

Should investors choose funds from focused families?

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Abstract

This paper finds evidence consistent with a separating equilibrium where high search cost investors choose mutual fund families that offer a broad product array, while low search cost investors find it most efficient to allocate their resources across families focused in a particular product line. Considering both security research and distribution efficiencies, we find that focused families offer investors about a 50 basis point annual advantage in domestic equity funds over our period of study. Innovations in distribution, such as fund supermarkets, as well as financial advice priced below the breakeven threshold, can lever the benefits of family focus. © 2006 Academy of Financial Services. All rights reserved.

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1. Introduction

Mutual fund investors must choose the proportion of their assets to be invested across and within various classes, such as stocks, bonds, international, or specialty sectors. Another, less apparent, decision is whether investors should direct their money into one mutual fund family that offers funds with almost all possible combinations of these choices or should they spread their money across several fund families, each offering only a subset of an investor's

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choices. This paper investigates whether investor welfare is improved by investing widely across several families that specialize in a narrow product line of funds versus investing narrowly with one or two families that offers a wide variety of fund products. We find evidence consistent with a separating equilibrium in which high search cost investors will find it most efficient to invest in fund families that offer a broad product array (herein “unfocused families”), while low search cost investors will find it most efficient to allocate their resources across families focused in a particular product line.

Fund families that offer a broad product array may be strategically targeting investors with high personal administrative and search costs (Sirri and Tufano, 1998; Massa, 2003; Siggelkow, 2003). By offering funds across many asset types, unfocused families can offer “one stop shopping” to investors thus lowering investors search costs as well as the costs of administering to their accounts. Additionally, if family marketing and distribution expenditures and investor search costs are substitutes, investors with low search costs might efficiently self-select (focused) families with lower marketing/distribution costs, while higher search cost investors are better served by families with a wide variety of offerings. Thus we would expect to see unfocused families charge higher 12b-1¹ (marketing) fees and be more likely to include loads on their funds to encourage brokers to recommend them.

Investors with low search costs will find it efficient to select focused families only if they have the ability to offer higher net returns than unfocused families can offer. Prior studies of economies of scale and scope provide some insight into how focused families may have the ability to offer higher returns. Similar to the findings in more traditional production settings (Berger & Ofek, 1995), the mutual fund industry may experience diseconomies of scope in both research and operations. A family’s lack of specialization could have offsetting costs for both its business and for the investors in its funds. Eaton (1995) provides just such an example in the case of Fidelity’s ill-fated attempt to extend its successful equity fund investment strategies into bond funds. Thus, families that specialize within a narrow product line may be able to provide higher gross returns or higher returns net of operating expenses than diversified families because of diseconomies of scope.

Furthermore, unfocused families may experience diseconomies of scale in implementing their investment objectives. Sirri and Tufano (1998) and Jain and Wu (2000) find that fund families that advertise experience abnormally large cash inflows, while Barber, Odean, and Zheng (2004) and Walsh (2004) find that funds that charge 12b-1 fees also experience higher cash inflows. Thus, funds that charge lower investor search costs through advertising or broker incentives grow faster and, *ceteris paribus*, are larger than other funds. Several studies have shown evidence of scale economies in operating expenses.² However, Chen, Hong, Huang and Kubik (2004) and Walsh (2004) find that larger funds earn lower returns, before and after fees, after controlling for other relevant aspects of the funds. Chen et al. (2004) attribute much of the diseconomies to the interaction of investment ideas and liquidity. Larger funds need either more investment ideas, or investment ideas in more liquid securities than smaller funds. The authors also provide some evidence of organizational diseconomies affecting fund performance. Therefore, if funds in unfocused families are, in fact, larger than those in focused families, then diseconomies of scale and scope may erode performance through lower gross returns or returns net of operating expenses, thus providing an incentive for low search cost investors to seek out funds in focused families.

Using several data sources to create a “look-back” bias free sample, we find a great deal of variation in the level of specialization among fund families over the period from 1990 through 1998. For example, some families such as Nuveen are highly focused in that they manage funds that are concentrated *within* one investment objective, such as municipal bonds. Other families such as Merrill Lynch manage funds spread widely *across* five investment objectives. In such a family, an investor could meet all her equity, bond, municipal bond, international, and sector fund needs.

Relying on Brown, Harlow and Starks’ (1996) performance measure, we find that focused families had higher percentages of “winning” funds over the 1990 to 1998 timeframe. Dissecting the components of fund performance reveals that the benefits from family focus derive from competitive advantage in security selection, research efficiency, and lower marketing and distribution costs. Focused families also tend to have a lower percentage of merged or liquidated funds.

