.[8]

(iv) *Regulatory trading*. This component captures the funds' trading that is due to the *regulatory limits* of the funds' portfolio holdings.

$$RT_T = \sum_t \sum_i \max\left(w_{i,t} - 0.1, 0\right) \tag{5}$$

where $w_{i,t}$ is the weight of company *i* at time *t*. In this paper, *t* represents weekly data. Hence, for each week I sum the weights above 10% for each stock.

(v) *Short-term trading*. This component is measured as the funds' turnover less long-term trading (as discussed above) and less regulatory trading. Hence, it captures the fund manager's trading deviations from the strategic portfolio during the year.

A. Method

In order to establish robust results of the relation between the funds' trading activity and performance, I consider several approaches. I start by running panel data regressions

$$\hat{\alpha}_{iT} - \bar{\hat{\alpha}}_T = \gamma_0 + \gamma_1\left(x_{iT} - \bar{x}_T\right) + \xi_{iT} \tag{6}$$

where $\hat{\alpha}_{iT}$ is the estimated alpha for fund *i* in year *T*, and x_{iT} is a measure of the funds' trading. I allow for fixed (year) effects by subtracting the mean of the alpha and the attribute during a year, denoted by $\bar{\hat{\alpha}}_T$ and $\bar{x}_T$, respectively. The relation between alpha and the

[8] I have also used a measure of the funds' rebalancing, which is calculated by $LT_T = \sum_{i(T)} \max\left(w_{i,T} - w_{i,T-1}, 0\right)$. This measure differs from the other measure since it does not take the returns of stocks in the strategic portfolio into account. However, this measure gives similar results.

trading measures is evaluated by a weighted least squares (WLS) approach where each observation is weighted by the reciprocal of its residual standard deviation from the performance regression in Section II.A. I use the WLS approach because the alphas are generated variables that contain measurement errors. This will introduce heteroskedasticity since the different alphas are measured with varying degrees of precision. The implication is that ordinary least squares (OLS) are inefficient and that the traditional estimates of the standard errors are misleading. I also examine other evaluation approaches in order to explore whether the WLS estimates are robust. Specifically, I am interested to study how the regression results are affected by the inclusion or non-inclusion of outliers.[9] These robustness checks are found to have no effect on the conclusions of the relation between performance and trading that are based on the WLS approach.

The second approach is to measure the performance of trading strategies based on the fund attributes. This gives further evidence on the cross-sectional differences and helps to quantify them economically. The funds are first ranked according to the attribute and then formed into two equally weighted portfolios; one consists of funds with a low attribute and one with high attributes. The cut-off points for Sweden funds are below the 25th percentile and above the 75th percentile. This choice of cut-off points for Sweden funds strikes a good balance between getting a large number of funds in each of the two portfolios and making the two portfolios distinctly different. However, the cut-off points for Small Cap funds are below the median and above the median. These cut-off points are chosen because only a few Small Cap funds exist within the Swedish mutual fund industry. I then construct a fictitious zero-cost portfolio by buying the "high" portfolio financed via a short-selling of the "low"

[9] I have reestimated the WLS regressions on every possible subsample of size N-2 drawn from the entire sample of N observations. This gives N(N-1)/2 different estimates, and I examine the distribution of these. Other approaches are estimations using the method of least absolute deviations (LAD) and the method of least trimmed squares (LTS), which put less weight on outliers. See, for instance, Rousseew and Leroy (1987) or Amemiya (1985) chapter 2 for further details on the estimators.

portfolio.[10] This zero-cost portfolio is held for one year, after which the sorting procedure is repeated, new portfolios are created and held for the subsequent year, and so on. Note that all the funds (even those that exit the sample during the period) are used in these strategies.

B. Aggregate Performance versus Trading Activity

In this section, I examine the relation between aggregate fund performance and the different measures of trading activity described above. The funds performance is measured in a setting similar to the one used in Ferson and Schadt (1996), and described in Section II.A. Table 3 presents the results of the single panel regressions using WLS and the results of the trading strategies for both Small Cap and Sweden funds.

