

HOW DO RETAIL INVESTORS CHOOSE FUNDS? AN EXPERIMENT

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Abstract

A variety of regulatory efforts attempt to protect retail investors from making poor investment decisions. Studies show that, to date, these efforts have had limited success. The reasons for poor investor decision-making are, however, unclear. Limitations in policy-makers' understanding of investor behavior make it difficult to improve the current regulatory structure and raise questions about the extent to regulation is a necessary substitute for market forces that have proven inadequate.

This article describes an internet-based experiment used to disentangle possible explanations for inefficient investment decisions and to acquire an increased understand of the reasons for consumers' investment behavior. Using a simplified construct of an employee's allocation among the options in a retirement plan, we study investor perceptions, investor use of the information provided and simulated investment decisions. We also test the effect of a fee instruction on all three topics.

The results of the experiment offer grounds for optimism. With simplified disclosure and a limited range of investment options, our subjects are able to identify the better fund options and allocate a greater portion of their portfolios to the better funds. At the same time, our study confirms the findings of prior research that investors engage in excessive and possibly naïve diversification. Lastly, the use of an explicit fee instruction caused subjects to pay greater attention to mutual fund fees and to allocate their investments into funds with lower fees. Our findings are preliminary but offer a starting point in gathering information on how we educate investors.

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INTRODUCTION

There is mounting evidence that retail investors make predictable, costly mistakes.¹ They trade too frequently, they buy high and sell low, they invest in fad instruments they do not understand, and they pay excessive fees. In an August 2012, 200-page study prepared in response to a Dodd-Frank mandate, the SEC concluded that “American investors lack basic financial literacy.”² The study found that investors do not understand basic concepts such as diversification, investment costs, inflation and compound interest, and that they lack the knowledge necessary to protect themselves from fraud.

Despite investors’ seemingly limited competence, regulatory and market developments increasingly require retail investors to navigate the financial markets themselves. Over the past thirty-five years, participant-directed 401(k) plans have largely replaced professionally managed pension plans.³ Unlike traditional pension plans, these participant-directed 401(k) plans place the responsibility for critical investment decisions in the hands of employees, who are responsible for selecting their own investments from a menu of employer-provided alternatives. This means that low-level employees—individuals with even less investment knowledge than the general population⁴—are now investing for retirement with almost no guidance.

To complicate matters further, mutual funds are the dominant investment option provided by employer-sponsored 401(k) plans, and the primary way in which retail investors participate in the market both in- and outside of retirement plans.⁵ Unlike other investments, mutual funds

¹ See, e.g., Andrea Frazzini & Owen Lamont, 88 J. FIN. ECON. 299 (2008) (observing that “individual investors have a striking ability to do the wrong thing.”).

² Securities & Exchange Comm’n, SEC Staff Study Regarding Financial Literacy Among Investors, August 2012, at 15, available at <http://www.sec.gov/news/studies/2012/917-financial-literacy-study-part1.pdf> (hereinafter “SEC Staff Study”).

³ See Pamela Perun & Joseph John Valenti, *Defined Benefit Plans: Going, Going, Gone?* 4 (undated working paper), available at planetnow.com/metaPage/lib/Perun-ValentiFinalAppam.pdf (observing that “[i]n 1975, over 70% of active employees participated in a defined benefit plan. In 2005, the majority of active employees (over 75%) participated in a defined contribution plan instead.”).

⁴ SEC Staff Study, supra note 2, at 15.

⁵ See Investment Company Institute, 2012 Investment Company Fact Book (2012), at 90, available at www.ici.org/pdf/2012_factbook.pdf (hereinafter “ICI Fact Book”).

are held primarily by individual investors; institutional use of mutual funds is limited and consists mostly of money market funds, which are used for cash management.⁶ This market segmentation means that retail fund investors cannot benefit from market discipline effected by more sophisticated institutions.⁷

As a result, there are reasons to doubt the efficiency of the mutual fund market: specifically, whether the market offers retail investors reasonable and comprehensible investment options. In particular, many commentators are puzzled by the huge number of fund choices and by the persistence of high-fee funds that underperform the market.

The possibility that market forces are insufficient to protect retail investors from making poor investment decisions has led to ongoing regulatory intervention efforts. Mandated disclosure requirements, product limits, and the imposition of fiduciary duties on employers, brokers and investment advisors, are among the approaches that policy-makers have considered in an effort to counteract the effects of poor investor decisions. Understanding the manner in which investors make investment decisions is critical, however, both to assessing the need for increased regulatory oversight and to identifying the most efficient form of regulatory intervention. To the extent that investors make bad choices, the question is why they do so.

Congress acknowledged the need for a better understanding of investor behavior in the Dodd–Frank Wall Street Reform and Consumer Protection Act (“Dodd-Frank”) and required the SEC to conduct a study of investor financial literacy.⁸ The SEC’s study was conducted at the most superficial level, however, and produced limited insight into

(stating that 91% of mutual fund holding households hold mutual fund shares inside retirement plans).

⁶ *See id.* at 86 (explaining that households owned 89% of mutual fund assets as of the end of 2011).

⁷ Some mutual funds operate multiple versions that are sold to retail and institutional investors. Although institutional “twins” typically charge lower fees than retail funds, one study finds that retail funds with an institutional twin perform better, suggesting that, in this context, retail investors can benefit from the market discipline imposed by institutions. *See* Richard B. Evans & Rüdiger Fahlenbrach, *Institutional Investors and Mutual Fund Governance: Evidence from Retail–Institutional Fund Twins*, _ REV. FIN. STUD. _ (forthcoming 2012), available at <http://rfs.oxfordjournals.org/content/early/2012/10/22/rfs.hhs105.full>.

⁸ Dodd–Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 917, 124 Stat. 1376 (2010) (codified as amended at 15 U.S.C. § 78n(a)(2) (Supp. IV 2010) (*hereinafter* “Dodd-Frank Act”).

developing future regulatory policy.⁹ In the resulting report, the SEC identified investor mistakes and misconceptions, but did not focus on the underlying mechanisms driving investor choices.

This article takes up where the SEC study left off, detailing the results of a new experiment that tries to understand how investors use the information available to them, and why they often ignore it. Using a simulated investment game in which participants were asked to allocate funds in a retirement account among mutual fund alternatives, we offer some insights into how individuals seek and assimilate information about a fund's characteristics. The simulation also uses an instruction about the importance of mutual fund fees to explore the potential for using instructions to influence investor decisions.

The results of the experiment offer preliminary grounds for optimism. With simplified disclosure and a limited range of investment options, our subjects were able to identify better fund options and allocate a greater portion of their portfolios to those funds. Furthermore, an initial attempt at basic investor education about the importance of fund fees improved decision-making. Through an explicit instruction we caused subjects to pay closer attention to mutual fund fees and to allocate their investments into funds with lower fees. At the same time, our study confirms the findings of prior research that a substantial fraction of investors engage in excessive and possibly naïve diversification (though we do find evidence for some market segmentation).

Our findings are concededly preliminary. More importantly, their application to real world investment decisions, in which the stakes and the cost of gathering and evaluating investment information are much higher, is unclear. Nonetheless, our research offers a starting point for gathering information on how to educate investors. Determining whether effective investor education is possible is critical to evaluating the manner in which we regulate, structure, and evaluate retail investing options such as retirement plans.

The article is organized as follows. Part I briefly describes the regulatory environment for mutual funds and 401(k) retirement plans. Part II identifies key findings on retail investor decision-making and observes how these findings cast doubt on the effectiveness of market discipline in the mutual fund market. Part III describes our experiment

⁹ SEC Staff Study, *supra* note 2.

structure. Part IV reports our results. Part V explores the implications of our findings and identifies next steps for additional research.

I. THE REGULATORY ENVIRONMENT FOR MUTUAL FUNDS AND 401(K) PLANS

A. *Mutual Funds*

Mutual funds constitute the dominant investment vehicle for investors.¹⁰ A mutual fund is a pool of assets that may include stocks, bonds, and other investment products. A mutual fund investor purchases shares that represent a pro rata ownership interest in the fund's pool of assets. The fund is required to value its assets on a daily basis and to purchase and sell fund shares at their net asset value, or "NAV."¹¹

At the end of 2011, there were over 7,637 active mutual funds in the United States.¹² Mutual fund types include funds that invest primarily in equity, funds that confine themselves to fixed income investments, and hybrid funds that combine the two. Funds may be actively managed or seek to replicate the performance of an index such as the S&P 500. Some funds focus on a particular segment of the market such as energy stocks or pharmaceuticals, others in types of investment products such as large cap equities or junk bonds. International funds purchase assets from across the globe or within a specific foreign country or geographic region. Target date funds offer a shifting asset allocation that becomes more conservative as the specified target date approaches.¹³

Mutual funds do not typically hire employees to engage in investment decisions or perform administrative services. Instead, funds

¹⁰ The economic importance of mutual funds worldwide is even greater. The Investment Company Institute reported that there were 72, 657 mutual funds worldwide, holding almost \$24 trillion in assets at the end of 2011. 2012 ICI Fact Book, *supra* note 5, at 193.

¹¹ For a general description of mutual funds see Jill E. Fisch, *Rethinking the Regulation of Securities Intermediaries*, 158 U. PENN. L. REV. 1961 (2012).

¹² 2012 ICI Fact Book, *supra* note 5, at 134 table 1. In addition to funds, there were over 1100 exchange traded funds or ETFs as of the end of 2011. *Id.* at 147 Table 14. ETFs differ from mutual funds in several key features, including the manner in which they trade, but offer investors a similar type of diversified investment. See Fisch, *supra* note 111 (describing ETFs).

¹³ Target date funds are often used for retirement investing. See Fisch, *supra* note 111 at 2022-23 (explaining target date funds).

outsource all operational requirements to outside service providers. The funds pass on the costs of these services to the funds' shareholders in the form of various fees. Funds' fees can include sales fees (also known as "loads"), management fees, distribution (12b-1) fees, and administrative expenses.¹⁴ Of these fees, the largest are management fees, which are paid to the funds' investment advisors. In addition to these fees, a fund may have less transparent expenses, such as trading commissions that are not included in the funds' tables of fees, but that are also borne by the funds' shareholders.

As of 2011, forty-four percent of U.S. households, or 52.3 million households, owned mutual funds.¹⁵ Mutual fund investing is not limited to wealthy or sophisticated retail investors; most mutual fund-owning households had household incomes of less than \$100,000.¹⁶ The relative lack of sophistication among mutual fund investors has led Congress and the Securities and Exchange Commission to regulate mutual funds strictly.

The SEC oversees the operation of mutual funds, which are heavily regulated by the Investment Company Act of 1940, or the "ICA."¹⁷ Among the regulations imposed on mutual funds are extensive disclosure regulations, including disclosure of a fund's investment objectives, costs, investment strategies, and advisers. Funds are restricted in their investments, in their use of leverage, and in the manner in which they compensate their investment advisers.¹⁸ The ICA also requires mutual funds to have a board consisting of directors of whom at least 40% must be independent of the fund's investment advisor.¹⁹ Finally, the

¹⁴ See Securities & Exchange Comm'n, Mutual Fund Fees and Expenses (Aug. 8, 2007), <http://www.sec.gov/answers/mffees.htm> (describing various types of mutual fund fees and expenses).