Mutual fund supermarkets and fee-only financial planners provide some evidence that the industry recognizes the benefits of focus. Distribution innovations, such as fund supermarkets, can reduce investor search and administrative costs and lever the benefits of family focus. Investors could also rely on advisors (such as fee-only financial planners) outside the fund family whose costs are less than the benefits obtained from the choice of funds in focused families.

The remainder of this paper is organized as follows: Section 2 describes the data and the variables. Section 3 presents the results, and Section 4 provides a discussion of the implications for individual investors. Section 5 then concludes.

2. Data

2.1. Sources

For this study, we rely on publicly available data compiled by *Morningstar* and *CDA Wiesenberger*. Our primary business unit of study is the fund family. The Investment Company Institute defines a fund family as a “group of funds under substantially common management. . .”³ Examples include Fidelity, T. Rowe Price, and Vanguard. Among other activities, families choose managers (or management teams) for individual funds, organize research staff, allocate investment opportunities, and perform distribution activities as well as administrative support for funds. Critical to the notion of a family is the ability for investors to exercise convenient exchange privileges to adjust their fund allocations based on changing personal investment objectives or shifting market conditions.

Our *Morningstar* data source lists funds by family. We rely on *Morningstar* to classify each fund within a family into one of five “investment objectives.” These are: 1) Domestic Equity, 2) Municipal Bond, 3) Bond, 4) International, and 5) Specialty/Sector. Within an objective, each fund fits into an established *Morningstar* category. See Appendix 1 for a complete breakdown of this structure.

We obtain data on fund families over the period from 1990 through 1998 from the *Morningstar Principia Plus* 1992–1999 On-Disc CDs, plus the 1990 and 1991 editions of

Morningstar Mutual Fund Data Source. We obtain fund characteristics including investment objective, the investment category within that objective, annual asset size, load status, performance, expense ratio, and 12b-1 fee.

The samples consist only of families with 10 or more funds in each year from 1990 to 1998 (40 families) and 1996 to 1998 (124 families). Families with 10 or more funds exhibit a range of specialization strategies. While “one-fund families” are interesting, it is not possible for such a family to spread its funds across investment objectives or styles. With 10 funds, a family could spread out across all five objectives or achieve significant “depth” within a single objective.⁴

We use data from *CDA/Wiesenberger Mutual Fund Reports* to supplement the Morningstar data and examine survivorship bias issues. Using searches of *CDA/Wiesenberger Mutual Fund Reports* and the *Wall Street Journal Index*, we also identify mergers between mutual fund families between 1990 and 1998. One example is the Benham-Twentieth (American) Century merger in 1994. In post 1994 data, *Morningstar* correctly lists them as one family. For purposes of family analysis, we separate merged families, such as Benham and Twentieth Century, in the years before their merger. In so doing, we address the “look back” bias in the *Morningstar* data.⁵

2.2. Measuring family focus

Most measures of specialization (or focus) can be expressed in general form as follows:

$$FOCUS = \sum_{j=1}^n P_j w_j \quad (1)$$

In a corporate context, P_j typically represents the fraction of assets (or sales) in a particular class (often a Standard Industrial Classification), and w_j represents the weight of the class itself. For mutual fund families, P_j can represent the fraction of total assets contained in the j th class.⁶ The Herfindahl index (H) has $w_j = P_j$ so that each fraction is weighted by itself.

Jacquemin and Berry (1979) test an entropy measure of specialization that weights each fraction by the natural log of the reciprocal of P_j so that $w_j = \ln(1/P_j)$.⁷ Suppose that the variable j refers to one of the five investment objectives in *Morningstar* and that P_j is the proportion of assets of the family in the investment objective j . The entropy measure *across* investment objectives (ENTACR) is thus:

$$ENTACR = \sum_{j=1}^5 P_j \ln(1/P_j). \quad (2)$$

ENTACR takes its minimum value of zero when the family has funds in only one investment objective. ENTACR has a maximum value of the natural log of the number of investment objectives, in this case five. This ENTACR value of 1.69 (natural log of five) occurs when the family has assets spread evenly across the five objectives (20% of its assets in each objective). Family specialization thus goes down as entropy goes up, unlike the Herfindahl index, which goes up with higher levels of family specialization.

Entropy may have an advantage over Herfindahl for the purpose of analyzing fund families. Some families have a very large fund that represents a substantial fraction of total assets for the family.⁸ Entropy gives less weight to large funds than Herfindahl since in the entropy calculation the reciprocal of P_j increases as P_j decreases. Thus relative to Herfindahl, entropy is more sensitive to small funds. These small funds still arguably require a level of management attention that is more than proportional to their relative size.

