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Family Matters: Rankings Within Fund Families and Fund Inflows

A. Kempf • S. Ruenzi

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Alexander Kempf
(kempf@wiso.uni-koeln.de)

Stefan Ruenzi
(ruenzi@wiso.uni-koeln.de)

Department of Finance
University of Cologne
Albertus-Magnus-Platz
and
Centre for Financial Research (CFR) Cologne
50923 Koeln, Germany

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ABSTRACT

This paper examines the influence of the position of a fund within its family on its subsequent net-inflows. Our empirical study of the US equity mutual fund market shows that reaching a top position within the family leads to large inflows. These inflows accrue beyond those expected, given the performance of the fund in its respective market segment. The effect is much stronger in large families than in small families. We also find that inflows significantly increase if a fund moves into the top positions within its family from one year to another. These results lead to competition within the fund family and to important risk taking incentives for fund managers.

I. Introduction

There is broad empirical evidence that investors direct money into mutual funds dependent on past performance.[1] Many studies show that the funds that rank highest within their respective market segment get the largest inflows.[2] This leads to incentives for fund managers to compete against the other fund managers within their segment for inflows.[3] James and Isaac (2000) show that such behavior can adversely affect price formation on asset markets.

We hypothesize that inflows not only depend upon the rank of a fund within its market segment, but also upon how well the fund performs as compared to other funds in the same fund family.[4] We analyze this additional influence of the relative position of a fund within its family on inflows, that cannot be explained by the fund's position within its market segment. We expect such an influence for two reasons:

First, some investors only consider the funds of one family when investing new money. These investors might be restricted by their 401(k) plans to the funds of one family or they might voluntarily decide to only invest in the funds of one family. Such voluntary concentration on one family offers the advantage of getting all fund holdings in one consolidated statement

[1] The very first papers are Spitz (1970) and Smith (1978). Recent studies include Ippolito (1992), Patel, Zeckhauser, and Hendricks (1994), Roston (1996), Chevalier and Ellison (1997), Goetzmann and Peles (1997), Sirri and Tufano (1998), and Nanda, Wang, and Zheng (2004). DelGuercio and Tkac (2002) and Agarwal, Daniel, and Naik (2004) look at the performance flow relationship in the pension fund and hedge fund markets, respectively.

[2] A market segment is defined as the entirety of all funds having comparable investment objectives, e.g., *Growth* or *Growth and Income*.

[3] Brown, Harlow, and Starks (1996) examine how fund managers react to these incentives.

[4] A fund family is defined as the entirety of all funds managed by the same mutual fund management company, e.g. *Janus* or *Fidelity*.

and of getting additional services.[5] For all these investors, only the relative performance of a fund as compared to the other funds in the same family matters.

The second reason is related to the advertisement decision of fund families. Many fund families advertise their funds (see, e.g., Jain and Wu (2000) and Gallaher, Kaniel, and Starks (2006)). These advertisements have an influence on fund investors' investment decisions and the funds that are being advertised for subsequently profit from higher inflows. As a fund family's budget for advertisement is limited, it will typically direct its advertisement activities towards the best funds within the family. Therefore, we expect the top funds within a family to eventually experience larger net-inflows than other funds. We expect this effect to exist in addition to the influence of the position of a fund within its segment on flows. To illustrate this point, consider the following simple examples. Assume the case of a very cost-efficient fund family whose funds all have very low expenses and therefore achieve top positions within their respective market segments.[6] Only the best funds within the family will be advertised, while the other funds - although still achieving very good positions within their respective market segments - will not be advertised. Now consider the opposite case of a very cost-inefficient family. Suppose that all of its funds have high expenses and consequently achieve mediocre positions within their respective market segments at best. This fund family will also direct its advertisement expenditures towards its best funds. This leads to increased flows into the best funds within the family, although they might have only achieved a mediocre relative position in their market segment. These examples illustrate why the relative position of a fund within a family might have an additional influence on inflows that cannot be explained by the relative position of a fund within its respective market segment.

[5]For example, Vanguard and T. Rowe Price offer premium services such as special online portfolio evaluation tools, financial planning tools, and access to analysts' reports to investors who maintain large balances in the fund family. Similarly, Fidelity offers personal advising and reduced transaction costs to investors who keep large amounts of money in their funds.

[6]Baks (2003) shows that only 10%-50% of the performance of a typical fund can be attributed to the person of the manager, while the rest is driven by the characteristics of the fund company itself.

Gallaher, Kaniel, and Starks (2006) show that advertisement only has an impact on inflows for those fund families with the largest advertising budgets. These are typically the large fund families. Consequently, we expect higher inflows into top performing funds due to advertisements mainly to accrue in large families. Furthermore, 401(k) plans are usually offered by large families and it is more likely that fund investors restrict themselves to the funds of one family if it offers a broad product range. These are typically the large fund families. Again, this effect should lead to a more pronounced relationship between the position of a fund in its family and inflows in large families as compared to small families.

In our study we address three main research questions: Is there an influence of a fund's relative position within its family on its net-inflows? Does the change in fund's relative position within its family affect its net-inflows? Are these effects more pronounced in large families than in small families? Ours is the first paper to address these issues. Answering these questions is our contribution to the literature. We base our answers on an empirical study of U.S. equity mutual funds. Put in a nutshell, we obtain the following answers to our research questions: First, the relative position of a fund in its family matters for fund inflows. It makes a huge difference, whether a fund reaches a top position within its family or not. Only funds with top family positions receive large additional inflows. While the average fund in our sample grows by 16.81% p.a., reaching the top decile within its family leads to additional inflows of nearly 7% p.a. Second, a change in a fund's position within its family over time has a pronounced impact on its inflows. If a fund manages to move from just below the top decile into the top decile within its family, it experiences additional inflows of nearly 20%. Third, the relative position of a fund in its family matters more in large families than in small families. Reaching the top decile within the family leads to additional inflows of about 3% in small families and to additional inflows of more than 23% in large families. Similarly, moving from below the top decile into the top decile in the family from one year to another leads to additional inflows of about 10% in small families and additional inflows of nearly 30% in large families. These results hold after controlling for the influence of the relative position of a fund within its segments and for the impact of numerous characteristics of the fund and its family.

Our findings have one core implication. The influence of the position within a family on fund net-inflows creates incentives for fund managers which influence their trading strategies and ultimately affect asset prices: Fund managers get paid dependent on their assets under management (see Khorana (1996)). Given the option like convex relationship between the relative position of a fund in its family and its inflows, fund managers have incentives to increase the fund's risk.[7] This behavior is neither in the best interest of fund investors nor in the best interest of fund families. It might also adversely affect price formation in asset markets (see James and Isaac (2000)).

Our paper is related to three stands of the literature. First, we extend the broad literature on risk taking incentives in the fund industry and their consequences (see, e.g., Starks (1987), Brown, Harlow, and Starks (1996), Chevalier and Ellison (1997), James and Isaac (2000), Taylor (2003), Hu, Kale, and Subramaniam (2005), Acker and Duck (2006), and Li and Tiwari (2006)). We show that risk taking incentives not only arise from the competition within the market segment but also from the competition within the fund family. Second, our results extend the broad empirical literature on the determinants of mutual fund inflows (as cited in Footnote 1) by providing evidence that the relative position of a fund in its family is an important determinant of fund inflows. Third, our paper is related to the emerging literature on fund families. Mamaysky and Spiegel (2002), Siggelkow (2003), Massa (2003), and Khorana and Servaes (2004) study the product policy of fund families and its consequences. Guedj and Papastaikoudi (2005) and Gaspar, Massa, and Matos (2006) examine how fund families shift performance between their funds to profit from the convex relationship between the position of a fund in its market segment and inflows. Our study complements these results by showing how the relative position within the family has an

[7] Brown, Harlow, and Starks (1996) empirically show that fund managers adjust their risk dependent upon their position within their market segment. Kempf and Ruenzi (2006b) show a similar impact of the position of a fund within its family on risk taking.

additional influence on fund inflows beyond the influence of the position within the segment. We also add to the literature on fund families by showing that this additional influence strongly depends on the size of the fund family.

