What Matters to Individual Investors? Evidence from the Horse's Mouth*

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September 30, 2017

Abstract

We survey a representative sample of U.S. individuals about how well leading academic theories describe their financial beliefs and decisions. We find substantial support for many factors hypothesized to affect portfolio equity share, particularly background risk, investment horizon, rare disasters, transactional factors, and fixed costs of stock market participation. Individuals tend to believe that past mutual fund performance is a good signal of stock-picking skill, actively managed funds do not suffer from diseconomies of scale, value stocks are safer and do not have higher expected returns, and high-momentum stocks are riskier and do have higher expected returns.

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* We thank Ravi Bansal, Nicholas Barberis, John Campbell, Raj Chetty, Joao Cocco, Lorenzo Garlappi, Vincent Glode, William Goetzmann, Luigi Guiso, Jonathan Ingersoll, Panu Kalmi, Raymond Kan, Alina Lerman, Tobias Moskowitz, Stefan Nagel, Monika Piazzesi, Jonathan Reuter, Thomas Rietz, Harvey Rosen, Robert Shiller, Matthew Spiegel, Adam Szeidl, Richard Thaler, Selale Tuzel, Raman Uppal, Annette Vissing-Jørgensen, Jessica Wachter, Stephen Wu, Amir Yaron, and seminar participants at the Canadian Economic Association Annual Conference, NYU, and Yale University for their comments. All shortcomings in the survey and analysis are our own. This research was supported by a Whitebox Advisors research grant administered through the Yale International Center for Finance.

The finance literature offers no shortage of theories of investor motivations and beliefs, which translate into choices and in aggregate determine asset prices. However, testing these theories with observational data has been difficult. Predictions of competing models are often similar or identical (Fama, 1970; Cochrane, 2017; Kozak, Nagel, and Santosh, 2017).[1] Finding exogenous empirical variation in a hypothesized factor is usually impossible, and when exogeneity is present, identification frequently relies upon the assumption of rational expectations, which may not hold. Even estimates from valid instrumental variable designs are only local average treatment effects, often within special subpopulations, making assessments of which factors are quantitatively most important in general tenuous. In leading models where rare disasters or long-run risk are important, the fundamental assumption is difficult to directly verify with only a century of data (Rietz, 1988; Shephard and Harvey, 1990).

We take a different approach in this paper: we ask a nationally representative sample of 1,098 U.S. individuals in the RAND American Life Panel how well leading academic theories describe the way they decided what fraction of their portfolio to invest in equities, their beliefs about actively managed mutual funds, and their beliefs about the cross-section of individual stock returns. Our questions aim to test the key assumptions of leading theories more directly than the usual approach of trying to infer the validity of these assumptions by examining downstream outcomes. Because we test a wide range of theories on the same sample using the same research design, it is easier to make apples-to-apples comparisons of different theories.

We find substantial support for many of the leading theories of how individuals determine their portfolio's equity share. Among representative-agent asset pricing models, we find especially strong support for the rare disaster model, with 42% of respondents describing concern about economic disasters as a very or extremely important factor. However, there is also significant evidence for the importance of

[1] Distinguishing between models that are observationally equivalent in existing data can be important because they may have different welfare or policy implications. For example, knowing that the stock market's expected returns vary because of irrational cashflow forecasts instead of rational time-varying risk aversion would have profound implications.

long-run consumption growth risk (28%), long-run consumption growth volatility risk (25%), consumption composition risk (27%), loss aversion (27%), and ambiguity aversion/parameter uncertainty (25%). Consumption commitments, which can be a microfoundation for a representative agent who has external habit utility, garner significant support as well (33%). These results suggest that no single existing theory will ultimately be successful in fully explaining equity prices. Moving to theories that have tended to be applied only at the individual level, we find especially strong support for the importance of years left until retirement (45% of employed respondents), health risk (44%), needing to have enough cash on hand to pay for routine expenses (44%), and unemployment risk (40% of employed respondents). Non-participation in the stock market is frequently driven by the fixed costs of participation (46% of non-participants) and not liking to think about one's finances (36% of non-participants).

Turning to mutual funds, 51% of those who have purchased an actively managed equity mutual fund say that the belief that the active fund would give them a higher average return than a passive fund was very or extremely important in that purchase decision. However, 28% of active fund investors say that a hedging motive—the belief that the active fund would have *lower* unconditional expected returns than the passive fund but higher returns when the economy does poorly—was very or extremely important. The recommendation of an investment advisor was very or extremely important for 48% of active fund investors' decision to buy an active fund. Consistent with Berk and Green (2004), 43% of all respondents agree or strongly agree that a fund having outperformed the market in the past is strong evidence that its manager has good stock-picking skills, but inconsistent with Berk and Green (2004), only 17% agree or strongly agree that funds have a harder time beating the market if they manage more assets.

Finally, regarding the cross-section of stock returns, 26% of respondents believe—contrary to actual returns data—that value stocks normally have lower expected returns than growth stocks, which is slightly more than the 23% who believe the reverse. More clear-cut is the weight of opinion on relative risk: 41% believe that value stocks are normally less risky than growth stocks, while only 13% believe the

opposite. A weak plurality (23%) believe—consistent with returns data—that high-momentum stocks normally have higher expected returns than low-momentum stocks. The same proportion (23%) believe that high-momentum stocks are riskier. 13% believe high-momentum stocks normally have lower expected returns, and 13% believe they are less risky.

Despite the deep and enduring influence of Lintner's (1956) classic survey work on corporate dividend policy, surveys on beliefs, motivations, and decision-making processes remain uncommon in financial economics research. Some notable recent exceptions in corporate finance that each seek to test a wide range of academic theories in an area are Graham and Harvey (2001), Brav et al. (2005), Graham, Harvey, and Rajgopal (2005), Gompers, Kaplan, and Mukharlyamov (2016), and Gompers et al. (2016). Survey studies of investment professionals with a similarly wide theoretical scope include Cheung and Wong (2000), Cheung and Chinn (2001), and Cheung, Chinn, and Marsh (2004).[2] We view our paper as a contribution to household finance in the spirit of these earlier papers.[3]

Survey methodologies of course have weaknesses. Survey respondents might not be highly motivated to give accurate responses, and the meaning of each response category (e.g., "very important") probably differs across respondents. However, to the extent that such measurement error is white noise, the ordinal ranking of importance and agreement ratings will still be informative. More fundamentally, individuals might not know the true motivations for their decisions, either because they have not introspected seriously enough, their memory has faded, or they were subliminally influenced. A related critique is the "as if" argument of Friedman (1956): our survey respondents may not regard a certain factor as important but nonetheless invest as if it were. Under this view, the fact that an assumption about investors' thought

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[2] Other survey studies of investment professionals that each focus on a narrower set of practices, beliefs, or channels include Shiller and Pound (1989), Taylor and Allen (1992), Menkhoff and Schmidt (2005), Menkhoff, Schmidt, and Brozynski (2006), Drachter, Kempf, and Wagner (2007), Lütje and Menkhoff (2007), and Menkhoff (2010).

[3] There are also a large number of papers that study survey data on individual investors' return beliefs (e.g., Shiller, 2000; Vissing-Jørgensen, 2003; Bacchetta, Mertens, and van Wincoop, 2009; Kézdi and Willis, 2011; Malmendier and Nagel, 2011; Amromin and Sharpe, 2014; Greenwood and Shleifer, 2014).

processes is false is unimportant as long as it generates accurate predictions of behavior.

Our survey measures how individuals consciously *perceive* themselves to be making financial decisions. Although individuals may not have full insight into the true reasons behind their decisions, we argue that it is worthwhile to understand these perceptions for at least four reasons. First, an individual's perceptions of her decision-making process are unlikely to be entirely unrelated to her true decision-making process. We suspect that even the most ardent acolyte of Friedman does not dismiss her conversations with friends and family members as completely uninformative about their thinking and motivations. And ceteris paribus, a model based on assumptions that are closer to the truth may be more likely to successfully predict behavior, particularly in novel settings. Harris and Keane (1999) find that relative to a model that tries to predict health insurance plan choices using only plan attributes, adding individuals' survey responses about how important these health insurance plan attributes are to them doubles the model's predictive power. Hausman (1992) argues that having no interest in the accuracy of a theory's assumptions is akin to relying entirely on a road test to predict the future driving performance of a used car and disregarding observations of what is under its hood. Second, an individual's perceived decision-making process affects how she will forecast her future actions, which is itself an input into the individual's actions today. Third, these perceptions can affect an individual's demand for debiasing mechanisms, information, and advice. Finally, we believe that it is inherently interesting to know what individuals believe about themselves and the reasons for their behavior. Barberis et al. (2015) argue that theory should endeavor to match survey measures of investor beliefs.

The remainder of the paper proceeds as follows. Section 1 discusses the process of designing our questions and our survey sample. Section 2 presents our questions and results relating to individuals' equity allocation decisions. Section 3 presents the same for our questions regarding actively managed equity mutual funds. Section 4 discusses our questions and results regarding investors' perceptions of value and momentum stocks. Section 5 concludes.

