Are Mutual Fund Fees Competitive?
What IQ-Related Behavior Tells Us

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March 4, 2008

We would like to thank the Finnish Armed Forces, the Finnish Central Securities Depository, and the Finnish Tax Administration for providing access to the data, as well as the Office of the Data Protection Ombudsman for recognizing the value of this project to the research community. Our appreciation also extends to Antti Lehtinen, Patrik Wikberg, and Shilei Zhang, who provided superb research assistance, and to Samuli Knüpfer, Juhani Linnainmaa, and Vesa Puttonen, who generated many insights that benefited this paper, and seminar participants at Michigan State University and New York University. Financial support from the Academy of Finland, the Finnish Cultural Foundation, and the Research Foundation for Savings Bank is gratefully acknowledged.

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Abstract

This study analyzes the fees of mutual funds and the choices of mutual fund investors. Using a comprehensive dataset on males in two Finnish provinces, we find that the fees of funds selected by high IQ investors are not significantly lower than the fees of funds selected by low IQ investors. This conclusion controls for a variety of fund and individual attributes that explain mutual fund fees and mutual fund choices. This suggests that fees are set competitively in the fund industry.

I. Introduction

If economic thought rests on a solid foundation, one expects to observe competitive pricing in a frictionless market with rational consumers. One implication of this is the law of one price—that is, identical goods or services sell for the same amount. If prices for the same good differ in the same market, economic reasoning implies that either the goods differ in ways that are apparent to the consumer but not to the empirical economist, or the market is not competitive. Lack of competition has to be due to some underlying friction on either the supply side (e.g., barriers to entry) or demand side (e.g., information frictions).

This paper, using data from Finland, offers an empirical analysis of the competitiveness of the market for mutual fund services by studying how demand is influenced by an investor's intellectual ability (which we sometimes refer to as "IQ" or "ability"). We assume that this market has no supply side frictions[1] and study whether demand side frictions account for differences in fees. Suppose, for example, that there are no differences in the value of services provided by funds with different fees.[2] In this case, investors of high intellectual ability, who face lower information frictions, would be more likely to avoid high fee funds. On the other hand, even in the absence of information frictions, differences in fees could exist in a competitive market if funds offered services of different value. If these service differences were valued equally, we would not expect IQ to be correlated with fees. On the other hand, if the services are of

[1] In the world's financial markets, there are nearly as many mutual funds as there are individual stocks. It would be difficult to argue that there are entry barriers here.

[2] Services that offer value to all investors would include performance, but there also are services that might have value to some investors and little if any to others. The latter include education about diversification, information on how to invest, technology that allows one to monitor a fund, ease in filling out forms, assistance with taxation associated with holding funds, telephone access to knowledgeable advisors, ability to invest in certain sectors of the market, like overseas, handholding and counseling with a real and familiar person, and asset allocation across classes of securities.

more value to low IQ than to high IQ investors, a negative correlation between fee and IQ could exist and still be consistent with a competitive market for mutual fund services.

The most salient observation from our data is that, within fund categories, the fund fees paid by investors of high intellectual ability are not significantly below those paid by investors of low intellectual ability. This suggests that differences in the fees of funds probably do not arise from frictions generated by the inability to process fee information. It is at least plausible that the observed fee differences arise because of differences in services across funds and that both high and low IQ investors value those service differences equally.

Evidence supporting this interpretation also is found from comparisons across fund categories. Balanced funds tend to have higher fees than portfolios of bond and equity funds that generate similar asset allocations. Fees are especially high for balanced funds marketed through a retail network, generally run by the investor's bank. In the absence of ability to time the market, the asset allocation service of balanced funds appears to be of little value to high IQ investors. After all, for someone of reasonable intelligence, buying both a bond fund and an equity fund is not "rocket science." If this assertion is true, we would expect to see many high IQ investors avoid the high fees of balanced funds by creating their own "home-made" balanced funds. By contrast, low IQ investors may not understand the concept of asset allocation and prefer to pay someone to educate them about it and take care of it in one simple fund. There is a cost to provide this service, as well as a cost for marketing the need for such a service to low IQ investors. Thus, in a competitive market, balanced funds that bear these costs could assess a higher fee than a nearly identical portfolio of equity and bond funds.

Our data show that higher IQ investors avoid balanced funds marketed through the retail networks, which tend to have far higher fees. This is not to say that all high IQ investors place no value on "one-stop shopping" for their asset allocation. At some price point, which may differ across investors, one prefers the convenience of a balanced fund to a portfolio of equity and bond funds. Such balanced funds would be less likely to handhold the prospective investor, to be marketed in a less costly manner, and to have lower fees than the retail network balanced funds. Such non-retail balanced funds have grown in number over time and have begun to earn some of the business of the higher IQ investors. Indeed, our results show that IQ is unrelated to an investor's likelihood of holding a non-retail balanced fund, which typically has far lower fees than a retail balanced fund.

In spite of this evidence, it is possible to argue that the high-fee retail balanced funds are unique at exploiting low IQ investors. This would be the case if the marginal cost of providing the balanced fund service to low IQ investors was below the price charged for those services. We are skeptical about this argument because of our other finding that within all classes of funds, fund fees paid by low IQ investors are not significantly larger than those for high IQ investors.

Taken together, our results imply that one must be cautious before jumping to the conclusion that differences in fees across mutual funds imply that investors are being gouged by the higher fee funds. The diversity of fees may reflect quality differences across funds that escape the naïve observer, but not the perceptive eye of the marginal consumer of fund services. Fee diversity also may reflect the differing values that different clienteles place on those services.

A difference in stock picking ability across fund managers does not appear to be one of the service differences that account for differences in fees. Fama-MacBeth regressions, over a longer sample period, cannot establish whether or not there is statistically reliable relationship between fees and performance (measured before fees are deducted).