We proceed as follows: In Section II we describe the design of the study. In Section III we present the data and summary statistics. Section IV contains the main results of our empirical study and some robustness tests. Section V concludes.

II. Model

We want to explain fund net-inflows, $FLOW_{i,t}$, by the relative position of a fund within its family. In doing so, we have to control for the influence of the relative position of the fund within its market segment as well as for further variables that might influence fund inflows. A simplified framework to address this issue is

$$FLOW_{i,t} = f(FamRank_{i,t-1}, SegRank_{i,t-1}, Controls).$$

The position of a fund within its family and within its market segment in the previous year are denoted by $FamRank_{i,t-1}$ and $SegRank_{i,t-1}$, respectively. $Controls$ denotes a set of control variables that have proven to be factors influencing fund net-inflows.

We now turn to a more detailed description of our model and the variables contained therein. In Section II.A we detail how we construct the dependent variable $FLOW_{i,t}$. In Section II.B we describe how we construct the rank variables $FamRank_{i,t-1}$ and $SegRank_{i,t-1}$. In Section II.C we introduce the control variables. The empirical model is detailed in Section II.D.

A. Fund Flows

We use the standard procedure from the literature (see, e.g., Chevalier and Ellison (1997) and Sirri and Tufano (1998)) to construct the net-inflows of fund i in year t:

$$FLOW_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}}{TNA_{i,t-1}} - r_{i,t}$$

$TNA_{i,t}$ is the total net asset value of fund i in year t and $r_{i,t}$ is the total rate of return of fund i in year t. Thus, $FLOW_{i,t}$ reflects the growth of the fund that is not due to the rate of return earned on the assets under management, but due to new external money flowing into the fund.

B. Rank Variables

Many studies show that the relative position of a fund within its segment (segment rank) influences subsequent net-inflows.[8] There are also some studies that use cardinal performance measures to explain fund inflows.[9] Patel, Zeckhauser, and Hendricks (1994), Myers (2001), and Navone (2002) explicitly compare the explanatory power of ranks and cardinal measures with respect to fund inflows. These studies consistently report that ranks explain inflows much better than cardinal measures do. This result is confirmed by the findings of the survey studies of Capon, Fitzsimons, and Weingarten (1994) and Capon, Fitzsimons, and Prince (1996). Thus, in the following we use ranks to explain fund net-inflows.[10]

As there is no clear evidence in the literature which performance measure the ranks should be based on, we use several different measures. We use the Sharpe Ratio and Alphas from

[8] Ranks based on raw and/or excess-returns are used by, e.g., Patel, Zeckhauser, and Hendricks (1994), Sirri and Tufano (1998), Fant and O'Neal (2000), Bergstresser, Chalmers, and Tufano (2006), and Christoffersen, Evans, and Musto (2006). Ranks based on risk-adjusted performance measures like Jensen's Alpha or multi-factor Alphas are used by, e.g., Fant and O'Neal (2000) and DelGuercio and Tkac (2002).

[9] See, e.g., Ippolito (1992), Gruber (1996), Nanda, Wang, and Zheng (2004), Lynch and Musto (2003), and Jain and Wu (2000).

[10] Our results are robust with respect to replacing ranks by cardinal measures (see Section D.1).

the three-factor model of Fama and French (1993) and the four-factor model of Carhart (1997). These factor models have been proven as valid models capturing the systematic risk factors driving equity returns. As our study concentrates on U.S. equity funds (see Section III), these measures are appropriate to measure fund performance.

To calculate ranks, we first determine the Sharpe Ratio for every fund i in every year t:

$$SR_{i,t} = \frac{r_{i,t} - r_t^f}{STD_{i,t}}.$$

$r_{i,t}$ denotes the rate of return of fund i in year t, r_t^f denotes the rate of return of the risk-free asset in year t and $STD_{i,t}$ denotes the annualized return standard deviation of fund i in year t. After calculating the Sharpe Ratio, we construct the segment rank of a fund by ordering all funds belonging to a specific market segment in a given year according to the Sharpe Ratio. We then assign a rank-number to each fund. This rank number is normalized so that ranks are evenly distributed between 0 and 1. The best fund gets assigned the rank 1. $SegRank_{i,t}$ denotes the rank of fund i in year t within its market segment, i.e. its segment rank. To determine the relative position of a fund in its family (family rank), we order all funds belonging to the same family according to their segment rank. Based on this segment ranking we then assign a new normalized rank number to them, the family rank $FamRank_{i,t}$. This method is sensible because fund families usually have funds in different equity market segments and these segments are characterized by different risk-return characteristics. Therefore, it is difficult to directly compare the Sharpe Ratios of equity funds from different market segments even if they belong to the same family. Calculating family ranks based on segment ranks is an easy way to directly compare funds from different equity market segments within the same family.

The same procedure is applied to calculate segment ranks and family ranks based on factor Alphas. The Fama and French (1993) three-factor Alpha of a fund is obtained in the following way. Using monthly observations, we run the following regression for each fund i

and each year t in order to get a time series of the three-factor Alphas, $\alpha_{i,t}^{3F}$, for each fund i:

$$r_{i,m,t} - r_{m,t}^{f} = \alpha_{i,t}^{3F} + \beta_{i,t}^{1} \cdot MMRF_{m,t} + \beta_{i,t}^{2} \cdot SMB_{m,t} + \beta_{i,t}^{3} \cdot HML_{m,t} + \varepsilon_{i,m,t}$$

$r_{i,m,t}$ is the rate of return of fund i in month m of year t, $r_{m,t}^{f}$ is the risk-free rate in month m of year t, and $MMRF_{m,t}$ is the excess-return of the market over the risk free rate in month m of year t. $SMB_{m,t}$ and $HML_{m,t}$ denote the rate of return in month m of year t on portfolios that mimic the size-factor and the book-to-market factor, respectively. The Carhart (1997) four-factor Alpha is estimated in the same way. The regression-equation is the same as for the three-factor model presented above, except that we add the momentum factor $MOM_{m,t}$ as explanatory variable:[11]

$$r_{i,m,t} - r_{m,t}^{f} = \alpha_{i,t}^{4F} + \beta_{i,t}^{1} \cdot MMRF_{m,t} + \beta_{i,t}^{2} \cdot SMB_{m,t} + \beta_{i,t}^{3} \cdot HML_{m,t} + \beta_{i,t}^{4} \cdot MOM_{m,t} + \varepsilon_{i,m,t}.$$

C. Control Variables

In addition to past performance, fund flows depend upon the characteristics of the fund itself. We control for this effect by adding fund characteristics as explanatory variables. Ippolito (1992) and Sirri and Tufano (1998) find a marginal influence of risk on fund net-inflows. We follow their approach and include the annualized standard deviation of monthly returns, $STD_{i,t}$, in the model as a measure of the riskiness of the fund. We also add the turnover ratio of the fund, $TO_{i,t}$, to examine whether investors prefer actively managed funds. While Woerheide (1982) finds no significant influence of the trading activity on fund net-inflows, more recent studies like Rockinger (1995) report a positive influence. We include the log of the fund size, $ln(TNA_{i,t})$, because it is probably more difficult for large funds to grow at the same rate as small funds (see, e.g., Chevalier and Ellison (1997), and Sirri and

[11] Both, the three- and the four-factor alpha, are estimated based on yearly estimations using only 12 monthly return observations. Consequently, individual alpha estimates will be noisy. However, we are not interested in an exact determination of an individual fund's alpha, but in the influence of family ranks on inflows for a very large cross-section of funds.