1. Survey design and sample

Our goal was to test a broad swath of the leading theories on the determinants of portfolio equity share and the reasons individuals invest in actively managed mutual funds, and to get a general sense for how individuals think about the cross-section of stock returns. We designed each question to map as closely as possible to the applicable theory or concept while excluding other theories or concepts and remaining comprehensible to a layperson.

We pilot-tested our survey questions using U.S. respondents recruited on Amazon's Mechanical Turk platform. To confirm that our respondents understood the questions, we included "I don't understand" as an answer option. We also included a free response question at the end of the equity allocation section that gave respondents an opportunity to write in additional factors that we had not mentioned in the survey. Based on the responses, we revised our questions and added several new ones to the survey. We then ran a second pilot using Mechanical Turk to confirm that these new questions were understood by respondents.

Next, we solicited feedback on the questions from other researchers, particularly those associated with theories we wished to test. After a second round of revisions, we ran a third Mechanical Turk pilot to confirm that the new questions were clear to respondents. For the overwhelming majority of the questions in our final pilot (61 out of 68), fewer than 1% of respondents reported that they did not understand the question. Even the least understood question had a "do not understand" rate of under 3% of respondents.

We conducted our final survey on the RAND American Life Panel (ALP), a sample of U.S. individuals at least 18 years of age. Panelists are paid at a rate of $40 per hour to answer survey questions, with a minimum of $3 per survey. RAND circulated a survey invitation to 2,148 members of the ALP, with a target sample size of about 1,000 survey completions. Because we reached the target survey completions sooner than expected, the survey invitation was closed early. Of those invited, 1,255 read our informed consent disclosure and 1,202 gave consent. 1,080 of the 1,202

reported being "the person in your family most knowledgeable about your assets, debts, and retirement planning," which is based on the criterion used to identify the "financial respondent" in the Health and Retirement Study. An additional 27 reported sharing that status equally with a spouse or partner. These 1,107 were then asked if they would like to answer additional questions in exchange for additional monetary compensation.[4] The 1,098 who opted to do so form our final sample. The surveys were completed between December 14, 2016 and December 27, 2016. We anticipated that the survey would take approximately 10 minutes to complete. Responses are weighted using raked sample weights provided by the ALP to form a nationally representative sample of primary financial decision-makers.[5] All percentages reported hereafter are weighted percentages.

2. Equity Share of Portfolio

The first section of the survey asks about the factors that determine the fraction of the individual's wealth invested in equities. We begin by asking respondents the value of their investible financial assets[6] and what percentage of these assets is invested in stocks, either directly or through mutual funds. We classify the 41% of respondents who report a zero allocation to equities as nonparticipants, and the 59% who report a positive allocation as participants.[7]

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[4] When asking the question about financial knowledge, we gave no indication that identifying oneself as a primary financial decision-maker would result in an opportunity to earn more money. Consistent with our finding a high fraction of respondents reporting that they are the person most knowledgeable about their finances, a 2014 *Money* magazine survey that found that among married adults ages 25 or over with household income of at least $50,000, 97% of men and 79% of women say that they are the primary or co-equal decision-maker on investments (http://time.com/money/2800576/ love-money-by-the-numbers, accessed March 16, 2017).

[5] Raking was based on gender, age, race/ethnicity, education, number of household members, and household income. See https://alpdata.rand.org/index.php?page=weights for more details.

[6] We specify that this value should include "bank accounts, brokerage accounts, retirement savings accounts, investment properties, etc., but NOT the value of the home(s) you live in or any private businesses you own."

[7] This rate of stock market participation is somewhat higher than the 48.8% reported in the 2013 Survey of Consumer Finances (Bricker et al., 2014).

We then ask each respondent how important various factors are in determining the percentage of her investible financial assets currently invested in stocks.[8] The answer options for each question are "not important at all," "a little important," "moderately important," "very important," and "extremely important."

The factors are presented to respondents in no particular order, but for the exposition that follows, we classify the factors into seven categories: factors from neoclassical asset pricing models, background risks and assets, nonstandard preferences, social and personal factors, expected return beliefs, heuristics, and transactional factors. When the direction in which a particular factor should push the equity share does not seem self-evident, we ask respondents follow-up questions regarding the directional effect of the factor.

We begin with a high-level summary of the results across all categories, presented in Table 1, to see which factors are globally most important. The first column shows the percent of respondents who report that each factor is very or extremely important; the second shows the percent who report each factor to be moderately, very, or extremely important; and the third shows the mean rating where each possible response is given a numerical value between 1 and 5 (where 5 represents "extremely important"). The correlations among the three measures are 0.90 or higher, so we will focus on the percent who report a factor to be very or extremely important.

Table 1 shows that rather than a single dominant factor driving equity decisions, our respondents consider a large variety of factors. Some factors do stand out. Particularly important drivers of stock market non-participation are fixed costs of participation (46% of non-participants say their wealth being too small to invest in stocks is a very or extremely important factor) and not liking to think about one's finances (36% of non-participants). Across both participants and non-participants, investment horizon in the form of years left until retirement (45% of employed respondents), background risk of expenses due to illness/injury (44% of all

[8] Participants are asked, "How important are the following factors in determining the percentage of your investable financial assets that is currently invested in stocks?," whereas nonparticipants are asked, "How important are the following factors in causing you to not currently own any stocks?"

respondents) and labor income (40% of employed respondents), the need to maintain cash on hand to pay for routine expenses (44% of all respondents), and concern about rare economic disasters (42% of all respondents) are frequently cited as very or extremely important.

At the other end of the spectrum, external habit, stock market returns before birth, advice from peers and media, rules of thumb, and a failure to follow through on intentions to invest in stocks are particularly unlikely (16% of respondents or less) to be rated as very or extremely important. We note that consumption commitments, which Chetty and Szeidl (2016) argue are a microfoundation for a representative agent who has external habit utility, garners significant support (33% of all respondents). A large number of other factors are very or extremely important to between 17% and 35% of respondents.

2.1. Neoclassical Asset Pricing Factors

We investigate six factors that have been hypothesized to affect the equity premium in neoclassical asset pricing models with a representative agent. Because in equilibrium, the representative agent must be willing to hold the market portfolio, these theories are implicitly theories of portfolio choice. Table 2 contains the exact text used to describe each factor and the percent of respondents who report that the factor is very or extremely important in determining their current portfolio equity share. The table also shows this percentage for demographic subsamples split by stock market participation status, wealth, and educational attainment.

A foundational feature of standard asset pricing models is that assets whose low payoffs tend to occur when the marginal utility of money is high are less attractive than assets whose low payoffs tend to occur when the marginal utility of money is low. The consumption-based capital asset pricing model (CCAPM) (Rubenstein, 1976; Breeden and Litzenberger, 1978; Lucas, 1978; Breeden, 1979), where an asset's return covariance with consumption growth determines its risk premium, is a special case. To investigate whether individuals consciously think in these terms, we ask each respondent to rate the importance of both of these factors (labeled in Table 2 as "return covariance with marginal utility of money" and "return covariance with

marginal utility of consumption," respectively). We did not want to tell respondents that the stock market's return *actually* covaries positively with, say, consumption growth; we wanted to elicit whether they believed that this is true *and* this had a significant effect on their asset allocation. Therefore, we ask respondents to rate the importance of their "concern" about this covariance. If a given respondent believed that the stated object of concern was not true, then her natural response would be to report that concern about it is not important.

The failure of the CCAPM is well-documented (Mehra and Prescott, 1985), leading to the other models we test in this section. Motivated by the rare disaster model of Rietz (1988) and Barro (2006), we ask our respondents about the importance of a concern that a dollar invested in stocks will lose more money than a dollar deposited in a bank savings account during an economic disaster ("rare disaster risk"). Using the cutoff of Barro and Ursúa (2012), we specify that the disaster in question is one where the U.S. economy's annual output drops by more than 10%.

In contrast to the sudden drop during disasters, the long-run risk model (Bansal and Yaron, 2004) hypothesizes that the equity premium is high because stock returns tend to be low when bad news arrives about the expectation and volatility of consumption growth over the long run. We ask separate questions about the importance of stock return covariance with news about aggregate consumption growth over the next year ("risk of aggregate consumption over next year")—which could be viewed as a nearly contemporaneous covariance—and about the importance of stock return covariance with news about aggregate consumption growth over the five-year period starting one year in the future ("risk of long-run aggregate consumption"). We choose this five-year period because the half-life of expected growth shocks is about 2.25 years in the Bansal, Kiku, and Yaron (2012) calibration.

We ask analogous questions about economic uncertainty—the importance of stock return covariance with news about aggregate consumption uncertainty over the next year ("risk of aggregate consumption volatility over next year") and stock return covariance with news about aggregate consumption uncertainty over the ten-year period starting one year in the future ("risk of long-run aggregate consumption

volatility"). The decade-long period reflects the high persistence of volatility in Bansal, Kiku, and Yaron (2012).

Piazzesi, Schneider, and Tuzel (2007) posit that households have nonseparable preferences over housing and a numeraire good, which leads them to fear "composition risk"—changes to the relative share of housing in their consumption basket. In their model, assets that have low numeraire payoffs when housing consumption is low relative to numeraire consumption command a higher risk premium. To capture composition risk, we ask about the importance of a concern that stock returns will tend to be low when consumption from one's physical living situation is dropping more quickly than the rest of one's consumption basket ("consumption composition risk").

