



Mutual fund shareholders: characteristics, investor knowledge, and sources of information

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Abstract

This paper examines responses from a survey of 2,000 randomly selected mutual fund investors who purchased shares from six different distribution channels. The survey provides data on the demographic, financial, and fund ownership characteristics of mutual fund investors. It also provides data on investors' knowledge of the costs and investment risks of mutual funds and the information sources these investors use to learn about these costs and risks. Our survey results strongly suggest there is room for improvement in the level of financial literacy of mutual fund investors. © 1999 Elsevier Science Inc. All rights reserved.

1. Introduction

Over the past twenty or so years, mutual funds have become an increasingly popular investment vehicle. Ownership of stock, bond, and money market mutual funds rose from 6% of U.S. households in 1980 to 42% in 1998, while the total assets held by mutual funds soared by almost 4,000%, increasing from \$135 billion to roughly \$5.5 trillion at year-end 1998 (Investment Company Institute, 1999). This dramatic growth has raised policymakers'

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concern with the level of investor knowledge regarding the costs and risks associated with mutual funds and with the types of distribution channels permitted to sell mutual funds. To provide perspective on these concerns, the Office of the Comptroller of the Currency (“OCC”) and the Securities and Exchange Commission (“SEC”) contracted with a market research firm to conduct a nationwide telephone survey of a randomly selected sample of 2,000 mutual fund investors (see Alexander et al., 1996).

The mutual fund survey collected two kinds of data. First, the survey collected data on the demographic, financial, and fund ownership characteristics of mutual fund shareholders. These data permit analysis of how these characteristics differ across the major distribution channels used by mutual fund purchasers. Second, the survey collected data on mutual fund investors’ familiarity with certain costs and investment risks associated with mutual funds as well as the information sources these investors used to learn about these costs and risks. In this paper, we provide background information on mutual fund investors, assess their degree of knowledge about the costs and investment risks associated with mutual funds, examine the determinants of their financial literacy, and examine whether or not certain distribution channels (e.g., pension plans or banks) pose unique regulatory concerns.

The remainder of this paper is organized as follows. Section 1 briefly reviews previous survey research on mutual fund investors. Section 2 examines the demographic and financial characteristics of mutual fund shareholders. Section 3 examines investor familiarity with the costs and certain investment risks associated with mutual funds, along with the information sources used by these investors in making mutual fund purchases. Section 4 develops a measure of overall investor financial literacy and examines its determinants. Finally, Section 5 discusses the policy implications of the survey results and draws conclusions.

2. Previous literature

Several recent mutual fund investor surveys provide conflicting evidence on investment risk disclosures and the level of investor knowledge. For example, the American Association of Retired Persons et al. (1994) concluded from their survey that “the vast majority of American bank consumers are unaware of the risks and fees involved in the sale of uninsured investment products, such as mutual funds and annuities.” In sharp contrast, the Consumer Bankers Association (1994), a banking trade group, found that few bank customers held the misconception that mutual funds purchased through a bank are federally insured. The conflicting evidence in these two initial surveys generated several other surveys. For example, a 1995 Prophet Market Research mystery shopping study that employed unidentified testers to examine disclosure concluded that banks do a better job than brokerage houses and insurance companies in educating customers about the risk of investment products (Kimmelman, 1995). A second round of bank mystery shopping by the same company in January 1996, however, yielded less favorable results about bank sales representatives’ disclosures of the risks, fees, and expenses associated with mutual funds. Bank representatives countered that because such disclosures are not typically made until the sales are about to be closed, mystery shoppers would not receive them (Plasencia & Cope, 1996). The Federal Deposit Insurance Corporation (“FDIC”) conducted a shopping survey of

non-deposit investment sales at FDIC-insured depository institutions (Market Trends, 1996) and found that bank sales representatives were more likely to make required disclosures in face-to-face discussions with investors than over the telephone.

Concerns about investor understanding of the costs and risks of mutual funds extend beyond investors who obtain their fund shares through a bank-related channel. For example, a recent survey of pension plan participants (mostly 401(k) plan participants) by John Hancock Mutual Life Insurance Co. reported that more than one-third of the respondents believed it was impossible to lose money in a bond fund (an additional 12% were not sure), while 12% believed it was impossible to lose money in a stock fund or said they did not know (Schultz, 1995). More generally, a survey commissioned by the Investor Protection Trust (Crenshaw, 1996) found that fewer than one-fifth of all individual investors (in stocks, bonds, funds, or other securities) could be considered “financially literate” based on their responses to a quiz. Furthermore, Chen and Volpe (1998) found that a large percentage of college students are not knowledgeable about personal finances. Finally, *Money* magazine and the Vanguard Funds Group jointly conducted a 20-question survey of 1,467 mutual fund investors and found that most investors have inadequate knowledge about their mutual fund investments (Updegrave, 1996).

The OCC/SEC survey focuses on investor knowledge rather than disclosure. One key distinction from previous surveys, however, is that detailed information on the type of distribution channel used in purchasing mutual funds was collected. This permits an examination of the differences in the demographic and financial characteristics of purchasers, as well as differences in the degree of financial literacy, by distribution channel.

