ON THE IMPORTANCE OF MUTUAL FUND FAMILIES IN EMERGING MARKETS
Key words: Mutual Fund, Performance Persistence, Fund Families

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On the Importance of Mutual Fund Families in Emerging Markets

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Abstract

This study contributes to the mutual fund literature by looking at performance persistence on a fund family level, allowing for individual equity, bond and balanced funds to be included under single family umbrellas. The study is conducted on the emerging Finnish mutual fund market, an environment in which the importance of superior fund family teams is likely to be accentuated. Using both non-parametric and parametric tests we find robust evidence of performance persistence for the fund families. Persistence is particularly strong in the first half of the investigation period, which highlights the importance of fund families at early stages of market development.

Special thanks to Niklas Geust (FIM Securities), Vesa Puttonen (Conventum Group) and Christian Wetterstrand (Bank of Aland) for fruitful discussions.
I. Introduction

The consensus emerging from numerous academic studies, with the first ones dating back to the studies by Treynor (1965), Sharpe (1966) and Jensen (1968), is that mutual funds do not tend to systematically outperform their benchmarks. This is very much at odds with the practitioner’s literature, where a belief has emerged that actively selecting among mutual funds can lead to superior future returns. Significant resources are today dedicated to tracking historical performance in order to be able to spot the future winners. Furthermore, information regarding fund performance is today widely available through sources ranging from daily newspapers to professional services, such as Morningstar Inc. In the 90s numerous academic studies regarding mutual fund performance persistence have seen daylight. These studies are almost without exception related to the performance persistence of individual funds. This study contributes to the mutual fund literature by looking at performance persistence on a fund family level as opposed to looking at individual funds.

Looking at performance persistence at fund family level is interesting since certain fund families are likely to have an edge in attracting talent, and should thus have managers who on the average are more skilled. Fund families with higher aggregate assets under management are likely to have higher revenues, partly to be allocated across the individual funds as higher than average salaries. Funds within the same family are able to tap into a broad pool of knowledge ranging from economists to industry specialists before making investment decisions. Consequently, it might be possible that certain fund families can create “winning teams”, which makes the individual funds within the family consistently perform well compared with the peer group.

The study is conducted using Finnish mutual fund data, which is interesting since the Finnish fund market can be characterized by a low degree of development, which is the type of environment in which certain fund families can be hypothesized to have a significant first mover advantage in terms of building a well functioning organization, and consequently achieving a superior performance relative to the peer group. Developing financial markets are furthermore often characterized by a labor market shortage, with skilled personnel turning to a few established and well branded fund
families, which is likely to further accentuate the superior performance of certain fund families.

Several previous studies, such as Hendricks, Patel, and Zeckhauser (1993), Goetzmann and Ibbotson (1994), Brown and Goetzmann (1995), have found evidence of performance persistence on an individual fund level. There is evidence of both prior winners repeating their superior performance and in particular losers repeating their substandard performance. Studies such as Carhart (1997) and Wermers (1997) have found that some of the positive performance persistence disappears when adjusting for common risk factors, and in particular for the momentum effect. The studies cannot, however, explain the negative performance persistence. The samples of almost all previous studies include only equity funds and arguably there is a gap in the academic literature as far as the performance persistence of other fund types is concerned. Exceptions are Blake, Elton and Gruber (1993), who do not find evidence of performance persistence for a sample of bond funds, and Sharpe (1995) who finds evidence of performance persistence for a group of stock, bond and balanced funds. Patari (2000) does not find evidence of performance persistence using a sample of 14 Finnish equity funds. On the other hand, using a different methodology on a sample of Finnish equity, bond and balanced funds Sandvall (2000) finds strong evidence of performance persistence, which is consistent with certain funds having a first mover advantage on a newly established market. The only study which measures performance persistence on a fund family level is Shukla and Trzcinka (1994), who find evidence of negative performance persistence for equity funds. The test design of the study is, however, very simplistic involving measuring the correlation of fund ranks in pairs of non-overlapping four year periods. The test design is furthermore subject to survivorship bias since the funds are required to have existed throughout the entire eight year test period. Finally, the study limits the fund family to only include equity funds.