Finally, we ask respondents about the role that consumption commitments play in their allocation decision ("consumption commitments"). Chetty and Szeidl (2007) and Chetty, Sándor, and Szeidl (2017) show how components of the consumption bundle that are difficult to adjust in the short run can cause individuals to invest less in risky assets. When a portion of one's consumption bundle cannot be easily adjusted, a negative shock must be accommodated entirely through adjustment of uncommitted consumption (e.g., food). This raises the local curvature of utility.

We found it difficult to succinctly describe the exact mechanism through which consumption commitments affect portfolio choice in a manner understandable to a non-economist. Therefore, we simply ask whether consumption commitments are an important factor in determining the respondent's equity share without stating the specific concerns consumption commitments generate or the direction in which they would push equity share. We then ask respondents who report that consumption commitments are at least moderately important a follow-up question about whether an increase in consumption commitments as a fraction of their income would increase, decrease, or have no effect on their equity share.

Table 2 shows that the rare disaster model has more support among our respondents than any other neoclassical asset pricing factor: 42% of respondents say that concern about a disaster played a very or extremely important role in

determining their equity share.[9] It is also the only factor in this category that receives more support among the 38% of respondents with at least $75,000 in investible assets than among respondents with less than $75,000 in investible assets (47% versus 40%) and among stock market participants than among non-participants (43% versus 42%). The rare disaster model is an attempt to explain the equity premium within the CCAPM framework, but both the marginal utility of cash and marginal utility of consumption factors draw less support (33% and 27%, respectively) than the rare disaster factor. This may indicate that most people do not think about their investments in terms of contemporaneous return covariance with marginal utility. Indeed, much popular, practitioner, and academic discussion of investing focuses on terminal wealth outcomes, without reference to intermediate-period consumption. But even an investor focused only on terminal wealth outcomes would be concerned about economic disasters before the terminal period.

The second most popular factor is consumption commitments, with 33% of respondents describing them as very or extremely important. In the answers to the follow-up question (shown in Table 3), among those who say that consumption commitments were very or extremely important, over three times as many report that an increase in their consumption commitments as a fraction of income would lead them to reduce their equity exposure (or in the case of stock market nonparticipants, make them less likely to start participating in the stock market) rather than increase it or make them more likely to participate (44% versus 13%), as Chetty and Szeidl (2007) and Chetty, Sándor, and Szeidl (2016) predict.

Surprisingly, 32% of respondents who say that consumption commitments are very or extremely important report that an increase in their consumption commitments would neither increase nor decrease their equity allocation (or make them neither more nor less likely to participate), and another 10% say that they don't know what the portfolio effect would be. There are several potential explanations for this result. First, it may be that the optimal policy function with respect to consumption commitments is locally flat for the 32%, even though it is not flat

[9] Although we have classified rare disasters as a neoclassical factor, fears of disasters may not be rational (Goetzmann, Kim, and Shiller, 2016). Similar caveats apply to our other "neoclassical" factors.

globally. We did not specify the amount of the increase in consumption commitments. Therefore, it is possible that some respondents answered the question under the scenario of a small increase in consumption commitments, so we are measuring the locally flat portion of their policy function. Second, we did not specify over what time horizon the portfolio change is being measured. It may be that even though an increase in consumption commitments would cause some respondents to *eventually* change their equity share, they would not do so during the time period assumed, or they did not know what time horizon we had in mind and so felt they could not give a directional answer. Third, even though we attempted to measure the partial derivative of equity share with respect to consumption commitments, respondents may be reporting the total derivative. Since changes in consumption commitments are likely to be accompanied by other economic events, the total derivative may be zero even if the partial derivative is not. Other respondents may have been able to compute the partial derivative but felt that we were asking for the total derivative, and found themselves unable to integrate across all the different scenarios to provide an unconditional average effect. Finally, it is possible that respondents did not understand the question or answered carelessly.

The two questions about stock return covariance with bad news about aggregate consumption growth and volatility over the next year garner 27% to 29% support. Because they describe covariances between returns and news about nearly contemporaneous consumption, these questions can be interpreted as the aggregate consumption analogues of the marginal utility of consumption question, which pertains to contemporaneous covariance with individual-specific marginal utility. The questions testing long-run risk—stock return covariance with news about expected consumption growth and volatility starting one year in the future—attract similar levels of support: 28% and 25%, respectively. Composition risk involving one's physical living situation earns comparable ratings, with 27% of respondents describing it as very or extremely important.

2.2. Background Risks and Assets

In this subsection, we explore how risks and assets outside the stock market affect allocations to equity. The largest asset most people have is their human capital, which is subject to wage risk and health risk. If these risks are correlated with stock returns, they should affect the willingness to hold stocks (Bodie, Merton, and Samuelson, 1992). Even if the risks are uncorrelated with stock returns, the optimal allocation to stocks could still fall in principle (Pratt and Zeckhauser, 1987; Kimball, 1993; Gollier and Pratt, 1996). The empirical literature on background labor income risk has generally found negative effects on equity allocations (Guiso, Jappelli, and Terlizzese, 1996; Hochguertel, 2003; Angerer and Lam, 2009; Palia, Qi, and Wu, 2014; Schmidt, 2016; Fagereng, Guiso, and Pistaferri, 2017), although the magnitude of these estimates is often small, perhaps due to the econometric problems discussed by Fagereng, Guiso, and Pistaferri (2017). Rosen and Wu (2004) find that households in poor health hold less in risky assets. To capture portfolio effects of human capital risk, we ask respondents who are currently employed about the importance of unemployment and wage growth risk in their equity allocation decision ("labor income risk"). We ask all respondents about the importance of the risk of expenses related to illness or injury to themselves or a family member ("risk of illness/injury").

A person's human capital wealth generally falls with age, as there is less labor income that can be expected in the future. This should affect the allocation of the financial portfolio because the fraction that the financial portfolio comprises of the total wealth portfolio (financial plus human capital wealth) is changing (Bodie, Merton, and Samuelson, 1992). We therefore ask employed respondents about the importance of the number of years remaining until retirement ("years left until retirement"). Because time until retirement can affect portfolio choice even if the respondent is failing to consider the human capital portion of their total wealth—for example, due to a belief in time diversification or negative serial correlation of stock returns (Barberis, 2000)—we separately ask about the importance of wages remaining to be earned in one's lifetime relative to current financial wealth ("human capital") to isolate the human capital channel. In a model with intermediate-period consumption, Wachter (2002) shows that the time remaining until a significant non-

retirement expense can also affect portfolio risk-taking. Therefore, we also ask all respondents, whether employed or not, about the importance of time remaining until a significant non-retirement expense such as a car purchase, down payment, or school tuition ("time until significant non-retirement expense").

Housing represents a large portion of the typical homeowner's wealth, and Flavin and Yamashita (2002), Cocco (2004), and Yao and Zhang (2005) present models where housing affects the demand for stocks. On the one hand, housing price risk crowds out stockholding as a fraction of one's total wealth portfolio. On the other hand, because the house diversifies against stock risk, homeownership can raise stockholding as a fraction of one's *financial* portfolio. We test both these channels, asking about concern that one's home value might fall ("home value risk") and, among stock market participants only, the belief that one can take more risks in one's financial portfolio because one's non-financial assets, such as a home or a small business, will serve as a cushion against financial portfolio losses ("non-financial assets cushion losses in financial assets"). We also ask about the importance risk in non-financial assets other than the home, such as small businesses ("non-financial risk"). Heaton and Lucas (2000) find that households with high and volatile proprietary business income have lower stockholdings.

The final background risk we investigate is inflation. Although the notion that stocks are a hedge against inflation has intuitive appeal because stocks are claims on real assets, early empirical studies found that stock returns are negatively correlated with inflation (Lintner, 1975; Bodie, 1976; Nelson, 1976; Fama and Schwert, 1977; Gultekin, 1983). Later studies have found that a long position in stocks hedges against inflation over longer horizons (e.g., Boudoukh and Richardson, 1993; Solnik and Solnik, 1997). We ask stock market participants about the importance of the belief that when their living expenses increase unexpectedly, the stock market will tend to rise ("stocks are an inflation hedge").

We ask one question only of nonparticipants: whether the amount of money that they have available to invest is an important factor in their decision not to invest in stocks ("wealth too small"). Vissing-Jørgensen (2003) has argued that fixed costs of stock market participation can explain both non-participation and why it declines

with wealth. We investigate what specifically comprises these fixed costs in Section 2.7.

Table 4 summarizes the results for these factors. At the high end, over 46% of non-participants say that not having enough money available to invest in stocks was very or extremely important in their decision not to invest in stocks. Somewhat surprisingly, 28% of the participants with at least $75,000 of investible assets also feel this way, although this could be understood if other factors cause these non-participants to perceive the per-dollar benefit of stockholding to be very low, thus requiring large amounts of wealth to make stockholding worthwhile.[10]

Among employed respondents, 45% report that the number of years remaining until retirement was very or extremely important. Barberis (2000) shows that a longer investment horizon can increase the optimal equity allocation due to mean reversion or decrease it due to greater parameter uncertainty. We therefore asked those who said this factor was at least moderately important a follow-up question about how an increase in their time to retirement would affect their equity allocation over the next year (for participants) or the likelihood of their investing in stocks over the next year (for non-participants). Because we did not want the increase in working life to be associated with a negative wealth shock, the scenario we presented was one where tomorrow, the respondent decided to retire ten years later than previously planned because she enjoyed working so much.