3. Demographic and financial characteristics of mutual fund investors

The major demographic characteristics considered in the survey included age, income, education, and gender. Purchasers from six distribution channels, including stockbrokers (both full-service and discount), commercial banks (both banks and savings associations, hereafter banks), mutual fund companies, insurance companies, employer-sponsored pension plans, and “other” (e.g., financial planners) were examined. These distribution channels are not mutually exclusive. That is, an investor who purchases a mutual fund directly from a fund company may purchase another one from a bank or a brokerage firm. As a result, the percentages reported in any given row for the following tables often sum to more than 100% and the chi-squared statistics in the tables test for significant differences between bank and non-bank purchasers, broker and non-broker purchasers, and so on.

Panel A of Table 1 shows the number of respondents for each of the six channels. Note that while there were 2,000 respondents to the survey, the sum of the respondents in the channels is 3,232 (summing across the row), indicating there are a large number of multiple-channel purchasers. It should also be noted that not all respondents provided answers to all questions, so the number of responses can vary by question.

Panels B and C of Table 1 show both demographic and financial data on investors. As shown in panel B, 58.6% of survey respondents were males. Investors who purchased mutual funds directly from a fund company were significantly more likely to be male (69.4%), while

Table 1
Demographic characteristics and financial experience of respondents

	Distribution channel used						Total
	Bank	Broker	Pension	Direct	Insurance	Other	
A. Number of Respondents	294	638	1,118	569	521	92	2,000
B. Demographic Characteristics							
Male	50.0%	62.5%	62.3%	69.4%*	54.9%	57.6%	58.6%
Median Age	45*	47*	41*	44*	44	44	43
Median Income	\$55,200	\$67,600*	\$62,100*	\$67,000*	\$59,200*	\$58,400	\$58,800
College Grad.	49.3%*	62.8%*	57.5%	68.5%*	55.3%	52.2%	54.6%
C. Financial Characteristics							
Seasoned investor ¹	85.2%	91.1%*	85.0%	89.7%*	90.5%*	83.5%	85.2%
Individual stocks	44.6*	72.6*	51.8	58.4	47.4	42.4	50.8
Individual bonds	34.4	39.0*	30.4	33.4	34.4	29.4	31.1
CDs	47.6*	41.7*	30.8*	34.3	36.3	28.3	34.9
Money Market	50.7*	46.2*	36.5*	37.3	36.3	38.0	38.3
Deposit Account							
Annuities	31.0	31.0*	25.1	25.0	45.5*	25.0	26.7
Primary residence	77.6	88.6*	81.0	82.1	84.6*	71.7*	80.9

¹ Purchased mutual fund prior to 1993.

Notes: Because the distribution channels are not mutually exclusive, a chi-squared statistic is used to test for significant differences in the percentages between bank and non-bank purchasers, broker and non-broker purchasers, pension and non-pension purchasers, direct and non-direct, insurance and non-insurance and “other” and non-other. To save space, the cell values corresponding to non-bank purchasers, non-broker purchasers, non-pension purchasers and so on are not reported in the table. An “*” denotes a cell value that is statistically significantly different at the five percent level from the corresponding value for all other purchasers not using the particular distribution channel being examined. Nonparametric tests for differences in the percentage values yield similar results and are not reported. A nonparametric test for median values is used to test for significant differences in the median age between bank and non-bank purchasers, broker and non-broker purchasers, direct and non-direct, pension and non-pension purchasers, insurance and non-insurance and “other” and non-other channel.

bank purchasers (50%) were equally divided between male and female, indicating that banks reach a somewhat different segment of the population than that reached by other mutual fund providers. The median age of a mutual fund shareholder in the survey is 43 years. Younger investors are significantly more likely to invest in mutual funds through their pension plans (e.g., 401(k) plans), reflecting the increased usage of defined contribution plans by employers in recent years. In terms of income, mutual fund investors have a median household income of \$58,800, which is close to the median household income of fund owners reported elsewhere (Investment Company Institute, 1999). Mutual fund purchasers using brokers, those buying through pension plans, and those buying directly from the fund company report notably higher median incomes than those purchasing through other distribution channels. Finally, in terms of education, mutual fund investors are well educated, with 54.6% having at least completed college. Broker (62.8%) and direct fund company (68.5%) customers are more likely to have at least a college degree than customers in the other distribution channels, while bank (49.3%) customers are less likely.

Table 2
Ownership attributes

	Distribution channel used						Total
	Bank	Broker	Pension	Direct	Insurance	Other	
A. Type of Fund Owned							
Stock	64.8%*	82.3%*	80.1*	85.3%*	58.5%*	75.9%	72.9%
Bond	40.3	45.6*	39.3*	39.7*	41.0*	34.5	36.1
Money	44.6*	39.4	39.1	38.8	65.5*	32.8	39.2
Other	15.5	19.1	12.4*	21.8*	28.6*	20.7	14.6
Median Number of Channels Used	2*	2*	2*	2*	2*	1	1
B. Number of Funds Owned							
One	22.9%	12.5%*	18.3%*	13.4%*	18.9%*	32.1%*	23.3%
Two	20.6	15.7*	20.3	17.2*	22.3	10.7*	21.0
Three	19.8	14.9	17.0	12.5*	15.2	16.7	16.1
Four or more	36.8	56.9%*	44.4*	57.0*	43.6*	40.5	39.6
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Median Number of Funds Owned	3	4+*	3*	4+*	3	3	3
C. Type of Largest Fund Owned							
Stock	49.8%*	69.7%*	68.0%*	73.9%*	59.5%*	59.3%	63.8%
Bond	14.7*	11.6	8.1*	7.9*	9.0	20.4*	10.6
Money	25.3*	11.6*	14.1*	9.7*	20.1*	13.0	16.3
Other	10.2	7.3*	9.8	8.5	11.3	7.4	9.3

Notes: 1. A “*” denotes a cell value that is statistically significantly different at the five percent level from the corresponding value for all other purchasers not using the particular distribution channel being examined.