This study measures the performance persistence of fund families using a Finnish sample during the time period 1.1.1995–30.6.2000. As earlier mentioned, using a Finnish sample is interesting since the Finnish market can be characterized by a low degree of development, which is the type of environment in which ”winning teams” are likely to excel. The fund family is defined to include equity, bond and balanced
funds, and is thus not restricted to include only one fund type. For each fund family the average of four within fund groups normalized performance measures are calculated. Performance persistence is then investigated by both measuring rank order correlations across ten overlapping one year periods and by performing a pooled cross sectional regression with a lagged measure of performance explaining future performance.

We find that performance persistence indeed can be documented for mutual fund families on the Finnish mutual fund market during the investigated period. Further, we also find evidence that the degree of persistence has decreased during the investigated period, hence supporting the hypothesis stating that persistence is more likely to occur on a less developed market. In addition, portfolio simulations indicate that the documented persistence can be viewed to be of economic significance.

The paper is organized as follows. Section II presents the data and Section III introduces the Finnish fund market from a European perspective. Section IV discusses the methodology and key results are displayed in Section V. Finally, Section VI provides summary and conclusions.

II. Data

Our data set includes the weekly returns\(^1\) of all domestic mutual funds registered in Finland from January 1995 to July 2000. In contrast to previous studies the fund families are allowed to include equity, bond and balanced funds. The sample includes as well newly incepted as disappearing funds, which have existed throughout the one year evaluation periods, and is thus largely free of survivorship bias\(^2\). The sample

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\(^1\) The results in Kallunki and Martikainen (1998) indicate that an evaluation on a daily level would lead to a price adjustment delay problem characteristic to a thinly traded market. An evaluation on a monthly level would on the other hand reduce the amount of observations which is problematic due to the short history of the Finnish mutual fund market.

\(^2\) A small amount of survivorship bias can be argued to be imposed by the test design, which requires a fund to exist throughout the one year evaluation periods. This is, however, not by far as severe as the type of survivorship bias present in studies such as Hendricks, Patel and Zeckhauser (1993) and Goetzmann and Ibbotson (1994), in which funds which at any time disappear during the evaluation period altogether are eliminated from entire sample. See Carhart, Carpenter, Lynch and Musto (2000) for a recent and interesting discussion on survivorship.
includes 10 overlapping one year periods, which are rolled every six months so that the second half of one period constitutes the first half of the next period. We measure fund performance against benchmark indices representing the alternative passive investment strategy for the uninformed investor. Equity fund returns are measured against the HEX portfolio index\(^3\), bond funds against a Finnish benchmark bond-index, and finally balanced funds are measured against an index taking the weights 40-40-20 in the above two indices and a benchmark money market index\(^4\). The dataset employed in the tests includes mutual funds from 18 fund families with an average of 2.6 funds per family. The largest and smallest fund families include on the average 7.2 funds and 0.2 funds throughout the ten evaluation periods, respectively. Funds are included in a family if they are distributed through the same distribution channels and are marketed under the fund family brand.

### III. The Emerging Finnish Fund Market – A Perspective

Seen from an international perspective the Finnish fund market is very young. The legislation which enabled the establishment of mutual funds in Finland was namely put in place as late as September 1987, while the first funds in for instance the US and Sweden were established in the 1920s and 1950s, respectively. After inception, the Finnish fund market did not get a flying start, mainly due to both a severe downturn in the economy which commenced in 1989.

Figure 1 below shows the growth and the level of fund investment in the European fund market.

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\(^3\) The Helsinki Stock Exchange portfolio index is a market value weighted return index adjusted for stock splits and dividends with an upper weight limit of 10% for each company, which resembles the limitations on single company weights imposed on the mutual funds by the Finnish legislation.