Tufano (1998)). Our model also includes the log of the age of a fund, $lnAGE_{i,t}$. Bergstresser and Poterba (2002) and DelGuercio and Tkac (2002) find a negative influence of a fund's age on fund net-inflows. To control for the negative influence of fees on flows documented in the literature (see, e.g., Sirri and Tufano (1998)) we include the total fee burden, $FEES_{i,t}$, as explanatory variable. It is constructed as the sum of the expense ratio and 1/7 of all loads charged by the fund, i.e. an average holding period of seven years for fund investors is assumed.[12] We also include the net-inflows of the fund in the previous year, $FLOW_{i,t-1}$. This variable captures further fund-specific characteristics that we do not control for yet. A significant impact of $FLOW_{i,t-1}$ could also be due to a status-quo bias of fund investors. If investors suffer from a status-quo bias they tend to repeat an investment decision made in the past, even if this decision is not optimal any more. This kind of behavior leads to a positive dependence of current net-inflows on past net-inflows (see, e.g., Kempf and Ruenzi (2006a)).

Besides characteristics of the fund i itself, fund flows also depend upon the characteristics of the fund family which fund i belongs to. We calculate all family related variables without including fund i. By doing so we avoid potential endogeneity problems. The log of the size of the family, $lnTNA(Fam)_{i,t}$, is a proxy for the visibility of a fund family. It is expected to positively influence investor recognition and eventually fund inflows. The total net assets under management of the family, $TNA(Fam)_{i,t}$, are calculated net of the total net assets of fund i. Funds might also benefit from positive spillover effects if there are other funds in the same family that deliver a top performance within their respective market segment (see, e.g., Ivkovic (2003) and Nanda, Wang, and Zheng (2004)). To control for this effect, we add the variable $STARRATIO(Fam)_{i,t}$ to our model. We calculate this variable by first counting the number of funds in fund i's family that were among the top 5% within their

[12] We follow Sirri and Tufano (1998) by assuming a seven year holding period while constructing our fee measure, $FEES_{i,t-1}$. Barber, Odean, and Zheng (2005) report an average holding period of 30 months. Therefore, we also do all examinations assuming a holding period of 30 months. All our results (not reported) remain qualitatively unaffected by this. All results not explicitly reported in the paper can be obtained from the authors upon request.

market segment.[13] When calculating this number, fund i is not included. This number of other star funds in the family is then divided by the total number of funds in that family to provide the star ratio.[14] Other family characteristics that might influence inflows into the family are captured by adding $FLOW(Fam)_{i,t}$ as control variable. This variable is defined as the net-inflows into fund i's family net of the inflows of fund i. Examples for family specific factors influencing inflows are marketing efforts boosting the whole family and additional services offered by the fund company like, e.g., telephone hotlines or defined contribution plans (see, e.g., Harless and Peterson (1998)).

Finally, there are factors that influence flows into the whole market segment a specific fund belongs to. This might be due to changes in aggregate inflows into the equity fund market (see, e.g., Rockinger (1995)) or due to shifts in demand between segments. We control for the influence of such effects on individual fund flows by adding the net-inflows into fund i's market segment, $FLOW(Seg)_{i,t}$, as control variable. This variable is calculated net of the inflows of fund i. A positive influence of segment net-inflows on fund net-inflows is documented in, e.g., Sirri and Tufano (1998) and Fant and O'Neal (2000).

D. Estimation Approach

We use two different approaches to study the impact of a fund's family rank and segment rank on fund inflows. The first approach is suggested by Sirri and Tufano (1998) to capture the impact of the segment rank on inflows. They use a piecewise linear model to allow for a

[13] Our measure for the effect of positive spillovers from other top funds within the family, $STARRATIO(Fam)_{i,t-1}$, is calculated by dividing the number of top 5%-funds in the family (excluding the fund under consideration) by the total number of funds in the family. We also use the top 2.5%-funds and the top 10%-funds to calculate this ratio instead. Results (not reported here) remain virtually unchanged.

[14] We use this ratio rather than a dummy indicating the existence of another top performer in the family (as, e.g., in Ivkovic (2003)) because the families in our sample are quite large and the probability of having a star in at least one market segment is quite high. For example, more than 40% of all families have a top 5%-fund in at least one market segment. This number rises to 55% if we look at top 10%-funds.

non-linear relationship between rank and inflows. We adopt and extend their approach by applying a piecewise linear specification for the influence of the segment rank as well as of the family rank: Slope coefficients are estimated for the bottom quintile, the three middle quintiles, and the top quintile of segment ranks and family ranks separately. The complete model reads:[15]

$$\begin{aligned} FLOW_{i,t} = {} & \beta_{1a} \cdot LOW(FamRank)_{i,t-1} + \beta_{2a} \cdot LOW(SegRank)_{i,t-1} \\ & +\beta_{1b} \cdot MID(FamRank)_{i,t-1} + \beta_{2b} \cdot MID(SegRank)_{i,t-1} \\ & +\beta_{1c} \cdot TOP(FamRank)_{i,t-1} + \beta_{2c} \cdot TOP(SegRank)_{i,t-1} \\ & +\gamma_1 \cdot STD_{i,t-1} + \gamma_2 \cdot TO_{i,t-1} + \gamma_3 \cdot lnTNA_{i,t-1} \\ & +\gamma_4 \cdot lnAGE_{i,t-1} + \gamma_5 \cdot FEES_{i,t-1} + \gamma_6 \cdot FLOW_{i,t-1} \\ & +\gamma_7 \cdot lnTNA(Fam)_{i,t-1} + \gamma_8 \cdot STARRATIO(Fam)_{i,t-1} + \gamma_9 \cdot FLOW(Fam)_{i,t} \\ & +\gamma_{10} \cdot FLOW(Seg)_{i,t} + \varepsilon_{i,t}, \end{aligned} \tag{1}$$

where

$$\begin{aligned} LOW(FamRank)_{i,t-1} &= \min(FamRank_{i,t-1}, 0.2) \\ LOW(SegRank)_{i,t-1} &= \min(SegRank_{i,t-1}, 0.2) \\ MID(FamRank)_{i,t-1} &= \min(FamRank_{i,t-1} - LOW(FamRank)_{i,t-1}, 0.6) \\ MID(SegRank)_{i,t-1} &= \min(SegRank_{i,t-1} - LOW(SegRank)_{i,t-1}, 0.6) \\ TOP(FamRank)_{i,t-1} &= FamRank_{i,t-1} - (LOW(FamRank)_{i,t-1} + MID(FamRank)_{i,t-1}) \\ TOP(SegRank)_{i,t-1} &= SegRank_{i,t-1} - (LOW(SegRank)_{i,t-1} + MID(SegRank)_{i,t-1}). \end{aligned}$$

The piecewise linear regression model allows us to estimate different slope coefficients for the bottom quintile (β_{1a} and β_{2a}), the three middle quintiles (β_{1b} and β_{2b}), and the top quintile (β_{1c} and β_{2c}). This model is applied to analyze the impact of the position within the family (family rank) and within the market segment (segment rank) on inflows. Note

[15] This model does not contain a constant because estimating the regression with time-fixed effects would otherwise make the regressors linear dependent.

that we include all controls that are relevant for investment decisions in year t, but whose values are unknown at the beginning of the year, as lagged variables.