Table 5 shows the distribution of responses among those who reported that years until retirement was very or extremely important. Respondents seemed to struggle with this scenario—the non-response rate of 15% is unusually high, and another 9% responded "I don't know"—perhaps because it was an unfamiliar one that they had not considered before. Among those who did respond, increases in equity

[10] We asked those who cited "wealth too small" as at least moderately important factor, "What is the least amount of money you would need to have available to make it worthwhile to invest in stocks?" Among those who rated "wealth too small" to be very or extremely important, the median respondent chose the category "$1,000 - $4,999." However, this response is difficult to interpret because 25% of these participants chose a category that is smaller than the category they indicated for the amount of investible wealth they had. One possibility is that some participants interpreted "available" money to mean something other than all their investible assets (for example, money they would not need to have on hand for expenditures like a down payment in the near future).

share or equity investment likelihood was nearly ten times as likely as decreases (38% versus 4%). Like with the follow-up question regarding consumption commitments, a surprisingly high number (33%) said that this increase in investment horizon would have no effect on their equity allocation percentage or equity investment likelihood over the next year. This response may reflect a locally flat relationship between investment horizon and equity investment, a recognition that it would take the respondent longer than one year to act in her portfolio, or some effect from working until an older age that nearly exactly offsets the effect of a longer investment horizon.

Returning to Table 4, we find that human capital is somewhat less important than investment horizon, with 34% reporting that the amount of financial wealth they have relative to expected future wages is a very or extremely important factor. Close behind is the number of years until a large *nonretirement* expenditure, which 33% of respondents describe as very or extremely important. Two background risks stand out from among the six we asked about. 44% report that the risk of illness or injury is very or extremely important, even though this risk is unlikely to have much correlation with equity returns. Close behind is wage risk, at 40% of employed respondents. This factor is particularly important among less wealthy and less educated respondents. Home value risk is somewhat less salient, but is still important to 27% of homeowner respondents. This risk is particularly acute for less educated respondents. The final three background factors—stocks as a hedge, non-financial assets as a cushion, and non-financial risks—are each described as very or extremely important by 18 to 19% of the relevant respondents.

2.3. Nonstandard Preferences

We ask participants about four types of nonstandard preferences: loss aversion, ambiguity aversion (which we do not separately identify from the effects of parameter uncertainty), internal habit, and external habit. Loss aversion is frequently described as disliking losses more than enjoying gains of equal magnitude (Kahneman and Tversky, 1979), but this property is true of risk-averse individuals as well. Therefore, we focus on an implication of loss aversion that is not shared with

classical risk aversion arising from expected utility preferences: aversion to small gambles (Segal and Spivak, 1990; Rabin, 2000). We ask respondents if the possibility of even small losses on their stock investment making them worry was an important factor in their equity allocation decision ("loss aversion"). Barberis, Huang, and Santos (2001), Barberis and Huang (2001), and Barberis, Huang, and Thaler (2006) present models where loss aversion reduces the demand for stocks.

Second, we ask respondents about the role of ambiguity or parameter uncertainty, in the form of not having a good sense of the average returns and risks of stocks, in their investment decisions ("ambiguity/parameter uncertainty"). A Bayesian investor will reduce his allocation to the risky asset in the face of parameter uncertainty, and an investor who is ambiguity averse in the sense of Ellsberg (1961) will reduce his risky allocation even further (Barberis, 2000; Garlappi, Uppal, and Wang, 2007; Kan and Zhou, 2007). Dow and Werlang (1992) were the first to show theoretically that ambiguity aversion can generate stock market non-participation. Dimmock et al. (2016) find that those who exhibit ambiguity aversion in a laboratory experiment are less likely to hold stocks, and conditional on holding stocks, allocate less to them.

We also ask respondents questions about the role of internal habit and external habit. In the Constantinides (1990) internal habit model, individuals derive utility from consumption today relative to their own past consumption, whereas in the Campbell and Cochrane (1999) external habit model, individuals derive utility from consumption today relative to a past aggregate consumption. In either case, the result is to increase risk aversion and hence willingness to hold stocks. To investigate whether investors are consciously considering these factors, we ask respondents about the importance of the difference between their current material standard of living and the level they are used to ("internal habit") and the importance of the difference between their current material standard of living and the level everybody else around them has experienced recently ("external habit").

Table 6 shows that loss aversion is described as very or extremely important by 27% of respondents, internal habit by 25% of respondents, and ambiguity/parameter uncertainty by 25% of respondents. There is relatively little

support for external habit, which is deemed very or extremely important by only 16% of respondents. To the extent that external habit-like preferences are important, their microfoundation seems more likely to be consumption commitments (Chetty and Szeidl, 2016) rather than a psychological desire to keep up with the Joneses. Each of these factors is relatively more important for non-participants, low-wealth respondents, and less-educated respondents.

The internal habit, external habit, and ambiguity/parameter uncertainty factor question wordings do not imply any directionality of the factors' effects. In addition, Dimmock et al. (2016) find that although 52% of American adults are ambiguity averse, 38% are ambiguity *seeking*. Therefore, we ask follow-up questions regarding directionality to anybody who rated one of these factors as at least moderately important. Table 7 shows the distribution of responses to these follow-up questions among those who rated a factor very or extremely important. We find that consistent with theory, people are much more likely to report decreasing their equity allocation or becoming less likely to invest in equities rather than increasing their equity allocation or becoming more likely to invest in equities in response to a fall in their material standard of living compared to what they are used to (41% versus 8%), a fall in their material standard of living compared to what everyone around them has experienced recently (45% versus 12%). Similarly, having a better sense of the average returns and risks of investing in stocks is much more likely to result in increasing equity allocations or becoming more likely to invest in equities (56%) than decreasing these (8%). As in previous follow-up questions, a sizable fraction responded that they would not change their equity allocation or likelihood of investing in equities or that they did not know how they would change these (50% for internal habit, 40% for external habit, and 34% for ambiguity/parameter uncertainty).[11]

[11] For the ambiguity/parameter uncertainty follow-up question, answering that one did not know which way one would react to having more precise information is a sensible response, since the response should depend on what the additional information is.

2.4. Stock Market Return Beliefs

We ask about the role of four categories of stock market return beliefs. We begin with the belief that low stock market returns tend to be followed by more low stock market returns ("stock market returns have momentum"). DeBondt (1993), Fisher and Statman (2000), Vissing-Jørgensen (2003), and Greenwood and Shleifer (2014) find robust survey evidence that individuals hold extrapolative beliefs about aggregate stock market returns on average. If individuals understand the logic of hedging and its applicability here, positive return autocorrelation should cause the unconditional willingness to hold equities to decrease, since poor stock returns are associated with worse future investment opportunities. Conversely, we also ask our respondents whether a belief that low stock market returns tend to be followed by high stock market returns played an important role in their portfolio choice ("stock market returns mean-revert"). Mean reversion means that stocks are a hedge, so unconditionally, it should make people more willing to hold stocks (Barberis, 2000).

If individuals believe that expected returns are time-varying, then their equity share at a particular moment in time may be affected by their view that expected returns are particularly high or low at that time. We therefore ask respondents whether a belief that the returns they can expect to earn from investing in stocks right now are lower than usual played an important role in their portfolio choice ("expected stock returns lower than usual right now"). We also ask stock market participants the reverse question about expected returns being higher than usual ("expected stock returns higher than usual right now").

None of these factors are rated by more than 24% of respondents as very or extremely important. The most popular—the belief that expected returns are currently higher than usual—is described as very or extremely important by 24% of respondents. Right behind this is the converse, that returns are currently lower than usual, with 23% support among stock market participants. This balance of opinions about the market risk premium may be partially due to the fact that the S&P 500 return in 2016, the year of the survey, was 12%, close to its historical arithmetic average. There is also little difference between the fraction who say that positive return autocorrelation is very or extremely important (18%) and those who say that

negative return autocorrelation is very or extremely important (17%). Notably, less educated respondents are substantially more likely to endorse the importance of all four deviations from random-walk returns.

The fact that similar proportions report positive return autocorrelations and negative return autocorrelations to be very or extremely important does not necessarily contradict the fact that stock return expectations are extrapolative on average. The implications of return autocorrelations for hedging demand are probably beyond the understanding of most individuals, and to the extent that non-zero return autocorrelations are mentioned in popular financial advice, the emphasis is usually on negative return autocorrelations which cause stocks to be less risky for long-run investors. Individuals may also not realize that their beliefs generally follow an extrapolative pattern, but instead believe each time they revise their beliefs that "this time is different."

2.5. Social and Personal Factors

We ask our respondents about eleven social and personal factors. The first of these is religion, which has been hypothesized to influence economic risk-taking since at least Weber (1930). A large body of empirical literature has found that Catholics are less risk averse than Protestants (Barsky et al., 1997; Hilary and Hui, 2009; Kumar, 2009; Kumar, Page, and Spalt, 2011; Shu, Sulaeman, and Yeung, 2012; Schneider and Spalt, 2016, 2017; Benjamin, Choi, and Fisher, 2016). We therefore ask each respondent whether her religious beliefs, values, and experiences played an important role in her equity allocation decision ("religious beliefs, values, and experiences").