To our best knowledge, this is the first study to address the issue of industry competitiveness by analyzing the role of intellectual ability in consumer behavior. Bailey, Kumar, and Ng (2006) find that education and wealth are positively related to sales loads, while Malloy and Zhu (2004) find the opposite result. However, neither study makes use of IQ data. Our study also is one of the first in finance to make use of comprehensive IQ data on a large population.[3] The IQ data are obtained from a test of intellectual ability given to virtually all male Finnish investors who reached military draft age since 1982. This IQ test is mandatory, and is taken at the age of induction into military service (about 18 or 19). We are fortunate to be able to link IQ data to trades in mutual funds made much later in life and to a host of control variables, all obtained from the Finnish Tax Authority.

The paper is organized as follows: Section 2 describes the institutional setting, the data, and the empirical methodology. Section 3 presents summary statistics and regression results. Section 4 concludes the paper by interpreting the regression results.

[3] Christelis et al. (2006) is the only other study we are aware of that makes use of data on cognitive ability. It studies the stock market participation of older investors in 11 countries in Europe.

2. Institutional Setting, Data, and Methodology

2.1. The Finnish Mutual Fund Market

Mutual funds registered in Finland differ from U.S. funds in several respects. First, the fees are more transparent. Funds cannot debit marketing, custodial, or other expenses of similar nature from fund asset values; the only legitimate deductible costs are management fees and transaction costs. Thus, management advisory fees are all-inclusive and are equivalent to expense ratios in the U.S.

Front-end loads, when they exist, tend to be lower than in the U.S., usually 1%. Funds are generally bought directly from the intermediary representing the fund company, most commonly the local bank branch selling fund products of that bank.[4] The small front-end loads offer little incentive for outsiders to sell the funds and also make it more difficult for foreign fund families (e.g. Fidelity) to tap market share in Finland. Brokers are not used to buy funds. However, some investors buy funds through a voluntary pension insurance scheme or at the recommendation of "independent" advisers (who tend to provide their services for free to the customer). As a rule, an investor using these alternative avenues ends up paying the same fees had she invested directly through a branch office.[5]

One consequence of this is that fund distribution is concentrated among large banks with extensive retail distribution networks, with the three largest banks accounting for a combined market share of about 70%. There also are many smaller asset

[4] Some banks or asset management houses also sell more specialized products (e.g., North America or Japan funds) produced by foreign subcontractors under their own brands. Only one bank with a relatively small retail network sells mutual fund products of its domestic competitors.

[5] This type of advisor (as opposed to the management advisory firm) makes money by getting volume discounts from the funds (including an exemption from the front-load fee), pocketing the difference. In practice, the volume discounts often generate little incentive for the advisers to recommend the funds, so the advisers tend to advise their clients to buy *more expensive* products (e.g. nontransparent insurance products) that provide fatter margins.

management houses or other players in the market, such as one major Swedish bank, Handelsbanken, (but it has no retail distribution network to speak of). None of the fund companies with retail distribution networks offer index products to their retail customers and index funds have a much smaller market share in Finland than in the U.S.

Because Finland is a small country, many Finnish mutual funds invest predominantly in foreign markets. This tendency has become ever more important as the Finnish mutual fund market has matured.

Finnish mutual funds, like U.S. funds, do not pay tax on undistributed interest or dividend income or capital gains realized by the fund. Investors are subject to taxation only when they receive dividend distributions from the funds or when they realize capital gains by selling shares in the fund. However, in contrast to the U.S., Finnish mutual funds are not compelled to distribute interest, dividend, or capital gains income. Indeed, Finnish mutual funds have tranches which reinvest these sources of income in the fund rather than distribute the income to investors as fund dividend distributions. These tax-advantaged tranches are preferred by the vast majority of investors in Finland. This implies that balanced funds can rebalance their portfolios without having to pay tax on potentially realized gains, giving them a small tax advantage over a portfolio of bond and equity funds that an investor might use to mimic the balanced funds asset allocation strategy.

During the sample period, Finnish end investors (except for some tax exempt institutions which are not part of our sample) paid a flat 28% rate (as of January 2000, a flat 29% rate) on their capital income, including capital gains, interest income, and

dividends. See Grinblatt and Keloharju (2004) for a more exhaustive description of personal taxation in Finland.

2.2. Mutual Fund, Income, Wealth, and Investment Data

Data on mutual fund transactions and holdings come from the Finnish Tax Administration (FTA). The Finnish Tax Administration collects these data from both funds and individuals. Mutual funds report sales by individuals to the FTA on an annual basis. The reported data include the name of the fund, the number of fund shares sold by the investor, and the sales date. These data, for the period from January 1, 1998 to December 31, 2000, are for investors throughout Finland. We restrict our sample to residents of two wealthy Finnish Provinces, Uusimaa and East Uusimaa (which comprise Greater Helsinki) because we also have the tax returns of the residents at the end of 1998, 1999, and 2000. These tax returns provide the income control variable used in our regressions, as well as data on the total wealth an investor places into all mutual funds.

The Finnish Central Securities Depositary (FCSD) is the source for data on investor wealth from holdings of individual securities. The wealth invested in individual stocks plus the wealth invested in mutual funds is the total portfolio wealth variable used as a control in our analyses.

Mutual Fund Report, a monthly publication, details for our purposes, fees, loads, performance, and countries of registration of all mutual funds sold in Finland. We have all issues of the report over our sample period of 1998-2000. Moreover, except for April 1997 (for which the report is missing), we have coded performance data from all issues of the report from the start of the report (9/1993) up to 7/2005. Because we analyze all

funds from all reports except for funds of funds, miscellaneous funds, and funds with incentive fees, all analyses in the next section are free of survivorship bias.