The piecewise linear specification is able to capture the influence of the segment rank on inflows very precisely (see Sirri and Tufano (1998)). However, it is not clear whether a piecewise linear specification is also appropriate to capture the influence of the family rank on inflows. Therefore, we replace the piecewise linear approach for the influence of the family rank in Model (1) by dummies indicating in which decile the fund is within its family. This alternative model reads:

$$
\begin{aligned}
FLOW_{i,t} \;&=\; \sum_{n=2}^{10} \delta_n \cdot D_n(FamRank)_{i,t-1} \\
&+\; \beta_{2a} \cdot LOW(SegRank)_{i,t-1} + \beta_{2b} \cdot MID(SegRank)_{i,t-1} + \beta_{2c} \cdot TOP(SegRank)_{i,t-1} \\
&+\; \gamma_1 \cdot STD_{i,t-1} + \gamma_2 \cdot TO_{i,t-1} + \gamma_3 \cdot lnTNA_{i,t-1} \\
&+\; \gamma_4 \cdot lnAGE_{i,t-1} + \gamma_5 \cdot FEES_{i,t-1} + \gamma_6 \cdot FLOW_{i,t-1} \\
&+\; \gamma_7 \cdot lnTNA(Fam)_{i,t-1} + \gamma_8 \cdot STARRATIO(Fam)_{i,t-1} + \gamma_9 \cdot FLOW(Fam)_{i,t} \\
&+\; \gamma_{10} \cdot FLOW(Seg)_{i,t} + \varepsilon_{i,t}.
\end{aligned} \tag{2}
$$

$D_n(FamRank)_{i,t-1}$ indicates whether a fund belongs to the family rank decile n. For example, $D_2(FamRank)_{i,t-1}$ equals one, if the fund belongs to the second worst decile within its family, i.e. if its family rank is between 0.1 and 0.2, and zero otherwise. Accordingly, $D_{10}(FamRank)_{i,t-1}$ equals one, if the fund belongs to the top decile within its family, i.e. if its family rank is between 0.9 and 1.0, and zero otherwise. The worst decile is the base decile and is not included in the regression in order to prevent the independent variables to be linear dependent. Thus, $D_n(FamRank)_{i,t-1}$ gives the additional inflows into a fund for reaching decile n as compared to being in the worst decile within the family.

The simplest approach to estimate Model (1) is to run pooled regressions. However, this approach assumes independent errors. To allow for possible violations of this assumption, we take advantage of the panel structure of our data and estimate a time-fixed effects model with panel corrected standard errors (PCSE). Using a PCSE specification allows us to accommodate panel data with autocorrelation and cross-correlation of the error terms and heteroskedasticity (see Beck and Katz (1995)). As a robustness check, we follow the standard method used in empirical studies on the relationship between segment ranks and subsequent inflows and apply the Fama and MacBeth (1973) approach. In particular, we run yearly cross-sectional regressions and compute time-series average coefficient estimates. Significance is determined based on the time-series standard deviation of the coefficient estimates.

III. Data and Summary Statistics

Our principal data source is the CRSP Survivor-Bias Free Mutual Fund Database.[16] We use data on all US equity funds from this database. We exclude all bond funds and money market funds. The CRSP database contains data on monthly total returns, fund size, the fund management company, the year of origin, and other characteristics of the fund. We use the Strategic Insight Objectives (SI) of the funds to define the market segments. This provides us with 38 different segments. As the SI classification is available from 1993 on, our study starts in 1993. It ends in 2001 leaving us with nine years of data. To calculate the three- and four-factor Alphas described in Section II.B we use the returns of the respective factor portfolios provided by Kenneth R. French.[17]

As we use previous year's performance to explain net-inflows, only funds that are at least two years old in any given year are included. We exclude funds with total net assets under management of less than ten million USD as data for these funds is often not reliable. Some funds have extremely high growth rates. Bergstresser and Poterba (2002) address this issue

[16]Source: CRSP™, Center for Research in Security Prices. Graduate School of Business, The University of Chicago. Used with permission. All rights reserved. crsp.uchicago.edu. For a more detailed description of the CRSP database, see Carhart (1997) and Elton, Gruber, and Blake (2001).

[17]The factor returns are available for downloading at Kenneth R. French's Homepage `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french`.

by excluding all funds that grew more than tenfold, arguing that such growth rates are not plausible. Rather than excluding such observations, we winsorize all growth rates that are larger than 1,000% by setting them equal to 1,000%.[18] Thus, we retain potentially valuable information by not discarding funds with very high growth rates. Our final sample consists of 17,588 fund year observations. Summary statistics of the sample are presented in Table I.

+++ PLEASE INSERT TABLE I ABOUT HERE +++

The number of funds in our sample grows from 882 in 1993 to 3,665 in 2001. The average number of funds per year is 1,954. The size of the average fund in our sample is 958 million USD, with a maximum average size of 1,198 million USD in 1999 and a minimum average size of 693 million USD in 1993. The mean net-inflow into a fund is 16.81% of assets under management p.a. with a maximum of 48.02% in 1993 and a minimum of 13.33% in 2001. The age of the mean fund is 11.22 years. It decreases over the sample period from 14.21 years to 9.82 years due to the large number of fund starts between 1993 and 2001.

IV. Empirical Results

We will start our empirical analysis by re-assessing the impact of the segment rank on fund inflows in Section A. Then we will turn to our first main research question and examine whether there is an additional influence of a fund's family rank on its inflows that cannot be explained by its segment rank (Section B). Finally, we will address the question of whether the impact of the family rank differs for funds from large and small fund families (Section C).

[18] About 0.8% of all observations are winsorized. Our results are robust against alternative ways to treat extreme observations (see Section D.2).

A. Does the Position of a Fund in its Segment Matter?

In this (mainly reproductive) section, we analyze the relationship between a fund's segment rank and its subsequent inflows. We estimate Model (1) with time-fixed effects and PCSE, but leave aside the influence of the position of a fund within its family for the moment.[19] This allows us to compare our results with results from the literature before taking into account the additional influence of the family rank. Results are presented in Table II.

+++ PLEASE INSERT TABLE II ABOUT HERE +++

Looking at the results where ranks are based on Sharpe Ratios, we find positive and significant slope coefficients for the bottom quintile, the mid quintiles, and the top quintile. This shows that the relationship between the segment rank of a fund and its subsequent inflows is positive. The slope coefficient for the top quintile is about four times as large as those for the other quintiles. This is evidence for a convex influence of the segment rank on fund inflows. A similar result is obtained if we base ranks upon three- or four-factor Alphas. Thereby, our results confirm the findings of earlier studies. Investors chase past winners, but do not sell past losers to the same extent.

With respect to the impact of the control variables we find results that are consistent with earlier studies: There is no notable influence of fund risk, $STD_{i,t-1}$, on net-inflows. This is sensible as ranks are based on performance measures that are already adjusted for risk. Turnover, $TO_{i,t-1}$, has no notable impact. Investors do not seem to prefer an active management style. There is a strong negative influence of fund size, $lnTNA_{i,t-1}$, on net-inflows. Large funds grow slower than small funds. The influence of the fund's age, $lnAGE_{i,t-1}$, is not significant. Fees, $FEES_{i,t-1}$, have a strong negative impact on net-inflows. Investors are fee-sensitive. The influence of previous year's fund net-inflows, $FLOW_{i,t-1}$, is positive

[19] We also applied the Fama and MacBeth (1973) method to examine the performance flow relationship in the segment as suggested by Sirri and Tufano (1998). For the sake of brevity, results are not reported here. They are very similar.

and highly significant. This is consistent with the existence of a status-quo bias among mutual fund investors. The size of the fund's family, $lnTNA(Fam)_{i,t-1}$, has a positive impact on its net-inflows. This suggests that larger families enjoy a better visibility and eventually higher growth due to inflows of new money. The influence of the star ratio, $STARRATIO(Fam)_{i,t-1}$, is positive and highly significant indicating that spillover effects are important. The net-inflows into a fund's family and into its market segment ($FLOW(Fam)_{i,t}$ and $FLOW(Seg)_{i,t}$, respectively) have a positive and significant influence on fund net-inflows. This indicates that further segment- and family-specific characteristics are important for fund investors. Overall, we confirm the results of earlier studies. We will not report estimates of the control variables in the following tables. They remain qualitatively unchanged.