¹⁵ *Id.* at 86. Mutual fund ownership has increased dramatically over the past thirty years. In 1980, less than six percent of US households owned mutual funds. *Id.* at 85.

¹⁶ *Id.* at 88. Only 38% of mutual fund owning households had incomes over \$100,000, and the median income for mutual fund holding households was \$80,000. *Id.*

¹⁷ 15 U.S.C. §§ 80a-1 to -64 (2006).

¹⁸ Fisch, *supra* note 11 at 1170-71.

¹⁹ SEC rules set a higher threshold, requiring fund boards to have a majority of independent directors in order for the fund to qualify for certain exemptive rules. See Role of Independent Directors of Investment Companies, Securities Act Release No. 7932, Exchange Act Release No. 43,786, Investment Company Act Release No. 24,816, 66 Fed. Reg. 3734, 3736 (Jan. 16, 2001) (codified as amended at scattered parts of 17 C.F.R.).

ICA requires the funds' shareholders to elect the directors and to approve certain structural changes.²⁰

The extensive regulation of mutual funds is a direct response to concerns about investor exploitation and the inability of market forces to adequately protect investors. Investors in mutual funds lost 40% of their investments between 1929 and 1936.²¹ Congress found, relying on an SEC study, that mutual fund sponsors were acting largely out of self-interest, abandoning their fiduciary duties to investors and charging investors with unjustified costs and expenses.²² The ICA was Congress' response to that problem.

However, the problem of mutual funds charging excessive fees continued. In 1966, the SEC reported to Congress that neither the ICA nor market discipline provided mutual fund investors with sufficient protection against excessive costs.²³ The SEC noted that the problem was exacerbated by the fact that mutual funds were sold primarily to "family [men] of moderate income."²⁴ In response, the SEC recommended that the ICA be amended to limit investment advisors to a "reasonable" fee for their management services and "that this standard be enforceable in the courts."²⁵

Congress adopted the SEC's recommendation and included in the 1970 revisions to the ICA Section 36(b), which imposes a fiduciary duty

²⁰ Unlike operating companies, mutual funds need not provide annual meetings for the election of directors.

²¹ Paul Royce, Speech by SEC Staff: A Celebration of the 60th Anniversary of the Investment Company Act Oct. 4, 2000, <http://www.sec.gov/news/speech/spch405.htm>.

²² *Id.*

²³ Report of the Securities and Exchange Commission on the Public Policy Implications of Investment Company Growth to House Committee on Interstate and Foreign Commerce, 80th Cong., 2nd Sess, House Report No. 2337, Dec. 2, 1966, *available at* http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&cad=rja&ved=0CDAQFjAA&url=http%3A%2F%2Fwww.sechistorical.org%2Fcollection%2Fpapers%2F1960%2F1966_InvCoGrowth_FRONTMatter.PDF&ei=KMmrUPeVKqup0AHZg4A4&usg=AFOjCNE9IEiuKf2m5-dICDydmLI7tMGfQ&sig2=FKPBah88m6n3W6L0pBWGhA (*hereinafter* 1966 SEC Report). The report concludes that "mutual fund shareholders need protection against incurring excessive costs in the acquisition and management of thew [sic] investments and that, given the structure and incentives prevailing in the industry, neither competition nor the few elementary safeguards against conflict of interest deemed sufficient in 1940 and contained in the Investment Company Act presently provide this protection in adequate measure." *Id.* at viii.

²⁴ 1966 SEC Report, *supra* note 23, at ix.

²⁵ *Id.* at viii.

upon investment advisers with respect to compensation received from a mutual fund and provides investors with a private right of action to enforce this duty.²⁶ Today, fees are far lower than they were in the 1960s, and, according to the Investment Company Institute, most new investments are made in funds that charge lower fees.²⁷ Nonetheless, mutual fund fees continue to vary significantly. Morningstar reports that currently the average reported expense ratio for U.S. large cap equity mutual funds is 1.31%,²⁸ but fees range from .1%²⁹ to more than 2%.³⁰

Although one might imagine that competitive markets would make it difficult for investors to raise legal challenges to fees they voluntarily elected to pay, suits against mutual fund advisers alleging excessive fees are surprisingly common.³¹ To a certain extent, this litigation pits the legal standard of fiduciary obligation against the effectiveness of market discipline.

This tension was recently exposed in the Seventh Circuit opinions in *Jones v. Harris*.³² The majority in *Jones* viewed extensive judicial oversight over fee levels as inappropriate, reasoning that “investors can and do protect their interests by shopping, and that regulating advisory fees through litigation is unlikely to do more good than harm.”³³ Critical to the court’s analysis was an assessment of the role of investor decisions in constraining fees. As Judge Posner observed

²⁶ 15 U.S.C. 80a-36(b), Pub. L. No. 91-547, 84 Stat. 1413 (1970) (codified as amended in scattered sections of 15 U.S.C.). See *Jones v. Harris Assocs. L.P.*, 130 S. Ct. 1418, 1423 (2010).

²⁷ 2012 ICI Fact Book, supra note 5 at 71-72.

²⁸ FINRA, Fund Analyzer Additional Information, <http://www.finra.org/Investors/ToolsCalculators/P117437> (last visited Sept. 19, 2012).

²⁹ Fidelity’s Spartan S&P 500 index fund currently has an expense ratio of .1%. See Fidelity.com, Spartan 500 Index Fund - Investor Class, Expense ratio, <http://fundresearch.fidelity.com/mutual-funds/summary/315911206> (last visited Nov. 20, 2012).

³⁰ Alliance Bernstein’s Blended Style Funds Tax-Managed International Portfolio, for example, has an expense ratio of 2.02%. See Alliance Bernstein Website, Alliance Bernstein Blended Style Funds Tax-Managed International Portfolio, Performance, https://www.alliancebernstein.com/abcom/Product_Center/3_Vehicle/MF/Equity/Core/Tax-Mgd_International_Portfolio.htm?shareclass=A (last visited Nov. 20, 2012).

³¹ Quinn Curtis and John Morley report that investors filed 91 suits against mutual fund advisors alleging excessive fees between 2000 and 2009. Quinn Curtis & John D. Morley, *An Empirical Study of Mutual Fund Excessive Fee Litigation: Do the Merits Matter?* (Working Paper, March 7, 2012), <http://ssrn.com/abstract=1852652>.

³² *Jones v. Harris Assocs. L.P.*, 527 F.3d 627 (7th Cir. Ill. 2008) (Easterbrook J.).

³³ *Id.* at 634.

in his dissent, the court’s reasoning raised an important empirical question: “will high fees drive investors away?”³⁴ Empirical studies have begun to try to answer this question, and the study we report in Part III adds to that growing literature.³⁵

B. 401(k) Plans

Courts and policy-makers are increasingly concerned with mutual fund investment decision-making, because mutual funds are the primary vehicle for employee retirement savings. Over the past forty years, employee retirement savings plans have largely shifted from defined benefit pension plans³⁶ to defined contribution plans, primarily 401(k) plans.³⁷ Both types of plans are regulated by the Employee Retirement Income Security Act of 1974 (“ERISA”).³⁸ The effect of this shift is to transfer responsibility for investment decisions from the employer to individual employees. Although the employee directs the investment of his or her retirement funds in a 401(k) plan, the employer selects the investment options available to the individual employees, who are limited to allocating their retirement funds among the choices provided.

So-called “participant control” allows the employer to reduce its liability exposure. Specifically, § 404(c) of ERISA exempts fiduciaries from liability for losses caused by participants’ exercise of control over assets in their individual accounts.³⁹ As of February 2012, the Department of Labor estimated that 72 million individuals are covered

³⁴ Jones v. Harris Assocs., 537 F.3d 728, 732 (7th Cir. 2008) (Posner, J., dissenting).

³⁵ The Supreme Court did not attempt to resolve this question. See Jones v. Harris Assocs. L.P., 130 S. Ct. 1418, 1430-1431 (2010) (“The debate between the Seventh Circuit panel and the dissent from the denial of rehearing regarding today’s mutual fund market is a matter for Congress, not the courts.”).

³⁶ Defined benefit plans, the category encompassing most traditional pension plans, promise “the participant a fixed level of retirement income, which is typically based on the employee’s years of service and compensation.” LaRue v. DeWolff, Boberg & Assocs., 552 U.S. 248, 250 n. 1 (2008) (citation omitted).

³⁷ Defined contribution plans promise “the participant the value of an individual account at retirement, which is largely a function of the amounts contributed to that account and the investment performance of those contributions.” *Id.* See also *id.* at 255 (“[d]efined contribution plans dominate the retirement plan scene today”); Edward A. Zelinsky, *The Defined Contribution Paradigm*, 114 YALE L. J. 451, 471 (2004) (explaining that at the time that ERISA was enacted, the defined benefit plan was the “dominant paradigm”).

³⁸ The Employee Retirement Income Security Act of 1974 (ERISA), 29 U.S.C. § 1132(a)(2).

³⁹ See also 29 CFR § 2550.404c-1 (2007).

by 401(k) plans in which individual participants are responsible for directing the investment of their retirement savings.⁴⁰

ERISA does not restrict the types of investments that a sponsor may offer through a 401(k) plan – the options commonly include mutual funds, money market funds, real estate accounts, stable value funds, and company stock.⁴¹ In order to obtain the benefit of ERISA’s section 404(c) safe harbor, a plan must offer investors at least three “diversified” investment options with “materially different risk and return characteristics.”⁴² Most 401(k) plans offer employees substantially more options. According to Brightscope, in 2011 the average 401(k) plan offered employees 24 investment options.⁴³ Some plans offer hundreds or even thousands of choices.⁴⁴ Approximately half of all 401(k) plan assets are invested in mutual funds.⁴⁵

Employers usually delegate the administration of their 401(k) plans to an independent service provider, which may be a bank, an investment company, or an insurance company.⁴⁶ The service provider acts as a trustee for the plan and bundles various administrative functions for the employer and helps the employer select the investment options. One study reports that mutual fund families act as trustees for 77% of plans.⁴⁷ Although many service providers include funds from outside the trustee’s family, affiliated funds tend to dominate the product lines of mutual fund trustees. Commentators have identified the selection of the trustee’s own product line as a potential conflict of interest and also

⁴⁰ United States Dept. of Labor, Fact Sheet, Final Rule to Improve Transparency of Fees and Expenses to Workers in 401(k)-Type Retirement Plans , Feb. 2012, <http://www.dol.gov/ebsa/newsroom/fsparticipantfeerule.html>.

⁴¹ U.S. Government Accountability Office, 401(K) PLANS, Certain Investment Options and Practices That May Restrict Withdrawals Not Widely Understood, GAO-11-291, March, 2011, <http://www.gao.gov/assets/320/316437.pdf>.

⁴² 29 C.F.R. § 2550.404c-1(b)(3)(i)(B)

⁴³ Jack Hough, *Get the most from a lame 401k plan*, WALL ST. J., Oct. 13, 2011, <http://money.msn.com/mutual-fund/get-the-most-from-a-lame-401k-plan-wsj.aspx>.

⁴⁴ See, e.g., Hecker v. Deere & Co., 556 F.3d 575 (7th Cir. 2009) (describing John Deere’s plan as offering more than 2500 investment options).