2.3. Performance measurement

We begin with the assertion that a family's performance is a composite of the performance of its individual funds. The first performance measure we use expands on prior research by Brown et al. (1996). They classify funds as winners or losers, based upon their performance in annual tournaments against other funds within their investment category. Using *Morningstar's* established investment categories, we extract information for each fund's relative performance against its competitors in the same investment category. If the fund's performance is above the median for the category for the year, the variable 'WIN' is assigned a value of one for that year. WIN takes a value of zero otherwise. Similar to Brown et al. (1996), we ignore any partial year observations. Performance of the family is then the proportion of winners among its funds for a given year.

We also use *Morningstar's* percentile ranking of the fund within its investment category. This measure ranges from 100 to one (top vs. bottom performer, respectively). Similar to WIN, the variable 'RANK' is then computed each year for a family as the average of the rankings of its funds.⁹

While composite WIN and RANK measures are useful for assessing a family's overall performance, they do not allow insight into family operations that return-based measures can provide. We define *gross returns* as returns before any expenses; *net returns* are returns after operating, but before marketing and distribution expenses; and *net-net returns* are returns after all expenses [operating, marketing (12b-1), and distribution (front and back end load)]. Because *Morningstar* returns consider operating and marketing (12b-1) expenses but not loads, we must convert loads to expenses to compute *net-net* returns. Similar to Khorana and Servaes (2004), we convert loads to expenses by taking the sum of a fund's back and front-end loads and dividing by various holding periods (ranging from one year to an infinite horizon). We then subtract the amortized load from the Morningstar return to obtain a fund's *net-net* performance. For any fund, *net-net* returns amortized over an infinite time horizon will equal *net* returns less the 12b-1 fee.

For each of these measures, we compute a fund's abnormal return by subtracting the mean return of funds in the same *Morningstar* category from the fund's return (Khorana & Servaes, 2004). We then standardize the abnormal return for an individual fund by dividing it by the cross-sectional standard deviation of returns for that category. This allows us to compare family abnormal returns from families dominated by equity funds to families that are mainly bond funds.¹⁰

For *gross*, *net*, and *net-net* performance measures, we thus compute an annual family abnormal return (FAR) as follows:

$$FAR = (1/N) \sum_{i=1}^N (R_i - R_{jAVE})/\sigma_j \quad (3)$$

where

R_i = return for a fund in a family

N = number of funds in the family

R_{jAVE} = average return for the j funds in the same *Morningstar* category as the fund i

σ_j = cross-sectional standard deviation of the returns of the j funds in the same *Morningstar* category as the fund i

Carhart (1997) and Wermers (2000) compute four-factor alphas to compare the performance of domestic equity funds. For an additional risk-adjusted performance metric, we too compute four-factor alphas for the domestic equity funds in our sample. We then tests whether focused families tend to have domestic equity funds with higher Carhart (1997) alphas.

2.4. Survivorship bias

Our *Morningstar Principia Plus* data sources contain only surviving funds. As a check for survivorship bias, we use *CDA/Wisenberger* to identify all merged or liquidated funds in our sample families over the period from 1990 through 1998. *CDA/Wisenberger* lists all merged or liquidated funds each month in its source *Mutual Fund Reports*. If a fund is merged or liquidated, we assume that it has been a ‘loser’ for its entire existence.¹¹ We then compute a family “loser ratio” for the period 1990 to 1998. This ratio is the total number of fund years of merged or liquidated funds divided by the total number of surviving fund years (obtained from *Morningstar*) plus the total number of merged or liquidated fund years.

For the 40 families that have had 10 or more funds over the period 1990 through 1998, this “loser” ratio averages 1.82%. High ENTACR (low focus) families’ loser ratio is 2.57%; low ENTACR families’ loser ratio is 1.06%. This difference, significant at the 0.05 level, is an important result in its own right and suggests that finding a positive link between focus and performance is not a result of survivorship bias. The families most prone to merge or liquidate funds tend to be the *least* focused.

3. Results

We divide the results section into four subsections to organize the flow of the findings. The first provides a descriptive summary of the data. The second examines whether focused families have better performing funds, and the third analyzes why focus and performance are linked. The fourth section uses four-factor alphas to provide a test of focus using domestic equity funds.

Table 1 Number and size of mutual fund families

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Panel A: whole sample									
No. of families	40	41	47	54	67	98	124	135	154
Percent of total assets in industry in families	83	82	83	84	83	88	89	89	89
Total assets per family	10,391	10,112	12,706	14,509	16,353	12,160	12,976	14,940	17,010
No. of funds per family	23	24	24	26	29	32	37	41	45
Assets/fund per family	422	385	456	485	469	332	308	316	329
Panel B: 40 families with 10 funds or more from 1990 to 1998									
Total assets per family	10,391	10,338	14,454	18,405	25,041	25,232	33,039	40,559	51,114
No. of funds per family	23	24	26	30	37	51	68	82	95
Assets/fund per family	422	392	494	567	635	528	576	604	679

Note: Descriptive data for mutual fund families with 10 or more funds in the year shown. Panel A has data for the entire sample. Panel B shows data for the 40 families that have been in existence (with 10 or more funds each year) for the entire sample period. Data on families is from the January 1999 *Morningstar* Principia Plus database. Mean values are shown for total assets, number of funds, and assets/fund per family. Total assets and assets/fund are in \$M. Values shown are as of the beginning of the year indicated.