The R^2 using ranks based on Sharpe Ratios is 16.79%, while it is around 15% for the factor Alpha ranks. Segment ranks based on Sharpe Ratios explain fund net-inflows better than ranks based on factor Alphas do. Therefore, we use ranks based on Sharpe Ratios in the remainder of the paper.[20]

B. Does the Position of a Fund in its Family Matter?

We now turn to our first main research question. We will first examine the impact of the family rank on inflows (Section B.1) before examining the impact of a change in a fund's family rank on inflows (Section B.2).

B.1. Impact of the Family Rank on Inflows

We analyze the impact of the family rank on fund inflows by estimating our complete Model (1). Results are presented in Table III.

[20]Calculating ranks based on factor Alphas leads to very similar results and changes none of our main findings (see Section D.2).

+++ PLEASE INSERT TABLE III ABOUT HERE +++

Our results show that it pays for a fund to reach a top position within its family. A top family rank of a fund leads to high subsequent inflows into the fund. There is a statistically significant positive estimate for the slope coefficient for the top quintile of family ranks, $TOP(FamRank)_{i,t-1}$. The other slope coefficients, $LOW(FamRank)_{i,t-1}$ and $MID(FamRank)_{i,t-1}$, are not significantly different from zero. It matters for fund net-inflows whether a fund belongs to the top quintile in its family, but it does not matter whether a fund belongs to the lowest or to the mid quintiles. These results hold irrespective of whether we estimate Model (1) with PCSE or by applying the Fama and MacBeth (1973) method: We always find a convex relationship between a fund's family rank and its subsequent inflows. Note that this relationship holds after controlling for the influence of the fund's segment rank, which is still positive and convex.

Our result that only reaching the top family ranks matters is consistent with the view that mutual fund families promote their best funds. As only the very best funds within a family will be promoted, it only matters to reach a top position. This suggests not to model different slope coefficients (as with the piecewise linear specification), but rather to look at a level effect of belonging to the top funds within the family. We do so by estimating Model (2). Estimation results are also presented in Table III. They indicate that it is important for a fund to reach a top position within its family. The coefficient for $D_{10}(FamRank)_{i,t-1}$ is positive and statistically significant. The coefficients for $D_2(FamRank)_{i,t-1} - D_9(FamRank)_{i,t-1}$ are all insignificant. The effect of reaching the top decile within the family is economically meaningful. A fund that reaches the top decile within its family grows by nearly 7% more than a fund with a comparable segment rank that does not belong to the top decile within its family. This is a very strong effect, given that the average flows into a fund in our sample are smaller than 17% (see Table I). These results hold for the PCSE as well as the Fama and MacBeth (1973) specification. Our prior result is confirmed: In terms of inflows, it matters whether or not a fund reaches a top position within its family.

B.2. Impact of Changes in the Family Rank on Inflows

So far we have analyzed the effect of the family rank on subsequent inflows. We now use an event-study like approach and examine the impact of changes in the family rank on changes in inflows.[21] We investigate the effect of an improvement of the family rank while controlling for effects from changes in the segment rank.

First, we concentrate on the few cases in which the fund moves up within the family (increases its family rank) but at the same time moves down within the market segment (decreases its segment rank). We define a dummy variable which takes on the value one, if a fund improves its family rank from below the top decile to the top decile between $t-2$ and $t-1$ and worsens its segment rank at the same time. We relate this dummy variable and the same control variables as in the above regressions to changes in inflows, $\Delta Flow_{i,t} = Flow_{i,t} - Flow_{i,t-1}$. We find that a fund's inflows increase by 8.65% if its family rank moves into the top decile. This effect cannot be attributed to an improvement in the segment rank occurring at the same time, since the dummy variable only takes on the value one, if the fund's segment rank did not increase. While the increase of 8.65% is economically significant, it is statistically significant only at the 10%-level. The weak statistical significance is likely to be driven by the rather small number of observations of 240 fund years for which the fund reaches the top family decile and at the same time experiences a drop in its segment rank.

To get a more comprehensive view about the influence of a change in family rank we analyze how flows change if the family rank improves from below a particular limit into a specific decile. For example, we would like to know how much flows increase if the fund's position improves from the bottom half of the family (family rank below 0.5) to the best decile (family rank between 0.9 and 1.0). In principle, we could use the above method to examine this question. However, this very strict test cannot be applied here due to the low number

[21] We wish to thank the referee for suggesting this alternative way to test for the influence of the family rank on inflows to us.

of observations. For example, there are barely any funds that improve their family rank by more than two deciles and at the same time worsen their segment rank. Thus, we do not restrict ourselves to the cases of decreasing segment ranks but rather control for changes in the segment rank. We run the following regression model:

$$\Delta Flow_{i,t} = D(FamUpMover)_{i,t-1} + \Delta SegRank_{i,t-1} + Controls + \varepsilon_{i,t}. \quad (3)$$

In this model, $D(FamUpMover)_{i,t-1}$ is a dummy variable that takes on the value one, if fund i's family rank improves from below a certain level (e.g. a family rank of not larger than 0.5) to a specific decile (e.g. a family rank between 0.9 and 1.0) from $t-2$ to $t-1$. $\Delta SegRank_{i,t-1} = SegRank_{i,t-1} - SegRank_{i,t-2}$ is a control variable capturing the influence of a change in the segment rank.[22] $Controls$ is a vector of further control variables. They are the same as in Model (1) and Model (2). Estimation results for the effect of an improvement of the family rank are presented in Table IV. Based on our results from Section B.1, we only expect an influence of moving into the top ranks within the family. Thus, we only report results for the cases where the rank improved into one of the three deciles $D_8(FamRank)_{i,t-1}$, $D_9(FamRank)_{i,t-1}$, and $D_{10}(FamRank)_{i,t-1}$, respectively.

+++ PLEASE INSERT TABLE IV ABOUT HERE +++

We find a very clear positive impact on flows if a fund moves into the top decile. For example, fund inflows increase by nearly 20% if a fund moves from below the top decile into the top decile. Table IV also shows that it only matters to reach the top decile. There is no significant effect of moving up into any of the deciles below the top decile. This result is consistent with results from Table III.

[22] It is possible that the convexity of the relationship between segment ranks and inflows documented above is reflected in a non-linear influence of the change in segment ranks on the change in inflows. Thus, in unreported tests, we also add $\Delta SegRank^2_{i,t-1}$ as additional control variable. Including this additional variable has no impact on our results.

Interestingly, the impact on inflows is stronger, the smaller the move in family rank is. This suggests that flows increase particularly strong if a fund has persistently good family ranks rather than a large increase in the family rank. For example, flows for a fund that moves into the top decile from an initial family rank of below 0.5 only experience an increase half the size of a fund that moved from below 0.9 to the top decile. This fits well with our explanation of advertisements driving inflows. A fund that realized a below-average performance within its family in $t-2$ (i.e. family rank of below 0.5) and only reaches the top decile in $t-1$ is less likely to be advertised for than a fund that consistently ranked highly within its family.

Summing up the results from Sections B.1 and B.2, we find strong evidence of a convex relationship between the family rank and subsequent inflows. It makes a big difference in terms of inflows whether a fund reaches a top position within its family or not. This effect occurs after controlling for the impact of the segment rank as well as characteristics of the fund itself, its family, and market wide effects.

C. Does the Influence of the Family Rank depend on the Family Size?

We now examine whether the influence of the family rank of a fund on its inflows is more pronounced in large families as compared to small families. We expect a difference because it has been shown that advertisement is only effective in families with large advertisement expenditures (Gallaher, Kaniel, and Starks (2006)). These families are the large ones. Furthermore, mainly large families offer 401(k) plans and offer such a variety of funds that investors are willing to restrict themselves to the funds of this family.

We examine the influence of family size by splitting up our sample into observations from large families and from small families. Large families are defined as those families that are comprised of at least 20 equity funds in a given year.[23] Results for our subsample tests of Model (1) and (2) using the PCSE method are presented in Table V.