The results show a positive relation between the funds' performance and overall trading for Small Cap funds. However, it is only the trading strategy that is statistically significant. This result is similar to Dahlquist, Engström, and Söderlind (2000), who find evidence of a positive relation between aggregate performance and overall trading (commission and turnover) for Swedish funds (joint estimation of Sweden funds and Small Cap funds). Moreover, this study also finds a positive and significant relation between performance and short-term trading when the trading strategy is employed. The lack of statistical significance in the single panel regressions is due to outliers that has less impact on the trading strategies. The funds' trading that is due to regulatory limits does not seem to affect the funds' performance.

The performance of Sweden funds is similar to that of Small Cap funds in that it is positively related to both the turnover measure and to short-term trading. This result holds both in the single panel regressions and when the trading strategies are employed. In contrast to Dahlquist, Engström, and Söderlind (2000), we do not find a statistically significant and positive relation between commission paid by the fund and fund performance for Sweden funds. One explanation for this result is that Dahlquist, Engström, and Söderlind (2000) did

[10] I have also tried cut-off points at 1/3 and 2/3. This trading strategy gives similar results.

not separate the funds based on investment objective. The fact that Small Cap funds performed better and paid higher commission than Sweden funds might have caused the positive relation in Dahlquist, Engström, and Söderlind (2000). There is mixed evidence on how trading that is due to regulatory limits affects performance for Sweden funds. The trading strategy, which is based on the funds' regulatory trading, indicates that this trading affects performance negatively, but the panel regression coefficients are positive, although not statistically significant.

C. Strategic and Tactical Performance versus Trading Activity

In this section, we examine the relation between strategic and tactical performance, which is described in Section II.C, and the different measures of trading activity described above. Table 4 presents the results of the examination of the relation between tactical performance and trading activity for both Small Cap and Sweden funds.

For Small Cap funds, the statistical relation between tactical performance and trading is stronger than the relation between aggregate performance and trading. Both the single panel regression and the trading strategies suggest that a positive relation exists between tactical performance (α_T) and the funds' turnover. A trading strategy, where an equally weighted portfolio of funds with above median turnover ratios are bought and below median turnover funds is sold, generates a positive performance of 5.7% per year. Similarly, a positive relation is found between tactical performance and short-term trading, and it is statistically significant both in the single panel regressions and when the trading strategy is employed. Also, a somewhat weaker but positive relation is found to exist between long-term trading and tactical performance. Interestingly, the results show a strong *negative* relation between regulatory trading and tactical performance. Hence, fund managers of Small Cap funds create tactical performance by making successful short-term bets on the stock market. However, they make inferior investment decisions when they are forced to trade compared with investing in the current portfolio.

The empirical results for Sweden funds are fairly similar to these for the Small Cap funds: there is a positive but somewhat weaker relation between aggregate trading and tactical performance. However, in contrast to the Small Cap funds, a positive relation is found between both short-term trading and tactical performance *and* long-term trading and tactical performance. Furthermore, no statistically significant relation between regulatory trading and tactical performance is found for Sweden funds.

In contrast to tactical performance, which is based on all the trading decisions made in one year, strategic performance is based on a single decision made at the beginning of the year. Therefore, it is not likely that strategic performance will be affected by the trading decisions during the year. When I examine the relation between strategic performance and the different measures of trading, almost no significant results appear. There is, nonetheless, one weak result that suggests that a positive relation exist between regulatory trading and strategic performance for Small Cap funds. This result is natural since regulatory trading occur when the fund hold stocks that outperform the market. Still, we need to change the setup to examine whether extensive trading causes high strategic performance. More specifically, we should evaluate the relation between lagged trading (trading prior to the strategic investment decision) and strategic performance. However, as this setup also fails to reveal any statistically significant relation between trading and strategic performance, it would appear that fund managers who are more active in the stock market do not possess superior ability to make strategic investment decisions.

VI. Conclusions

Fund managers' skills have previously been decomposed into market timing ability, stock-picking ability and style. This paper deepens our understanding of how fund managers create performance by decomposing it into strategic and tactical decisions. These new measures of performance require access to data on the funds' portfolio holdings that allow us to compute a replicating portfolio. It also contributes to the literature by adding new empirical

evidence on fund managers' ability to create value for investors by examining managers that operate in a less matured equity market compared with the U.S.