\(^4\) The benchmark bond and money market indices are calculated by Merita–Nordbanken Ltd and Leonia Bank Ltd daily at 1 p.m.
As can be seen from the figure above, the Finnish fund market is among the least developed in Europe, the degree of market development being defined as the aggregate fund net asset value (NAV) per capita. For Finland NAV per capita amounts to EUR 1,980, while the European average is EUR 5,970. On the other hand, the Finnish fund market is with a growth rate of 110% among the fastest growing ones compared with a European average of 37%. The Finnish fund market can in summary be characterized as an emerging fund market, and should thus as earlier mentioned be a very interesting test laboratory for fund family performance persistence.
IV. Methodology

A. Performance Measures

The performance of the mutual funds is examined using three different performance measures to insure the robustness of the later performed persistence tests. The three measures are excess return, Sharpe ratio\(^5\) and abnormal return (in excess of CAPM). All measures are calculated for each fund for the first and the second half of the 10 overlapping one year evaluation periods. In order to furthermore increase the robustness of the results, the abnormal return is estimated both with and without the quadratic timing factor adjustment suggested by Treynor and Mazui (1966)\(^6\). The abnormal return \((\alpha)\) is thus obtained by estimating the following two models using OLS:

\[
\begin{align*}
\text{rfund} &= \alpha + \beta \text{rmarket} + \varepsilon \quad (1) \\
\text{rfund} &= \alpha + \beta \text{rmarket} + \gamma \text{rmarket}^2 + \varepsilon \quad , (2)
\end{align*}
\]

where \(\text{rfund}\) and \(\text{rmarket}\) are the logarithmic weekly mutual fund and benchmark returns excess the risk free rate, respectively.

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\(^5\) Sharpe-ratio = \((\text{rfund} - r_{rf}) / \delta(\text{rfund})\), where \(r_{rf}\) is the risk free rate and the standard deviation is estimated using 26 weekly returns. The one month Helibor / Euribor rate effectively reinvested is used as the risk free rate.

\(^6\) One of the most common criticisms of the Jensen’s alpha measure is that it is based on an upwardly biased estimate of systematic risk for a market timing investment strategy. As demonstrated in Admati and Ross (1985) and Dybvig and Ross (1985) this may assign unjustified negative performance to a market timer. The quadratic measure suggested by Treynor and Mazui (1966) controls for the expected curvature present in returns when using a market timing strategy, and thus in theory allows for a more unbiased Jensen’s alpha measure. Kraus and Litzenberger (1976) and Jagannathan and Korajczyk (1986) note that spurious market timing ability may arise due to co-skewness in returns. This does not, however, mitigate the value of the adjusted measure for abnormal return as a valuable robustness check.
B. Fund Family Performance Averages

The key challenge when measuring fund family performance is the aggregation of performance measures for individual funds representing different fund categories\(^7\). This is done by standardizing all performance measures within each fund category. We assume that the performance measures are normally distributed within each fund category. Using this assumption we can normalize all the performance measures by calculating their Z-values, or

\[
Z(\text{PM}_{\text{fund}}) = (\text{PM} - \text{avg}(\text{PM}_{\text{fund type}})) / \delta (\text{PM}_{\text{fund type}}),
\]  

(3)

where \( \text{PM} \) is the performance measure to be normalized, \( \text{avg}(\text{PM}_{\text{fund type}}) \) is the average \( \text{PM} \) for the fund category and \( \delta (\text{PM}_{\text{fund type}}) \) is the cross-sectional standard deviation for \( \text{PM} \) within the fund category. Using these normalized performance measures we obtain measures of average fund family performance by weighting the individual fund observations with their respective fraction of the total fund family net asset value (NAV). Furthermore, we also calculate equally weighted Z-values to achieve a higher reliability in the results\(^8\).

C. Measuring Fund Family Performance Persistence

The fund family performance persistence is measured with as well non-parametric as parametric methods. Firstly, based on the three normalized performance measures we calculate half year fund family ranks throughout the evaluation period.

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\(^7\) Shukla and Trzcinka (1994) avoid the problem by only allowing equity funds to be included in the mutual fund families, and calculating fund family performance directly as an arithmetic average of the individual fund performances.