⁴⁵ Sarah Holden & David Abbey, *Fortune’s Assessment of Industry Stance on 401(k) Fees Is Misguided*, ICI VIEWPOINTS, June 25, 2012, http://www.ici.org/viewpoints/view_12_fortune_401k_fees.

⁴⁶ U.S. Government Accountability Office, 401(K) PLANS, supra note 41.

⁴⁷ Irina Stefanescu, Veronika Krepely Pool, & Clemens Sialm, *It Pays to Set the Menu: Mutual Fund Investment Options in 401(K) Plans* (Working Paper July 18, 2012), <http://ssrn.com/abstract=2112263>.

found that trustees may be less inclined to remove one of their own underperforming funds from the plan menu.⁴⁸

Service providers charge various types of fees to 401(k) plan sponsors in connection with the provision of administrative services.⁴⁹ Both the amount and the type of the fee can vary dramatically among providers.⁵⁰ A substantial percentage of plans pass through all or part of fees charged by their service providers to plan participants.⁵¹ In addition to the plan-level fees, participants pay expenses and fees associated with different investment options offered by the plan, such as mutual fund expenses and transaction fees.

ERISA imposes fiduciary obligations on the sponsor in connection with the selection of investment options, and sponsor contracts with service providers typically vest authority for the selection of investment options in the plan sponsor.⁵² Fiduciaries are required to select and periodically evaluate the plan's mix and range of investment options.⁵³ In evaluating whether the sponsor has adhered to its obligations, courts have evaluated the "the range of investment options and the characteristics of those available options, including the risk profiles, investment strategies, and associated fees."⁵⁴

⁴⁸ *Id.*

⁴⁹ In response to a GAO study which found that many plan sponsors did not know or understand the fees charged by their plans, (see Government Accountability Office, 401(K) PLANS Increased Educational Outreach and Broader Oversight May Help Reduce Plan Fees, GAO-12-325 (April 2012), *available at* <http://www.gao.gov/assets/600/590359.pdf>) the Department of Labor adopted new regulations, effective in July of 2012, requiring detailed fee disclosure from service providers to plan sponsors. 29 CFR §2550.408b-2 (Feb. 2012). *See also* Mary Beth Franklin, *New fee disclosure rules could shake up 401(k) world*, INVESTMENTNEWS, June 24, 2012, <http://www.investmentnews.com/article/20120624/REG/306249994> (describing new disclosure requirements and predicting their effect). In addition, the regulations require, as of August 30, 2012, that fee information be disclosed to plan participants.

⁵⁰ *See* Government Accountability Office, *Increased Educational Outreach and Broader Oversight May Help Reduce Plan Fees*, GAO-12-325, Apr. 2012, *available at* <http://www.gao.gov/assets/600/590359.pdf> (describing range and types of fees).

⁵¹ *See id.* at 16. *See also id.* at 21 (stating that "[p]articipants generally paid part or all of the fees charged for key 401(k) plan services.").

⁵² 29 U.S.C. § 1002(21)(A). *See, e.g.,* Renfro v. Unisys Corp., 671 F.3d 314, 323 (3d Cir. 2011).

⁵³ Renfro v. Unisys Corp., 671 F.3d at 326.

⁵⁴ *Id.*

Commentators have debated what these fiduciary obligations mean, specifically the extent to which they require sponsors to choose the lowest-cost mutual fund options.⁵⁵ Commentators have also debated the extent to which sponsors effectively minimize investment costs. Although some argue that retirement plan fees are unduly expensive and that, in particular, the mutual fund options offered by 401(k) plans are more costly and less attractive than available alternatives,⁵⁶ others dispute those claims.⁵⁷

Courts faced with claims under the ICA have been largely focused on whether employers have offered a sufficient number of sufficiently different investment options, rather than the quality of those options or the choice architecture. In a number of recent cases, employees have sued their employers, alleging a breach of fiduciary duty based on the employer's failure to select appropriate investment options and, in particular, to offer mutual fund options with sufficiently low costs.⁵⁸ In many of these cases, the courts have concluded that the employer has fulfilled its fiduciary obligations merely by offering its employees a sufficient range of investment options. Market competition and investor choice, the cases suggest, provide employees with adequate protection.

In *Hecker v. John Deere*,⁵⁹ for example, the Plan offered employees “a generous choice of investment options” that included “23 different Fidelity mutual funds, two investment funds managed by Fidelity Trust, a fund devoted to Deere's stock, and a Fidelity-operated facility called BrokerageLink, which gave participants access to some 2,500 additional funds managed by different companies.”⁶⁰ All the funds “were available on the open market for the same fee.”⁶¹ As the court

⁵⁵ Christopher Carosa, *401k Plan Sponsors and the Mutual Fund Expense Ratio Wild Goose Chase*, FIDUCIARY NEWS, July 3, 2012, <http://fiduciarynews.com/2012/07/401k-plan-sponsors-and-the-mutual-fund-expense-ratio-wild-goose-chase/>.

⁵⁶ Scott Cendrowski, *Is your 401(k) ripping you off?*, CNN MONEY, June 25, 2012, <http://finance.fortune.cnn.com/2012/06/25/retirement-guide-401k-fees/>.

⁵⁷ Holden & Abbey, *supra* note 45.

⁵⁸ The basis for this litigation stems from the Supreme Court's holding in *LaRue v. DeWolff, Boberg & Associates, Inc.*, 128 S. Ct. 1020 (2008), where the court noted that “a participant in a defined contribution pension plan [may] sue a fiduciary whose alleged misconduct impaired the value of plan assets in the participant's individual account.”

⁵⁹ *Hecker v. Deere & Co.*, 556 F.3d 575 (7th Cir. 2009).

⁶⁰ *Id.* at 578.

⁶¹ *Id.* at 579.

explained, “the undisputed facts [left] no room for doubt that the Deere Plans offered a sufficient mix of investments for their participants.... Importantly, all of these funds were also offered to investors in the general public, and so the expense ratios necessarily were set against the backdrop of market competition.”⁶² Similarly, in *Renfro v. Unisys Corp.*,⁶³ the court concluded that an employer met its obligations by providing an adequate range and mix of investment options – in the case of Unisys, the plan offered “seventy-three distinct investment options.”⁶⁴

In contrast, the court in *Braden v. Wal-Mart Stores* refused to dismiss similar allegations concerning Wal-Mart’s 401(k) plan.⁶⁵ Braden alleged that Wal-Mart included funds with unreasonably high fees in its 401(k) plan, due in part to alleged fee-sharing between the funds and Merrill Lynch, the plan’s trustee.⁶⁶ Braden claimed that this resulted in the Plan paying \$20 million per year in excessive fees.

The Eighth Circuit found that the plaintiff’s complaint adequately alleged that Wal-Mart breached its fiduciary duty in selecting investment options for the company’s 401(k) plan. “Taken as true, and considered as a whole, the complaint’s allegations [were] understood to assert that the Plan include[d] a relatively limited menu of funds which were selected by Wal-Mart executives despite the ready availability of better options. The complaint allege[d], moreover, that these options were chosen to benefit the trustee at the expense of the participants.”⁶⁷ The court noted, in particular, that Wal-Mart offered a limited number of options consisting of “ten retail mutual funds, a collective trust, Wal-Mart stock, and a stable value fund.”⁶⁸ Comparing Wal-Mart’s plan to John Deere’s plan, which offered its participants access to more than 2,500 mutual funds, the court stated that the “far narrower range of investment options available in this case makes more plausible the claim that this Plan was imprudently managed.”⁶⁹ The court stated that the fact that Wal-Mart

⁶² *Id.* at 586.

⁶³ 671 F.3d 314 (3d Cir. 2011).

⁶⁴ *Id.* at 327.

⁶⁵ 588 F.3d 585, 596 (8th Cir. Mo. 2009)

⁶⁶ Following the court’s decision, Wal-Mart and Merrill Lynch agreed to a \$13.5 million settlement of the litigation. *See* William P. Barrett, Forbes, Walmart, Merrill Lynch Agree To Pay \$13.5 Million To Settle 401(k) Fiduciary Lawsuit, Dec. 5, 2011, <http://www.forbes.com/sites/williambarrett/2011/12/05/walmart-merrill-lynch-agree-to-pay-13-5-million-to-settle-401k-fiduciary-lawsuit/>.

⁶⁷ *Id.* at 596.

⁶⁸ *Id.* at 589.

⁶⁹ *Id.* at 596 n. 6.

offered its employees a choice among only ten mutual fund options made “more plausible the claim that this Plan was imprudently managed.”⁷⁰

These 401(k) fiduciary duty cases are premised on two critical assumptions. First, they assume that market forces adequately protect mutual fund investors from excessive fees. Second, they reflect the courts’ perception that employers best serve their employees’ interests by offering a large menu of investment options. As the next section suggests, research has cast doubt upon the accuracy of both of these assumptions.

II. THE LITERATURE ON INVESTOR DECISION-MAKING

Understanding consumer investment behavior is critical because the regulatory structure described above is based in part on assumptions about how individuals make investment decisions. Empirical studies demonstrate a wide variety of investor mistakes – mistakes that may be evidence weighing against the belief that competition in the market for mutual funds can keep fees low without regulatory oversight.

Studies strongly suggest that, of the information available to retail investors, fund expenses are the best predictor of future returns, and that lower expenses are correlated with higher returns. Morningstar’s Director of Mutual Fund Research has observed, “[i]f there’s anything in the whole world of mutual funds that you can take to the bank, it’s that expense ratios help you make a better decision.”⁷¹ In a recent study, Cooper, Halling, and Lemmon found that among the funds in their sample, lower-fee funds outperformed otherwise observably identical higher-fee funds by 32%.⁷²

⁷⁰ Braden v. Wal-Mart Stores, Inc., 588 F.3d 585, 596 n.6 (2009).

⁷¹ Morningstar compared the predictive power of its star ratings (which take into account expenses as well as other variables) to expense ratios alone, and found that expense ratio alone was a better predictor of future fund performance than the star ratings in a majority of the years analyzed. Russel Kinnel, *How Expense Ratios and Star Ratings Predict Success*, MORNINGSTAR, Aug. 9, 2012, <http://news.morningstar.com/ARTICLENET/ARTICLE.ASPX?ID=347327>).

⁷² Cooper, et al., supra note 79.

Nonetheless, investors continue to purchase higher fee funds. The reason for this behavior is unclear.⁷³ Some investors appear to believe that higher fees are correlated with better performance, in accordance with the adage, “you get what you pay for.”⁷⁴ Other investors appear to underestimate the economic significance of fund fees.⁷⁵ And for others, fees may be presented in a manner that is too complex or difficult to find.⁷⁶ As former SEC Chair Arthur Levitt testified before Congress in 1998, “[o]ur own research shows that fewer than one in five fund investors could give any estimate of expenses for their largest mutual fund and fewer than one in six fund investors understood that higher expenses can lead to lower returns.”⁷⁷

The literature in this area is extensive, and the results of some studies conflict.⁷⁸ Nonetheless, several principles emerge that are important for evaluating existing regulatory approaches. First, for the most part, high-fee funds appear to underperform both their lower fee competitors⁷⁹ and passively managed index funds that provide a market

⁷³ The empirical findings may be complicated by the fact that some mutual fund fees are directly used to market funds. Studies have shown that loads and 12b-1 fees have a positive effect on market share. See Ajay Khorana, *What Drives Market Share in the Mutual Fund Industry?*, 16 REV. FIN. 81 (2012).