+++ PLEASE INSERT TABLE V ABOUT HERE +++

Looking at the results from Model (1), we find significantly positive slope coefficients for the top quintile of family ranks in small as well as in large families. However, the impact of the family rank is much more pronounced in large families than in small families. The estimate is only 0.36 for small families, while it is 0.90 for large families. This is confirmed by the results from Model (2). The additional inflows when reaching the top decile within the family are only about 3% for small families, but more than 23% in large families.

Like in Section B.2, we examine the influence of moving into the top decile while the segment rank worsens. The estimated effect on flows is 1.68% and insignificant in small families. In large families, the estimated coefficient is 27.98% and significant at the 5%-level. This confirms our finding from above. We also re-estimate Model (3) for funds from small and large families.[24] Results on the estimated coefficient $D(FamUpMover)$ are presented in Table VI.

+++ PLEASE INSERT TABLE VI ABOUT HERE +++

We find a much stronger impact of moving into the top decile for funds in large families than for funds in small families, again confirming the results from above. The coefficients for funds from large families are about two to three times as large as those for funds from

[23] While chosen arbitrarily, our results are robust against variations of this definition for large families. For example, all main results (not reported) are qualitatively unaffected if we use 15, 25 or 30 member funds as cutoff to define large and small families. Using a cutoff of 20 fund classifies about 60% of all observations as belonging to large families, while 40% are classified as belonging to small families.

[24] As we only found significant effects for moving into the very best family rank decile in Table IV, we only report results for this case.

small families. For example, moving from a family rank of below 0.9 into the top decile in small families leads an increase in flows of 10.43%; in large families it leads to an increase of 29.62%.

Overall, our results suggest that risk-taking incentives due to the convexity relationship between the family rank and inflows are stronger in larger families. This is consistent with results in Kempf and Ruenzi (2006b), who report more pronounced risk-adjustments as response to the family rank in large families as compared to small families.

D. Stability of Results

We now assess the robustness of our results in several ways. First, we examine whether our main results change if we capture the performance of a fund in its segment by cardinal performance measures rather than by segment ranks (Section D.1). Second, we investigate the stability of our results by conducting several further robustness tests (Section D.2).

D.1. Using Family Ranks Based on Cardinal Measures

In Section B we calculated family ranks based on segment ranks. This seems to be the most plausible way to capture the position of a fund in its family. However, fund companies might also choose the funds to be advertised based on cardinal performance (e.g. the Sharpe Ratio) rather than based on the segment rank. To allow for this possibility we now calculate family ranks based on the Sharpe Ratio of all funds belonging to the family. Results using this method are presented in Table VII.

+++ PLEASE INSERT TABLE VII ABOUT HERE +++

The results are similar to those in Section B. Like above, the inflows are the largest for funds in the top decile. However, inflows are not restricted to those funds. For the full sample, the top 40% of the funds of a family receive significant additional inflows. Looking at small and large families separately, we find a much stronger influence of the family rank in top deciles for large families than for small families. This confirms our results from Section C.

D.2. Further Robustness Tests

We now shortly touch upon results from further robustness tests we conducted. Results are not explicitly reported in tables.

Impact of Differential Fee Levels within Families

Gaspar, Massa, and Matos (2006) show, that mainly funds with relatively high fee levels within their family profit from cross-fund subsidization. To examine whether this has any impact on the relationship between the relative position of a fund in its family and inflows, we split up our sample into funds whose fee level is above the median of all funds in the same family and year and those whose fee level is below the median of all funds in the same family and year. In both subsamples, we find a significantly positive and convex influence of the relative position of a fund in its family and its inflows, confirming our results from above.

Including Contemporaneous Performance

In our models we did not include the contemporaneous performance of the fund as explanatory variable. One might argue to include contemporaneous performance as independent variable because the performance within year t might already cause net-inflows in year t. However, there are endogeneity problems because the performance in year t is also used to calculate the dependent variable $FLOW_{i,t}$. Despite this potential problem, we also follow Sirri and Tufano (1998) and re-estimate our models with the return of fund i in year t, $r_{i,t}$, as additional explanatory variable. Its influence is always positive and statistically significant. The results regarding the other variables remain very similar, i.e. the family rank remains an important factor explaining fund inflows.

Leaving out Observations from the Year 1993

The year 1993 is characterized by extreme net-inflows (see Table I). Therefore, we re-estimate our models while excluding observations from 1993. All results remain very similar.

Treatment of Extreme Growth Observations

In our investigation we winsorized all extreme growth rates of more than 1,000% by setting them equal to 1,000%. Alternatively, we also winsorize all growth rates larger than 500% or exclude all observations with growth rates larger than 500% and 1,000%, respectively. Results remain very similar.

Alternative Performance Measures

For most of our examinations we used ranks based on Sharpe Ratios. Alternatively, we also calculate ranks based on three- and four-factor Alphas. All main results remain qualitatively unchanged.

V. Conclusion

Sirri and Tufano (1998), among others, examine the relationship between the relative position of a fund within its market segment and its subsequent net-inflows. They find a positive and convex relationship.

We extend their analysis in the following way. First, we examine whether fund inflows not only depend on the relative position of a fund in its market segment, but additionally also upon the relative position of a fund in its family. We expect such an influence, because (i) fund families advertise their best funds, (ii) many 401(k) plan investors are restricted to the funds from one family, and (iii) some investors only choose among the funds from one specific family. Second, we investigate the impact of a temporal change of a fund's relative position within its family on subsequent inflows. Third, we analyze whether the influence of the relative position of a fund in its family on subsequent inflows depends on the size of the family. We expect a stronger influence in large families, because (i) advertisement is only increasing flows for funds from large families with high advertisement budgets (Gallaher, Kaniel, and Starks (2006)), (ii) mainly large families offer 401(k) plans, and (iii) investors are more likely to only consider the funds of one family if this family offers a large product range, which is the case in large families.

Our study is based upon a broad sample of US equity mutual funds. We obtain three main results: First, the relative position of a fund in its family matters. In terms of inflows, it makes a huge difference of whether a fund reaches a top position within its family or not. The top 10% funds in a family grow by an additional 6.87% p.a. (given an average growth rate of 16.81% p.a.). This result holds after controlling for the influence of the fund's relative position in its market segment, characteristics of the fund and its family as well as market-wide factors. Second, an improvement of a fund's relative position within its family from below the top two deciles into the top deciles leads to pronounced additional inflows. Third, the relative position of a fund in its family mainly matters in large families. There, the impact is much larger than in small families. While top funds within small families grow by an additional 3% p.a. more than other funds, this effect amounts to 23% p.a. for funds from large families.

Brown, Harlow, and Starks (1996) show that a convex relationship between the relative position of a fund in its segment and its net-inflows leads to incentives for fund managers to engage in gambling behavior. Our result of a convex relationship between the relative position of a fund in its family and subsequent inflows, that exists besides the convex relationship between the relative position of a fund in its market segment and its inflows, gives rise to more complex incentives. Fund managers not only have incentives to compete against other funds within their market segment, but also to compete against other funds within their own family. Kempf and Ruenzi (2006b) show that they do so by engaging in unproductive risk gambles. This is clearly not in the best interest of the fund family nor in the best interest of the fund investors. Thus, there are a new moral hazard problems in the principal agent relationships between the fund management company, its fund managers and its investors. Studying the implications arising from this complex incentive structure offers a promising avenue for further research.

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Table I
Summary Statistics

This table presents summary statistics of our dataset covering the years 1993-2001. The numbers are based on calculations including all U.S. equity mutual funds from the CRSP database except those with total net assets (TNA) under management of less than 10 million USD and those younger than 2 years. Growth rates of more than 1,000% are winsorized by setting them equal to 1,000%. The total number of observations is 17,588.