\(^8\) Both value and equally weighting the family performance measure is attractive since it gives an opportunity to form an opinion regarding whether positive (negative) fund family performance persistence is driven by certain large funds within the family umbrella or whether all individual funds on the average tend to perform better (worse).
By using Kendall’s W coefficient of concordance\(^9\) we test the zero hypothesis that there is no correlation among the fund ranks, the alternative hypothesis being that prior fund ranks carry information regarding future rankings, i.e. there is performance persistence. Secondly, we use a pooled cross sectional regression with a lagged measure of normalized performance explaining future performance, or

\[
Z_{\text{avg}}(\text{PM}_{\text{fund},t}) = \alpha + \beta Z_{\text{avg}}(\text{PM}_{\text{fund},t-1}) + \epsilon ,
\]

where \(Z_{\text{avg}}(\text{PM}_{\text{fund},t})\) and \(Z_{\text{avg}}(\text{PM}_{\text{fund},t-1})\) are the normalized fund family performance measures (as described in the previous section) during the second and the first half years of the ten one year overlapping evaluation periods, respectively. The zero hypothesis is that the \(\beta\) coefficient takes the value zero, i.e. prior performance does not explain future performance, while performance persistence, on the other hand, would imply a positive value for \(\beta\).

V. Results

The section is divided into three sections. The first and second sections present non–parametric and parametric estimations of performance persistence, respectively. The third section presents results from portfolio simulations.

A. Non–Parametric Test

Table 1 below presents the results from the non-parametric Kendall’s W test.

\(^9\) Kendall’s coefficient of concordance is calculated according to \(W= [(12^*\Sigma T^2)/(m^2*N(N^2-1))] - [3^*(N+1)/(N-1)]\), where \(T\) is the sum of the ranks of the individual fund families in the different periods, \(N\) is the number of fund families included and \(m\) is the number of periods over which the fund families are ranked. The significance of \(W\) can be approximated by converting it to a \(X^2\) distribution according to \(X^2 = m(N-1)^*W\).
Table 1

Kendall’s Coefficient of Concordance

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equally Weighted</td>
<td>Value Weighted</td>
</tr>
<tr>
<td>Kendall’s W</td>
<td>0.29</td>
<td>0.23</td>
</tr>
<tr>
<td>N (# funds)</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>m (# periods)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Χ²</td>
<td>31.9</td>
<td>24.8</td>
</tr>
<tr>
<td>Prob.</td>
<td>0.001</td>
<td>0.010</td>
</tr>
</tbody>
</table>

The table presents the results from Kendall’s W test, where W is calculated according to

\[ W = \frac{12*\sum T^2}{m^2*N(N^2-1)} - \frac{3*(N+1)}{(N-1)} \]

where T is the sum of the ranks of the individual funds in the different periods, N is the number of funds included and m is the number of periods over which the funds are ranked. The significance of W can be approximated by converting it to a \( \chi^2 \) distribution according to \( \chi^2 = m(N-1)*W \). The fund ranks are calculated on the basis of excess return, Sharpe ratio, Jensen’s alpha and finally timing adjusted Jensen’s alpha (“Alpha2”). All performance measures are normalized as was described in Section IV. Within fund families the normalized performance measures are both equally and value weighted.

The results from Kendall’s W tests reveal a significant correlation between fund family ranks using both the equally weighted and the value weighted approach when measuring mutual fund performance with excess returns (Return) and Jensen’s alpha (Alpha). Furthermore, Kendall’s W statistics are significant for the equally weighted methodology in the case of the timing adjusted Jensen’s alpha (Alpha2). In summary, evidence is recorded in favor of mutual fund family performance persistence, but as the Kendall W test methodology by definition reduces the data sample rather significantly in the case where the sample increases with time, we turn to the pooled cross-sectional regressions for further verification.

\[ \text{In order to test the stability of the results the sample is furthermore split into two equally large sub-samples covering the time periods 1.1.1995–30.6.1997 and 30.6.1997–30.6.2000, respectively. The results indicate that fund family performance persistence is stronger in the second sub-period. The results are somewhat surprising since it could be expected that the importance of fund families would be larger the lower the degree of market development. Kendall’s W test is, however, problematic in the second sub-period, where the amount of funds is rapidly increasing, since it limits the test to only include mutual funds present at the beginning of the period, thus potentially producing an unrepresentative sample.} \]
B. Pooled Cross Sectional Regression

This section presents the results from the pooled cross sectional regression \(^{11}\). Results for as well the full sample and two sub samples are presented in order to increase the robustness of the results.

Table 2 below presents the results from the pooled cross sectional regression for the entire investigation period.