⁷⁴ See Neil Weinberg, *Fund Managers Know Best*, FORBES 220 (Oct. 14, 2002) (finding that many investors believe higher fee funds are better performers).

⁷⁵ John Beshears et al., *How Does Simplified Disclosure Affect Individuals’ Mutual Funds Choice?*, (NBER Working Paper 14859 April 2009), available at <http://www.nber.org/tmp/87051-w14859.pdf>. One recent study finds that investors overwhelmingly rely on past performance rather than cost information and select funds with high past performance even when cost information is completely omitted. See Beth A. Pontari et al., *Regulating Information Disclosure in Mutual Fund Advertising*, 32 J. CONSUM. POLICY 333 (2009).

⁷⁶ See, e.g., Brad M. Barber et al., *Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows*, 78 J. BUS. 2095, 2107 (2005) (finding that investors have learned to reject high load funds, but continue to ignore operating expenses). See also Mark Grinblatt, et al., *IQ and Mutual Fund Choice* (Working Paper Sept. 6, 2012), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2021957 (finding that investors with high IQs tended to avoid higher fee funds). But see James J. Choi et al., *Why Does the Law of One Price Fail? An Experiment on Index Mutual Funds*, 23 REV. FIN. STUD. 1405 (2010) (finding that almost none of subject minimized fees despite reporting importance of fees, but that minimizing search costs only modestly improved portfolio allocations).

⁷⁷ Arthur Levitt, *The Numbers Game*, Speech at NYU Law School, Sept. 28, 1998, available at <http://www.sec.gov/news/speech/speecharchive/1998/spch220.txt>.

⁷⁸ See Martijn Cremers, et al., *The Mutual Fund Industry Worldwide*, (Working Paper), available at <http://ssrn.com/abstract=1830207> (identifying the conflicting literature).

⁷⁹ Michael J. Cooper, Michael Halling, & Michael L. Lemmon, *Violations of the Law of One Fee in the Mutual Fund Industry* (Working Paper March 8, 2012), available at

rate of return.⁸⁰ Although there is evidence that *some* managers have superior stock-picking ability that persists over time,⁸¹ many studies find that managers are not able to beat the market over the long run.⁸² Even if some funds can consistently outperform the market, the percentage of funds that do so appears to be quite small, and it is unclear whether the average retail investor is capable of identifying outperformers.

These studies offer reason to question the degree to which the mutual fund market is competitive, despite investors' ability to redeem mutual fund shares at any time for their net asset value and to replace those funds with others that are competitively priced.⁸³ The law of one price suggests that similar products should have similar prices and that fee dispersion should not persist unless products are truly different.⁸⁴ Nonetheless, substantial price dispersion persists in the mutual fund market – price dispersion that does not appear to be explained by product

<http://ssrn.com/abstract=1456079>; Javier Gil-Bazo & Pablo Ruiz-Verdú, *The Relation Between Price and Performance in the Mutual Fund Industry*, 64 J. FIN. 2153, 2154 (2009); John A. Haslem et al., *Identification and Performance of Equity Mutual Funds with High Management Fees and Expense Ratios*, J. INVESTING 32 (Summer 2007).

⁸⁰ Martin J. Gruber, *Another Puzzle: The Growth in Actively Managed Mutual Funds*, 53 J. OF FIN. 783 (1996).

⁸¹ Martijn Cremers & Antti Petajisto, *How Active is Your Fund Manager? A New Measure That Predicts Performance* (Yale ICF Working Paper No. 06-14, March 31, 2009), available at <http://ssrn.com/abstract=891719> (finding that the most active funds, as opposed to closet indexers, can outperform their benchmarks net of fees.) See also Robert Kosowski et al., *Can mutual fund "stars" really pick stocks? New evidence from a bootstrap analysis*, 61 J. FIN. 2551 (2006); Baker et al., *Can Mutual Fund Managers Pick Stocks? Evidence from Their Trades Prior to Earnings Announcements*, 45 J. FIN. & QUANT. ANAL. 1111 (2010).

⁸² Ronald N. Kahn & Andrew Rudd, *Does Historical Performance Predict Future Performance?*, FIN. ANALYSTS J., Nov.–Dec. 1995; Mark M. Carhart, *On Persistence in Mutual Fund Performance*, 52 J. OF FIN. 57 (1997); Nicolas P. B. Bollen & Jeffrey A. Busse, *Short-Term Persistence in Mutual Fund Performance*, 18 REV. FIN. STUD. 569, 594-95 (2004).

⁸³ A number of articles argue that the mutual fund market is competitive. See, e.g., Ajay Khorana & Henri Servaes, *What Drives Market Share in the Mutual Fund Industry?*, __ REV. FIN. __ (forthcoming 2012) (finding that higher-fee fund families have lower market shares); Sunil Wahal & Albert Wang, *Competition among mutual funds*, 99 J. FIN. ECON. 40 (2011), <http://www.sciencedirect.com/science/article/pii/S0304405X10001881> (finding that the mutual fund market, at least after 1998, is competitive and that the price competition introduced by new entrants reduces management fees).

⁸⁴ See Choi et al, *supra* note 76 (questioning whether demand for non-portfolio services can justify higher fees).

differences.⁸⁵ One recent paper found that, after controlling for fund characteristics, “the average spread in residual fees (between the 1st and 99th percentile) across all funds over the sample [was] 2.34%.”⁸⁶ Another study found that, even in the absence of product differences, investors failed to minimize fees.⁸⁷

In addition to evidence that investors do not choose funds based on price, there is some evidence that investors do not choose at all—instead, they attempt to divide their money among the available options. This has been demonstrated in a variety of studies of “naïve diversification”⁸⁸ Bernartzi and Thaler first demonstrated this phenomenon in a series of experiments in 2001.⁸⁹ They found that subjects asked to make investment decisions had a strong inclination to spread their money, essentially investing $1/n$ into each of the n funds that was offered as investment choices irrespective of the particular choice set or the attributes of the options at hand. Research has also demonstrated that investors formulate their asset allocation decisions based on the alternatives provided rather than independently determining an appropriate allocation.⁹⁰ This approach has been termed the “menu effect.”⁹¹ Similarly naïve diversification may lead investors to fail to reject even unattractive investment options. If investors do not reject less attractive options, offering them a range of choices does not prevent poor investment decisions, and may counterproductively induce them.

Finally, as noted above, policies that favor choice itself may be misguided given evidence of the effects of many choices on decision-making quality. Investors express a preference for choosing from a large

⁸⁵ Peter Wallison & Robert E. Litan, *COMPETITIVE EQUITY* (2007). *See also* Choi, et al., *supra* note 76 (finding substantial fee variation among index funds that are designed to follow an identical and largely mechanical investment strategy).

⁸⁶ Cooper et al., *supra* note 79, at 4.

⁸⁷ Choi et al, *supra* note 76.

⁸⁸ Schlomo Benartzi & Richard H. Thaler, *Naive Diversification Strategies in Defined Contribution Saving Plans*, 91 *AM. ECON. REV.* 79-98 (2001).

⁸⁹ *Id.*

⁹⁰ *See also* Nina Tang, et al., *The efficiency of sponsor and participant portfolio choices in 401(k) plans*, 94 *J. PUB. ECON.* 1073 (2010) (finding that investors fail to construct efficient retirement portfolios, where efficiency is designed as maximizing their risk-adjusted return, and that individual allocation strategy are even less efficient than using a $1/n$ heuristic).

⁹¹ Maureen Morrin, et al., *Saving for Retirement: The Effects of Fund Assortment Size and Investor Knowledge on Asset Allocation Strategies*, 42 *J. Consum. Aff.* 206 (Jul 2008).

assortment of products,⁹² but it isn't clear that more choice is better for investors in retirement accounts. First, increasing the number of investment options increases investors' tendency to invest in a large number of funds, although a very large number of choices appears to reduce the extent to which investors engage in complete naïve diversification as discussed above.⁹³ Second, and more problematically, increasing the amount of choice actually may lower employee participation rates. In one recent article, researchers looked at a broad collection of data on investment decisions made by over 500,000 employees and found that increasing the number of investment options decreased both equity allocation and overall investment levels.⁹⁴

Although the empirical literature identifies a variety of possible shortcomings in investor decision-making, the precise mechanisms driving the choice of high-fee funds remain unclear. One possibility is that investment disclosure is inadequate. The SEC has repeatedly revised and refined its disclosure requirements for mutual funds in an effort to address the concern that investors do not choose their funds rationally.⁹⁵ Yet one of the more recent studies to examine the effectiveness of these reforms found that the introduction of the summary prospectus had no effect on investor behavior.⁹⁶

Another possibility is that investors are inadequately informed about the task at hand or the fundamentals of investing. When investing for retirement, for example, employees are not typically provided with instructions such as the appropriate number of options to choose or the correct allocation between equity and fixed income. Investors do not receive training in the difference between active and passive management. Investors are not even instructed as to the importance of fees in selecting among investment alternatives. And at an even more basic level, people are confused about the math. Finance scholars Lusardi and Mitchell found that more than half of participants in a demographically diverse sample did not realize that mutual funds do not pay a guaranteed rate of return, and fewer than 20% could correctly

⁹² *Id.*

⁹³ See Morrin, *supra* note 91 (“considering a larger number of funds to invest in may be overwhelming for many investors, resulting in choosing more funds for investment and allocating the invested dollars evenly across the chosen funds”).

⁹⁴ Sheena S. Iyengar & Mark R. Lepper, *When Choice is Demotivating: Can One Desire Too Much of a Good Thing?*, 79 J. PERSON. & SOC. PSYCH. 995 (2000).

⁹⁵ See Fisch, *supra* note 111.

⁹⁶ Beshears, *supra* note 75.

answer a multiple-choice question about the calculation of compound interest.⁹⁷

Even ideal disclosure requirements will have limited effectiveness, though, if investors are unable to use the information provided.⁹⁸ Lack of investor education or overtaxed cognitive resources might explain the inability of investors to estimate the costs associated with a 1% difference in fees, for example, or the willingness of investors, even post-Enron, to invest a substantial portion of their retirement accounts in company stock. To the extent that these shortcomings are due to behavioral biases, little effort has been made to overcome them.⁹⁹ The literature continually identifies the inability of investors to demonstrate a basic understanding of investment principles, but little effort has been devoted to determining how to improve that understanding.

Understanding the reasons for existing investor behavior is critical to designing more effective regulatory approaches. As noted above, Congress recognized as much when, as part of Dodd-Frank, it required the SEC to conduct a study of investor financial literacy.¹⁰⁰ The report of the study, which the SEC released on August 30, 2012, was a disappointment.¹⁰¹ Although Congress had directed the SEC to identify the existing level of financial literacy among retail investors and to study such issues as designing more effective disclosure and identifying a strategy to improve financial literacy, the SEC's efforts were extremely limited. Although the study concluded that U.S. retail investors "lack

⁹⁷ Annamaria Lusardi & Olivia S. Mitchell, *Financial literacy and retirement planning in the United States*, 10 J. PENSION ECON. & FIN. 509 (2011).