2.3 Data on Investor Intelligence

We combine data from these three data sources with data from an intellectual ability (IQ) test. Around the time of induction into mandatory military duty in the Finnish armed forces, typically at ages 19 or 20, males in Finland take a battery of psychological tests. These include an ability (IQ) test for which we have comprehensive data beginning January 1, 1982 and ending December 31, 2001. Thus, we observe fund investment behavior years, and sometimes decades, after the investor has taken the IQ exam.

The scores on the ability test are standardized to follow the stanine distribution (integers 1-9, approximating the normal distribution with each stanine representing one half of a standard deviation). Only those individuals with reliable ability scores are included in the sample.

The Finnish Armed Forces (FAF) test measures intellectual ability in three areas: mathematical ability, verbal ability, and logical reasoning. The FAF forms a composite ability score from the results in these three areas. We use the composite ability score in our analysis.

The FAF ability score significantly predicts life outcomes, such as income, wealth, and marital status. Figure 1 shows that for male cohorts above 30 years of age, the correlation between ability and ordinary income generally ranges from 0.25 to 0.3.

Figure 2 shows that for virtually all cohorts above 25 years of age, married males have higher ability scores than single or cohabiting men.

In Figure 1, the low or negative correlations for the youngest cohorts are driven by the fact that smart students are likely to study longer and start earning higher incomes only later. In Figure 2, the higher ability scores for the oldest cohorts (born before 1961 or so) are driven by the fact that these individuals probably postponed entry to military service due to their studies (the earliest data is from 1982). The reverse applies to the very youngest generations: conditional on having taken the test by 2001, i.e. the last military data year, they are less likely to have become students and postponed their entry to the military service.

2.4. Methodology

Our approach to analyzing fees largely consists of regressions with the dependent variable being the fee of a fund associated with a fund-investor pairing. There are controls for investor income, wealth (value of individual stocks plus mutual fund wealth), and a host of dummy variables that control for fund type and distribution network type. Because residuals of the same fund tend to be correlated across investors in that fund, we estimate the regression using robust clustering assumptions on the residual covariance matrix. This estimation approach allows for general heteroskedasticity, along with off-diagonal elements that are block-diagonal for each fund.[6]

Much of the empirical analyses use dependent variables consisting of fees, front-end loads, and back-end loads at the beginning of a month in which an investor sells shares in a mutual fund. An observation is a pairing of an investor with a fund. For an

[6] See, for example, Wooldridge (2003).

investor who sells the same fund in multiple months during the sample period, we use the investor's trade-weighted fees and loads as the investor's fee in that fund, with fees and loads reported at the beginning of the months of sale. (For most funds, this averaging process is irrelevant as fees and loads rarely change and using the fee and load schedule reported at the beginning of the sample period hardly makes a difference.) We employ this approach because we lack direct data on the funds that investors own or that investors purchase.

Most investors are associated with only one fund. Because of this, our sample size, based on each investor-fund pairing, is only slightly larger than the number of investors in the two provinces who sold funds over our sample period. All of our analyses exclude investors who never sold a fund during our sample period.

Whenever possible, we use the income and wealth controls from the end of the year prior to the date of a sale of fund shares by an investor. Thus, year 2000 sell transactions use end of 1999 portfolio wealth and end of 1999 income as controls; year 1999 sell transactions use end of 1998 portfolio values and 1998 income as controls. If there are sales transactions in the same fund over multiple years, we average income for the relevant years associated with the transaction.[7]

In addition to the regressions described above, we also employ logit regressions to study the binary choice of a balanced fund. Here, we have the same investor-fund pair as the unit of observation, but the dependent variable is the logit of the decision. Finally, to study performance, we use the familiar Fama-MacBeth technique with returns on the left

[7] Because the tax data available to us are restricted to the years 1998-2000, we have been forced, in fewer than 12% of cases, to use end of 1998 portfolio values and income as controls for 1998 sell transactions.

hand side and both fees and fund category dummy variables on the right hand side of monthly cross-sectional regressions.

3. Results

3.1 Summary data

Table 1 presents summary statistics on our data. Panel A indicates that funds sold through a retail network, except for bond funds, tend to be more expensive than funds sold though non-network fund companies. Balanced funds have higher fees than a mix of corporate bond funds and equity funds that would replicate the typical balanced fund's allocation of 60% in stocks and 40% in bonds. This is especially true for balanced funds sold through retail networks, which are far more expensive than their non-retail counterparts, as seen in Panel A for the year 2000.

Panel A also lists summary statistics by year. Over the sample period, there was entry into the balanced fund arena with the entering funds having lower fees than their more seasoned counterparts. The older balanced funds with higher fees tend to be distributed through retail networks, but the newer balanced funds are not distributed this way. The investor-weighted fee for balanced funds did not decline as a consequence of fund entry because the number of investors in the retail balanced funds with higher fees grew over time as well.

Panel B of Table 1 indicates that balanced funds are more widely held than the other categories of funds. They also tend to have the smallest holdings, in part because they tend to have the smallest minimum investment.

Table 2 lists the average fees (Panel A), front-end loads (Panel B), and back-end loads (Panel C) for investors grouped by IQ. The rightmost column indicates that investors with the highest IQ invest in funds with the lowest fees and loads. The differences between the fees and loads of the highest and lowest IQ investors are statistically significant in all three panels. However, when we group fees by the type of fund, the significance of these differences largely disappears (except for the loads on bond funds, at a significance level that does not survive the Bonferroni inequality for the multiple comparison). Thus, differences in the fees and loads paid by high and low IQ investors are accounted for by the type of fund they invest in, rather than a search within a fund type for low fee funds.

3.2 Ability Predicts Avoidance of Balanced Funds

Table 3 lends further support for this hypothesis. It runs a logit regression of the decision to invest in a balanced fund against IQ and a set of control variables. As can be seen from the table, high IQ investors are significantly less likely to invest in retail balanced funds. The same is not true for the non-network balanced funds. Recall from Table 1 Panel A that the fund sector with the highest fees are the retail balanced funds. They charge 38 basis points per year more than the non-network balanced funds and far more still than bond funds. Thus, while high IQ investors may be willing to pay substantially more for the asset allocation mix of a professional manager in lieu of a home-made mix of pure bond and equity funds, they are reluctant to incur the fees charged by the retail balanced funds. Low IQ investors are either unaware of how to

invest in the cheaper balanced fund alternatives or appreciate the convenience of obtaining a retail network balanced fund from their local bank.