Many authors have argued that religion affects trust (e.g., Putnam, 1993; Guiso, Sapienza, and Zingales, 2003; Benjamin, Choi, and Fisher, 2016), and Guiso, Sapienza, and Zingales (2008) present evidence that lack of trust in other market participants is an important driver of reluctance to invest in stocks. In light of this work, we ask respondents about the importance of concern that companies, managers, brokers, or other market participants might cheat them out of their investments ("low trust in market participants"). Closely related is the difficulty of

finding a trustworthy investment advisor ("lack of trustworthy advisor"). We also ask about the importance of advice more generally from a professional financial advisor ("advice from professional financial advisor"), advice from a friend, family member, or coworker ("advice from friend, family, or coworker"), advice from media sources ("advice from media"), and a general lack of knowledge about how to invest ("lack of knowledge about how to invest").

There is also a literature on the role of personal experience in financial decision making. Malmendier and Nagel (2011) find evidence that households who have lived through high stock market returns invest more in stocks. Vissing-Jørgensen (2003) finds that the idiosyncratic component of an investor's *own* portfolio return positively affects his expectation of future *aggregate* stock market returns. To investigate whether individuals are conscious of these effects, we ask our respondents about the importance of feelings, attitudes, and beliefs about the stock market gotten from living through stock market returns, whether or not they were invested in stocks at the time ("experience of living through returns"), and the importance of feelings, attitudes, and beliefs about the stock market gotten from personal experiences of investing in the stock market ("personal experience investing in stock market").

We ask non-participants about two additional personal factors. First, we ask about the importance of "financial phobia" (Burchell, 2003; Shapiro and Burchell, 2012) in causing their non-participation ("don't like to think about my finances"). Second, it is possible that respondents hold no stock not because they do not want to, but because they have not gotten around to participating, perhaps due to time-inconsistent procrastination (Laibson, 1997; O'Donoghue and Rabin, 1999). We therefore ask about the importance of having intended to invest in stocks but not having gotten around to it ("intended to invest in stocks but never got around to it").

Table 9 shows that a general lack of comfort with financial markets is significant driver of investment choices. The leading cause of non-participation is low trust in market participants, which is rated very or extremely important by 40% of non-participants. Close behind are a lack of knowledge of how to invest (cited by 38% of non-participants), financial phobia (36% of non-participants), and a lack of a trustworthy advisor (32% of non-participants). Low trust, lack of knowledge, and lack

of a trustworthy advisor are frequently cited as very or extremely important by participants as well (32%, 31%, and 27%, respectively). Factors associated with general discomfort with financial markets are particularly important for those with less education.

Experience of living though returns, advice from a professional financial advisor, personal experience investing in the stock market, and religion all are rated as very or extremely important by 24 to 25% of respondents. Personal experience and professional financial advisors are relatively more important to the wealthy, while religion is relatively more important to the less educated. Relatively few people say that advice from peers or media was very or extremely important (15% and 12%, respectively), and the least important factor was delay despite an intention to invest in stock (4% of non-participants). Despite evidence that individuals' financial choices exhibit considerable inertia (Choi et al., 2002), people do eventually move away from their status quo to what they perceive to be their optimum (Carroll et al., 2009), even if it takes them a few years. Therefore, in a sample that includes many middle-aged and older adults, it may not be unexpected that procrastination is a relatively small driver of stock market non-participation.[12]

2.6. Other Factors

Finally, we ask respondents about the role of five other factors. The first is a rule of thumb such as investing 100 minus age percent of assets in stocks, or investing one-third of one's wealth in each of stocks, bonds and real estate ("rule of thumb"). The second is the default investment allocation in their work-based retirement savings plan ("default allocation in retirement savings plan"). Madrian and Shea (2001) and Choi et al. (2004) document that a sizeable fraction of investors remain at the default asset allocation in their 401(k) plan. Third and fourth, we ask about two

[12] To non-participants who rated "intended to invest but never got around to it" as at least moderately important, we asked follow-up questions about which factors were important in causing them to not get around to investing in stocks. Appendix Table 1 shows the distribution of answers for those who rated "intended to invest but never got around to it" as very or extremely important. Only 15% said that procrastination for no good reason was very or extremely important. The most salient drivers were having less money available now than when they originally planned on investing in stocks (40%), discovering that it was costlier to invest in stocks than they expected (30%), and being too busy (20%).

transactional factors which were motivated by answers to the free-response question in our initial pilot survey about whether there were other important factors affecting respondents' equity choices that we had not asked about: the concern that stock investments will take too long to convert into spendable cash in an emergency ("stocks take too long to convert to cash in emergency"), and the amount of cash the respondent needs to have on hand to pay routine expenses ("need cash on hand for routine expenses"). Finally, we ask respondents about the importance of what they know about the stock market's returns during the decades before they were born ("stock market returns before I was born").

Table 10 reports that a large fraction of respondents (44%) say that needing to have cash on hand to pay routine expenses was a very or extremely important factor. The need for emergency liquidity also has substantial support, at 27% of respondents. Unsurprisingly, these factors are substantially less important among stock market participants and those with more wealth and education. However, even among high-wealth and high-education respondents, the absolute levels of importance are quite high—for example, 38% for needing cash on hand and 21% for stocks taking too long to convert to cash among high-wealth respondents.

Only 24% of respondents identify the default investment allocation in a work-based retirement savings plan as very or extremely important. Although this might seem low in light of the evidence on how sticky defaults are, one must keep in mind that only about half of American workers have access to a work-based "salary reduction plan" (predominantly 401(k) and 403(b) plans), and only about half of 401(k)/403(b) plans automatically enroll their employees and hence have an asset allocation default (Copeland, 2013; Vanguard, 2014).[13]

In accordance with the findings of Malmendier and Nagel (2011) that personally experienced returns have a greater impact than returns one only reads

[13] Table 1 reports that 51% of respondents say that a work-based retirement savings plan default asset allocation was at least moderately important. It is unlikely that 51% of American workers are subject to automatic 401(k) enrollment at their current employer. However, this 51% figure may not be implausible given that the question also asks about one's spouse/partner's workplace retirement savings plan default, and both the respondent and spouse/partner may be influenced by asset allocation defaults at past employers.

about, only 15% of respondents say that stock returns before their birth played a very or extremely important role in their equity allocation decision, which is significantly lower than the 25% of respondents in Table 9 who said that stock market returns they had lived through were very or extremely important. Untabulated results suggest that those younger than 40 are more likely to rate these pre-birth returns as very or extremely important (18.2%, standard error = 4.7%) than those who are at least 60 (11.4%, standard error = 2.1%), although this difference is not statistically significant. Rules of thumb receive relatively little support, with only 12% of respondents regarding them as very or extremely important.

2.7. Fixed Costs of Stock Market Participation

Among stock market non-participants, 46% said that not having enough money to invest in stocks was a very or extremely important factor in their decision not to participate, suggesting that there are fixed participation costs. In this section, we explore what these fixed costs are. We asked non-participants who rated "wealth too small" as at least a moderately important factor a series of follow-up questions about how important various factors were in causing the amount of money they have to be too small.

Vissing-Jørgensen (2003) suggests that fixed costs of stock market participation include the entry costs of acquiring information about investing and setting up accounts, and the ongoing costs of keeping abreast of the market, transaction costs, and preparing tax returns that are made more complicated by stockholding. We therefore ask non-participants about the importance of the amount of time, money, and/or effort it would take to learn about stocks ("costs of learning about stocks"), hire an investment adviser ("costs of hiring an adviser"), set up an investment account ("costs of setting up an account"), stay up-to-date on the stock market ("costs of staying up-to-date"), maintain a relationship with an investment advisor after hiring him or her ("costs of maintaining an adviser"), maintain an investment account after setting it up ("costs of maintaining an account"), and deal with a tax return that is harder to prepare ("tax complexity").

We ask one question to homeowners about whether owning a home is important in causing them to not have enough money to make it worthwhile to invest in stocks ("home crowd-out"). This question is motivated by the model of Cocco (2004), where the purchase of a house can leave the individual with so little liquid wealth that paying the fixed cost to participate in the stock market is not worthwhile. Although the purchase of a home will mechanically leave a household with less money available to potentially invest in stocks, the household's wealth may be sufficiently inframarginal that the purchase does not push them from participation to non-participation.

Table 11 shows that information costs—both the costs of staying up to date about stocks and the cost of learning about them in the first place—are the most important reasons why respondents felt that the money they have available is not enough to make it worthwhile investing in stocks (45% and 41% rate these as very or extremely important, respectively).[14] Costs of hiring and maintaining an advisor are close behind, at 39% and 38%, respectively. The area where there is the largest gap between the up-front fixed cost and the ongoing fixed cost is with respect to investment accounts: 38% cite the costs of maintaining an account as very or extremely important, while 32% cite the costs of setting one up. A smaller fraction (29%) cite tax complexity. This factor is more important for lower-wealth respondents. Finally, 24% of homeowners report that home ownership is a very or extremely important factor in causing them not to have enough money to make it worthwhile to invest in stocks, a figure that jumps to 42% for wealthy respondents.