2. Fund owners with four or more funds are represented by 4+ since the exact number of funds, if over three, was not requested in the survey.

3. See notes to Table 1.

Panel C of Table 1 reports the length of time that respondents have been fund investors, i.e., investor seasoning. As shown in the table, the average mutual fund shareholder was not a new investor in mutual funds since about 85% of the survey respondents purchased a mutual fund prior to 1993. Purchasers of mutual funds from brokers, fund companies, and insurance companies were significantly more likely to be experienced investors. The panel also indicates that the typical mutual fund shareholder owned several other types of financial assets besides mutual funds. Roughly 51% owned individual stocks, 31% owned individual bonds, 35% owned certificates of deposit (“CDs”), 38% had money market deposit accounts (“MMDAs”), and 27% owned annuities. Furthermore, about 81% of the sample owned their primary residence. Purchasers of mutual funds from brokers were significantly more likely than all other purchasers to own each type of financial asset listed and their primary residence. In contrast, bank purchasers were significantly less likely to own individual stocks but were significantly more likely to own CDs and MMDAs. Pension plan investors were significantly less likely to own CDs and MMDAs, whereas insurance company investors were more likely to own annuities and their primary residence.

Panel A of Table 2 presents data on the types of mutual funds owned by purchasers using the various distribution channels. In general, each type or category of fund represents a

different combination of possible risk and return. Over 72% of respondents own stock mutual funds, nearly 40% own money market mutual funds, and about 36% own bond funds. Broker, pension plan, and direct purchasers were significantly more likely to own stock funds, whereas bank and insurance company purchasers were significantly less likely to own them. In contrast, bank and insurance company customers were significantly more likely to own money market mutual funds than were the customers of other sales channels. Lastly, broker, pension plan, direct, and insurance company customers were significantly more likely to own bond funds than are other sales channel customers.

Panel B of Table 2 reveals that the median number of funds owned by the respondents is three. Furthermore, 55.7% (= 16.1% + 39.6%) of the respondents reported owning three or more mutual funds. More than two-thirds of broker and direct mutual fund purchasers own three or more mutual funds, with more than half of both groups owning four or more mutual funds. The median number of funds owned by the respondents was significantly greater for broker, direct, and pension plan investors relative to non-broker, non-direct, and non-pension plan purchasers, respectively.

Panel C of Table 2 presents the type of mutual fund in which the respondents hold their largest investment. The largest fund type may indicate some measure of the risk preferences of investors, or alternatively, the knowledge of investors. About 64% of the respondents report that their largest investment is in a stock fund. Broker, pension plan, and direct purchasers were significantly more likely to have their largest investment in a stock fund. On the other hand, bank and insurance company purchasers were significantly less likely to have their largest investment in a stock fund. Bank purchasers were the largest investors in bond and money market funds with a percentage (40.0% = 14.7% + 25.3%) that is significantly greater than that for non-bank purchasers.

4. Sources of information and knowledge of mutual fund investors

This section examines the sources of information that investors use to learn about mutual fund investments, as well as the level of financial literacy displayed by survey respondents. The analysis shows which investors, categorized by distribution channel, are aware of the returns and risks associated with mutual fund purchases, along with the role played by the mutual fund prospectus and other sources of information in their learning about mutual fund investments.

4.1. Sources of information

Panel A of Table 3 indicates that the mutual fund prospectus was the single most widely used source of information, with 57.7% of respondents having cited it as a source of information in making their most recent mutual fund purchase. Survey respondents also reported that they relied heavily on, in decreasing order, employer-provided printed materials (44.5%), financial publications like newspapers and magazines (42.0%), family or friends (37.6%), and meetings or presentations at work (33.5%) in choosing their most recent