The coefficient on the ability score for retail funds is of the same order of magnitude as the coefficients for logged wealth and income. The effect of a stanine change in IQ on avoidance of high fee retail funds is similar to that of a two to threefold increase in wealth and income.

3.3 Ability Does Not Predict Avoidance of High Fee Funds When Controls Are Used

Table 4 uses robust cluster estimation to generate coefficients in regressions of fees on income and wealth controls, as well as ability. Panel A does not control for the distribution network, while Panel B does. In either case, once we control for fund type, income, and portfolio wealth, the fees of the funds selected by high IQ investors are not significantly lower than the fees selected by low IQ investors.

The coefficients on ability in Panel A not only indicate a lack of statistical significance, there also seems to be a lack of economic significance. All but the balanced fund regressions have ability coefficients on the order of ½ basis point or less per IQ stanine. In most cases the effect is far less. In the case of loads, these are one-time fees. Also, back end loads sometimes are early redemption fees, intended to discourage investors from taking advantage a fund's mark to market imperfections at redemption time.

The impact of the ability coefficients for the balanced funds, while insignificant, is complicated by the large difference in fees between retail and non-retail balanced funds. If high IQ investors avoid such funds—the behavior observed in Table 3—one

might observe a negative coefficient. Table 4 Panel B investigates this by adding controls for retail network funds. For non-retail funds, across all fund types, the fees of the funds appear to be insignificantly related to investor IQ. For the retail balanced funds, there is a sizable positive coefficient of .011 (the sum of the ability and ability x retail coefficients). This is of the same sign and of similar magnitude to the corresponding coefficient for the non-retail balanced funds. It also is statistically significant.

We don't know what to make of this coefficient. It would be difficult to come up with a hypothesis in which high IQ investors are more easily exploited by an information friction than low IQ investors. In general, high IQ investors avoid retail balanced funds altogether. The few that do tend to live in urban areas and have their wealth invested in funds offered by their bank. One particular bank, Nordea, known to cater to affluent investors, has particularly high fees for its funds. Those in favor of the competitive market hypothesis would argue that this sub-clientele likes the service they receive for the high fees. Alternatively, one can point to this group of investors as having the highest value of their time, and hence high search costs. IQ per se is a poor proxy for the value of one's time, but IQ and an investment in Nordea may be a good proxy, or so the argument would go.

For the lack of competition argument to work, it must be that the cost Nordea or similar retailers incur to provide services to this sub-clientele of smart investors must be less than the revenue obtained from the higher fee. Although the resulting economic profits are attractive to entrants, these smart investors must be more indifferent to entry by competitors than dumb investors. Finally, for some reason, the economic forces at

work allow these smart investors to be charged exorbitant fees only for retail funds in the balanced fund arena. Is this credible? We are more inclined to believe that investors, certainly the smarter investors, are probably getting something for the extra fees they pay. What they are getting is not obvious to us, but it may be obvious to them.

It also is possible that this sign reflects the limitations of inferences about ownership from the sales data we have. A positive coefficient here can arise from smart investors selling the higher fee retail balanced funds and exiting for the lower fee non-retail balanced funds that became more prominent over the sample period. While sales reflect prior ownership, the relative lack of sales among lower IQ investors can also reflect inertia rather than lack of ownership.

3.4 The Relation of Performance before Fees to Fees

Berk and Green's (2004) model of equilibrium fees in the portfolio management industry suggests that differences in the fees of active fund managers might reflect differences in ability. For this reason, we investigate the relation between fees and performance. Table 5 reports coefficients from Fama-MacBeth cross-sectional regressions of monthly fund returns (before deducting fees) on fund type dummies and fees. The relation of performance to fee is reported as the average of the coefficients on fees from the monthly cross-sectional regressions. Berk and Green's hypothesis is that this coefficient should be one, while those who believe that active fund management adds no value hypothesize an average coefficient of zero.

The t-statistics reported in Table 5 indicate how significant the coefficient is from zero. The standard errors, obtained by dividing the fee coefficient by the t-statistics, are

generally too large to draw conclusions about whether performance is a service difference that might account for differences in fees. The average coefficient is both insignificantly different from zero and insignificantly different from one.

For the twelve year period, the standard error for the fee is virtually identical to the coefficient, which is slightly above one. While the point estimate of the coefficient for the 12-year period is close to one, an investor looking at the period just prior to the 1998-2000 sample period to draw inferences about how fees influence performance would have estimated a 0.598 sensitivity of performance to fees. This point estimate is too small to justify buying a high fee fund in the absence of other services provided in conjunction with those fees.

4. Summary and Conclusion

If demand side frictions generate a noncompetitive outcome, we expect some investors to flee that outcome. These are not going to be the investors facing the greatest information barriers about how to flee. Rather, they are likely to be the most intelligent investors, whose cognitive abilities allow them to make price comparisons and deduce how to avoid excessive prices.

With respect to mutual funds, we have found that high fee funds are avoided when it is clear that the service provided is not of use to the investor. In the case of balanced funds sold through a retail distribution network, fees exceed the weighted average fee of a synthetic balanced fund created from investments in both an equity fund and a bond fund. The asset allocation service may justify a higher fee, but more so for investors who cannot, without great effort or cost on their part, replicate that service. It is

quite clear that a high IQ investor does not benefit from the asset allocation service to the same extent as a low IQ investor. It may be difficult for the latter investor to understand how to construct an asset allocation strategy from pure equity and bond funds. Thus, it is not surprising that high IQ investors avoid balanced funds that charge extremely high rates for the asset allocation service, as is typical of balanced funds distributed by retail networks.