⁹⁸ See Jeff Schwartz, *Reconceptualizing Investment Management Regulation*, 16 GEO. MASON L. REV. 521 (2009) (arguing that, in the absence of investor education, SEC disclosure rules do not lead investors to make better investment decisions).

⁹⁹ In the one area in which such biases appear clear – the tendency of investors to place undue weight on past performance – the regulatory response has been tepid. Rather than limiting advertisements highlighting past performance, despite their substantial influence on investment decisions, the SEC simply requires such advertisements to contain language informing investors that “past performance does not guarantee future results.” See Molly Mercer, et al., *Worthless Warnings: Testing the Effectiveness of Disclaimers in Mutual Fund Advertisements*, 7 J. EMPIR. LEG. STUD. 429 (2010) (explaining that past performance advertising is highly effective and demonstrating that current SEC disclaimer is too weak).

¹⁰⁰ Dodd-Frank Act, *supra* note 8, at § 917.

¹⁰¹ SEC Press Release, SEC Issues Financial Literacy Study Mandated by the Dodd-Frank Act, Aug. 30, 2012, <http://www.sec.gov/news/press/2012/2012-172.htm>.

basic financial literacy,”¹⁰² the SEC’s quantitative studies focused primarily on investor preferences rather than evaluating effectiveness. For example, the SEC conducted a substantial online survey, in which subjects were given investment information to review.¹⁰³ The SEC did not question the investors on their understanding of the material provided but on their perceptions of the presentation and complexity of the information provided. For example, rather than trying to determine whether investors could reliably locate information contained in a summary prospectus, the SEC asked them whether they found it difficult to locate the information that they needed.¹⁰⁴

Although the SEC study offered little of practical value, an improved understanding of retail investor decision-making can assist regulators in improving the manner in which approximately \$19 billion of U.S. retirement assets are invested.¹⁰⁵ This information could also assist employers in designing retirement plans to optimize allocation decisions by employees. Our experiment, described in the next section, offers an initial step toward obtaining this understanding.

III. OUR EXPERIMENT

To increase our understanding of how retail investors make investment decisions, we designed an experiment to simulate the process of allocating a retirement account among a selection of mutual funds. Our experiment created a web-based user interface to provide subjects with ten fictional mutual fund choices. Information about each of the choices was provided through clickable links. Our software enabled us to collect the subjects’ allocation decisions and information about which of the links that they clicked. After the subjects submitted their allocations, we collected additional survey information about the subjects’ beliefs, risk preferences and investment experience, as well as demographic information.

A. Study Design

¹⁰² SEC Staff Study, *supra* note 2, at iii.

¹⁰³ Investors were given summary prospectuses of several mutual funds, but the fund names were changed to the fictitious “Petunia,” “Gardenia” and “Hydrangea” funds.
Id.

¹⁰⁴ *Id.*

¹⁰⁵ As of June 30, 2012, US retirement assets totaled \$18.5 trillion. Investment Company Institute, Retirement Assets Total \$18.5 Trillion in Second Quarter 2012, Retirement Statistics, http://www.ici.org/research/stats/retirement/ret_12_q2 (last visited Nov. 21, 2012).

Subjects were instructed to allocate an initial \$10,000 among the ten fund choices. The experiment did not permit subjects to submit an allocation unless their allocations totaled exactly 100% of the \$10,000. The subjects were told that they were investing for retirement and that the overall value of their portfolio would be calculated based on a simulated thirty-year performance. We attempted to provide an incentive for subjects to allocate carefully by instructing them that they would be paid a bonus based on the performance of the portfolio that they chose.¹⁰⁶

Our fund allocation page (Figure 1) listed the ten mutual fund choices. By clicking on the fund name, subjects were able to access a fund information page (Figure 2) that provided a brief description of the fund along with four buttons allowing subjects to obtain information on four fund attributes – performance, risk, fees and holdings. Each button allowed subjects to click through to obtain more detailed information (Figure 3).

¹⁰⁶ See section IIIB (describing performance bonuses paid to each group of subjects).

Figure 1. Fund allocation page

Please allocate your hypothetical retirement account of \$10,000 by designating the percentage that you wish to invest in each of the 10 funds below. Your allocations must total 100%. Press the submit button when you are done. You can click on each of the fund names for additional information about the fund.

FUND No	FUND TYPE	FUND NAME	ALLOCATION
1	Money Market Fund	The Jones Fund	0 %
2	Money Market Fund	The Smith Fund	0 %
3	Fixed Income Fund	The Skyler Fund	0 %
4	Fixed Income Fund	The Durns Fund	0 %
5	Equity Index Fund	The White Fund	0 %
6	Equity Index Fund	The Brown Fund	0 %
7	Managed Equity Fund	The Thomas Fund	0 %
8	Managed Equity Fund	The Hamlin Fund	0 %
9	Managed Equity Fund	The Lowe Fund	0 %
10	Managed Equity Fund	The Powell Fund	0 %
Total			0

Submit

Figure 2. Fee information page, money market fund

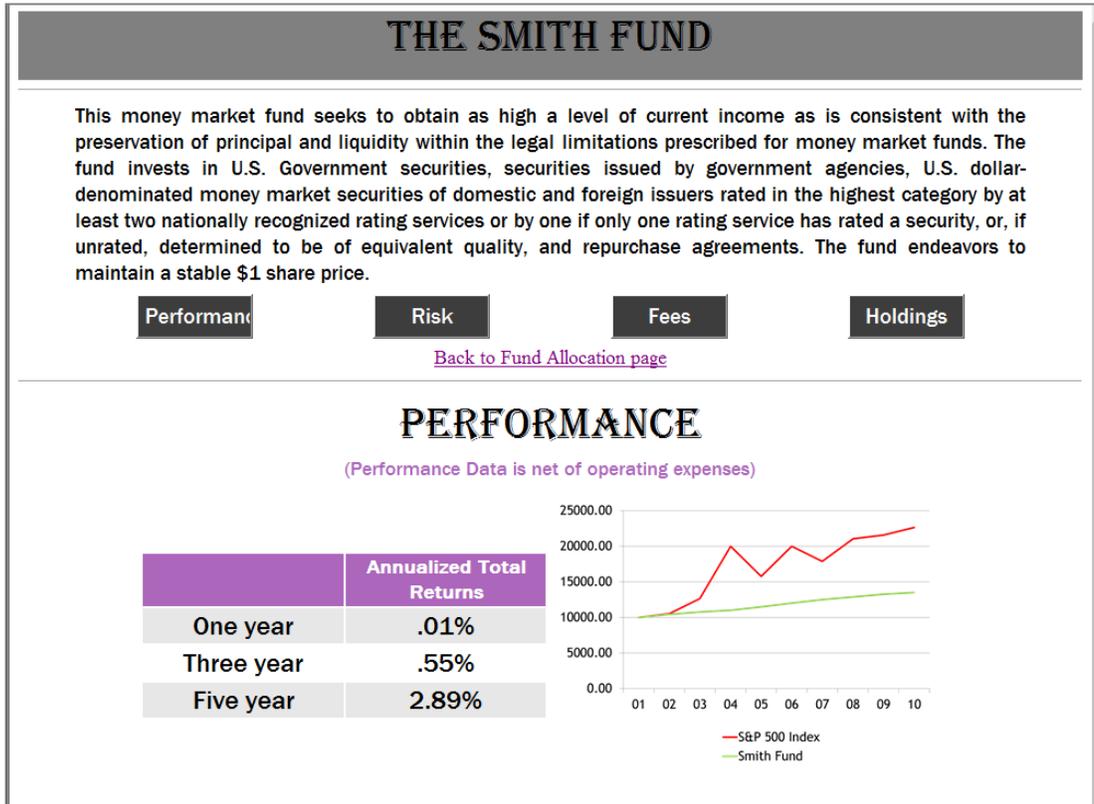
THE SMITH FUND

This money market fund seeks to obtain as high a level of current income as is consistent with the preservation of principal and liquidity within the legal limitations prescribed for money market funds. The fund invests in U.S. Government securities, securities issued by government agencies, U.S. dollar-denominated money market securities of domestic and foreign issuers rated in the highest category by at least two nationally recognized rating services or by one if only one rating service has rated a security, or, if unrated, determined to be of equivalent quality, and repurchase agreements. The fund endeavors to maintain a stable \$1 share price.

Performance
Risk
Fees
Holdings

[Back to Fund Allocation page](#)

Figure 3. Money market fund with performance information shown



The information provided for each fund was presented in an identical and highly simplified format. Performance information included a graph showing the fund’s ten-year performance as well as the performance of the S&P 500 (over the same hypothetical time period) and a chart showing annualized one-, three- and five-year returns. Fee information consisted of a single number showing the fund’s current expense ratio.¹⁰⁷ Risk description language was taken from real mutual

¹⁰⁷ We did not include loads, 12b-1 fees, sponsor fee waivers or other types of expenses. Haslem has argued that investors lack the information they need to make efficient fund choices because the expense ratio does not break out all costs or include all cost categories. Haslem, *supra* note 79. Our study was specifically constructed to reduce the likelihood that investor choices were due to confusion or inability to understand the fee disclosure

fund prospectuses, and the holdings page listed each funds' top ten holdings and showed the percentage of fund assets invested in each, again modeled on actual funds.

As noted above, the funds in the experiment were modeled on real world funds – fee levels, holdings and descriptive language were taken from real mutual fund documents. The choice to construct fictional funds was driven in part by a desire to avoid the potentially distortionary effect of the Financial Crisis of 2008 on reported fund performance. Using fictional funds also allowed us to control the degree to which funds differed from each other. For example, we constructed several fund pairs that varied across only a single dimension, such as fees.

We gave our funds generic names such as the Smith Fund, much like those used in the SEC study of investor literacy,¹⁰⁸ to avoid the possibility that investors would infer information about fund style or strategy from the names of the funds.¹⁰⁹ On the fund allocation page, we also randomly varied the order in which funds appeared within their fund category. A simplified presentation of fund attributes appears in Table 1.

¹⁰⁸ The SEC named its fictional funds "Petunia Core Equity," "Gardenia Asset Allocation Portfolio," and "Hydrangea Bush Government Bond Fund." SEC Staff Study, *supra* note 2.

¹⁰⁹ See Michael J. Cooper, et al., *Changing Names with Style: Mutual Fund Name Changes and Their Effects on Fund Flows*, 60 J. FIN. 2825 (2005) (finding investors directed money into funds that changed their names to reflect a "hot investment style").

Table 1. Fund Attributes

Fund	Type	5-year return	Fees
1	Money Market	2.89%	.43%
2	Money Market	2.91%	.43%
3	Fixed Income	7.5%	.87%
4	Fixed Income	5.41%	.83%
5	Equity Index	8.67%	.10%
6	Equity Index	8.62%	.45%
7	Managed Equity	9.1%	.61%
8	Managed Equity	8.67%	.61%
9	Managed Equity	9.0%	1.62%
10	Managed Equity	9.7%	2.1%

We collected information on how subjects allocated their \$10,000 as well as how many clicks each subject used to view additional information about the funds. After the subjects submitted their allocations, they were asked to answer a series of questions about their investment beliefs, risk preferences and investment experience. Subjects were also asked to supply demographic information and to identify “the most important factor in my choice of retirement funds in this study.”