3.1. Descriptive summary

Table 1 (Panel A) shows the growth of the number of families with 10 or more funds during the sample period from 1990 to 1998. Families with 10 or more funds comprise between 80% and 90% of the total assets in *Morningstar* throughout the period. The average number of funds per family grows smoothly over the nine-year period. The trends in the growth of average total assets per family and assets/fund are nonmonotone, however, reflecting the entry of a large number of smaller families in the mid-1990s.

Table 1 (Panel B) displays descriptive results for the 40 families that have had 10 or more funds since 1990. For these families, the growth in total assets per family and average number of funds per family is smooth. In terms of assets per fund, there is evidence of nonmonotone growth similar to that for the sample at large. This is due, in part, to the rapid growth in the number of funds per family, coupled with a slowdown in the growth of assets, around the 1994 timeframe. This sample of 40 contains a wide range in terms of assets under management. As of the beginning of 1998, Fidelity had the largest amount of assets under management among the 40 families, just over \$414B. Conversely, Lexington had the smallest asset size of the subsample, about \$1.4B.

Families exhibit a wide variety of specialization strategies. The mean ENTACR as a percentage of its maximum value over the period from 1990 to 1998 is about 70%, but there is significant variation. Nuveen maintains zero ENTACR for nearly the entire nine-year period; nearly all of its funds are in the municipal bond objective. At the other end of the spectrum is a family like Merrill Lynch, with virtually the maximum possible ENTACR (over 95%).

We find that ENTACR is uncorrelated with total assets under management at the family level, so families do not necessarily spread out across objectives as they grow. Some large

Table 2 Focus and family win/rank performance

Measure	ENTACR (assets)	Median performance	Mean performance	<i>p</i> -values	
				Wilcoxon	<i>t</i> Test
1990–1998 (<i>N</i> = 40)					
WIN	LOW	56.5	56.1	.04	.02
	HIGH	51.2	51.3		
RANK	LOW	53.1	53.0	.05	.05
	HIGH	50.2	50.5		
1996–1998 (<i>N</i> = 124)					
WIN	LOW	55.2	54.5	.06	.09
	HIGH	50.6	50.7		
RANK	LOW	52.0	51.9	.05	.05
	HIGH	48.7	49.1		

Note: Performance of fund families over the period from 1990 through 1998. Families in the sample have 10 or more funds every year during the period of interest. *N* is the number of families for the periods shown. Panel A divides the sample into two groups based on whether the family's average entropy (ENTACR) for the period is below (LOW) or above (HIGH) the median for the sample. ENTACR measures asset spread across the five investment objectives: 1) domestic equity, 2) municipal bonds, 3) corporate bonds, 4) international, and 5) specialty/sector. Two measures of sponsor performance are shown. The first is WIN, which takes value one in a given year if a fund's performance exceeds the median within its investment category, as defined by *Morningstar*. WIN takes value zero otherwise. Family performance each year is the percentage of winners among its funds. The other performance measure is RANK, which is the percentile ranking of the fund in its investment category. RANK ranges from zero (poor performance) to 100 (top performance). Family performance each year is the average of the ranks of its funds. *p*-values are shown for both Wilcoxon test statistics and *t* tests.

families remain “boutiques” that specialize within a narrow range of investment objectives. Other smaller families emphasize breadth early in their existence, as they try to offer investors a “cafeteria” of funds across objectives as quickly as possible. Despite the differences in focus, families do not appear to take on different levels of systematic risk based on their level of specialization. Equal and value weighted fund betas for families are not correlated to family ENTACR. Had beta been positively correlated to ENTACR, then using WIN/RANK ratios or FARs (category-adjusted returns) to measure family performance could generate risk bias.

3.2. Do focused families tend to have better performing funds?

Table 2 compares the performance of families based on the average of their annual ENTACR values over the period of interest. Similar to Siggelkow (2003), the annual ENTACR values are computed using beginning-of-year asset values to reflect the structure in place before that year's performance. For example, in studying family performance during 1990 to 1998, we use the assets as of the beginning of 1990, 1991, 1997, and 1998.

Table 2 shows that high focus (reflected by low ENTACR) is associated with better family performance. Both the WIN and RANK variables are higher for the low ENTACR families over the nine-year period (1990–1998). All of the differences are significant at the 10% level

or better.¹² The results from 1996 to 98 again show that low ENTACR families are better performers. Each of the differences is significant at the ten-percent level or better. Using H instead of ENTACR to measure focus has no impact on the tendencies seen in Table 2, and only minor impact on significance levels.