On the other hand, when balanced funds charge a bit less for the service of providing both bonds and stocks, as is typical of the newer balanced funds that are not purchased from a retail distribution network, high IQ investors buy them. Low IQ investors either do not know how to obtain access to these funds as alternatives to those distributed by their banks or lack the minimum investment amounts that these funds require.

When the service provided is equally valued by high and low IQ investors, we do not expect a relationship between IQ and fees in a competitive market. Within fund types, there are differences in fees and differences in services. However, because the service is a bit more opaque to the researcher, but not the customer, one cannot say for certain that the lack of a relationship between IQ and fees within fund types, which we document, proves a competitive outcome. It is possible that the service difference, in whole or in part, is the expectation of performance, but the standard errors associated with this analysis are too large to know this with any degree of confidence.

What we do know is that high IQ investors are sensitive to fees charged for transparent benefits that are easy to replicate more cheaply. It strikes us as unlikely that they would be blind to fees when the fees charged differ within the fund sector for no

sensible reason. Carried to its logical conclusion, if funds charge different fees because investors don't care about fees or cannot escape from them, what prevents the low fee funds from raising fees?

Our result that, within fund types, high IQ investors do not select funds with lower fees is robust to different datasets and different specifications. We have verified that the results hold for data outside of the provinces of Uusimaa and East Uusimaa, for which we have less perfect controls. We have also tried different specifications for the controls to the same effect.

The lack of a relationship between IQ and fees is not likely to be due to measurement error in IQ, as this variable seems to have predictive power for future income, marital status, self-confidence,[8] and the likelihood of buying retail balanced funds. In unreported work, we also find that IQ is predictive of the likelihood of buying fixed income and money market funds.

Our analysis would be difficult to extend to other industries. Because the primary attribute of the product sold by funds, an expected risk return trade-off, is far less complex than the attributes of other goods and services, it is easier for us to argue that service differences in the mutual fund industry are not themselves associated with monopoly-like rents. This argument is more difficult to make in other industries. For example, medical services may vary along many dimensions—skill of the doctor at diagnosing and treating many different disease categories, hospital one can be admitted to, waiting time when seeking medical help, bedside manner, etc. Some of these are unique to the provider. Similarly, the utility obtained from a fashionable line of clothing or cosmetics may differ along dimensions that are unique to the provider. The inability

[8] See Grinblatt and Keloharju (2007).

of other producers to mimic each of these preference dimensions may contribute to demand functions for the producer's goods and services that are far from perfectly elastic.

The primary product of a mutual fund that is unable to "beat the market," is easily mimicked both by other funds and by other investment routes, such as holding individual securities. That primary product appears to be supplemented with services that do not appear to be so homogeneous as to preclude all differences in fees. However, outside of stock picking ability, which this paper can neither demonstrate nor rule out, it is difficult to imagine that the additional services funds provide generate monopoly-like rents.

Despite the seemingly competitive structure of the mutual fund market, a number of researchers have suggested that the market is not competitive. Bailey, Kumar, and Ng (2006) find that investors hold high expense ratio funds instead of index funds because of overconfidence. Barber and Odean (2005) and Korkeamaki and Smythe (2004) contend that investors are not terribly sensitive to less visible fees (although the former paper finds that visible fees, like loads, affect fund flows). This would seem to suggest that information frictions prevent the competitive outcome and that variation in fees cannot be explained by differences in the quality of the services that funds provide. On the other hand, Zhang (2007) and Ivkovic and Weisbenner (2007) seems to refute this evidence.

Others have argued that economies of scale in the production function for management advisory services are obvious and that such economies imply that the market is not competitive because fee schedules do not reflect these economies.[9] However, in an equilibrium where the production function has this property, price can only equal marginal cost for an industry structure with only a few large funds that charge

[9] See, for example, Freeman and Brown (2003). Coates and Hubbard (2006) dispute this argument.

negligible fees for their services. The noncompetitive equilibrium has even fewer funds. This conclusion is clearly at odds with the existing structure of the mutual fund industry. Instead, there is a seemingly endless proliferation of funds, of all sizes, with a wide variety of fees.

All of this is of great interest to U.S. regulators because mutual funds are a unique form of organization. To escape corporate taxation under the Investment Companies Act of 1940, the management of the fund passes all corporate profits on to shareholders (the fund investors). In this case, however, the advisors of the fund set up the corporate structure, organize its management, and design its investment policy to appeal to a particular investor niche. These investors are customers on the one hand, but also shareholders that elect a board to approve the advisor and the advisor's compensation. The additional protections afforded by having customers as shareholders, and binding advisors to them with a fiduciary duty to charge a fair fee, grew out of an era that saw great mistrust of markets and the protections they offer consumers. Some, viewing differences in fees today, may contend that these additional protections need to be strengthened, even if these protections generate additional costs. Our findings provide no evidence that would support this view.

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Table 1

Descriptive statistics of mutual funds

Each mutual fund represents the unit of observation. The data represents the situation at the end of the year (year 2000 unless otherwise noted) and are from funds registered in Finland. Funds with incentive fees, miscellaneous funds, and funds of funds are excluded from the data.