Year	Number of Funds	Mean TNA in Mio USD	Mean Net-Inflows in %	Mean Age in Years
1993	882	693.19	48.02	14.21
1994	1,020	703.30	17.66	13.78
1995	1,003	950.92	15.22	14.85
1996	1,250	1,087.55	14.47	13.51
1997	1,674	1,130.13	18.61	11.81
1998	2,192	1,100.48	14.15	10.75
1999	2,663	1,197.80	16.66	10.34
2000	3,239	920.10	14.18	9.90
2001	3,665	754.85	13.33	9.82
Sample Average	1,954	957.93	16.81	11.22

Table II
Impact of Segment Ranks on Net-Inflows

Estimation results from Model (1) with PCSE and time fixed effects as contained in the main text are presented. The influence of the family rank, $FamRank_{i,t-1}$, is excluded. The dependent variable is the growth rate of fund i due to net-inflows in year t, $Flow_{i,t}$. Explanatory variables are contained in Column 1. $Low(SegRank)_{i,t-1}$, $Mid(SegRank)_{i,t-1}$, and $Top(SegRank)_{i,t-1}$ provide the slope coefficients for the influence of the segment rank of fund i in year $t-1$ in the bottom, the three middle, and the top quintiles, respectively. Segment ranks are based on Sharpe Ratios, three-factor Alphas, and four-factor Alphas, respectively. $STD_{i,t-1}$ is fund i's lagged return standard deviation. $TO_{i,t-1}$ is fund i's lagged turnover ratio. $lnTNA_{i,t-1}$ and $lnAGE_{i,t-1}$ are the logarithms of fund i's lagged size in million USD and of its lagged age in years, respectively. $FEES_{i,t-1}$ is the total fee burden calculated as 1/7 times total loads plus the expense ratio of fund i. $FLOW_{i,t-1}$ denotes lagged net-inflows of fund i. $lnTNA(Fam)_{i,t-1}$ denotes the logarithm of the lagged size of fund i's family in million USD net of fund i's size. $STARRATIO(Fam)_{i,t-1}$ is the number of other funds in the same family that reached a segment rank of at least 0.9 in the previous year divided by the total number of funds in the family of fund i. $FLOW(Fam)_{i,t}$ and $FLOW(Seg)_{i,t}$ denote the relative growth of fund i's family and segment in year t, respectively, net of fund i's growth. The last line contains the R^2. The number of observations in all models is 17,588.

	Segment ranks based on		
	Sharpe Ratio	3-Factor Alpha	4-Factor Alpha
$LOW(SegRank)_{i,t-1}$	0.4667***	0.1270	0.1955
$MID(SegRank)_{i,t-1}$	0.4114***	0.3282***	0.2793***
$TOP(SegRank)_{i,t-1}$	1.8979***	1.4400***	1.4196***
$STD_{i,t-1}$	0.2054*	−0.0656	−0.0502
$TO_{i,t-1}$	0.0079	0.0065	0.0073
$lnTNA_{i,t-1}$	−0.1436***	−0.1426***	−0.1415***
$lnAGE_{i,t-1}$	−0.0110	0.0074	0.0068
$FEES_{i,t-1}$	−5.4038***	−5.8389***	−5.7171***
$FLOW_{i,t-1}$	0.1480***	0.1554***	0.1567***
$lnTNA(Fam)_{i,t-1}$	0.0526***	0.0564***	0.0565***
$STARRATIO(Fam)_{i,t-1}$	0.4148***	0.7239***	0.7237***
$FLOW(Fam)_{i,t}$	0.0774***	0.0781***	0.0809***
$FLOW(Seg)_{i,t}$	0.1543***	0.1528***	0.1528***
R^2	16.79%	15.31%	15.03%

***,**, and * denote statistical significance at the 1%, 5%, and 10%-level, respectively.

Table III
Impact of Family Ranks on Net-Inflows

Estimation results from Models (1) and (2) as contained in the main text are presented. Results for the PCSE with time fixed effects specification as well as results of Fama and MacBeth (1973) regressions (FMB) are presented. Dependent variable in all models is the growth rate of fund i due to net-inflows in year t, $Flow_{i,t}$. Explanatory variables are contained in Column 1. $Low(FamRank)_{i,t-1}$, $Mid(FamRank)_{i,t-1}$, and $Top(FamRank)_{i,t-1}$ ($Low(SegRank)_{i,t-1}$, $Mid(SegRank)_{i,t-1}$, and $Top(SegRank)_{i,t-1}$) provides the slope coefficients for the influence of the family rank (segment rank) of fund i in year $t-1$ in the bottom, the three middle, and the top quintiles, respectively. $D_n(FamRank)_{i,t-1}$ are dummy variables that take on the value one, if the family rank of fund i in year $t-1$ is in the nth decile. $n = 10$ denotes the best decile. Segment ranks are based on Sharpe Ratios and family ranks are based on segment ranks. The same control variables as in Table II are included, but their coefficients are not explicitly reported. The last lines contains the R^2 for the PCSE method. The number of observations in all models is 17,588.

	Model (1)		Model (2)	
	PCSE	FMB	PCSE	FMB
$LOW(FamRank)_{i,t-1}$	−0.1633	-0.2786		
$MID(FamRank)_{i,t-1}$	0.0142	0.0314		
$TOP(FamRank)_{i,t-1}$	0.3982***	0.4935**		
$D_2(FamRank)_{i,t-1}$			0.0448	-0.0025
$D_3(FamRank)_{i,t-1}$			−0.0192	-0.0450
$D_4(FamRank)_{i,t-1}$			−0.0229	-0.0453
$D_5(FamRank)_{i,t-1}$			−0.0327	−0.0531*
$D_6(FamRank)_{i,t-1}$			−0.0388	-0.0360
$D_7(FamRank)_{i,t-1}$			−0.0151	-0.0595
$D_8(FamRank)_{i,t-1}$			−0.0123	-0.0189
$D_9(FamRank)_{i,t-1}$			0.0312	0.0108
$D_{10}(FamRank)_{i,t-1}$			0.0687**	0.0685**
$LOW(SegRank)_{i,t-1}$	0.5697***	0.6404**	0.5759***	0.6429**
$MID(SegRank)_{i,t-1}$	0.3880***	0.3752***	0.3966***	0.3801***
$TOP(SegRank)_{i,t-1}$	1.6286***	1.3419***	1.5466***	1.2716***
...	...	...	...	...
R^2	16.85%		16.90%	

***,**, and * denote statistical significance at the 1%, 5%, and 10%-level, respectively.

Table IV

Impact of Changes in Family Ranks on Changes in Net-Inflows

Estimation results for the influence of the dummy variable $D(FamUpMover)$ from Model 3 are presented. The dependent variable is the change in fund flows of fund i between $t-1$ and t, $\Delta Flow_{i,t}$. $D(FamUpMover)$ is a dummy variable that takes on the value one, if the family rank of fund i increases from a family rank in $t-2$ not larger than a initial cutoff to a family rank in $t-1$ within a specific decile, and zero otherwise. The initial cutoffs are contained in the first row, while the deciles the fund moves into are contained in the second line. These deciles are denoted by $D_8(FamRank)_{i,t-1}$, $D_9(FamRank)_{i,t-1}$, and $D_{10}(FamRank)_{i,t-1}$ for the third best, the second best and the best decile in the family, respectively. Further explanatory variables are the change in segment rank of fund i between $t-2$ and $t-1$, $\Delta SegRank_{i,t-1}$, as well as the same control variables as in Table II. All models are estimated with PCSE and time fixed effects.