3. Actively Managed Mutual Funds

The second section of our survey explores the reasons why individuals purchase actively managed equity mutual funds. The amount of investment in active management is puzzling given that passive funds in aggregate outperform active

[14] This was even higher among wealthy non-participants, where the figures are 71% for both. However, given that there are relatively few respondents in this category, these figures should be interpreted with caution.

funds (e.g., Gruber, 1996; French, 2008; Fama and French, 2010). French (2008) hypothesizes that investors misperceive the relative returns to active management versus passive management as a whole, or are overconfident about their ability to pick outperforming active managers. Del Guercio and Reuter (2014) find that underperformance in active management is concentrated in funds sold through brokers, suggesting that much investment in active funds is the result of an agency problem that causes brokers to advise clients to invest in poorly performing funds. Moskowitz (2000), Glode (2011), Kosowski (2011), and Savov (2014) argue that investment in active funds could be rational despite their lower average returns, since active funds outperform in states of the world where marginal utility is high. In the model of Berk and Green (2004), active management should on average match passive management returns. Managers have heterogeneous skill in generating alpha, and this skill has decreasing returns to scale. In equilibrium, there is neither persistence in alphas nor outperformance of active management because money rationally flows to funds with high past returns (and exits funds with low past returns) up to the point where every manager's alpha going forward is the same in expectation.

We ask questions related to each of the above explanations. We begin by asking whether respondents have ever purchased shares in an actively managed stock mutual fund.[15] Those who report having done so are then asked to rate the importance of four factors in their reason for doing so. First, we ask about the importance of a belief that the active fund would give them higher returns on average than a passive fund ("higher returns"). Second, we ask about the importance of the recommendations of an investment advisor that they hired ("advisor recommendation"). Third, we ask about the importance of the belief that even though the active fund would have lower returns than a passive fund on average, it would have higher returns when the economy is doing poorly ("hedging"). Fourth,

[15] 33% report having done so. Immediately before this question, we asked whether the respondent knows what a mutual fund is. 52% of respondents told us that they did. We then showed all respondents the definition of a mutual fund, an actively managed stock mutual fund, and a passively managed stock mutual fund.

recognizing the importance of employer-sponsored retirement savings plans in many individuals' financial lives, we ask about the importance of a suitable passive fund not being available within the investment menu of their employer-sponsored retirement savings plan ("passive not available").

We ask all respondents, whether or not they had invested in an active fund before, how much they agreed with the statement that past returns of an actively managed stock fund that are significantly higher than the overall stock market's returns are strong evidence that its manager has good stock-picking skills ("managerial skill"). Answer options are "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree." We also ask how much respondents agreed with the statement that when an actively managed stock mutual fund gets more money to manage, it becomes harder for it to beat the overall stock market ("decreasing returns to scale").

The results are summarized in Table 12. By far the most important motivators of active fund purchase are a belief that they would supply higher returns on average (cited as very or extremely important by 51% of respondents who had experience with actively managed equity mutual funds) and the recommendation of a financial advisor (cited by 48% of eligible respondents). Hedging demand has non-trivial support, described as very or extremely important by 28% of eligible respondents. A lack of passive funds in an retirement savings plan investment menu is the least important factor, with only 19% describing this as very or extremely important.

Regarding the assumptions of Berk and Green (2004), 43% of respondents agree or strongly agree that past returns are evidence of skill, but only 17% agree or strongly agree that there are decreasing returns to scale in active money management. High-wealth respondents are substantially more likely than low-wealth respondent to believe that high past returns are strong evidence of skill (52% versus 38%), and modestly more likely to believe in decreasing returns to scale (23% versus 14%).

4. Cross-Section of Equity Returns

Differences in expected returns across portfolios formed on value and momentum are well established (Fama and French, 1992; Jegadeesh and Titman, 1993), but whether these differences are driven by mispricing or rational responses to risk remains controversial. In the final section of the survey, we investigate what our respondents believe about the expected returns and risks of value and momentum stocks.

We begin by asking respondents whether they are familiar with the terms "growth stock" and "value stock." 24% report being familiar with both, 66% report not being familiar with either term, and 5% report being familiar with only one of the terms. We then show a simple definition of a growth stock and of a value stock.[16]

Next, we ask respondents to complete the following sentence about the relative risk of growth versus value: "Compared to a growth stock, I expect a value stock to normally be …" Respondents choose among four possible answers: "riskier over the next year, on average," "equally risky over the next year, on average," "less risky over the next year, on average," and "no opinion." We ask them to complete another sentence about the relative expected return of growth versus value: "Compared to a growth stock, I expect a value stock to normally have ..." Here, the answer choices are "higher returns over the next year, on average," "about the same returns over the next year, on average," "lower returns over the next year, on average," and "no opinion." We also ask respondents to complete two similar sentences about the risk and expected returns of high- versus low-momentum stocks, this time comparing "a stock whose price fell a lot over the past year" to "a stock whose price rose a lot over the past year."

Table 13 shows that respondents in aggregate believe in a positive relationship between expected return and risk, but they do not always understand the relationship between characteristics and expected return. They tend to view value stocks to be less risky than growth stocks, with 41% regarding value stocks as less risky and 13%

[16] Specifically, we told participants the following: "A value stock is a stock that has a low price relative to its company's current profits (and other fundamentals). A growth stock is a stock that has a high price relative to its company's current profits (and other fundamentals)."

regarding them as more risky. There is greater disagreement about the relative expected returns, but contrary to actual historical data, slightly more believe that value stocks have lower returns (26%) rather than higher returns (23%), although this difference is not statistically significant. More consistent with the historical data is respondents' tendency to believe that high-momentum stocks have higher returns rather than lower returns (23% versus 13%). Respondents also tend to believe that high-momentum stocks are riskier (23% versus 13%). We note that for each of these questions, about a quarter of respondents state they have no opinion, and 6% do not respond. The qualitative patterns do not change when we restrict the sample to those who have at least $75,000 in investible assets, except that slightly more believe that value stocks have higher returns than growth stocks (25% versus 23%), a statistically insignificant difference.

5. Conclusion

In our survey of primary household financial decision-makers in the U.S., we find that individuals consider a wide variety of factors hypothesized in the academic literature when deciding what fraction of their portfolio to invest in stocks. We find particularly strong support for background risks, investment horizon, rare disasters, transactional factors, and fixed costs of stock market participation, but many other factors garner significant support as well. The largest drivers of investing in active equity mutual funds are a belief that they will provide higher average returns than passive funds and the advice of a professional investment adviser. Households tend to believe that past fund performance is a good signal of stock-picking skill, but contrary to Berk and Green (2004), do not generally believe that funds suffer from diseconomies of scale. Regarding the cross-section of stock returns, households tend to believe that value stocks are safer and (contrary to historical data) do not have higher expected returns, and that high-momentum stocks are riskier and (consistent with historical data) do have higher expected returns.

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Table 1: Summary of Importance of Equity Allocation Factors

The first column shows the percent of respondents who described the factor as very or extremely important. The second shows the percent of respondents who described the factor as at least moderately important. The third column shows the mean response, where the responses are translated into a five-point scale: not important = 1, a little important = 2, moderately important = 3, very important = 4, and extremely important = 5. All statistics are calculated using sampling weights.

	Very or extremely important	Moderately important or more	Mean rating
Wealth too small to invest in stocks *	46.2%	55.6%	2.93
Years left until retirement ***	45.2%	64.3%	3.14
Risk of illness/injury	44.0%	67.8%	3.24
Need cash on hand for routine expenses	43.9%	65.4%	3.16
Rare disaster risk	42.3%	66.5%	3.18
Labor income risk ***	39.7%	62.0%	3.04
Don't like to think about my finances *	35.6%	54.7%	2.78
Lack of trust in market participants	35.0%	57.1%	2.89
Lack of knowledge about how to invest	33.9%	58.5%	2.85
Human capital fraction of total wealth	33.5%	62.2%	2.97
Time until significant non-retirement expense	33.4%	56.4%	2.82
Consumption commitments	33.2%	58.8%	2.91
Return covariance with marginal utility of money	32.9%	57.8%	2.85
Lack of trustworthy adviser	29.2%	49.9%	2.65
Risk of aggregate consumption over next year	28.5%	55.7%	2.75
Risk of long-run aggregate consumption	28.0%	53.4%	2.69
Stocks take too long to convert to cash in emergency	27.4%	48.7%	2.65
Return covariance with marginal utility of consumption	27.3%	54.2%	2.71
Risk of aggregate consumption volatility over next year	27.0%	53.4%	2.72
Consumption composition risk	26.9%	50.4%	2.67
Home value risk ****	26.8%	51.4%	2.76
Loss aversion	26.6%	49.7%	2.61
Experience of living through stock market returns	25.4%	55.6%	2.75
Internal habit	25.4%	51.6%	2.64
Ambiguity / Parameter uncertainty	25.2%	53.3%	2.63
Advice from a professional financial advisor	25.2%	46.2%	2.44
Risk of long-run aggregate consumption volatility	24.8%	51.3%	2.66
Personal experience investing in stock market	24.4%	52.5%	2.65
Default allocation in retirement savings plan	24.3%	51.3%	2.57
Religious beliefs, values, and experiences	24.2%	41.8%	2.41
Expected stock returns lower than usual right now	23.8%	45.9%	2.51
Expected stock returns higher than usual right now **	22.8%	53.6%	2.65
Stocks are an inflation hedge **	19.2%	55.2%	2.64
Non-financial assets cushion losses in financial assets **	18.5%	48.9%	2.56
Non-financial asset risk	18.3%	38.9%	2.22
Stock market returns have momentum	17.9%	40.8%	2.36
Stock market returns mean-revert	16.5%	43.4%	2.37
External habit	15.7%	40.3%	2.29
Stock market returns before I was born	15.4%	36.6%	2.24
Advice from a friend, family member, or coworker	14.7%	39.9%	2.25
Rule of thumb	12.4%	35.8%	2.15
Advice from media	11.7%	35.9%	2.12
Intended to invest in stocks but never got around to it *	4.4%	23.5%	1.68

* Among stock market non-participants only. ** Among stock market participants only. *** Among employed respondents only. **** Among homeowners only.