Panel A. Descriptive statistics by year and type of retail distribution network

	All funds				Retail network	No network
	1997	1998	1999	2000	2000	2000
Average management fee, equally weighted						
Money market	0.49%	0.49%	0.48%	0.48%	0.50%	0.47%
Bond	0.57%	0.58%	0.55%	0.55%	0.53%	0.57%
Balanced	1.89%	1.75%	1.52%	1.55%	1.79%	1.41%
Equity	1.67%	1.65%	1.56%	1.57%	1.63%	1.52%
Average management fee, weighted by # investors						
Money market	0.55%	0.54%	0.54%	0.54%	0.57%	0.46%
Bond	0.62%	0.61%	0.61%	0.59%	0.59%	0.64%
Balanced	2.04%	2.12%	2.16%	2.03%	2.07%	1.71%
Equity	1.95%	1.84%	1.79%	1.79%	1.78%	1.84%
Number of funds						
Money market	14	15	18	19	8	11
Bond	15	20	26	31	14	17
Balanced	15	22	34	40	15	25
Equity	29	47	72	98	47	51
Totals	73	104	150	188	84	104
Value of assets, mill. eur	3,051	4,699	9,708	12,650	7,673	4,977
Number of investors	90,926	207,610	375,686	778,402	671,559	106,843

Panel B. Descriptive statistics by type of fund

	Money market	Bond	Balanced	Equity	All
Management fee, %					
Average	0.48%	0.55%	1.55%	1.57%	1.29%
Std. dev.	0.13%	0.17%	0.50%	0.55%	0.65%
Median	0.50%	0.60%	1.70%	1.60%	1.50%
Front-end load, %					
Average	0.07%	0.20%	0.75%	0.73%	0.60%
Std. dev.	0.18%	0.24%	0.63%	0.52%	0.55%
Median	0.00%	0.00%	0.90%	1.00%	0.50%
Back-end load, %					
Average	0.09%	0.39%	0.75%	0.79%	0.67%
Std. dev.	0.30%	0.27%	0.35%	0.40%	0.41%
Median	0.00%	0.50%	1.00%	1.00%	1.00%
Minimum investment, euros					
Average	60,068	119,301	39,546	57,711	64,240
Std. dev.	228,742	292,782	161,450	242,535	235,360
Median	1,000	1,000	292	84	500
Fund size, million euros					
Average	80.96	54.59	85.79	61.10	67.28
Std. dev.	72.22	54.32	126.68	71.66	84.41
Median	47.10	36.80	39.90	39.60	39.60
Number of investors					
Average	698	1,159	6,377	4,838	4,140
Std. dev.	828	2,596	14,517	8,185	9,157
Median	401	87	1,035	991	680
Average portfolio size per investor, equally weighted, euros					
Average	221,587	415,301	93,670	140,968	184,288
Std. dev.	244,639	572,146	165,268	471,770	437,208
Median	123,077	205,480	44,674	34,734	48,482
Average portfolio size per investor, weighted by # investors, euros					
Average	116,038	47,117	13,453	12,628	16,251
Std. dev.	166,429	167,430	26,638	54,828	63,111
Median	49,226	19,417	8,821	7,507	8,761

Table 2
Average management fees and front- and back-end loads by ability and type of fund

Each investor-mutual fund combination represents the unit of observation. Within each investor-fund combination, all transactions are equally weighted. The sample is restricted to residents of Uusimaa and East Uusimaa with reliable ability scores. The data come from 1998-2000. Funds with incentive fees, funds of funds, miscellaneous funds, and funds registered outside of Finland are excluded from the data.

Panel A: Average management fee by ability and type of fund

	Management fee, %				
Ability stanine	Money market	Bond	Balanced	Equity	All
Lowest	0.53	0.59	2.05	1.74	1.73
2	0.52	0.65	1.99	1.73	1.63
3	0.48	0.63	2.08	1.78	1.71
4	0.46	0.61	2.02	1.76	1.69
5	0.48	0.62	1.99	1.77	1.67
6	0.50	0.62	1.96	1.76	1.63
7	0.48	0.62	1.95	1.76	1.61
8	0.48	0.62	1.97	1.76	1.59
Highest	0.48	0.63	1.93	1.74	1.52
t-value for Lowest - Highest	0.91	-1.58	1.76	-0.02	3.82

Panel B: Average front-end load by ability and type of fund

	Front-end load, %				
Ability stanine	Money market	Bond	Balanced	Equity	All
Lowest	0.000	0.464	0.912	0.923	0.875
2	0.053	0.302	0.913	0.894	0.799
3	0.052	0.300	0.974	0.901	0.835
4	0.106	0.289	0.903	0.909	0.833
5	0.026	0.263	0.903	0.926	0.828
6	0.029	0.282	0.869	0.928	0.807
7	0.007	0.282	0.859	0.912	0.781
8	0.028	0.262	0.890	0.919	0.778
Highest	0.016	0.230	0.831	0.902	0.720
t-value for Lowest - Highest	-0.41	2.64	1.24	0.69	4.33

Panel C: Average back-end load by ability and type of fund

	Back-end load, %				
Ability stanine	Money market	Bond	Balanced	Equity	All
Lowest	0.250	0.464	0.948	0.924	0.890
2	0.197	0.457	0.896	0.861	0.797
3	0.200	0.460	0.885	0.875	0.816
4	0.127	0.420	0.917	0.913	0.849
5	0.125	0.445	0.917	0.929	0.850
6	0.179	0.438	0.914	0.946	0.851
7	0.145	0.441	0.912	0.948	0.839
8	0.174	0.430	0.926	0.950	0.833
Highest	0.161	0.445	0.930	0.948	0.805
t -value for Lowest - Highest	0.78	0.40	0.52	-0.83	2.80

Table 3
Determinants of the decision to invest in a balanced fund

This table reports coefficients and robust test statistics for logit regressions with a balanced fund dummy as the dependent variable. The dependent variable obtains the value 1 if an investor has sold balanced funds but no other types of funds, and 0 if the investor has sold equity funds and money market or bond funds but no other types of funds. Each investor represents the unit of observation. For investor, all transactions are equally weighted. The data comes from 1998-2000 and is limited to investors who are residents of Uusimaa and East Uusimaa and have reliable ability scores. Funds with incentive fees, funds of funds, miscellaneous funds, and funds registered outside of Finland are excluded from the data.