Despite the positive association between focus and performance, at this stage we cannot determine whether focus leads to better performance, or whether good performance attracts assets that increase focus (Sirri & Tufano, 1998). We do rely on beginning-of-period asset structure (each year) to see if the focus variable can forecast better performance for that coming year.

3.3. *Why do focused families tend to have better performance?*

The Table 2 results invite an inquiry as to why families with focused investment objectives tend to have more funds that outperform their within-category peers. The WIN and RANK performance measures do not allow an answer to these questions. To study this issue, we examine family *gross*, *net*, and *net-net* returns. Finding that focused families have higher *gross* and/or *net* returns implies a linkage between focus and security selection/research. Higher *net-net* returns in focused families suggest a link between focus and lower marketing/distribution costs.

Table 3 presents comparisons of the FAR measures in the high and low ENTACR subsamples. Table 3 shows that low-ENTACR families generally have more positive returns across all measures of FAR, suggesting that specialized families have advantages in security selection and research efficiency (*gross* and *net* returns), as well as in marketing/distribution (*net-net* returns). However, the only differences significant at normal levels are in the *net-net* FAR measures in the 1996–98 timeframe.

If unfocused families rely more on marketing and distribution than their specialized peers, then there should be a relationship between family focus (ENTACR) and marketing and distribution expenses (12b-1 fees and loads). Table 4 shows that both 12b-1 fees and loads are generally higher in less focused (high ENTACR) families.¹³ In the 1996 to 1998 timeframe, high-ENTACR families have an average 12b-1 fee that is 15 basis points higher than the average 12b-1 fee in low-ENTACR families. For the load variable (sum of front and back end loads), the difference between low and high-ENTACR families is about 80 basis points (assuming a one-year holding period). Rather than substituting for marketing (12b-1) expenses, loads appear to be a “double whammy” for investors in high-ENTACR families.

Suggesting that family specialization benefits accrue in marketing and distribution extends the literature in industrial organization. Prior empirical work on corporate focus has linked poor performance and a lack of focus (Berger & Ofek, 1995), but that research could not shed light on why the poor performance was occurring. This is because operations costs and marketing/distribution costs are difficult to separate in corporate studies. These costs can be isolated and analyzed using mutual fund data.

Consistent with our priors, unfocused families rely more heavily on advertising and distribution to attract high search cost investors. An alternative interpretation of this result is that focused families are more efficient with their use of advertising and distribution than unfocused families. For example, a focused family can amortize the cost of an advertising

Table 3 Focus and standardized family abnormal returns

Return measure	ENTACR (assets)	Median performance	Mean performance	<i>p</i> -values	
				Wilcoxon	<i>t</i> Test
Panel A: 1990–1998 (<i>N</i> = 40)					
GROSS	LOW	−0.023	0.012	.95	.64
	HIGH	−0.004	−0.004		
NET	LOW	−0.034	0.015	.68	.61
	HIGH	−0.005	−0.005		
NET-NET					
One-year	LOW	−0.17	0.067	.58	.36
	HIGH	−0.19	−0.067		
Four-year	LOW	0.031	0.053	.25	.26
	HIGH	−0.094	−0.034		
Seven-year	LOW	0.028	0.049	.21	.23
	HIGH	−0.082	−0.026		
Infinite	LOW	−0.049	0.015	.68	.30
	HIGH	−0.009	−0.042		
Panel B: 1996–1998 (<i>N</i> = 124)					
GROSS	LOW	0.026	0.045	.18	.15
	HIGH	−0.017	−0.024		
NET	LOW	0.061	0.036	.23	.23
	HIGH	−0.029	−0.026		
NET-NET					
One-year	LOW	0.236	0.178	.00	.01
	HIGH	−0.119	−0.027		
Four-year	LOW	0.095	0.122	.01	.01
	HIGH	−0.050	−0.019		
Seven-year	LOW	0.088	0.101	.02	.02
	HIGH	−0.033	−0.017		
Infinite	LOW	0.091	0.087	.05	.08
	HIGH	−0.028	−0.015		

Note: Performance of fund families over the period from 1996 through 1998. Families in the sample have 10 or more funds every year during the period of interest. *N* is the number of families. The sample is divided into two groups based on whether the family's average entropy (ENTACR) for the period is below (LOW) or above (HIGH) the median for the sample. ENTACR measures asset spread across the five investment objectives: 1) domestic equity, 2) municipal bonds, 3) corporate bonds, 4) international, and 5) specialty/sector. Standardized family-abnormal return (FAR) measures are: GROSS, which is return before expenses; NET, which is return after operating but before marketing and distribution expense; NET-NET, which is returns after all expenses. For NET-NET, loads are amortized over one-year, four-year, seven-year, and infinite horizons. Each fund's return is adjusted by the mean return for the investment category, with the difference standardized by the category standard deviation. FAR is the equal-weighted average of the standardized returns of a family's funds. *p*-values are shown for both Wilcoxon test statistics and *t* tests.

campaign across a number of similar funds.¹⁴ An unspecialized family, however, might be unable to extend an advertising campaign across funds as easily. Either interpretation leads to the conclusion that advertising costs act as a substitute for investor search costs, thus leading high search cost investors toward unfocused families and low search cost investors toward focused families.