Table 2: Neoclassical Asset Pricing Factors

This table presents the percent of respondents who described the factor in the first column as very or extremely important, either for the entire sample (N= 1,098) or split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Rare disaster risk	Concern that in an economic disaster where the amount that the U.S. economy produces in a year shrinks by more than 10%—like the Great Depression—a dollar I invested in stocks would lose more value than a dollar I put in a bank savings account	42.3% (2.9)	43.3% (3.3)	42.1% (5.3)	46.7% (3.5)	39.8% (4.2)	36.4% (3.4)	45.0% (3.8)
Consumption commitments	My fixed expenses (like mortgage payments, rent, car payments, utility bills, etc.) that are difficult to adjust in the short run	33.2% (2.6)	27.8% (2.8)	41.5% (4.8)	25.1% (3.1)	38.5% (3.7)	28.4% (3.4)	35.5% (3.4)
Return covariance with marginal utility of money	Concern that when I especially need the money, the stock market will tend to drop	32.9% (2.8)	29.1% (2.9)	39.4% (5.3)	31.1% (3.4)	34.2% (4.1)	26.2% (3.0)	36.1% (3.8)
Risk of aggregate consumption over next year	Concern that when bad news arrives about how the U.S.'s material standard of living will change **over the next year**, the stock market will tend to drop	28.5% (2.5)	24.0% (2.9)	35.3% (4.6)	24.2% (2.7)	31.4% (3.7)	18.7% (2.4)	33.0% (3.5)
Risk of long-run aggregate consumption	Concern that when bad news arrives about how the U.S.'s material standard of living will change **over the 5 year period starting 1 year in the future**, the stock market will tend to drop	28.0% (2.4)	23.9% (2.6)	34.0% (4.6)	23.9% (2.9)	30.7% (3.5)	18.7% (2.4)	32.4% (3.3)
Return covariance with marginal utility of consumption	Concern that when I have to cut my spending, the stock market will tend to drop	27.3% (2.8)	23.4% (2.7)	33.5% (5.3)	25.4% (3.2)	28.7% (4.0)	17.6% (2.4)	31.9% (3.8)
Risk of aggregate consumption volatility over next year	Concern that when uncertainty increases about how the U.S.'s material standard of living will change **over the next year**, the stock market will tend to drop	27.0% (2.4)	24.4% (3.0)	31.3% (4.3)	23.3% (2.8)	29.5% (3.6)	21.0% (2.8)	29.9% (3.3)
Consumption composition risk	Concern that when the quality of my physical living situation (how nice my housing is, the safety of my neighborhood, etc.) is dropping faster than the rest of my material quality of life, the stock market will tend to drop	26.9% (2.4)	22.9% (2.9)	33.1% (4.4)	24.7% (3.1)	28.4% (3.5)	18.0% (2.4)	31.1% (3.4)
Risk of long-run aggregate consumption volatility	Concern that when uncertainty increases about how the U.S.'s material standard of living will change **over the 10 year period starting 1 year in the future**, the stock market will tend to drop	24.8% (2.2)	23.1% (2.6)	27.5% (3.8)	24.7% (3.0)	25.0% (3.0)	22.4% (2.9)	25.9% (2.9)

Table 3: Responses to Increase in Consumption Commitments

This table presents the distribution of responses to the question "If your fixed expenses rose as a fraction of your income, would this rise cause you to increase or decrease the percentage of your investable financial assets held in stocks?" (for stock market participants) or "If your fixed expenses rose as a fraction of your income, would this rise make you more or less likely to invest in stocks?" (for stock market non-participants). In the first column, the population over which these percentages are calculated is all respondents who rated consumption commitments to be a very or extremely important factor in their equity allocation decision (N = 344). Subsequent columns report percentages over subsamples split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	All	Participant		Wealth		Education	
		Yes	No	High	Low	High	Low
Decrease equity allocation percentage / less likely to invest in equities	44.1% (4.6)	30.6% (5.2)	57.0% (6.6)	40.2% (7.4)	45.6% (5.7)	44.1% (6.9)	44.1% (5.8)
Neither increase nor decrease equity allocation percentage / neither more nor less likely to invest in equities	31.6% (3.8)	44.4% (5.7)	18.9% (4.7)	35.3% (6.1)	30.1% (4.8)	34.2% (6.9)	30.6% (4.6)
Increase equity allocation percentage / more likely to invest in equities	12.8% (3.3)	13.1% (5.1)	12.8% (4.3)	10.8% (4.5)	13.6% (4.3)	9.4% (4.7)	14.1% (4.2)
I don't know	9.9% (2.3)	8.7% (3.1)	11.3% (3.4)	8.3% (3.5)	10.6% (2.8)	11.7% (4.7)	9.3% (2.5)
Did not respond	1.6% (1.4)	3.2% (2.8)	0.0% (--)	5.4% (4.7)	0.0% (--)	0.6% (0.6)	1.9% (1.9)

Table 4: Background Risks and Assets

This table presents the percent of respondents who described the factor in the first column as very or extremely important, either for the entire sample (N= 1,098) or split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Some factor importances were elicited only among stock market non-participants (N = 376), stock market participants (N = 708), employed respondents (N = 771), or homeowners (N = 778). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Wealth too small*	The amount of money I have available to invest in stocks is too small	46.2% (5.2)	--	46.2% (5.2)	27.7% (9.2)	48.8% (5.7)	70.7% (6.1)	41.6% (6.1)
Years left until retirement***	The number of years I (and my spouse/partner, if applicable) have left until retirement	45.2% (3.3)	54.9% (3.7)	30.3% (5.1)	58.9% (3.9)	37.0% (4.4)	45.3% (4.2)	45.1% (4.6)
Risk of illness/injury	The risk of expenses due to illness or injury to me or someone else in my family	44.0% (2.9)	44.2% (3.3)	44.4% (5.2)	42.9% (3.4)	44.9% (4.1)	34.5% (3.3)	48.4% (3.8)
Labor income risk***	Concern that I (or my spouse/partner, if applicable) might become unemployed, receive a pay cut, or not receive an expected pay increase	39.7% (3.5)	37.2 (3.8)	45.1% (6.8)	33.9% (4.0)	43.4% (5.0)	31.1% (3.7)	44.4% (4.9)
Human capital	The difference between how much money I have available to invest right now and all the money I (and my spouse/partner, if applicable) expect to earn in wages over the rest of my life	33.5% (2.9)	29.4% (3.0)	40.2% (5.3)	33.0% (3.6)	34.1% (4.1)	28.9% (3.5)	35.7% (3.8)
Time until significant non-retirement expense	How soon I will have significant expenses (like a car purchase, a down payment on a home, school tuition, etc.)	33.4% (2.6)	33.5% (3.3)	34.1% (4.5)	27.8% (3.3)	37.2% (3.8)	35.7% (3.8)	32.4% (3.4)
Home value risk****	Concern that my home value might fall	26.8% (2.5)	25.2% (3.0)	30.8% (4.9)	27.5% (3.3)	26.1% (3.7)	18.7% (2.7)	31.8% (3.7)
Stocks are an inflation hedge**	A belief that stocks are attractive because when my living expenses increase unexpectedly, the stock market will tend to rise	19.2% (2.7)	19.2% (2.7)	--	19.6% (3.6)	18.7% (4.1)	10.7% (2.4)	25.8% (4.3)
Non-financial assets cushion losses in financial assets**	A belief that I can afford to take more risks in my financial portfolio because my non-financial assets (such as my home or small business) will cushion me against losses in my financial portfolio	18.5% (2.5)	18.5% (2.5)	--	19.6% (3.1)	16.9% (4.1)	11.9% (2.3)	23.5% (4.0)
Non-financial risk	Concern my non-financial assets other than my home—such as my small business—might lose value	18.3% (2.1)	15.3% (2.2)	23.0% (4.0)	15.7% (2.8)	20.0% (2.9)	12.2% (2.3)	21.2% (2.8)

* Among stock market non-participants only. ** Among stock market participants only. *** Among employed respondents only. **** Among homeowners only.