### Table 2

**Pooled Cross Sectional Regression:**

**Full Sample**

<table>
<thead>
<tr>
<th></th>
<th>Equally Weighted</th>
<th>Value Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t-values / (prob)</td>
<td>t-values / (prob)</td>
</tr>
<tr>
<td>Return</td>
<td>6.27 (0.000)</td>
<td>6.52 (0.000)</td>
</tr>
<tr>
<td>Sharpe</td>
<td>2.69 (0.008)</td>
<td>2.82 (0.005)</td>
</tr>
<tr>
<td>Alpha</td>
<td>1.72 (0.087)</td>
<td>2.22 (0.028)</td>
</tr>
<tr>
<td>Alpha2</td>
<td>0.38 (0.706)</td>
<td>0.89 (0.376)</td>
</tr>
</tbody>
</table>

The table presents the t-values and associated probability values from a pooled cross sectional regression, defined as 
\[
\frac{z_{\text{avg}}(P\text{M}_{\text{fund}})}{\text{t-values}} = \alpha + \beta \frac{z_{\text{avg}}(P\text{M}_{\text{fund,t-1}})}{\text{t-values}} + \epsilon,
\]
where \(z_{\text{avg}}(P\text{M}_{\text{fund}})\) and \(z_{\text{avg}}(P\text{M}_{\text{fund,t-1}})\) are the normalized fund family performance measures (as described in the methodology section) during the second and the first half years of the ten one year evaluation periods, respectively. The normalized fund family performance measures are both equally and value weighted. The normalized performance measures are excess return, Sharpe ratio, Jensen’s alpha and finally timing adjusted Jensen’s alpha (“Alpha2”). The regression includes 150 observations.

When measuring performance by excess returns and Sharpe ratio (Sharpe), the full sample pooled cross-sectional regression results (Table 2) display very significant parameter estimates with expected signs for both the equally weighted and the value weighted approach. In addition, the parameter estimate for Jensen’s alpha in the value weighted approach is significant whereas that of the equally weighted approach close-to significant at a 5% confidence level. Further worth noting is that all parameter

\(^{11}\) A White heteroskedasticity consistent variance–covariance matrix is used in all regressions. No testing and correction for autocorrelation is undertaken since the results in Sandvall(1998) indicate that this would only have a marginal effect on the results.
estimates show positive signs as expected, hence enhancing the robustness of the results. We note that the Sharpe ratios are more significant compared with the non-parametric test, which can be explained by that the latter restricts the data sample to only include fund families which exist in the first ranking period. In conclusion, these results further support mutual fund family performance persistence during the investigated period in Finland. To be able to determine the influence of market maturity on the observed phenomenon we, however, need to disintegrate the sample into two separate time-periods.

Table 3 below presents the results from the pooled cross sectional regression for the first half of the investigation period.

**Table 3**  
**Pooled Cross Sectional Regression:**  
**First Sample Half**

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Equally Weighted</td>
</tr>
<tr>
<td></td>
<td>t-values / (prob)</td>
</tr>
<tr>
<td>Return</td>
<td>2.76 (0.008)</td>
</tr>
<tr>
<td>Sharpe</td>
<td>2.82 (0.006)</td>
</tr>
<tr>
<td>Alpha</td>
<td>1.94 (0.057)</td>
</tr>
<tr>
<td>Alpha2</td>
<td>1.68 (0.097)</td>
</tr>
</tbody>
</table>

The table presents the t-values and associated probability values from a pooled cross sectional regression, defined as $z_{avg}(PM_{fund,t}) = \alpha + \beta z_{avg}(PM_{fund,t-1}) + \epsilon$, where $z_{avg}(PM_{fund,t})$ and $z_{avg}(PM_{fund,t-1})$ are the normalized fund family performance measures (as described in the methodology section) during the second and the first half years of the ten one year evaluation periods, respectively. The normalized fund family performance measures are both equally and value weighted. The normalized performance measures are excess return, Sharpe ratio, Jensen’s alpha and finally timing adjusted Jensen’s alpha ("Alpha2"). The regression includes 66 observations.

The regression results for the first half of the sample reveal no major differences to the results of the whole sample, except that the parameter estimates for the timing adjusted Jensen’s alphas now also indicate performance persistence.
Table 4 below presents the results from the pooled cross sectional regression for the second half of the investigation period.