After completing the questionnaire, subjects received a message showing the final value of their retirement portfolio. The website calculated this value by using a rough algorithm simulating fund returns over thirty years. Returns were ranked by asset class.¹¹⁰ Consistent with our hypothesis, funds within each class were ranked so that funds with lower fees yielded higher returns. Because we were agnostic about the

¹¹⁰ Equity funds paid a higher return than bond funds, which paid more than money market funds. Our algorithm also included an adjustment factor for risk, a component of our experiment that is analyzed in a separate article.

relative merits of professionally managed funds versus passive indexing, we structured the returns of our lowest cost index fund and actively managed equity fund to be identical on a cost-adjusted basis. The distribution of possible portfolio values and fees is shown in Table 2.

Table 2. Distribution of possible fees and payouts

Maximum Portfolio Value (100% invested in highest performing fund)	\$76,120
Minimum Portfolio Value (100% invested in lowest performing fund)	\$15,630
Portfolio Value with 10% invested in each fund	\$38,989-49,543
Maximum Fee (100% invested in highest fee fund)	2.1%
Minimum Fee (100% invested in lowest fee fund)	.10%
Average fee (effective fee with 10% invested in each fund)	.81%

B. Subjects

Our study drew from two subject pools. Table 3 contains basic demographic information on each group of subjects. The first group of subjects was made up of undergraduate students, graduate students, and some staff who took the study at the University of Pennsylvania's Wharton Behavioral Lab (WBL). The Wharton Behavioral Lab draws subjects from across the University of Pennsylvania campus, primarily undergraduates. Its subjects are not confined to students affiliated with the Wharton business program.

The second group of subjects signed up through Amazon Mechanical Turk (MTurk) and took the study online. Although some scholars have raised questions about the external validity of online subject pools like Amazon Turk that pay subjects very small amounts for small tasks and short questionnaires,¹¹¹ others have found that they are

¹¹¹ See Armin Falk & Ernst Fehr, *Why labour market experiments?*, 10 *LABOUR ECON.* 399, 402 (2003) (exploring the role of stake levels); see also Ernst Fehr & John List, *The Hidden Costs and Returns of Incentives - Trust and Trustworthiness among CEOs*,

comparable to other survey panels.¹¹² Our goal in this study was to simulate the allocation decision faced by ordinary employees choosing among investment options in their 401(k) plans. Using subjects who may have below-average means or sophistication is appropriate for a study that seeks to describe and address the investment choices of employees with little specialized knowledge or investment experience.¹¹³

Table 3. Subject demographics, by subject pool.

	MTurk	WBL
Total number of subjects	197	201
Median age	32	20
Percent female	52%	67%
Percent owning a mutual fund	43.1%	12.9%
Percent who have a retirement account	54.9%	8.5%
Percent with college education	58.4%	33.8%
Percent reporting somewhat to very stable income	67.0%	71.6%

2 J. EURO. ECON. ASS'N 743 (2004) (finding differences in the behavior of students and CEOs in studies concerning the effect of incentives).

¹¹² U.S. workers on Mechanical Turk are arguably closer to the U.S. population as a whole than subjects recruited from traditional university subject pools. *See* Gabriele Paolacci, Jesse Chandler, & Panagiotis G. Ipeirotis, *Running Experiments on Amazon Mechanical Turk*, 5 JUDG. & DECISION MAKING 411 (2010).

¹¹³ We note that the self-reported education level of Mechanical Turk subjects is higher than that of the general population. *See id.*

We incentivized our subjects to select funds carefully by providing a performance-based bonus. MTurk participants were paid a base rate of \$1 for completing the study and an additional \$1 bonus if their portfolio value was above the median in that subject pool. Subjects who participated in the study via the Wharton Behavioral Lab were paid a \$10 show-up fee for a session that included this experiment as well as other studies. They were instructed that they would also receive a bonus payment proportionate to their total portfolio value at the end of the session – one dollar for every \$10,000 in their portfolio (rounded to the nearest quarter).

C. Experimental Manipulation

One of our goals was to investigate whether varying investment instructions affected investor behavior. Specifically, we sought to test the effect of providing subjects with an instruction focusing them on the importance of mutual fund fees. We also sought to test the effect of the generic instruction required by the SEC in connection with mutual fund information on past performance.

We sought to separate out the effects of varied instructions by dividing our subjects randomly into three groups. Subjects were assigned to one of three possible conditions: Performance, Fees, or Control. After subjects logged in to the fund study site, they read a single page of instructions. In addition to basic information about the purpose and design of the study, subjects in the Performance and Fees conditions received an additional single sentence instruction as follows:

Fee Condition Instruction:

In making your investment decision, you may want to consider the following information: The most important single factor in mutual fund performance is the fund's operating expenses (in other words, its fees).

Performance Condition Instruction:

In making your investment decision, you may want to consider the following information: studies have shown that past performance does not predict future returns.

Subjects in the Control condition did not receive any additional instruction. We report here only on the comparison of the Fees Group and the Control Group. Because of the complex relationship between fees and performance, as noted in Part II above, we consider the effect of the performance instruction in other work. As a robustness check, we also asked participants who received a special instruction in the questionnaire portion of the experiment to identify the instruction that they received from a list of seven alternatives.¹¹⁴

IV. STUDY RESULTS

A. *Overall Descriptive Results*

We report data from 197 Amazon Turk subjects and 201 University of Pennsylvania subjects. Because of the demographic differences between our groups, we report results separately.¹¹⁵

To summarize, our overall results are as follows. First, we found that investors understood the general objectives and design of the study – they invested, in the aggregate, the most money in the two funds that we had designed to be the most efficient investment options – the low cost equity index fund and the low cost actively managed fund.¹¹⁶ Second, we found that investors diversified, probably excessively, but we found segmentation within our investor pool. Third, we found that the fee instruction mattered. These results are considered in more detail below.

¹¹⁴ 49.2% of the Turk Group and 57.2% of the Wharton Group correctly identified their own condition.

¹¹⁶ Because of the debate in the empirical literature over the extent to which active management adds value, we designed this study to be agnostic between each of these alternatives.

Table 4. Basic descriptive means, by subject pool

	MTurk	WBL
Minutes logged in	12.7	11.3
Total clicks	34.3	59.0
Mean clicks on fees	6.86	11.77
Mean clicks on risk	4.70	9.32
Mean clicks on holdings	3.25	7.08
Mean clicks on performance	7.98	13.76
Total number of funds invested in	6.39	7.33
Percent Investing in all 10 funds	27.9%	32.4%
Percent correctly identifying own condition	49.2%	57.2%
Average portfolio value	\$47,679	\$48,839
Average pay	\$1.50	\$4.91

The subjects from the two pools were very similar in terms of their overall choices and performance in the task, with some important exceptions. The University of Pennsylvania subjects accessed a much higher quantity of information, clicking through many more links. The MTurk subjects invested in fewer overall funds, and were less likely to invest in all ten funds. We also note here, as is reflected in the

significance tests below, that there is generally more variance in the data from the Turk subjects.

Figure 5 shows the mean investment across conditions in each fund. Figure 6 shows the overall distribution across subjects of the debt/equity split.

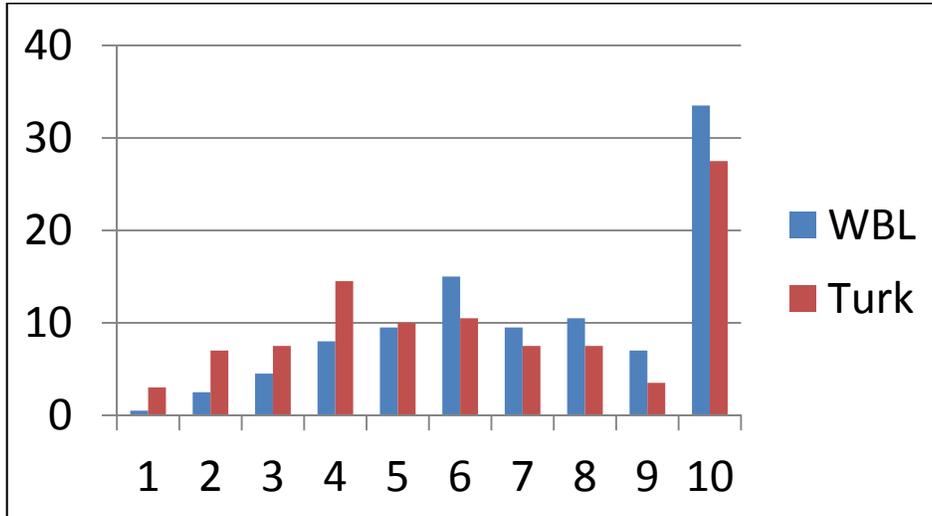
B. *Investment Patterns*

Before discussing the particular results of our experimental manipulation, we can observe some overall patterns in how subjects chose funds across conditions in order to get a sense of subjects' baseline preferences and strategies. First, we note that most subjects chose a reasonable debt/equity balance (see Figure 5), and that the most popular investments were the two investments that should have been the most attractive – the low-fee index fund and the low-fee managed fund. Figure 6 shows the mean investment in each fund, by subject pool. Note that Figure 6 shows the means aggregated across conditions, but the overall pattern is the same if we look only at subjects in the Control condition.

Second, we see substantial evidence of a strong preference for diversification, naïve or otherwise¹¹⁷; from these patterns of investment it seems clear that subjects were not trying to pick funds. We expected investors would attempt to identify the best fund in each category and to invest in only 2-3 funds, depending on the extent to which they wanted to diversify between fixed income and equity and between passive and active investment strategies – subjects about which we remained agnostic for purposes of this study. Instead, we found the following. Only 7.5% of WBL and 17.8% of MTurk subjects chose 3 or fewer funds. However, with respect to diversification, we do see segmentation within our subject pools. As Figure 5 bears out, our aggregate results on diversification combine different investment patterns. In the WBL pool, for example, about a third of subjects invested in 4-6 total funds, and a third invested in all ten funds. We suspect that these are different kinds of investors, and that this market may be segmented in some important ways that we can only flag here for future research.

¹¹⁷ See Bernartzi & Thaler, *supra* note 88.

Figure 4. Total Number of Funds Invested In, by Subject Pool



Finally, we note a few common investments that seem to reflect either a lack of understanding (of the task or of investing, we cannot be sure) or a set of arguably irrational preferences or beliefs. As we have discussed, many of these choices may be explainable with reference to naïve diversification. To wit: 74.6% of WBL participants and 65.2% of MTurk participants who invested in the low-fee index fund also invested in the high-fee index fund, despite the fact that they were both described as tracking the same index. Similarly, 68% of MTurk investors allocated at least some money to a higher-fee managed fund that was really just a closet index fund (made clear in the holdings), as did 74.1% of WBL subjects. 79.6% of WBL and 74.1% of MTurk investors and allocated funds to a money market fund even though they were told that they were investing for a 30-year time frame and the reported returns of the money markets were significantly lower than the other fixed income alternatives.