Independent variables	Retail network	No network	All
Constant	6.381	6.016	5.763
	6.94	3.00	5.86
Retail network			0.755
			1.54
Ability	-0.185	-0.005	-0.007
	-4.28	-0.08	-0.11
Ability * Retail network			-0.177
			-2.44
Ln (Wealth)	-0.156	-0.166	-0.159
	-6.19	-3.61	-7.18
Ln (Income)	-0.299	-0.331	-0.311
	-3.47	-1.70	-3.47
Pseudo R^2	0.111	0.086	0.103
N	1,064	510	1,574

Table 4
Determinants of management fees and front- and back-end loads

The table reports coefficients and robust test statistics for robust cluster OLS regressions with the average management fee, front-end load, or back-end load as the dependent variable. Each investor-mutual fund combination represents the unit of observation. Within each investor-fund combination, all transactions are equally weighted. The data comes from 1998-2000 and is limited to investors who are residents of Uusimaa and East Uusimaa and have reliable ability scores. Funds with incentive fees, funds of funds, miscellaneous funds, and funds registered outside of Finland are excluded from the data.

Panel A: Regression Specification Controlling for Fund Type, Wealth, and Income

	Dependent variable						
	Management fee					Front-end load	Back-end load
Independent variables	Money market	Bond	Balanced	Equity	All	All	All
Constant	0.562	0.602	2.257	1.839	1.875	1.033	0.821
	11.95	26.70	17.18	17.81	23.20	25.48	9.63
Money market					-1.265	-0.880	-0.791
					-16.00	-18.11	-9.27
Bond					-1.132	-0.645	-0.506
					-15.44	-7.33	-9.10
Balanced					0.213	-0.038	-0.019
					1.80	-0.54	-0.31
Ability	-0.001	-0.001	-0.009	0.000	-0.002	-0.004	0.005
	-0.49	-0.33	-1.65	0.03	-0.87	-1.58	1.66
Ln (Wealth)	-0.003	0.002	-0.007	-0.002	-0.003	0.000	0.004
	-2.22	2.36	-2.08	-0.49	-0.99	-0.07	1.54
Ln (Income)	-0.005	0.000	-0.018	-0.006	-0.008	-0.009	0.006
	-1.46	0.11	-2.55	-0.84	-1.63	-2.86	1.51
R^2	0.022	0.015	0.018	0.001	0.608	0.483	0.413
N	867	1,123	2,860	8,197	13,047	13,047	13,047

Panel B: Specification Also Controlling for Distribution Network

	Dependent variable						
	Management fee					Front-end load	Back-end load
Independent variables	Money market	Bond	Balanced	Equity	All	All	All
Constant	0.474	0.672	1.852	1.911	1.894	0.794	1.002
	16.89	24.04	12.76	13.52	13.51	5.64	11.16
Money market					-1.357	-0.732	-1.009
					-8.57	-5.06	-9.52
Bond					-1.109	-0.723	-0.530
					-7.12	-5.26	-5.44
Balanced					-0.051	0.001	-0.098
					-0.26	0.01	-0.94
Retail network	0.133	-0.051	0.223	-0.091	-0.094	0.171	-0.228
	5.29	-1.94	1.28	-0.54	-0.57	1.20	-2.06
Retail * Money market					0.149	-0.144	0.478
					0.88	-1.03	3.66
Retail * Bond					-0.055	0.194	0.093
					-0.33	1.42	0.81
Retail * Balanced					0.377	0.011	0.144
					1.67	0.06	1.11
Ability	-0.001	0.000	-0.012	-0.008	-0.009	-0.003	-0.003
	-0.41	0.00	-1.41	-0.99	-1.47	-0.45	-1.10
Ability * Money market					0.005	-0.005	0.003
					0.99	-0.70	0.44
Ability * Bond					0.001	-0.005	-0.007
					0.21	-1.05	-1.40
Ability * Balanced					0.006	-0.004	-0.004
					0.98	-0.77	-0.76
Ability * Retail	0.001	-0.002	0.023	0.012	0.012	0.005	0.013
	0.31	-0.70	2.35	1.26	2.01	0.76	3.13
Ln (Wealth)	-0.002	0.001	0.002	-0.003	-0.001	0.003	0.003
	-1.86	1.21	0.89	-0.68	-0.55	1.53	1.67
Ln (Income)	-0.002	-0.002	-0.004	-0.007	-0.005	-0.002	0.004
	-0.77	-1.24	-0.66	-1.61	-1.91	-1.20	1.51
R^2	0.383	0.238	0.232	0.002	0.629	0.552	0.448
N	867	1,123	2,860	8,197	13,047	13,047	13,047

Table 5
The relationship between management fee and return

This table shows results from Fama-MacBeth regressions, where the monthly return on a mutual fund (before the management fee is deducted) is regressed on monthly management fee and dummies for money market, bond, and balanced funds (equity funds are the omitted category). The data comes from 1993/9-2005/7 except that data from 4/1997 is missing. Funds with incentive fees, funds of funds, miscellaneous funds, and funds registered outside of Finland are excluded from the data. Average coefficients are reported with t-statistics (testing differences from zero) are shown.

Time range	Constant	Management fee	Money market	Bond	Balanced	N
1993/9-1997/12	0.018	0.598	-0.009	-0.010	-0.004	51
	2.50	0.65	-1.63	-1.45	-1.98	
1998/1-2000/12	0.019	1.109	-0.016	-0.015	-0.006	36
	2.30	0.27	-1.84	-1.65	-1.06	
2001/1-2005/7	-0.003	1.629	0.005	0.007	0.002	55
	-0.38	1.77	0.67	1.01	0.61	
1993/9-2005/7	0.010	1.127	-0.005	-0.004	-0.002	142
	2.40	1.00	-1.35	-1.02	-0.99	

Figure 1
The relationship between IQ and future income
This figure plots the cross-sectional correlation coefficient between investor intellectual ability (IQ) and either ordinary income or ordinary income decile in 2000 for each birth-year cohort for which we have data. Data are from males in the Finnish provinces of Uusimaa and East Uusimaa. Ordinary income is from their year 2000 tax return and IQ is from an exam taken on entry to the Finnish Armed Forces after December 31, 1981.