Interestingly, I obtain evidence that supports the value of active portfolio management when I evaluate performance and apply the new measures on a sample of Swedish mutual funds. First, the results show that both the average Sweden fund and the average Small Cap fund have outperformed the benchmark model. Second, Small Cap fund managers' tactical decisions create a significant positive performance that explains the overall good performance of the funds. In contrast, the managers of Sweden funds create performance through superior strategic decisions. Interestingly, a buy-and-hold strategy of observed portfolio holdings of the average Sweden fund yields the same performance as an investment in the fund itself gross of fees. Overall, these results highlight the importance of competition for information. Small Cap fund managers which operate in the less competitive part of the stock market exploit short term information asymmetries in order to create abnormal returns. In contrast, Sweden fund managers do not on average have access to information of short term pricing errors of stocks and therefore focus on making superior strategic decisions.

In the second part of the paper, I examine the relation between performance and trading, and extend previous evidence by decomposing trading into long-term trading, short-term trading, and regulatory trading. The cross-sectional analysis confirms previously documented evidence of a positive relation between aggregate performance and trading activity. This paper shows that this relation is due to a positive relation between the performance of fund managers' tactical decisions and trading. In contrast, no significant relation is found between the performance of fund managers' strategic decisions and trading. Moreover, the results show that Small Cap fund managers create performance mainly by making successful short-term bets in the stock market. Fund managers of Sweden funds create tactical performance by making short-term bets as well as by rebalancing decisions. The results also indicate that Small Cap fund managers make inferior trading decisions when they are forced to trade due to regulatory restrictions.

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Table 1: Data Description

Panel A. Swedish Equity Mutual Fund Industry

	1995	1996	1997	1998	1999	2000
Number	286	300	330	356	394	453
TNA	152	202	307	365	592	595
Net flow	1.3	2.1	52.6	14.1	27.1	68.7

Panel B. Characteristics of the Sample of Funds

Fund Category	No.	Comm.	Turnover	Short term	Long term	Reg.
Small Cap	15	0.34	0.79	0.45	0.31	0.03
		(0.20)	(0.56)	(0.43)	(0.16)	(0.01)
Sweden	97	0.27	0.65	0.29	0.27	0.06
		(0.20)	(0.50)	(0.28)	(0.14)	(0.06)

Panel C. Excess Return on Benchmarks

Benchmarks	1996	1997	1998	1999	2000	Mean
General Market	28.68	25.54	8.70	43.39	-12.46	18.77
Small Firms	34.09	21.66	-12.91	44.45	-9.43	15.57

Panel A shows the characteristics of the Swedish equity mutual fund industry. Number refers to the number of funds, TNA is total net assets at the end of each year and net flows refer to net flows during the year. TNA and flows are expressed in SEK billion. Panel B contains means and medians (within parentheses) for various attributes of the sample of funds. The sample is divided into two groups based on their investment objective. Commission is the funds' transaction costs over average assets. Turnover is the minimum of purchases and sales over average assets. Long-term trading is the change in the portfolio composition during a year. Short-term trading is the funds turnover minus long-term trading minus regulatory trading. Regulatory trading is trading that is due to regulatory restrictions. Panel C shows the return on the benchmarks in excess of the 7-day interbank rate. Mean refers to the average excess return during the period 1996 to 2000. Both benchmarks are value-weighted and include dividends.

Table 2: Fund Performance

	1996	1997	1998	1999	2000	1996-2000	R^2
	Panel A. Investment objective: Small Cap						
E.R	37.69	25.10	-0.49	48.22	-2.20	21.66	
R.V	-0.08	-1.55	0.12	17.3	0.10	3.18	
α_S	6.69	2.40	5.99	-8.74	6.71	0.14	0.85
α_T	-0.48	-0.74	0.19	13.72	2.72	3.16	0.10
α	5.85	1.49	6.02	3.75	8.91	3.23	0.85
	Panel B. Investment objective: Sweden						
E.R	26.88	24.82	13.27	46.22	-11.45	19.95	
R.V	-3.67	-3.38	2.05	-2.95	-5.14	-2.62	
α_S	2.03	1.76	2.43	0.73	6.54	3.24	0.94
α_T	-3.05	-2.17	5.45	-0.70	-3.31	-1.42	0.14
α	-1.14	-0.48	7.72	0.02	2.97	1.74	0.91

The table shows average performance across funds in % per year and on average during the sample period. The performance is separated according to investment objective. Two non-risk adjusted measures of performance are presented: the funds' return in excess of the risk-free interest rate (E.R.), and the funds' return in excess of its replicating portfolio (R.V.). Moreover, the table presents three risk adjusted performance measures. The aggregate alpha (α), which also is decomposed into strategic performance and tactical performance, strategic alpha and tactical alpha. R^2 is the average coefficient of determination across funds in the categories.