Table 3
Information sources used in purchasing most recent mutual fund

	Distribution channel used						Total
	Bank	Broker	Pension	Direct	Insurance	Other	
A. Information Sources							
Prospectus	51.2%*	56.5%	60.8%*	74.0%*	59.1%	49.4%	57.7%
Broker	27.4	61.6*	24.8*	29.6	31.7	31.8	31.0
Family or friends	40.4	34.3*	33.6*	30.5*	42.4*	36.5	37.6
Financial publications	41.4	49.8*	41.3	67.9*	39.7	34.1	42.0
Banker	41.1*	6.9*	7.0*	4.3*	10.5	4.7	10.3
Insurance company	0.0*	0.6*	0.6*	0.5*	6.0*	0.0	1.6
Fund company	0.0	0.2	0.3	0.7*	0.0	0.0	0.3
Employer	34.4*	23.3*	65.0*	25.9*	35.6*	35.3	44.5
Meeting/presentation	23.9*	18.3*	46.6*	17.1*	31.1	27.1	33.5
Other	4.6	4.8*	3.5	5.9*	3.5	5.9	3.5
B. Best Source of Information							
Prospectus	13.9%	13.0%	16.8%*	20.5%*	17.4%	13.4%	15.2%
Broker	11.0*	39.0*	11.7*	14.9	16.0	22.0	16.9
Family or friends	20.9*	13.3*	10.9*	12.6*	20.4*	24.4*	16.3
Financial publications	13.6	21.6*	16.6	36.7*	12.6*	14.6	17.1
Banker	19.4*	2.0*	1.9*	0.9*	4.4	1.2	4.2
Insurance company	0.0	0.3	0.1*	0.0	1.6*	0.0	0.4
Fund company	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Employer	18.7*	9.1*	39.3*	10.9*	21.4*	23.2	26.7
Meeting/presentation	0.4	0.2	0.7	0.2	0.8	0.0	0.6
Other	2.2	1.6	2.0	3.3	5.2	1.2	2.6

Notes: 1. A "*" denotes a cell value that is statistically significantly different at the five percent level from the corresponding value for all other purchasers not using the particular distribution channel being examined.

2. "Employer" denotes "Employer-provided printed materials" and "Meeting/presentation" denotes "Meetings or presentations at work."

3. See notes to Table 1.

mutual fund investments. Furthermore, 31% of the survey respondents stated that brokers provided information used in making their most recent mutual fund investment decisions.

The prospectus was used by over 50% of the respondents regardless of the distribution channel used to make the purchase (except for "other"). For those who purchased mutual funds directly from a fund company, the prospectus and financial publications were the two most widely cited sources of information. Not surprisingly, bank and broker purchasers were much more likely to cite bankers and brokers, respectively, as sources of information than purchasers who used other distribution channels, while pension plan purchasers were more likely to cite employer-provided printed materials and meetings or presentations at work.

Panel B of Table 3 presents respondents' perceptions of the best source of information for their most recently purchased mutual fund. Generally, respondents cited the information source most closely associated with the distribution channel that they used in making their purchase as the most important. For example, a significant percentage of bank purchasers (19.4%), broker purchasers (39.0%), and pension plan purchasers (39.3%) named banker, broker, and employer-provided printed materials, respectively, as the best source of information. This is consistent with earlier observations on the results presented in Panel A.

Table 4
Investor knowledge of risk associated with mutual funds

		Distribution channel used						Total
		Bank	Broker	Pension	Direct	Insurance	Other	
A. Is It Possible to Lose Money In This Type of Fund?								
Stock Fund	Yes	93.9%	96.9%*	94.6%	97.9%*	92.3%	92.4%	94.0%
	No	2.7	0.9*	1.5	0.5*	2.5	2.2	2.0
	DK/Refused	3.4	2.2*	3.9	1.6*	5.2	5.4	4.1
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Bond Fund	Yes	72.8%	79.5%*	73.6%*	85.6%*	68.7%	67.4%	71.8%
	No	13.3	8.2*	12.1	6.2*	13.2	18.5	12.3
	DK/Refused	14.0	12.4*	14.3*	8.3*	18.0	14.1	16.0
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Money Market Fund	Yes	64.0%	63.0%	64.9%	67.5%*	66.8%	64.1%	63.9%
	No	20.1	23.0	20.3	21.8*	20.0	19.6	20.5
	DK/Refused	16.0	14.0	14.9	10.7*	13.2	16.3	15.7
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
B. Cross-Fund Differences								
Stock vs. Bond Funds	Stock Funds	93.9%	96.9%	94.6%	97.9%	92.3%	92.4%	94.0%
	Bond Funds	72.8	79.5	73.6	85.6	68.7	67.4	71.8
	Difference (t-statistic)	(8.0*)	(10.7*)	(15.8*)	(8.6*)	(11.7*)	(4.7*)	(22.1*)
	Bond vs. Money Market Funds	Bond Funds	72.8%	79.5%	73.6%	85.6%	68.7%	67.4%
	Money Mkt Funds	64.0	63.0	64.9	67.5	66.8	64.1	63.9
	Difference (t-statistic)	(2.6*)	(7.3*)	(5.1*)	(7.9*)	(0.74)	(0.55)	(6.1*)

Notes: 1. DK denotes "don't know."

2. A "*" signifies statistical significance at the five percent level; a paired t-test was used in testing the difference between stock and bond funds and between bond and money market funds.

3. See notes to Table 1.

Surprisingly, direct plan purchasers cited financial publications (36.7%) more than the prospectus (20.5%) as the best source.

Overall, survey respondents most often cited employer-provided printed materials as the best source of information about their most recently acquired mutual funds. This result would seem to be best explained by the large number of respondents who had purchased funds through pension plans. After employer-provided materials (26.7%), the sources of information most frequently cited as the best were, in decreasing order, financial publications (17.1%), broker (16.9%), family or friends (16.3%), and the prospectus (15.2%).