### Table 4
**Pooled Cross Sectional Regression:**
**Second Sample Half**

<table>
<thead>
<tr>
<th></th>
<th>Equally Weighted</th>
<th>Value Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t-values / (prob)</td>
<td>t-values / (prob)</td>
</tr>
<tr>
<td>Return</td>
<td>5.72 (0.000)</td>
<td>6.29 (0.000)</td>
</tr>
<tr>
<td>Sharpe</td>
<td>1.80 (0.075)</td>
<td>1.83 (0.071)</td>
</tr>
<tr>
<td>Alpha</td>
<td>0.73 (0.469)</td>
<td>1.23 (0.223)</td>
</tr>
<tr>
<td>Alpha2</td>
<td>-0.63 (0.529)</td>
<td>-0.40 (0.691)</td>
</tr>
</tbody>
</table>

The table presents the t-values and associated probability values from a pooled cross sectional regression, defined as $z_{avg(PMfund,t)} = \alpha + \beta z_{avg(PMfund,t-1)} + \epsilon$, where $z_{avg(PMfund,t)}$ and $z_{avg(PMfund,t-1)}$ are the normalized fund family performance measures (as described in the methodology section) during the second and the first half years of the ten one year evaluation periods, respectively. The normalized fund family performance measures are both equally and value weighted. The normalized performance measures are excess return, Sharpe ratio, Jensen’s alpha and finally timing adjusted Jensen’s alpha (“Alpha2”). The regression includes 84 observations.

The regression results for the second sample half differ from those of the full sample and the first sample half in that only parameter estimates for excess returns are significant (though the parameter estimates for the Sharpe ratio remain on the borderline of significance). Further, the timing-adjusted Jensen alphas show negative signs, contrary to expected within the framework of performance persistence. In conclusion, the connection between past and future values of the investigated measures seems somewhat weaker for the second sample half than for the full sample and the first sample half. This finding might hence be interpreted as an indication that mutual fund family performance persistence has decreased during the investigated period, which in turn implies that mutual fund family performance persistence might
be stronger for developing markets than for more mature ones\textsuperscript{12}.

\textit{C. Economic Significance of Performance Persistence - Winner and Loser Portfolios}

\textbf{Figure 2}

\textbf{Cumulative Abnormal Returns for Winner and Loser Portfolios}

\textsuperscript{12} We also attempt to control the detected fund family performance persistence with various attributes which intuitively could be assumed to be related with fund family performance. This is done by adding the attributes to Equation 1. The additional test are performed for as well the entire sample as for the two sub-periods. The variables for the individual funds have been arithmetically weighted when being combined under family umbrellas. The first type of variables are related to the scope of the fund family, and include both the raw number of funds under management and a dummy variable for whether or not the fund families have all three fund types (i.e. equity, bond and balanced funds) in their offering. Secondly, the average age of the funds included in the family umbrella is used as a proxy for experience. Thirdly, market share is used as a proxy for brand. We also test whether the average fund family fees relative to the remainder of the market can explain the documented performance persistence. Finally, we also incorporate a dummy for whether the fund family is a bank or non-bank. Finland namely has a history of being very bank centered and it can be hypothesized that banks which are able to cross-sell money from saving accounts into their mutual funds do not need to compete for new capital as much as independent entities. For all variables except the bank/non-bank dummy we cannot find variables with satisfactory statistical significance and stability in coefficient signs across the periods. There is some evidence that the bank/non–bank dummy as expected is inversely related to performance. Most of this effect seems to be related to the first sub-period. Further trying to understand the relationship between family attributes and performance may be an interesting avenue for future research.
To achieve a better perception of the economic significance of performance persistence for mutual fund families we construct four portfolios which are reconfigured with half-year intervals as a function of the Jensen alpha measure. The two “Prior Winner” portfolios are formed as equally weighted portfolios of the best third of all mutual fund families, where performance is measured with the equally and the value weighted Jensen alpha methodology. Correspondingly, the two “Prior Loser” portfolios are formed as equally weighted portfolios of the worst third of all mutual fund families, where performance is measured with the equally and the value weighted Jensen alpha methodology. In case the value weighted portfolios show stronger persistence effect, there is reason to suspect that the results are driven by certain dominating funds. The ex-post Jensen alphas are then cumulated over the subsequent half-year periods to calculate cumulative abnormal portfolio returns in excess of the CAPM expectation for each portfolio.