Table 3: Cross-Sectional Analysis of Aggregate Performance versus Trading

	Commission	Turnover	Long term	Short term	Reg. Trading
Panel A. Investment Objective: Small Cap					
Single Panel Regressions[a]					
No.observations	46	47	47	47	60
Coefficient	1.47	2.21	4.46	2.92	27.62
Standard error	(4.09)	(1.91)	(6.56)	(2.61)	(22.16)
Performance of Trading Strategies[b]					
Alpha	4.66	5.81	2.87	6.29	-2.05
Standard error	(3.01)	(2.57)	(2.38)	(2.25)	(2.68)
Panel B. Investment Objective: Sweden					
Single Panel Regressions[a]					
No.observations	281	285	301	285	391
Coefficient	0.24	1.15	2.01	1.36	2.25
Standard error	(1.40)	(0.55)	(1.79)	(0.61)	(6.00)
Performance of Trading Strategies[b]					
Alpha	3.07	3.52	2.58	2.51	-2.11
Standard error	(2.70)	(2.15)	(1.64)	(1.75)	1.88)

This table relates estimated annual aggregate alphas to measures of trading (commission, turnover, long-term trading, short-term trading, and regulatory trading).

a The single panel regression is a regression of the alpha on a constant and each attribute individually allowing for fixed year effects, see equation (6). The equation is estimated with weighted least squares, where each observation is weighted by the inverse of the standard deviation of the estimated alpha. The number of observations and the slope coefficient is reported and the corresponding heteroskedasticity-consistent standard error is shown in parentheses below the coefficient.

b The trading strategy is to buy (with equal weights) funds above the 50th percentile of the attribute, and sell (with equal weights) funds below the 50th percentile for Small Cap funds. Corresponding percentiles for Sweden funds are the 25th and 75th. The performance of the trading strategy is estimated in the same way as the performance of the funds, and the conditional alpha is reported. The corresponding heteroskedasticity-consistent standard error is shown in parentheses below the alpha.

Table 4: Cross-Sectional Analysis of Tactical Performance versus Trading

	Commission	Turnover	Long term	Short term	Reg. Trading
Panel A. Investment Objective: Small Cap					
Single Panel Regressions[a]					
No.observations	46	47	47	47	60
Coefficient	-0.01	3.31	7.38	3.81	-35.68
Standard error	(2.11)	(1.80)	(6.12)	(2.22)	(16.54)
Performance of Trading Strategies[b]					
Alpha	5.73	5.65	4.00	3.33	-4.37
Standard error	(2.09)	(1.89)	(1.70)	(2.00)	(2.07)
Panel B. Investment Objective: Sweden					
Single Panel Regressions[a]					
No.observations	281	285	301	285	391
Coefficient	1.51	1.22	2.71	1.25	2.02
Standard error	(1.47)	(0.64)	(2.13)	(0.66)	(5.72)
Performance of Trading Strategies[b]					
Alpha	2.33	1.93	2.77	0.86	-0.10
Standard error	(1.99)	(1.48)	(1.51)	(1.38)	(1.66)

This table relates estimated annual tactical alphas to annual measures of trading (commission, turnover, long-term trading, short-term trading, and regulatory trading).

a The single panel regression is a regression of the alpha on a constant and each attribute individually allowing for fixed year effects, see equation (6). The equation is estimated with weighted least squares, where each observation is weighted by the inverse of the standard deviation of the estimated alpha. The number of observations and the slope coefficient is reported. The number of observations and the slope coefficient is reported and the corresponding heteroskedasticity-consistent standard error is shown in parentheses below the coefficient.

b The trading strategy is to buy (with equal weights) funds above the 50th percentile of the attribute, and sell (with equal weights) funds below the 50th percentile for Small Cap funds. Corresponding percentiles for Sweden funds are the 25th and 75th. The performance of the trading strategy is estimated in the same way as the performance of the funds, and the conditional alpha is reported. The corresponding heteroskedasticity-consistent standard error is shown in parentheses below the alpha.