In regressions not reported in a separate table, we estimate multivariate regressions that

Table 4 Family focus and marketing/distribution expenses

Family measure	ENTACR (assets)	Median (percent)	Mean (percent)	<i>p</i> -values	
				Wilcoxon	<i>t</i> Test
Panel A: 1990–1998 (<i>N</i> = 40)					
12b-1	LOW	0.29	0.29	.14	.19
	HIGH	0.46	0.38		
Front-end load	LOW	2.08	2.14	.80	.77
	HIGH	2.25	2.00		
Back-end load	LOW	0.42	0.59	.04	.03
	HIGH	1.27	1.10		
Total load	LOW	3.31	2.72	.69	.50
	HIGH	3.68	3.10		
Panel B: 1996–1998 (<i>N</i> = 124)					
12b-1	LOW	0.22	0.28	.00	.00
	HIGH	0.41	0.43		
Front-end load	LOW	0.92	1.10	.04	.04
	HIGH	1.44	1.51		
Back-end load	LOW	0.27	0.63	.00	.00
	HIGH	1.23	1.02		
Total load	LOW	1.66	1.73	.01	.00
	HIGH	2.73	2.53		

Note: Data on fund families over the period from 1990 through 1998. Families in the sample have 10 or more funds every year during the 1990–1998 period (Panel A) or the 1996–1998 period (Panel B). *N* is the number of families. The sample is divided into two groups based on whether the family's average annual entropy (ENTACR) for the period is below (LOW) or above (HIGH) the median for the sample. ENTACR measures asset spread across the five investment objectives: 1) domestic equity, 2) municipal bonds, 3) corporate bonds, 4) international, and 5) specialty/sector. Four measures of marketing/distribution costs are shown: family 12b-1, which is average of the annual 12b-1 fees of the funds in the family, family front end load, back end load, and total load, which is the sum of the front and back end loads. With a one-year holding period, load and 12b-1 costs would be directly comparable. *p*-values are shown for both Wilcoxon test statistics and *t* tests.

use *net-net* FAR as the performance (dependent variable) measure. The independent variables are ENTACR, family assets (log), and fund age. The ENTACR variable remains significant even after controlling for family size and fund age. We also regress a family's equal weighted 12b-1 fee (or load) on ENTACR, family asset size, and fund age. Consistent with the earlier results, less focused (high ENTACR) families tend to have higher levels of 12b-1 fees, loads, and 12b-1 fees plus loads amortized over various horizons.¹⁵

3.4. A test involving domestic equity funds

The four-factor model has become the standard method for performance evaluation involving domestic equity funds (Carhart, 1997). While we cannot use this model to generate alphas for funds in the international and bond (taxable and tax-exempt) objectives, domestic equity funds do provide an opportunity to use the four-factor model to examine the relationship between focus and performance. Recall that in Table 3, *gross* and *net* FARs were generally higher in focused families, although not significantly so. If family focus is linked

Table 5 Four factor alphas from domestic equity funds

Family measure	ENTACR (assets)	Median (percent)	Mean (percent)	<i>p</i> -values	
				Wilcoxon	<i>t</i> Test
Panel A: 1990–1998 (<i>N</i> = 40)					
Gross alpha	LOW	0.034	0.021	.85	.83
	HIGH	0.017	0.025		
Net alpha	LOW	−0.046	−0.063	.60	.62
	HIGH	−0.056	−0.052		
Panel B: 1996–1998 (<i>N</i> = 124)					
Gross alpha	LOW	0.040	0.038	.01	.02
	HIGH	0.003	0.001		
Net alpha	LOW	−0.042	−0.048	.01	.05
	HIGH	−0.080	−0.079		

Note: The *monthly* four-factor alphas for domestic equity funds over the period from 1990 through 1998. Families in the sample have 10 or more funds every year during the 1990–1998 period (Panel A) or the 1996–1998 period (Panel B). *N* is the number of families. The sample is divided into two groups based on whether the fund is in a family whose average annual asset entropy (ENTACR) based on investment objective for the period is below (LOW) or above (HIGH) the median for the sample. Similar to Carhart (1997), we eliminate all funds with less than 30 months of data from the analysis. All classifications come from Morningstar. *p*-values are shown for both Wilcoxon test statistics and *t* tests.