Figure 5. Histogram showing mean percentage (aggregated across conditions) of portfolio invested in each fund, by subject pool

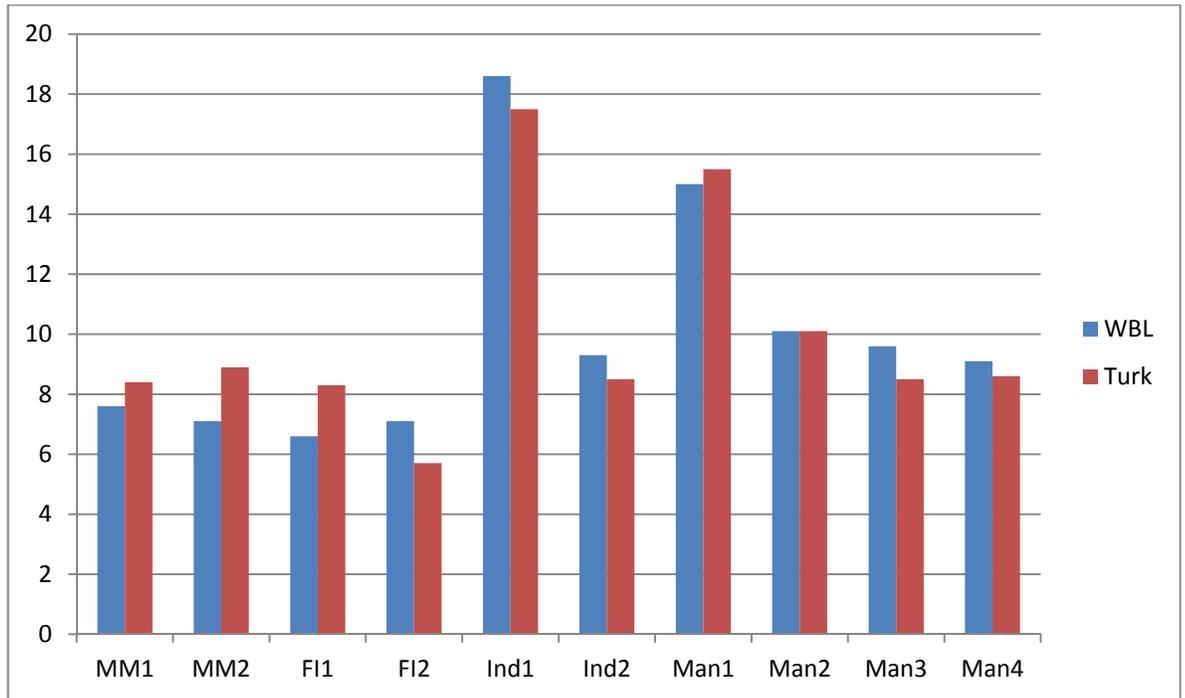
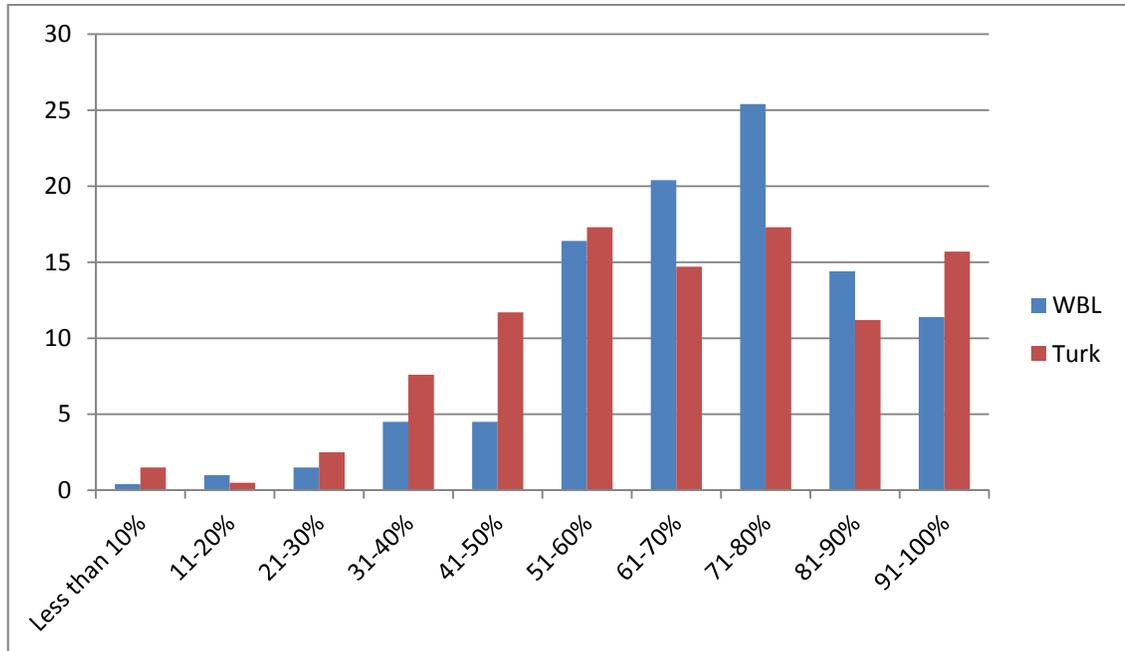


Figure 6. Histogram showing mean percentage (aggregated across conditions) of total portfolio invested in equity, by subject pool



C. Response to Fee Instruction

In this section we analyze the effect of the fee instruction on subjects' beliefs and choices. For purposes of this analysis, we are comparing the responses of the 72 WBL subjects assigned to the Fees condition with the responses of the 60 subjects assigned to the Control condition, and separately, the responses of 64 subjects in the Fees condition with 65 in the Control condition from the MTurk pool.¹¹⁸ As

¹¹⁸ We also analyzed sex differences. Men and women in the Wharton subject pool did not differ on any of the primary dependent variables, including portfolio composition and clicking patterns. Women in the Turk pool invested significantly more in safe (fixed income) funds than men (34.8% vs. 27.4%, $p=.015$).

noted above, we exclude subjects randomly assigned to read an instruction about past performance from this set of analyses.¹¹⁹

We found that investors who received the fee instruction differed from the control group along three dimensions – they sought more information about fees, they reported believing that fees were more important, and they shifted their allocations toward lower cost funds.¹²⁰

1. Search for Information: Fee Clicks

The fee disclosure had a significant impact on how subjects collected and used fee information. As Table 5 indicates, subjects in the Fees group were much more likely to look at a fund’s fees. On average, WBL subjects in the Fees group clicked 40% more on the fees buttons, meaning that they viewed fee information 40% more often, than subjects in the control group. The increase was even more dramatic for subjects from the MTurk pool, where subjects in the Fees group clicked more than twice as often on the fee disclosure than subjects in the control group. In both subject pools, the Fees instruction caused investors to search for more fee information than the control group.

Table 5. Fee Clicks by Condition, for WBL and MTurk samples

	Fee Group Mean	Control Group Mean	T	Df	p
Fee Clicks: WBL	14.82	10.40	3.10	129.62	.002
Fee Clicks: MTurk	9.36	4.09	4.37	101.87	.000

¹¹⁹ As a general matter, the behavior of those subjects who received the performance instruction was similar to that of the control group. For our primary variables, including fee clicks, average fee paid, the importance of fees and investment in the lowest and highest fee funds, the results of the performance group were statistically indistinguishable from the control group. The performance instruction did generate marginal differences in the investors’ allocation among the various funds.

¹²⁰ All statistical tests reported here are two-sided t-tests, comparing the variable means across conditions. We report the results of the main statistical tests of significance in tables, including means, t-statistics, degrees of freedom, and p-value.

2. Beliefs about the Importance of Fees

The fees instruction affected subjects' beliefs about the importance of fund fees. We report group means and significance statistics for WBL participants in Table 6, and for MTurk participants in Table 7. The effects were very similar across subject pools. Overall, in both subject pools, subjects in the Fees condition were less likely than subjects in the control group to agree that a fund's fees do not affect returns and were substantially more likely to report that operating expenses were the most important factor in fund performance. The most dramatic impact of the fee instruction was on the subjects' self-reported identification of the most important criterion in their selection among the investment alternatives. In both subject pools, the instruction caused a significant reduction in subjects reporting diversification as the most important consideration, and a corresponding increase in the percentage of subjects reporting that fees were the most important consideration. Notably, the fee instruction appeared to be new information to the MTurk subjects as well as the Wharton students despite the fact that the MTurk subjects were significantly more experienced investors, with over half reporting that they have a retirement account.

Table 6. Beliefs and preferences by condition, WBL subjects

	Fee Group Mean	Control Group Mean	T	Df	p
Fees do not affect returns	3.04	3.53	1.97	129.99	.051
Operating expenses most important in performance	4.31	3.16	4.38	129.35	.000
Most important is fees	27.8%	6.7%	3.39	114.67	.001
Most important is diversity	30.6%	53.3%	2.68	121.53	.008

Table 7. Beliefs and preferences by condition, MTurk subjects

	Fee Group Mean	Control Group Mean	T	Df	p
Fees do not affect returns	2.61	3.48	3.43	124.22	.001
Operating expenses most important in performance	4.28	3.25	4.75	85.95	.000
Most important is fees	35.9%	4.6%	4.75	85.95	.000
Most important is diversity	31.3%	50.8%	2.27	126.55	.024

3. Fund Selection

Because our experiment focused our subjects on allocating investment funds, the effect of the fee instruction on that allocation decision is arguably the most important component of our experiment. It is arguably also the most important aspect of our study with respect to real-world policy choices in that it measures the potential ability of an instruction to affect investor behavior rather than simply attitudes or beliefs. Because of the importance of this question, we designed our study to measure potential effects in several ways. Results are summarized in Table 8 (WBL) and Table 9 (MTurk).

First, for each subject, we determined the asset-weighted average mutual fund fee that the subject's account would have paid at the time of the subject's investment allocation.¹²¹ For example, a subject who invested half of his or her money in a fund with a .1% fee and half in the fund with a 2.1% fee had an average fund fee of 1.1%. By this measure, for both subject pools, the fee instruction had a clear impact. In both pools, subjects in the Fees group selected portfolios charging a lower average fee than subjects in the control group. Perhaps more importantly,

¹²¹ Differences in fund performance would cause the average fee to vary over the thirty years of the simulation.

the average fee difference between conditions was significant even when we look only at fees paid on equity funds (Funds 5-10).

The fee instruction also affected the subjects' choices among specific investment alternatives. The Fees group invested a higher percentage of their portfolio in the lowest-fee fund option and a lower percentage of their portfolio in the highest-fee fund than the control group (though the latter difference is not significant in the MTurk group). They also invested more in index funds and less in managed funds than their Control counterparts. Notably, those in the Fees group invested more in the lower-fee index fund than those in the control group, but did not invest more in the higher-fee index fund than those in the control group, suggesting that their investment shift resulted from a concern about fees rather than a preference for passively over actively managed funds.