Figure 1: Overall Turnover and Decomposed Turnover

The figure shows how the decomposed turnover measures depend on overall turnover. The sample of funds has been divided into groups of about 50 funds based on overall or reported turnover. Total turnover refers to the average overall turnover within each group. Overall turnover has been decomposed into long-term trading, short-term trading and regulatory trading.

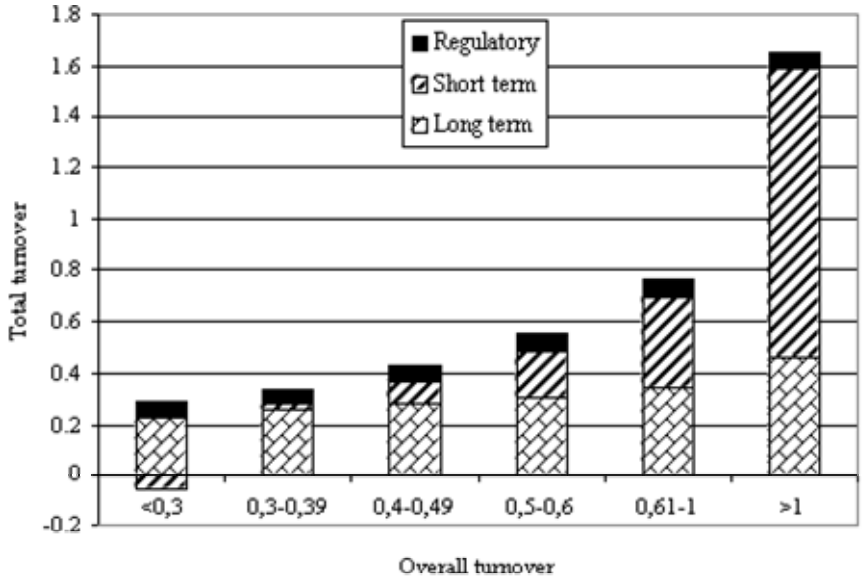


Figure 2: Distribution of Aggregate Performance

The figure shows 451 annually estimated alphas for the sample of funds. The alphas are separated on the investment objectives, Small Cap and Sweden. Nine alphas are higher than 20% and three are lower than 20%.

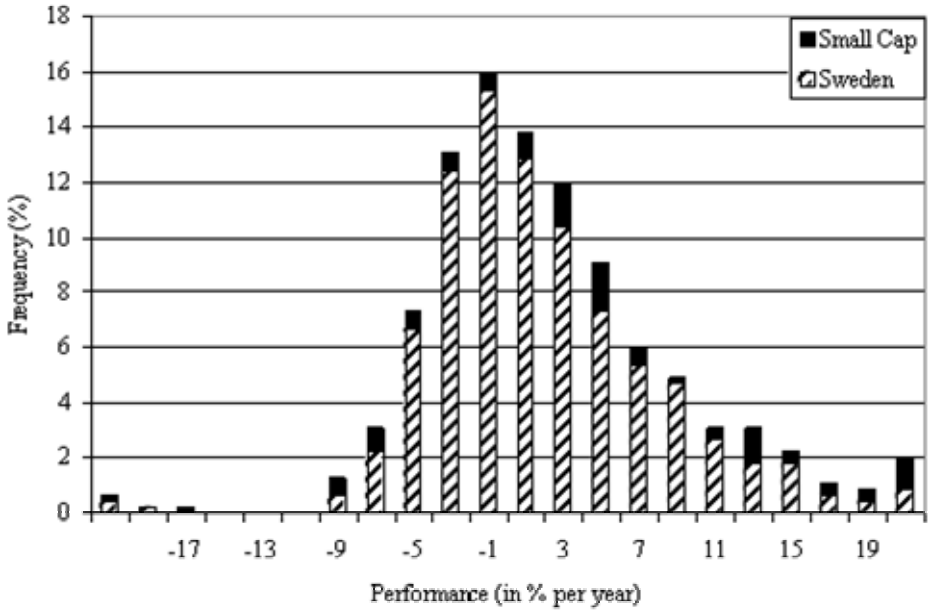


Figure 3: Distribution of Strategic and Tactical Performance

The figure shows the distribution of 451 annually estimated alphas for the funds' strategic decisions and the distribution of 451 annually estimated alphas for the funds' tactical decisions. Fifteen alphas are higher than 20% and five are lower than 20%. The performance of the funds is gross of fees.