to security selection and research, then four-factor tests of domestic equity funds might be able to isolate the focus effect. Table 5 presents a comparison of the Carhart (1997) four-factor alphas from equity funds in focused and unfocused families. Table 5 shows that both *gross* and *net* domestic equity fund alphas are generally higher in focused families, with significant differences in the 1996–98 timeframe. Panel B shows that in 1996 to 1998, domestic equity funds from focused families outperform by three to four basis points on a monthly basis (or about 0.5% per year).¹⁶ The results are consistent with arguments that focus is linked to security selection and research efficiency, at least with regard to domestic equity funds. Family focus could lead to advantages in either the hiring domestic equity fund managers and/or in the organizing of research staff.

4. Implications for investors

What do the results suggest for individual investors? First, family focus appears to matter; it tends to be associated with good performance in the family's (more specialized) lineup of funds. So, if an investor had zero search and administrative costs, she should prefer funds from focused families. High search and administrative cost investors, however, should emphasize families offering "one-stop shopping."

What is the payoff to investing in focused families? The results in Table 5 suggest that for domestic equity funds the advantage is about 0.5% a year. This suggests that an intermediary or innovation that allows an investor to rely on funds from focused families could charge up to 0.5% a year and create value (*ceteris paribus*). Interestingly, the no-transaction-fee (NTF)

fund supermarkets, such as Schwab and Fidelity, charge 0.35 to 0.40% per year. These NTF supermarkets reduce search and administrative costs, allowing investors to hold funds from a number of (focused) families in a single account. Unfocused families are more akin to a fund supermarket themselves, so the rationale for them entering NTF supermarkets is less clear.

The marketing and distribution cost results in Table 4 also have interesting implications for investors. They suggest an efficient selection between investor clienteles and family focus strategy. To attract high search-cost investors who would favor “one-stop-shopping,” unfocused families tend to have higher 12b-1 (marketing) fees and higher loads (paid to brokers to attract investors). Focused families, who would tend to appeal to low search-cost investors, have lower marketing and distribution expenses. For their investor clientele, the added marketing and distribution expense is not needed. The benefits of being a low search cost investor can be estimated by the differences in costs, roughly 0.15% per year on 12b-1 fees and 0.80% a year in load charges (assuming a one-year holding-period). The load cost difference could be amortized to zero assuming an infinite investor holding period, but the 12b-1 difference would remain. These costs also provide an estimate of the value of a fee-only financial planner that assists an investor into focused (no-load or 12b-1) families. Indeed the question of what type of investor should use bundled advice as well as bundled product solutions remains an interesting one for future research (Elmerick, Montalto & Fox, 2002).

5. Conclusions

Some mutual fund families offer a broad range of funds *across* investment objectives while others specialize by offering funds *within* a narrow investment niche. Should investor choose funds from focused families (the former), or rely more on “one stop shopping?” Building on research by Massa (2003), Khorana and Servaes (1999, 2001), and Sirri and Tufano (1998), we find that focused families had higher percentages of “winning” funds over the period from 1990 to 1998. The advantages of family focus accrue from several factors, including superior security selection, efficiency in research, and lower marketing and distribution costs. Advantages in security selection and research are clearest in domestic equity funds. Domestic equity funds from focused families have higher Carhart (1997) alphas. Lastly, focused families that decrease focus tend to underperform families that remain focused.

Heterogeneous investor search and administrative costs explain why both focused and unfocused families can simultaneously exist. Investors with low search and administrative costs can take advantage of the benefits of family focus; high cost investors cannot. Innovations that reduce investor search and administrative costs, such as fund supermarkets, can lever the benefits of family focus. Or, investors can use financial planners whose costs could be lower than the added marketing and distribution charges of fund families. Whether the costs these intermediaries impose is worth the added gains, however, remains a question for future research.