The portfolio analysis indeed seems to reveal some economic significance of performance persistence for mutual fund families as the equally (value) weighted “winner” portfolios yield cumulative abnormal returns of 16.5% and (14.5%) over the portfolio simulation period while the corresponding numbers for the “loser” portfolios are only 1.5% and (0.4%), respectively.\(^1\)

\(^1\) In order to test the sensitivity of the results to the base case 30% portfolios selection rule, the results were regenerated using the median, 40% and 20% as selection rules for the winner and loser portfolios. As expected, the differences between the winner and loser portfolios increase slightly the narrower the selection criteria. For instance, the cumulated abnormal returns for the median based equally (value) weighted winner and loser portfolios are 15.4% (14.0%) and 4.8% (3.1%), while the corresponding figures for the 20% portfolios are 22.4% (22.4%) and –0.8% (–4.6%), respectively. The differences between the winner and loser portfolios is statistically significant with a probability value of 0.00. As a further robustness check we also weight the winner and loser portfolios according to size (so far only the families have been equally and value weighted when combining the individual funds under the family umbrellas). The results are in line with the base case, which suggests that the results are not driven by a fund family size.
The difference between the winner and loser portfolios is statistically significant\textsuperscript{14}. Most of the difference between the winner and loser portfolios furthermore seems to be attributed to the latter part of the period\textsuperscript{15}. Furthermore, it is interesting to notice that persistence is stronger for the portfolios constructed according to the equally weighted performance measure. This articulates the importance of fund families as opposed to individual fund performance.

VI. Summary and Conclusions

This study contributes to the mutual fund literature by measuring performance persistence on a fund family level. We allow for equity, bond and balanced funds to be included in the fund families. In order to be able to calculate value and equally weighted family performance measures we normalize the performance measures of the individual funds across the different fund categories.

The study is conducted on the Finnish mutual fund market which is an interesting test laboratory for measuring the significance of fund families. The Finnish fund market can from a European perspective be characterized as one of the least developed ones, which is the type of environment in which certain fund families through first mover advantage are likely to be able to outperform the peer group.

\textsuperscript{14} For the full evaluation period the difference between the cumulated abnormal returns for the winner and loser portfolios is statistically significant with probability values of 0.00 for both the equally and value weighted fund families. t-values have been calculated as paired comparisons of means assuming identical, unknown variances as follows: 
\[ t = \frac{(CAR_w - CAR_L)}{\sqrt{s^2 / N}} \]

where the pooled estimate of the population variance is calculated according to 
\[ s^2 = \frac{\sum_{n=1}^{N} (CAR_{wn} - CAR_w)^2 + \sum_{n=1}^{N} (CAR_{ln} - CAR_L)^2}{2(N - 1)} \]

\textit{CAR}_{wn} denotes the cumulated abnormal return of the winner portfolio in the n:th performance period, while \textit{CAR}_w and \textit{CAR}_L denote the average cumulated abnormal returns of all N individual half year performance periods tested. The same t-statistic has been used in similar settings by for instance DeBondt and Thaler (1985) and Larkomaa (1997).

\textsuperscript{15} In order to gain a more exact understanding of the difference, the evaluation period was split into two, and the cumulated abnormal returns were calculated for both halves similarly to what has been done in Figure 2 for the entire period. In the first sub–period the cumulated abnormal returns for the equally (value) weighted fund families amounted to 8.0% (4.6%) for the winners and 2.9%(2.3%) for the losers. In the second sub–period the corresponding figures for the winner and losers were 8.5% (9.9%) and –2.5% (–0.8%), respectively.
We find significant evidence of fund family performance persistence using as well non–parametric as parametric tests. Interestingly, the fund family performance persistence is stronger in the early days of the Finnish fund market which is interpreted to highlight the importance of dominant fund families on emerging markets. The results are furthermore significantly stronger than those found by Shukla and Trzcinka (1994), who used a more mature US data sample. We also test the economic significance of the results by forming winner and loser portfolios which are rebalanced every six months. We find that betting on prior winners would have been a superior strategy during the investigation period.
References