4.2. Knowledge of risk, expenses, and performance

Panel A of Table 4 presents data on mutual fund investor awareness of certain investment risks involved with stock, bond, and money market mutual funds. Most mutual fund purchasers know that it is possible to lose money in stock, bond, and money market mutual funds (94.0%, 71.8%, and 63.9% know this, respectively). As shown in panel B, the difference in the percentages of investors who believe that stock and bond mutual funds can

Table 5
Knowledge and beliefs about annual expenses

	Distribution channel used						Total
	Bank	Broker	Pension	Direct	Insurance	Other	
A. Knowledge Of Largest Fund's Expenses							
Yes	15.3%	23.0%*	19.8%	35.0%*	20.7%	17.4%	18.9%
No	84.7	77.0	80.2	65.0	79.3	82.6	81.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
B. Knowledge of Expenses at Time of Purchase							
Yes	46.1%	49.5%*	40.5%*	59.7%*	47.8%*	28.0*	43.0%
No	53.9	50.5*	59.5*	40.3*	52.2*	71.9*	57.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
C. Expected Performance of Fund with Higher than Average Expenses							
Above average	23.8%	19.3%	19.7%	16.6%	22.9%	20.3%	19.9%
About average	66.5	63.3	64.4	62.9	63.6	56.3	64.4
Below average	9.7*	17.4	15.9	20.6*	13.5	23.4	15.7
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
D. Expected Performance of Fund with Good Performance in the Previous Year							
Above average	19.5%	24.9%	25.3%	29.8%*	27.3	23.6%	24.1%
About average	75.6	68.0	68.8	62.2*	69.1	69.4	70.6
Below average	4.9	7.1*	5.9	8.0*	3.6	6.9	5.3
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: A “*” signifies statistical significance at the five percent level; a paired t-test was used in testing the difference between stock and bond funds and between bond and money market funds. See notes to Table 1.

lose money is a statistically significant 22.2%; the difference when bond and money market funds are compared is 7.9%, which is smaller but still statistically significant. The differences between the stock and bond fund percentages are generally similar across all distribution channels. A similar observation can be made when the bond and money market fund percentages are compared, except for the insurance and “other” distribution channels where the differences are small and insignificant. Overall, broker and direct purchasers seem most knowledgeable about the possibility of losing money in all three types of mutual funds.

Although not reported in the tables, the respondents’ beliefs about being able to lose money in stock, bond, and money market funds were also examined by four demographic pieces of information: age, income, education, and gender. Notable observations are (1) college graduates are significantly more likely to believe one can lose money in a stock fund; (2) knowledge that bond funds can lose money is related to age (older investors are more likely to know), income (wealthier investors are more likely to know), and gender (males are more likely to know); and (3) respondents younger than 35 are less likely to believe that one can lose money in a money market fund. No other significant differences were observed.

Table 5 reports data on investor familiarity with mutual fund operating expenses. The first two panels present information on the percentage of respondents who could provide some expense estimates for their largest mutual fund. As shown in panel A, the level of expenses did not seem to be an important factor in the purchasing decision of many respondents. Only 18.9% of the respondents could give an estimate of expenses for their largest mutual fund, although broker and direct purchasers were significantly more likely to be able to do so. The percentages of respondents who could provide even an approximation of actual expenses

were even smaller. Respondents earning less than \$75,000 were significantly less likely to provide an expense estimate. Males and college graduates were significantly more likely to provide an expense estimate.

Respondents who could not provide an expense estimate for their largest fund were asked if they knew of their largest funds' expenses at the time of purchase. Panel B of Table 5 reports that only 43.0% of the respondents claimed to have known any of their largest fund's expenses at the time they first invested in the fund. Broker, direct, and insurance company purchasers were significantly more likely to have claimed to have known the annual expenses of their funds at the time of initial purchase. College graduates and males were significantly more likely to have responded that they knew the funds expenses.

Pension plan purchasers, in contrast, were significantly less likely to have known their funds' annual expenses. Annual expenses of funds may be of less significance to mutual fund shareholders who purchase their shares through employee pension plans, however, as a participant in a typical defined contribution plan is presented with a choice of different funds with different investment objectives. Although the choice of funds is typically designed to allow the employee to allocate assets among broad categories of investments (e.g., stocks, bonds, or money market investments), the employee is usually not presented with a choice of different funds with the same investment objective. As a result, the cost of holding a particular fund would appear to be of lesser importance to an employee who purchases fund shares through an employee pension plan than to an investor who purchases funds through other distribution channels.

Panel C of Table 5 reports investors' beliefs about the relationship between expenses and mutual fund performance. In general, there is an inverse relationship between fund performance and expenses, particularly for bond and money funds (see Blake et al., 1993; Carhart, 1997; Elton et al., 1996). About 20% of the survey respondents believed that mutual funds with higher expenses produced better results, while 64% believed that funds with higher expenses produced average results. Only 16% of the survey respondents believed that higher expenses led to lower than average returns. Bank customers were significantly less likely than non-bank customers to expect an inverse relationship, while direct fund purchasers were significantly more likely to expect an inverse relationship. The relationship between performance and expenses was also examined by the respondents' largest fund type. The only statistically significant difference involved respondents who named money market mutual funds as their largest type. These respondents were significantly less likely to believe that higher expenses led to lower than average returns.