Notes

1. Rule 12b-1 allows fund advisors to use fund assets to pay for marketing and distribution exclusively pursuant to a 12b-1 plan voted on by the fund shareholders. Any distribution costs not covered by the 12b-1 plan must be paid for by the fund advisor out of their profits.
2. For example, see Latzko (1999) and Dermine and Roller (1992).
3. The term “complex” is often used interchangeably with “family.” In this paper, we use the term “family” exclusively. See the 1996 *Mutual Fund Factbook*, written by the Investment Company Institute.
4. We did estimate the results using families with five or more funds. They show similar trends to those in the paper, but with less statistical significance. Part of the reason may be that families with less than 10 funds tend to be very small. Table 1 shows that our sample of families with 10 or more funds comprises nearly 90% of the fund assets in *Morningstar* in 1998.
5. Our time frame does limit our ability to make more general statements. Our sample, however, is from a period where there were relatively few mergers and acquisitions in the mutual fund industry. An analysis using more recent data would have to address a more intense look back bias.
6. Using the number of funds in each objective to calculate specialization is also a possibility. However, relying on funds to calculate specialization brings the issues surrounding multiple class funds into play. Multiple class funds became popular in the mid-1990s. *Morningstar* correctly lists a fund with A, B, C, and I shares, for example, as four funds. This classification is done because the classes differ with regard to features such as loads, expenses, and minimum investments. However, this fund is a single portfolio. The sum of the assets in each class represents the total asset value of the fund.
7. Entropy measures have been used mainly in the natural sciences, but Horowitz (1970) argues that entropy has utility beyond that boundary. Palepu (1985) studies the linkage between profitability and entropy in a corporate context.
8. Fidelity is an excellent example. At the end of 1998, Fidelity had 281 funds tracked by *Morningstar*, but Magellan Fund alone was over 16 percent of the family’s total assets under management. Similarly, Vanguard had 83 funds at the end of 1998, but the Index 500 Trust fund was nearly 19 percent of the family’s total assets.
9. Looking at RANK allows us to assess whether a family’s overall performance is driven by extreme fund performance. Under *Morningstar*’s ranking scheme, when a family has more than one fund within a category, those funds compete with each other in the rankings. The result is a compression of the family’s performance toward the median in that category. To estimate the extent that families are competing against each other, we determine the largest percentage of funds from one family in each investment category. The average over 44 categories is 8.7%, and the maximum in any one category is 22%.
10. An example might be comparing an equity-fund-dominated family like Janus with a bond-dominated family such as Nuveen. Tax issues would complicate any compar-

isons involving families that emphasize municipal bond funds. We do not attempt to correct for these differences in our performance measures.

11. Our approach to survivorship bias is similar to that used by Khorana and Servaes (2004). Because our goal is to put the worst face on survivorship bias, we assume that fund merger or liquidation is an extreme step taken when a fund has performed very poorly. This assumption is supported by the research of Carhart, Carpenter, Lynch and Musto (2002), who find that funds are merged or liquidated after multi-year poor performance. While our results would be stronger if we re-computed WIN ratios considering merged and liquidated funds as losers throughout their existence, we do not report the results this way. Funds can be merged or liquidated for reasons other than poor performance. For example, Domowitz and Zhao (2003) argue that high capital gains overhang is a factor in the fund exit decision.
12. We also examine value-weighted (by assets) measures of WIN and RANK. The results are similar to those in Table 3.
13. Because *Morningstar* reports only the current 12b-1 fee and loads on a given compact disc, we rely on historical *Morningstar* data to get 12b-1 and load fees back to 1990.
14. As an example, Janus (a highly focused equity family) conducted an advertising campaign promoting their ability to efficiently research companies and make successful equity investments.
15. We also estimated separate regressions using family front-end load and back-end load, respectively. In both regressions, ENTACR was negative and significant. This is an interesting result considering that front-end loads are arguably more oriented toward distribution (paying a commission) while back-end loads may be aimed at dissuading investors from leaving funds. In a focused family for example, one might have expected to find higher levels of back-end loads because if investors leave the fund they may be more likely to leave the family. Our findings suggest that back-end loads act more like deferred commissions. As such, investors unaware of back-end loads could be damaged by recommendations to change funds.
16. We also calculated value-weighted alphas. The results are similar to the equal-weighted alphas in Table 5 with slightly more statistical significance.

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Appendix: breakdown of fund investment objectives and categories**1. Domestic Equity**

Large Blend
Large Value
Large Growth
Mid Cap Blend
Mid Cap Value
Mid Cap Growth
Small Blend
Small Value
Small Growth

2. Municipal Bonds

Muni Short
Muni Single State Intermediate
Muni National Intermediate
Muni Single State Long
Muni National Long

3. Bonds

Ultra Short
Short Term
Intermediate Term
Long Term
Short Government
Intermediate Government
Long Government
High Yield
Multi Sector
Convertibles

4. International

Foreign Stock
Europe Stock
World Stock

Japan Stock
Diversified Pacific/Asia Stock
Diversified Emerging Market
Pacific Asia (less Japan)
Latin America
International Bond
International Hybrid

5. Specialty/Sector

Specialty Technology
Specialty Precious Metals
Specialty Communications
Specialty Health
Specialty Utilities
Specialty Real Estate
Specialty Financial
Specialty Unaligned
Specialty Hybrid

Note: This appendix describes the breakdown of mutual funds into investment objectives and the investment categories within those objectives. The classification scheme is taken entirely from *Morningstar*. The investment objectives are 1) domestic equity, 2) municipal bonds, 3) bonds, 4) international, and 5) specialty/sector. The investment categories are under one of these objectives and are the basis for relative performance measures.

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