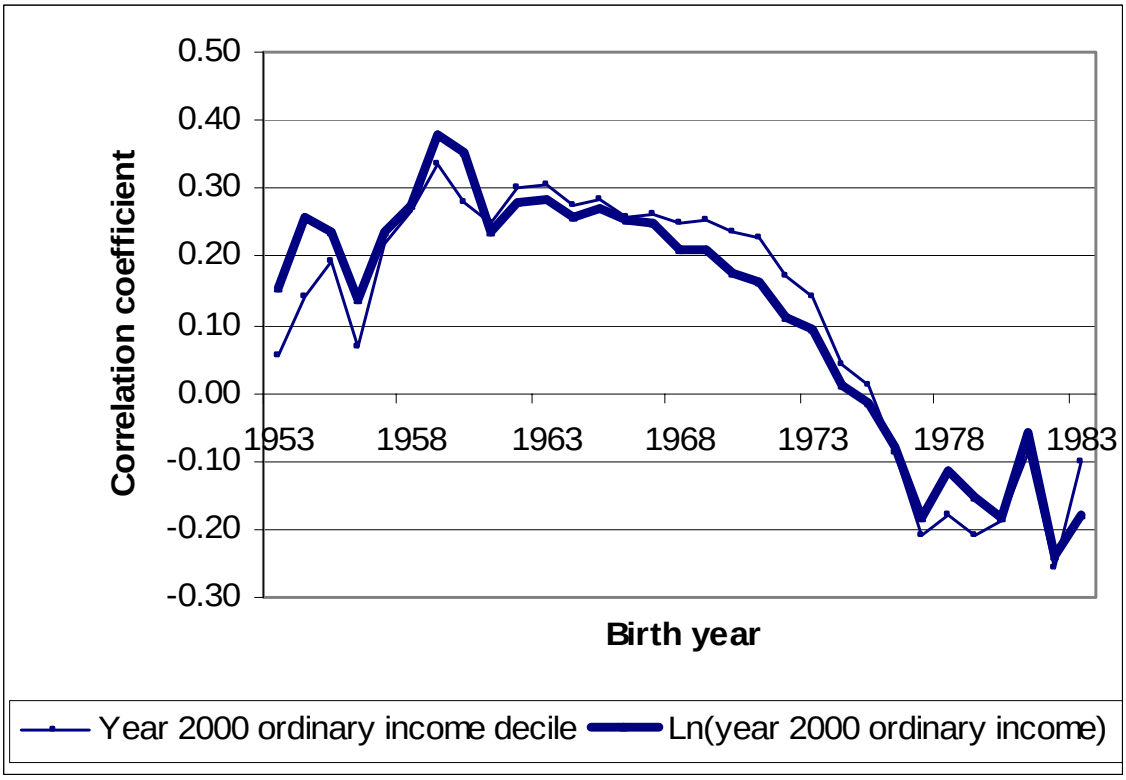
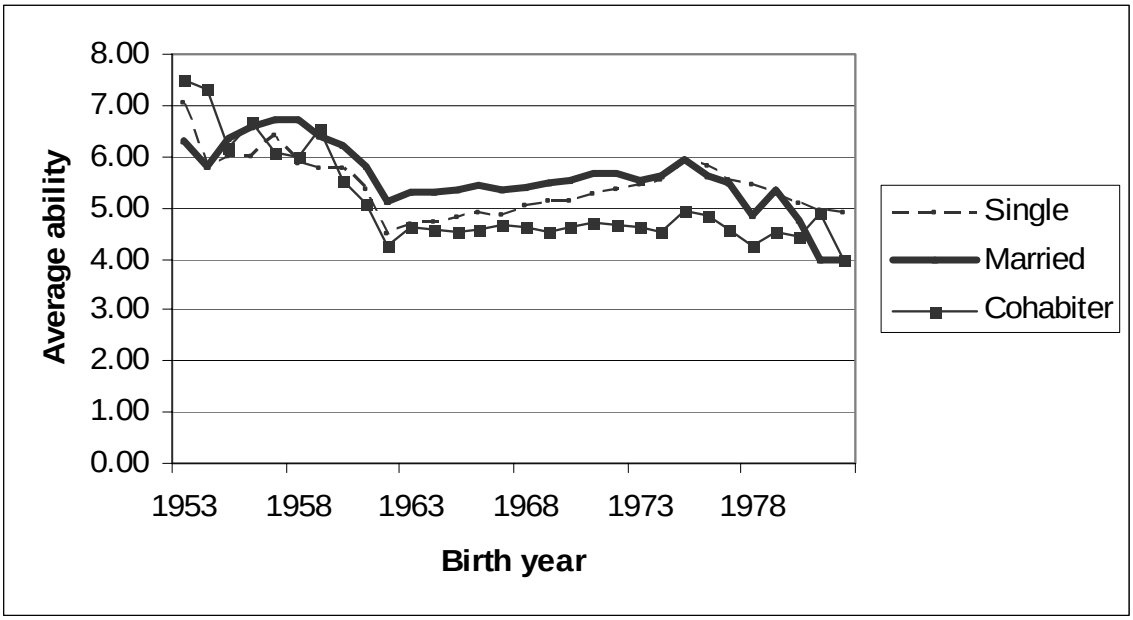
Figure 2
The relationship between IQ and future marital status
This figure plots the average of investor intellectual ability for birth-year cohorts, broken down by marital status. Data are from males in the Finnish provinces of Uusimaa and East Uusimaa. Marital status is from their year 2000 tax return and IQ is from an exam taken on entry to the Finnish Armed Forces after December 31, 1981.