Panel D of Table 5 reports investor perceptions about the year-to-year performance of mutual funds. Mutual funds must present historical fund returns over the past ten years in the prospectus which, in turn, must be presented to investors before they make their purchase decision. Although many investors tend to choose mutual funds largely on the basis of past performance, empirical evidence on the historical relationship between returns in successive years suggests there is either a slightly positive relationship or none at all, depending on the time period, sample, and methodology utilized (see Blake et al. 1993; Bogle, 1992, 1994; Brown & Goetzmann, 1995; Brown et al., 1992; Carhart, 1997; Elton et al., 1996; Goetzmann & Ibbotson, 1994; Hendricks et al., 1993; Kahn & Rudd, 1995; Malkiel, 1995). Approximately 24% of the respondents believe that a fund that has performed well last

year will have an above average return this year; 71% believe the fund will have an average return; and 5% believe the fund will have a below average return. Direct purchasers are significantly more likely than non-direct purchasers to believe that returns in successive years are positively related. Interestingly, as reported in panel B of Table 3, 36.7% of direct purchasers named financial publications as the best source of information. These publications are the most likely places for performance advertisements to appear, thereby implying—but not stating—that there is a direct relationship between past and future performance.

Several other interesting results are not reported in the tables. For example, respondents who owned either stock or bond funds were significantly more likely than, respectively, non-stock owners or non-bond owners to know that average stock market returns exceed the return on U.S. Treasury bills. However, the difference between money market and non-money market owners was not significant. In terms of demographic characteristics, college graduates, males, and respondents with higher income were significantly more likely to believe that the average return on stocks is greater than that on Treasury bills.

Although this analysis was extended by classifying respondents by the largest fund they owned, those whose largest holding was a stock fund were found to be significantly more likely to know that stock market returns on average exceed Treasury bill returns. In contrast, investors whose largest holding was either a bond or money market fund were significantly less likely to know this.

5. Investor financial literacy

In this section, we examine the level of financial literacy of the mutual fund survey respondents. We conduct this analysis in several steps. First, we construct an aggregate measure of overall investing and mutual fund knowledge for each respondent. This measure is called the respondents' quiz score. Second, we test for statistically significant differences between high and low quiz score groups by demographic and financial characteristics and by sources of information. Finally, we employ a logit model to assess the factors that are most important in explaining differences in overall investor literacy as measured by the quiz score.

The quiz score should not necessarily be interpreted as indicating whether any particular financial intermediary has been more or less successful in educating investors. Quiz scores may show that in general, more knowledgeable investors choose to purchase funds through particular channels. For example, more financially literate investors may be more comfortable with the idea of purchasing directly from a fund company and may be more likely to maintain an account with a stockbroker. As a result, it can not be inferred that salespeople in these distribution channels necessarily do a better job of disclosing risks and costs. Indeed, Alexander et al. (1997) found evidence that a mutual fund investor's level of financial literacy and choice of distribution channel are jointly determined.

Table 6
Mean of the quiz score by distribution channel

Distribution channel	Mean for channel users	Mean for non-channel users	Difference	t-statistic
Bank	4.77	5.08	-0.31	-2.10*
Broker	5.48	4.81	0.67	6.21*
Direct	6.26	4.50	1.76	17.44*
Pension	5.14	4.89	0.25	2.39*
Insurance company	4.82	5.11	-0.29	-2.38
Other	4.92	5.04	-0.12	-0.42
Mean for all channels	5.03			

Notes: A "*" signifies statistical significance at the five percent level. A difference in means test is used to test for significant differences in quiz scores that adjusts for unequal variances when necessary. The absolute value of the t-statistic is reported. See notes to Table 1.

5.1. Quiz score measure of investor financial literacy

The measure of overall investor knowledge is based on the responses to a subset of questions in the mutual fund survey. The quiz consists of nine questions and the number of correct responses is called the quiz score. The quiz score measures investing knowledge in general and mutual fund investment knowledge in particular on the part of mutual fund shareholders. The questions involve the respondents reporting whether or not they know:

- (1) that it is possible to lose money in a stock mutual fund;
- (2) that it is possible to lose money in a bond mutual fund;
- (3) that money market mutual funds are not insured;
- (4) that there are thousands of mutual funds to choose from in making an investment decision;
- (5) that stock market returns are, on the average, greater than the return on U. S. Treasury bills;
- (6) what the term net asset value (NAV) means;
- (7) what the term redemption means;
- (8) what the term derivatives means; and
- (9) what the term present value means.

Quiz questions six through nine are relatively weak measures of investor knowledge, as respondents were given credit for those questions if they claimed to know what these various terms mean, even though no attempt was made to verify the accuracy of their responses. The results reported here, however, are essentially unchanged when quiz scores are based solely on the responses to the first five questions.

5.2. Quiz score analysis

Table 6 presents the mean of the respondents' quiz score by distribution channel as well as for those respondents who did not use the channel. Also, we report the results of conventional t-tests of the equality of mean quiz scores for each type of distribution channel.

The typical mutual fund shareholder had a quiz score of five out of a possible nine. Investors purchasing directly from fund companies scored much higher than any other fund group. Broker and pension plan purchasers also scored significantly higher than those buying mutual fund shares through other distribution channels. However, bank and insurance company purchasers received significantly lower mean quiz scores than other survey respondents.