	$FamRank_{i,t-1}$		
$FamRank_{i,t-2}$	$D_8(FamRank)_{i,t-1}$	$D_9(FamRank)_{i,t-1}$	$D_{10}(FamRank)_{i,t-1}$
≤ 0.1	-0.1289	-0.0599	0.0558
≤ 0.2	-0.1208	-0.0832	0.0404
≤ 0.3	-0.0033	-0.0129	0.0530^{*}
≤ 0.4	-0.0453	-0.0170	0.0603^{**}
≤ 0.5	-0.0242	0.0140	0.1051^{***}
≤ 0.6	-0.0287	0.0420	0.1182^{***}
≤ 0.7	-0.0101	0.0402	0.1533^{***}
≤ 0.8		0.0470^{*}	0.1674^{***}
≤ 0.9			0.1987^{***}

***,**, and * denote statistical significance at the 1%, 5%, and 10%-level respectively.

Table V
Impact of Family Ranks on Inflows in Large and Small Families

Estimation results from Models (1) and (2) as contained in the main text with PCSE and time fixed effects are presented for subsamples of funds from large families and small families. Large families are defined as families with at least 20 equity funds in a given year. Dependent variable in all models is the growth rate of fund i due to net-inflows in year t, $Flow_{i,t}$. Explanatory variables are contained in Column 1. $Low(FamRank)_{i,t-1}$, $Mid(FamRank)_{i,t-1}$, and $Top(FamRank)_{i,t-1}$ ($Low(SegRank)_{i,t-1}$, $Mid(SegRank)_{i,t-1}$, and $Top(SegRank)_{i,t-1}$) provide the slope coefficients for the influence of the family rank (segment rank) of fund i in year $t-1$ in the bottom, the three middle, and the top quintiles, respectively. $D_n(FamRank)_{i,t-1}$ are dummy variables that take on the value one, if the family rank of fund i in year $t-1$ is in the nth decile. $n = 10$ denotes the best decile. Segment ranks are based on Sharpe Ratios and family ranks are based on segment ranks. The same control variables as in Table II are included, but their coefficients are not explicitly reported. The last two lines contain the R^2 and the number of observations, N.

	Model (1)		Model (2)	
	Small Families	Large Families	Small Families	Large Families
$LOW(FamRank)_{i,t-1}$	−0.0841	-0.0446		
$MID(FamRank)_{i,t-1}$	−0.0316	0.0930		
$TOP(FamRank)_{i,t-1}$	0.3634**	0.8977***		
$D_2(FamRank)_{i,t-1}$			0.0273	0.0818*
$D_3(FamRank)_{i,t-1}$			−0.0230	0.0193
$D_4(FamRank)_{i,t-1}$			−0.0362	0.0208
$D_5(FamRank)_{i,t-1}$			−0.0439	0.0158
$D_6(FamRank)_{i,t-1}$			−0.0536	0.0233
$D_7(FamRank)_{i,t-1}$			−0.0176	0.0415
$D_8(FamRank)_{i,t-1}$			−0.0105	0.0577
$D_9(FamRank)_{i,t-1}$			0.0171	0.1263**
$D_{10}(FamRank)_{i,t-1}$			0.0308**	0.2320***
$LOW(SegRank)_{i,t-1}$	0.3094	0.7060***	0.3403	0.6786***
$MID(SegRank)_{i,t-1}$	0.3392***	0.3231***	0.3319***	0.3468***
$TOP(SegRank)_{i,t-1}$	1.8440***	1.0997***	1.8398***	0.9783***
...	...	...	...	...
R^2	16.85%	17.63%	16.88%	17.74%
N	7,021	10,567	7,021	10,567

***,**, and * denote statistical significance at the 1%, 5%, and 10%-level, respectively.

Table VI
Impact of Changes in Family Ranks on Changes in Net-Inflows in Small and Large Families

Estimation results for the influence of the dummy variable $D(FamUpMover)$ from Model 3 are presented. Estimation results for subsamples of funds from large families and small families are presented. Large families are defined as families with at least 20 funds in a given year. The dependent variable is the change in fund flows of fund i between $t-1$ and t, $\Delta Flow_{i,t}$. $D(FamUpMover)$ is a dummy variable that takes on the value one, if the family rank of fund i increases from a family rank in $t-2$ not larger than a initial cutoff to the top decile in $t-1$, and zero otherwise. The initial cutoffs are contained in the first row. Further explanatory variables are the change in segment rank of fund i between $t-2$ and $t-1$, $\Delta SegRank_{i,t-1}$, as well as the same control variables as in Table II. All models are estimated with PCSE and time fixed effects.

	$FamRank_{i,t-1}$	
	Small Families	Large Families
$FamRank_{i,t-2}$	$D_{10}(FamRank)_{i,t-1}$	$D_{10}(FamRank)_{i,t-1}$
≤ 0.1	0.0330	0.1355*
≤ 0.2	0.0057	0.1080*
≤ 0.3	0.0235	0.0976*
≤ 0.4	0.0241	0.1101**
≤ 0.5	0.0321	0.1921***
≤ 0.6	0.0578*	0.1915***
≤ 0.7	0.0931***	0.2260***
≤ 0.8	0.0938***	0.2566***
≤ 0.9	0.1043***	0.2962***

***,**, and * denote statistical significance at the 1%, 5%, and 10%-level, respectively.

Table VII
Impact of Family Ranks Based on Sharpe Ratios on Net-Inflows

Estimation results from Model (2) as contained in the main text with PCSE and time fixed effects are presented for the full sample and subsamples of funds from large families and small families. Large families are defined as families with at least 20 equity funds in a given year. The dependent variable is the growth rate of fund i due to net-inflows in year t, $Flow_{i,t}$. Explanatory variables are contained in Column 1. $D_n(FamRank)_{i,t-1}$ are dummy variables that take on the value one, if the family rank of fund i in year $t-1$ is in the nth decile. $n = 10$ denotes the best decile. $Low(SegRank)_{i,t-1}$, $Mid(SegRank)_{i,t-1}$, and $Top(SegRank)_{i,t-1}$ provide the slope coefficients for the influence of the segment rank of fund i in year $t-1$ in the bottom, the three middle, and the top quintile, respectively. Segment ranks and family ranks are based on Sharpe Ratios. The same control variables as in Table II are included, but their coefficients are not explicitly reported. The last two lines contain the R^2 and the number of observations, N.

	Full Sample	Small Families	Large Families
$D_2(FamRank)_{i,t-1}$	-0.0525^{*}	-0.0452	-0.0125
$D_3(FamRank)_{i,t-1}$	0.0242	0.0254	0.0728^{*}
$D_4(FamRank)_{i,t-1}$	-0.0067	-0.0477	0.0576
$D_5(FamRank)_{i,t-1}$	0.0080	-0.0249	0.0714^{**}
$D_6(FamRank)_{i,t-1}$	0.0368	0.0018	0.1073^{***}
$D_7(FamRank)_{i,t-1}$	0.0971^{***}	-0.0016	0.1981^{***}
$D_8(FamRank)_{i,t-1}$	0.0564^{**}	0.0026	0.1427^{***}
$D_9(FamRank)_{i,t-1}$	0.0937^{***}	0.0656	0.1728^{***}
$D_{10}(FamRank)_{i,t-1}$	0.1165^{***}	0.0383	0.2522^{***}
$LOW(SegRank)_{i,t-1}$	0.4013^{***}	0.2473	0.4748^{**}
$MID(SegRank)_{i,t-1}$	0.3308^{***}	0.3141^{***}	0.3036^{***}
$TOP(SegRank)_{i,t-1}$	1.7419^{***}	1.9389^{***}	1.5066^{***}
...	...	...	...
R^2	17.05%	16.91%	18.01%
N	17,588	7,021	10,567

***,**, and * denote statistical significance at the 1%, 5%, and 10%-level, respectively.

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centre for financial research
cfr/university of cologne
Albertus-Magnus-Platz
D-50923 cologne
Fon +49(0)221-470-6995
Fax +49(0)221-470-3992
kempf@cfr-cologne.de
www.cfr-cologne.de