Table 8. Fund selection by condition, WBL

	Fee Group Mean	Control Group Mean	T	Df	p
Average Total Fees Paid (asset-weighted)	.66%	.80%	3.27	129.50	.001
Average Fees Paid in Equity (asset-weighted)	.70%	.84%	2.61	129.77	.010
Index Funds (5-6)	34.12	25.55	2.70	129.77	.008
Managed Funds (7-10)	40.81	48.40	2.46	129.90	.015
Fixed income funds (3-4)	13.76	16.58	1.74	129.99	.085
Money Market (1-2)	18.44	16.14	1.17	126.44	.246
Average Percent of Portfolio Invested in Lowest-Fee Fund	23.5	15.7	3.18	119.20	.002
Average Percent of Portfolio Invested in Highest-Fee Fund	7.15	11.42	2.31	115.34	.022

Table 9. Fund selection by condition, MTurk

	Fee Group Mean	Control Group Mean	T	Df	p
Average Total Fees Paid (asset-weighted)	.68%	.79%	2.21	125.60	.028
Average Fees Paid in Equity (asset-weighted)	.70%	.84%	2.32	124.29	.023
Index Funds (5-6)	29.76	22.45	2.01	118.4	.047
Managed Funds (7-10)	38.65	46.85	1.93	120.41	.056
Fixed income funds (3-4)	12.38	13.82	1.20	126.97	.232
Money Market funds (1-2)	19.21	15.88	1.11	112.47	.268
Average Percent of Portfolio Invested in Lowest-Fee Fund	21.1%	13.9%	2.17	115.94	.032
Average Percent of Portfolio Invested in Highest-Fee Fund	7.55%	10.42%	1.38	126.08	.170

D. Diversification

Finally, we considered the extent to which the fee instruction affected the propensity of the subjects to engage in a naïve diversification strategy. Table 10 shows the comparison of the concentration of funds by condition, using a concentration measure based on each fund’s Euclidean distance from the perfectly even distribution.¹²² This concentration measure assesses the degree to which

¹²² See Beshears, et al., *supra* note 75. Concentration is measured by the square root of the sum of the squared differences between the actual allocations and the even distribution (.10, .10, .10,.10, .10, .10,.10, .10, .10, .10). The most diversified portfolio

a subject's portfolio differed from the naïve $1/n$ investment strategy.¹²³ For both subject pools, subjects in the Fees group had more concentrated portfolios than those in the control group – that is, their portfolios looked less like the paradigmatic naïvely diversified allocation. However, even though both groups' allocations were more concentrated, subjects did not actually invest in significantly fewer total funds. MTurk subjects invested a positive amount in a median of 6 total funds, and the median for WBL subjects was even higher, at 8 total funds. In both cases, the mean number of funds invested is slightly lower for the Fees group than for the control group, but not significantly so. Indeed, subjects shifted their allocations to reduce overall fees (and increase returns), but did not shift out of high fee funds entirely despite seeking more fee information.

Table 10. Concentration of investments, by condition, for both subject pools

	Fee Group Mean	Control Group Mean	T	Df	p
Concentration: WBL	.333	.287	1.98	128.47	.050
Concentration: Amazon Turk	.376	.315	1.75	122.78	.082

E. Robustness: Subjects with Investment Experience

In our last analysis, we consider how the fee instruction affected a particular sub-group of subjects who we predict would be less in need of investor education. Because the Amazon Turk subjects were not primarily drawn from a student population, we looked at some experimental effects on the sub-group of the sample who had investment experience. Of the 197 MTurk subjects, 54.8% reported that they had a retirement account for which they made investment decisions. Noting at the outset that tests of the experimental manipulation on this sub-group

would be zero, and the most concentrated portfolio (100% in one fund, 0 in 9 funds) is .949.

¹²³ We also measured diversification using the Herfindahl-Hirschman index, typically employed to measure the concentration of market power in an industry, which simply sums the squared percentage allocated to each fund. This measure also yielded statistically significant differences in concentration by condition, at $p=.028$ for the WBL subject pool and $p=.067$ for the Turk pool.

are less powerful because the sample size is smaller, we found that the fee instruction impacted decision-making even when investors were not entirely new to investing.

Looking only at experienced investors, the fee instruction increased subjects' clicks on fee links from 3.9 to 8.7 clicks ($t=3.14$, $df=58.12$, $p=.003$). Those who saw the fee instruction paid a significantly lower total fee (.63% vs. .75%) than those in the control group ($t=2.13$, $df=71.00$, $p=.037$). The instruction made subjects invest slightly, though not significantly, more in the lowest-fee fund ($p=.237$) and slightly less in the highest-fee fund (mean difference=3.8%, $t=1.85$, $df=64.16$, $p=.069$). Experienced subjects in the Fee group were also much more likely to report that the most important consideration was operating expenses compared with experienced subjects in the control group (percent difference=30.8, $t=3.46$, $df=48.84$, $p=.001$).

V. IMPLICATIONS AND NEXT STEPS

This study constitutes preliminary research. Consequently, our ability to generalize from our results is limited. As noted above, our study contained a number of simplifications and design choices that we will investigate further through additional research.

In particular, we deliberately designed our study, in contrast to other experimental studies (and the real world of investing), to make fee information simple, accessible and comparable. Our simplification was designed to enable us to differentiate between an inability to obtain or understand fee information and a failure to use that information in making investment decisions. Our subjects did not have to expend search costs to locate fee information or compare different types of fees. This simplification appears to be of limited value. Without the fee instruction, our subjects tended to diversify among the investment options provided, to pay average fees, and to obtain average performance from their investments. This suggests that the SEC's emphasis on improving disclosure, at least in the absence of improved investor education, may be misplaced.

We hypothesize that investor ignorance of the economic significance of mutual fund fees limits their reliance on fee information in choosing among investment alternatives. Mutual fund fees are presented in fractions of a percent, and investors may assume that the

real cost of such fees is negligible.¹²⁴ Our study predicts that, if investors are instructed about the importance of fees, they will be more attentive to fees in choosing among funds.

In a separate study we explored the extent to which inattention to fees might be the result of limited investor financial literacy. In a 2-minute questionnaire, subjects were asked to estimate the difference between two 30-year investments of \$10,000 with an average (before fees) rate of return of 8%, one with a 1% fee and the other with a 2% fee.¹²⁵ The median response was \$3,000, and almost 40% of subjects underestimated the effect of the fee by an order of magnitude. This is a very rough way to picture how individuals approach the complex compound interest problem. Nonetheless, it supports a possible explanation for why investors do not change their behavior in response to simplified fee information: they do not think that fees, which seem very small, will have big effects on funds' returns.

Accordingly, our study indicates that a more explicit instruction may be effective in helping to overcome investor ignorance about the economic importance of fees. As indicated above, we found a substantial effect from providing investors with a very simple fee instruction. We intend, through future research, to expand on this finding by varying the nature of the fee instruction in order to determine whether we can thereby improve its effectiveness.¹²⁶

Our findings about the extent of diversification are consistent with the literature and seem to confirm a high degree of naïve diversification. We are particularly troubled by the frequency with which investors allocate money to both members of a pair-wise set of funds in

¹²⁴ Such an assumption is, of course, mistaken. An investor who invests \$10,000 in a retirement account that earns an 8% return (before fees) for thirty years and that charges a .5% fee will have more than \$85,000 in retirement savings. If the fees are 2% instead, that same account will be worth less than \$55,000.

¹²⁵ The study was a short survey on Amazon Turk. 185 subjects were paid \$.75 and half received a bonus of a \$.25 bonus for above-average accuracy. Before seeing the main question, they were told, “[w]hen you buy shares of a mutual fund, as many people do when they choose a retirement portfolio, a percentage of the investment goes toward the mutual fund’s annual operating expenses – in other words, mutual funds charge investors a yearly fee which is automatically deducted from investor accounts. In this task, you are being asked to estimate the total cost of a mutual fund’s fees over a long time period.” They were instructed to answer the question quickly, without using a calculator. The correct answer is approximately \$20,000.

¹²⁶ Compare Mercer et al., *supra* note 99 (conducting an experiment to vary the strength of performance disclaimer and finding that stronger disclaimers were more effective).

which one alternative is objectively inferior. Our findings suggest that an employer's burden in designing an appropriate 401(k) plan may be particularly difficult because the inclusion of even a few poor investment choices in a plan can harm investors who are unable to identify and eliminate such funds. This also suggests that investors do not truly understand the objective of diversification consistent with the literature finding that investors do not diversify efficiently. Here, as with fees, we intend to explore the extent to which information and instructions can improve the quality of investor decisions.

Our results with respect to both fees and diversification raise broader questions about the extent to which retail investors truly understand the investment process. Efficient retirement investing demands that investors understand basic principles of costs and diversification, but also the effect of compounding, the value of asset allocation and the consequences of these choices for investing over a thirty-year (or more) time horizon. Given our subjects' expressed levels of discomfort with the investment process, we predict that, rather than attempting to understand these concepts, investors search for short-cuts, heuristics and opportunities to delegate.

Delegation is of particular concern. Studies show that an increasing number of retirement investors attempt to delegate their investment decisions by choosing actively managed mutual funds, target-date funds or professionally managed accounts.¹²⁷ This behavior, however, makes investors particularly vulnerable to the investment choices of professionals, choices that are often opaque or shielded from market discipline. The popularity of target-date funds in 401(k) plans is one example. Target-date funds provide investors with a gradual shift from equity to fixed income as the investor nears retirement age, thereby relieving investors of the burden of determining how to allocate their assets appropriately.¹²⁸ Yet, when the financial crisis hit, investors

¹²⁷ See More 401(k) Participants Turning to Professionals for Help (stating that more than 1/3 of Vanguard's 401(k) plan participants turned their accounts over to professional money managers); Elizabeth O'Brien, *10 things 401(k) plans won't tell you*, MARKETWATCH (reporting that employees invest almost three times as much money in actively managed equity funds as index funds, despite the higher cost of actively managed funds).

¹²⁸ Gwendolyn A. Williamson, *Retirement Product Disclosure Rules and the Impact on Mutual Fund Distribution*, 19 INVESTMENT LAWYER (Oct. 2012).

learned that different target-date funds had widely varied approaches to asset allocation and were far riskier than investors had believed.¹²⁹

CONCLUSION

Many studies have identified biases or mistakes in consumers' real-world investment decisions. Regulatory changes that have increased individual consumer responsibility for retirement savings and investment choices magnify the consequences of these mistakes. The extent to which disclosures, investor education, or other strategies can address these mistakes is of critical policy concern.

This study has important implications for future regulatory policy. First, our results contribute evidence that investor choice, without more, does little to protect investors or to produce efficient investment decisions. Second, they cast doubt on the claim that poor investor decisions are the result of lengthy or confusing disclosure documents and suggests that simplified disclosure, without more, is unlikely to affect investor behavior significantly. Third, they suggest a research agenda for improving investor literacy.

The experimental manipulation in this study, although modest, was able to impact investor behavior significantly. Our study suggests that explicitly instructing consumers about the nature of investment decisions and providing them with clear guidelines as to appropriate considerations and benchmarks is likely to constitute new information for most investors and improve investment outcomes. Although our results are preliminary and tentative, they offer the opportunity for strengthening consumers' ability to invest more effectively.

¹²⁹ *Id.* These concerns led the SEC to develop a rule-making proposal for target-date funds. See Proposed Rule, Investment Company Advertising: Target Date Retirement Fund Names and Marketing, SEC Release Nos. 33-9126; 34-62300; IC-29301; File No. S7-12-10 (June 16, 2010); (75 FR 35920 (June 23, 2010)), www.sec.gov/rules/proposed/2010/33-9126.pdf.