Although not presented, we examine financial literacy results by the number of channels used by the respondent to purchase mutual funds, and several demographic and financial characteristics, as well as best source of information. First, multiple-channel purchasers have significantly higher quiz scores than those who used only a single channel (5.70 vs. 4.44, respectively), with the largest difference, except other, being in the pension channel (5.78 vs. 4.21). This is of particular interest, given the recent rapid growth in 401(k) plans. Second, average quiz score was higher for males and for those respondents who work in the financial services industry, and generally increased with age, education, and income. Finally, in terms of best source of information, respondents who reported that financial publications and the prospectus were the best sources of information scored significantly higher on the quiz. In contrast, those respondents who relied on family or friends, bank representatives, employer-provided printed materials, and insurance company representatives scored significantly lower.

5.3. *Quiz score logit analysis*

In the previous section, we examined quiz scores by considering the individual factors one at a time. In comparison, a multivariate analysis assesses how the quiz score varies by particular factors, holding constant the effects of a wide set of other factors. We use a multivariate analysis based on a logit model. This analysis makes it possible to assess the linkage between the quiz score to demographic and financial characteristics, and to other factors such as sources of information and distribution channel used.

Table 7 reports the results for this model, displaying maximum-likelihood coefficient estimates and their asymptotic t-statistics along with a chi-squared measure of overall goodness of fit and its p-value, the proportion of correctly predicted quiz scores, and the total number of observations. Overall, the model can be viewed as a way of seeing if the various items of information provided by respondents can be used to predict whether they are above or below average in their financial literacy. Thus, the dependent variable in the multivariate model is a discrete random variable that takes on a value of either one or zero for each respondent, depending on whether the respondents quiz score placed him or her in the top or bottom half of the quiz score distribution. While dividing the sample into halves is arbitrary, the results do not differ when the sample is divided into tertiles, quartiles, and quintiles. Similarly, the results were also insensitive to different indices of knowledge measured by several alternative subsets of the quiz questions.

We use a large number of explanatory variables in the estimation. Included among these are several dummy (or indicator) variables. The demographic dummy variables MALE, COLLEGE_GRAD, WORK_FIN_INST, AGE, NUM_FUNDS, INCOME, and SEASONED take on a value of 1 (0 otherwise) if the respondent is a male, is a college graduate, works at a financial institution, is older than 43 years of age, owns three or more funds, has

Table 7
Multivariate logit estimation of determinants of quiz scores

Variable	Coefficient estimate	t-statistic
MALE	0.8320	6.75*
COLLEGE_GRAD	0.6753	5.54*
WORK_FIN_INST	1.1758	5.00*
AGE	0.1618	1.34
NUM_FUNDS	0.2530	2.08*
INCOME	0.5370	4.20*
SEASONED	0.3609	1.54
PUBLICATIONS	0.9376	3.82*
PROSPECTUS	0.5981	2.45*
BROKER	0.0707	0.29
BANKER	-0.3925	-1.03
EMPLOYER	-0.4336	-1.85
FAMILY	-0.3051	-1.20
Chi-Squared Statistic	302.5	
(p-value)	(0.000)	
Proportion Predicted Correctly	0.701	
Number of Observations	1554	

Note: Quiz score is a dummy variable with a 1 indicating the respondent scored in the top half of the distribution and 0 otherwise. The dummy variables, MALE, COLLEGE_GRAD, WORK_FIN_INST, AGE, NUM_FUNDS, INCOME and SEASONED take on a value of 1 (0 otherwise) if the respondent is a male, a college graduate, works at a financial institution, older than 43 years of age, owns three or more funds, has household income greater than \$75,000, and purchased a mutual fund prior to 1993, respectively. Also included are dummy variables for the best source of information used in the respondents' most recent mutual fund purchases. The dummy variables PUBLICATIONS, PROSPECTUS, BROKER, BANKER, EMPLOYER, and FAMILY take on a value of 1 (0 otherwise) if the best source of information is financial publications, the mutual fund prospectus, broker, banker, employer-provided printed materials, and family or friends, respectively.

household income greater than \$75,000, and purchased a mutual fund prior to 1993, respectively. Also included are dummy variables for the best source of information used in purchasing the most recent mutual fund. To avoid collinearity problems, a separate dummy variable was not included for respondents naming "other" as the best source of information. The dummy variables PUBLICATIONS, PROSPECTUS, BROKER, BANKER, EMPLOYER, and FAMILY take on a value of 1 (0 otherwise) if the best source of information is, respectively financial publications, mutual fund prospectuses, brokers, bankers, employer-provided printed materials, and family or friends. It should be noted the number of respondents in the multivariate analysis is 1,554 since 446 respondents did not provide answers to one or more of the questions such as age or income.

The results of this exercise indicate that there is a significant positive relationship between the quiz score and five demographic explanatory variables—being a male, a college graduate, working at a financial institution, owning three or more funds, and earning income greater than \$75,000. Furthermore, those respondents who indicated that either financial publications or mutual fund prospectuses were their best source of information earned significantly higher quiz scores. The overall fit of the multivariate model is good, as indicated by the significantly low p-value associated with the chi-squared statistic. In addition, the model was able to correctly identify high and low quiz score respondents for slightly more

than 70% of the respondents based on their demographics and best source of information, providing additional evidence that the model has a good fit.