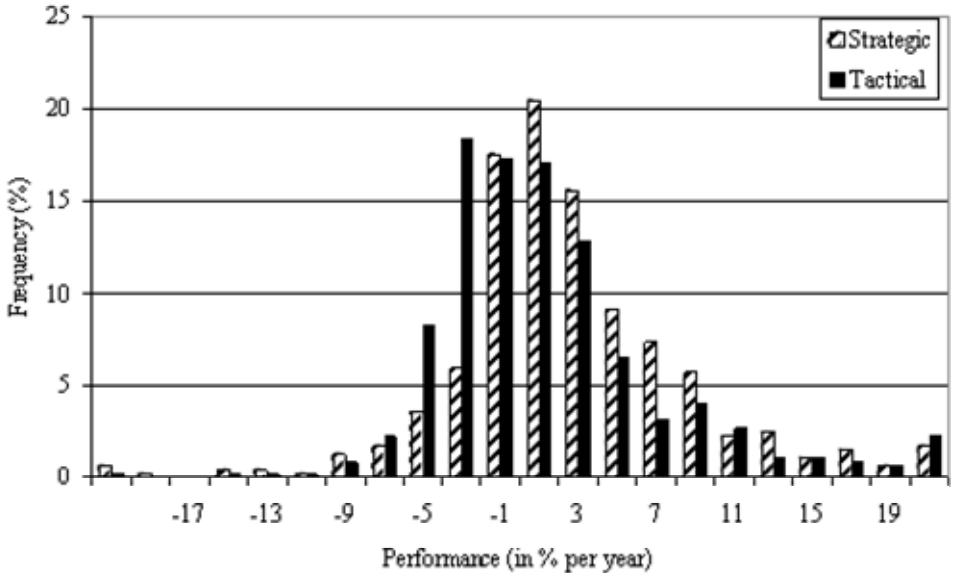
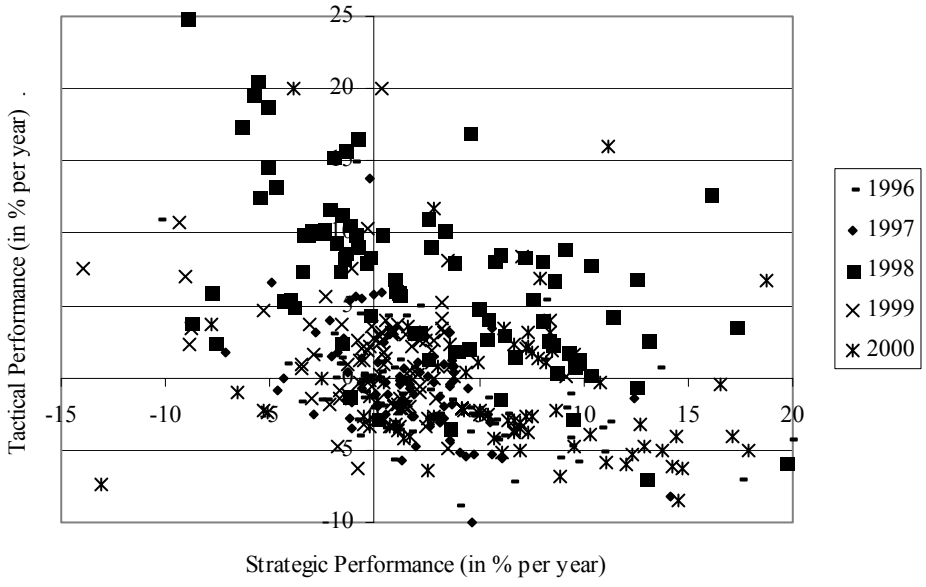


Figure 4: Scatter Plot of Strategic and Tactical Performance

The figure shows the relation between the funds' strategic and tactical performance. It covers annual alphas for 451 fund portfolios, which has been estimated between 1996 and 2000.