6. Conclusion

Our results show that the typical mutual fund investor surveyed is older, wealthier, and better educated than the average American. The results of the survey suggest, however, that investor knowledge of the expenses and risks associated with mutual funds can be improved. Although the average fund shareholder has invested in funds for several years, most fund shareholders do not appear to appreciate the relationship between fund expenses and performance. In addition, a substantial number of fund investors still believe that they cannot lose money in a bond fund.

The survey results also suggest that more can be done to make mutual fund prospectuses more useful to investors, especially since over 40% of those surveyed stated that they never used the prospectus. Moreover, the survey respondents considered the prospectus only the fifth best source of information about the funds that they purchased. Two rules that were recently adopted by the SEC are significant and timely steps in this direction. The first rule requires the use of “plain English” that avoids legalese in disclosure documents such as prospectuses. The second rule allows shortened but more focused prospectuses, known as profile prospectuses, to be sent to potential mutual fund purchasers. Readers interested in these rules will find them posted at the SEC’s web site: www.sec.gov/rules/final/33-7497.txt and www.sec.gov/rules/final/33-7513.htm, respectively.

Although broker and direct fund company purchasers are relatively more knowledgeable about the costs and risks of mutual fund investments than non-broker and non-direct fund company purchasers, it is likely that investors self-select into the various distribution channels. For example, more knowledgeable investors may be more comfortable with the idea of purchasing from a fund company or a broker. As a result, salespeople at banks and insurance companies may face greater challenges in educating their typical mutual fund buyers. The survey should not be read as indicating that salespeople in broker and direct distribution channels necessarily do a better job of disclosing risks and costs than their counterparts in other distribution channels.

The ongoing challenge of raising the level of investor comprehension of the costs and risks associated with mutual fund investments extends well beyond simply designing regulatory requirements. Ultimately, the goal of better educated investors can only be achieved by a concerted joint effort involving numerous parties, including plan sponsors, brokers, fund companies, and governmental regulatory agencies.

References

- Alexander, G. J., Jones, J. D., & Nigro, P. J. (1996). Report on the OCC/SEC survey of mutual fund investors. Washington, DC: Office of the Comptroller of the Currency and the U. S. Securities and Exchange Commission.

- Alexander, G. J., Jones, J. D., & Nigro, P. J. (1997). Investor self-selection: evidence from a mutual fund survey. *Managerial and Decision Economics* 18(Special Issue, Nov.–Dec.), 719–729.
- American Association of Retired Persons, Consumer Federation of America, and the North American Securities Administrators Association, Inc., (1994, January). Outline for minimums for Hill Reform Action...Most consumers do *not* know risk of uninsured investments at banks, Report.
- Blake, C. R., Elton, E. J., & Gruber, M. J. (1993). The performance of bond mutual funds. *Journal of Business* 66(July), 371–403.
- Bogle, J. C. (1992). Selecting equity mutual funds. *Journal of Portfolio Management* 18(Winter), 94–100.
- Bogle, J. C. (1994). *Bogle on mutual funds: new perspectives for the intelligent investor*. Burr Ridge, IL: Irwin.
- Brown, S. J., & Goetzmann, W. N. (1995). Performance persistence. *Journal of Finance* 50(June), 679–698.
- Brown, S. J., Goetzmann, W. N., Ibbotson, R. G., & Ross, S. (1992). Survivorship bias in performance studies. *Review of Financial Studies* 5, 553–580.
- Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance* 52(March), 57–82.
- Chen, H., & Volpe, R. (1998). An analysis of personal financial literacy among college students. *Financial Services Review* 7(2), 107–28.
- Consumer Bankers Association. (1994, November). *Consumer Investment Product Survey*.
- Crenshaw, A. B. (1996, May 19). Before risking the money, invest in financial literacy. *The Washington Post*, pp. H1, H4.
- Elton, E. J., Gruber, M. J., & Blake, C. R. (1996). The persistence of risk-adjusted mutual fund performance. *Journal of Business* 69(April), 133–157.
- Goetzmann, W., & Ibbotson, R. G. (1994). Do winners repeat? *Journal of Portfolio Management* 20(Winter), 9–18.
- Hendricks, D., Patel, J., & Zeckhauser, R. (1993). Hot hands in mutual funds: short-run persistence of relative performance, 1974–1988. *Journal of Finance* 48(March), 93–130.
- Investment Company Institute. (1999). 1999 Mutual Fund Fact Book. Available online: www.ici.org.
- Kahn, R. N., & Rudd, A. (1995). Does historical performance predict future performance? *Financial Analysts Journal* 51(Nov.–Dec.), 43–52.
- Kimmelman, J. (1995, June 9). Banks best at disclosing risks, study finds. *American Banker*, p. 10.
- Malkiel, B. (1995). Returns from investing in equity mutual funds 1971 to 1991. *Journal of Finance* 50(June), 549–572.
- Market Trends. (1996, May 5). *Survey of Nondeposit Investment Sales at FDIC-Insured Institutions*.
- Plasencia, W., & Cope, D. (1996, January 19). Blasted on mutual fund disclosure, banks hit back. *American Banker*.
- Schultz, E. (1995, December 22). Helpful or confusing? Fund choices multiply for many retirement plans. *The Wall Street Journal*, pp. C1, C25.
- Updegrave, W. L. (1996). Fund investors need to go back to school. *Money* (February) 98–100.