Table 5: Responses to Increase in Investment Horizon

This table presents the distribution of responses to the question "Suppose that tomorrow, because you enjoy working so much, you decide to retire 10 years later than you had previously planned. Would this cause you to increase or decrease the percentage of your investable financial assets held in stocks **over the next year**?" (for stock market participants) or "Suppose that tomorrow, because you enjoy working so much, you decide to retire 10 years later than you had previously planned. Would this make you more or less likely to invest in stocks **over the next year**?" (for stock market non-participants). In the first column, the population over which these percentages are calculated is all respondents who rated the number of years left until retirement to be a very or extremely important factor in their equity allocation decision ($N = 357$). Subsequent columns report percentages over subsamples split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	All	Participant		Wealth		Education	
		Yes	No	High	Low	High	Low
Decrease equity allocation percentage / less likely to invest in equities	4.2% (1.2)	3.9% (1.2)	5.3% (3.2)	3.1% (1.2)	5.4% (2.1)	5.5% (2.4)	3.5% (1.3)
Neither increase nor decrease equity allocation percentage / neither more nor less likely to invest in equities	33.1% (4.1)	34.2% (4.8)	28.5% (8.0)	32.5% (5.7)	33.7% (6.0)	36.0% (6.1)	31.5% (5.4)
Increase equity allocation percentage / more likely to invest in equities	38.4% (4.2)	42.1% (5.0)	28.5% (7.2)	44.0% (5.8)	32.9% (5.8)	45.3% (5.8)	34.6% (5.6)
I don't know	9.0% (3.6)	9.4% (4.7)	7.9% (3.6)	5.9% (2.0)	12.0% (6.7)	4.5% (2.1)	11.4% (5.4)
Did not respond	15.3% (3.3)	10.5% (3.2)	29.9% (8.3)	14.5% (4.3)	16.1% (5.0)	8.7% (3.3)	19.0% (4.7)

Table 6: Non-Standard Preferences

This table presents the percent of respondents who described the factor in the first column as very or extremely important, either for the entire sample (N= 1,098) or split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Loss aversion	The possibility of even small losses on my stock investments makes me worry	26.5% (2.5)	20.9% (2.7)	35.6% (4.7)	24.1% (3.3)	28.2% (3.5)	16.6% (2.6)	31.2% (3.4)
Internal habit	The difference between my current material standard of living and the level I am used to	25.4% (2.4)	23.2% (3.1)	28.6% (4.0)	22.3% (3.1)	27.5% (3.4)	17.5% (2.8)	29.0% (3.3)
Ambiguity/parameter uncertainty	I don't have a good sense of the average returns and risks of investing in stocks	25.2% (2.2)	22.2% (2.6)	30.4% (4.1)	23.2% (3.0)	26.5% (3.1)	20.6% (2.7)	27.4% (3.0)
External habit	The difference between my current material standard of living and the level everybody else around me has experienced recently	15.7% (2.0)	11.3% (2.3)	22.1% (3.8)	13.7% (2.9)	17.0% (2.8)	8.0% (1.9)	19.3% (2.8)

Table 7: Follow-Up Questions on Non-Standard Preferences

This table presents the distribution of responses to questions among those who indicated that internal habit (Panel A, N = 245), external habit (Panel B, N = 135), or ambiguity aversion/parameter uncertainty (Panel C, N = 272) were very or extremely important. Stock market participants were asked, "If your material standard of living fell compared to what you are used to, would this fall cause you to increase or decrease the percentage of your investable financial assets held in stocks?," "If your material standard of living fell compared to what everybody else around you has experienced recently, would this fall cause you to increase or decrease the percentage of your investable financial assets held in stocks?," and/or "If you had a better sense of the average returns and risks of investing in stocks, would that cause you to increase or decrease the percentage of your investable financial assets held in stocks?" Non-participants were asked analogous questions regarding whether these factors would "make you more or less likely to invest in stocks." In the first column, the population over which these percentages are calculated is all respondents who rated the relevant factor to be a very or extremely important factor in their equity allocation decision. Subsequent columns report percentages over subsamples split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	All	Participant		Wealth		Education	
		Yes	No	High	Low	High	Low
Panel A: Internal Habit – Response to fall in standard of living compared to what you are used to							
Decrease equity allocation percentage / less likely to invest in equities	40.7% (5.2)	38.2% (8.0)	42.5% (6.9)	41.3% (8.3)	40.4% (6.6)	60.6% (7.6)	35.1% (5.9)
Neither increase nor decrease equity allocation percentage / neither more nor less likely to invest in equities	27.4% (4.4)	28.8% (6.0)	26.4% (6.9)	37.9% (7.9)	22.1% (5.1)	28.5% (6.3)	27.0% (5.4)
Increase equity allocation percentage / more likely to invest in equities	7.5% (3.3)	4.6% (2.2)	11.0% (6.5)	2.3% (1.1)	10.1% (4.8)	4.3% (1.9)	8.4% (4.1)
I don't know	22.4% (5.4)	24.6% (8.4)	20.1% (6.7)	12.4% (4.7)	27.5% (7.4)	5.7% (2.4)	27.2% (6.6)
Did not respond	2.0% (1.8)	3.9% (3.4)	0.0% (--)	6.1% (5.3)	0.0% (--)	1.0% (1.0)	2.3% (2.3)
Panel B: External Habit – Response to fall in standard of living compared to what everybody else around you has experienced recently							
Decrease equity allocation percentage / less likely to invest in equities	44.7% (6.9)	33.0% (10.8)	54.0% (9.4)	53.6% (11.6)	40.2% (8.1)	58.3% (11.1)	42.0% (7.8)
Neither increase nor decrease equity allocation percentage / neither more nor less likely to invest in equities	25.5% (6.1)	22.0% (6.3)	26.5% (9.4)	20.3% (6.7)	28.1% (8.4)	29.9% (9.3)	24.6% (7.2)
Increase equity allocation percentage / more likely to invest in equities	11.7% (5.0)	19.4% (10.7)	6.3% (2.6)	2.9% (2.2)	16.0% (7.1)	6.5% (5.0)	12.6% (5.8)
I don't know	14.9% (4.8)	17.6% (6.9)	13.2% (6.8)	13.4% (6.9)	15.7% (6.3)	3.1% (2.4)	17.2% (5.7)
Did not respond	3.3% (2.9)	7.9% (6.8)	0.0% (--)	9.9% (8.4)	0.0% (--)	2.1% (2.2)	3.5% (3.5)
Panel C: Ambiguity / Parameter Uncertainty – Response to having a better sense of the average returns and risks of investing in stocks							
Decrease equity allocation percentage / less likely to invest in equities	8.0% (3.4)	3.8% (2.3)	12.4% (6.4)	2.6% (1.5)	11.0% (5.1)	1.3% (1.1)	10.4% (4.6)
Neither increase nor decrease equity allocation percentage / neither more nor less likely to invest in equities	18.9% (3.6)	16.8% (4.0)	21.2% (5.9)	18.7% (4.9)	19.1% (4.8)	19.6% (4.9)	18.7% (4.5)
Increase equity allocation percentage / more likely to invest in equities	56.0% (4.7)	59.1% (6.1)	52.9% (7.1)	54.2% (7.3)	57.1% (6.2)	61.4% (6.3)	54.0% (5.9)
I don't know	14.9% (2.8)	16.2% (3.6)	13.2% (4.2)	18.8% (4.8)	12.6% (3.4)	16.9% (4.0)	14.2% (3.5)
Did not respond	2.2% (1.8)	4.0% (3.5)	0.3% (0.3)	5.8% (5.0)	0.2% (0.2)	0.8% (0.8)	2.7% (2.4)

Table 8: Return Beliefs

This table presents the percent of respondents who described the factor in the first column as very or extremely important, either for the entire sample (N= 1,098) or split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Only stock market participants (N= 708) were asked about the importance of a belief that expected stock returns are higher than usual right now. Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Expected stock returns lower than usual right now	A belief that the returns I can expect to earn from investing in stocks right now are lower than usual	23.8% (2.5)	23.8% (3.2)	24.3% (4.1)	22.7% (3.4)	24.7% (3.5)	14.1% (2.5)	28.3% (3.4)
Expected stock returns higher than usual right now**	A belief that the returns I can expect to earn from investing in stocks right now are higher than usual.	22.8% (3.3)	22.8% (3.3)	--	22.0% (3.7)	23.7% (5.8)	11.1% (2.3)	31.8% (5.1)
Stock market returns have momentum	A belief that low stock market returns tend to be followed by more low stock market returns	17.9% (2.2)	15.4% (2.6)	21.5% (3.9)	17.7% (3.2)	18.1% (2.9)	9.4% (2.0)	21.8% (3.0)
Stock market returns mean-revert	A belief that low stock market returns tend to be followed by high stock market returns	16.5% (2.0)	18.6% (2.8)	13.6% (2.9)	19.2% (3.2)	14.9% (2.6)	10.2% (1.9)	19.5% (2.8)

** Among stock market participants only.

Table 9: Social and Personal Factors

This table presents the percent of respondents who described the factor in the first column as very or extremely important, either for the entire sample (N = 1,098) or split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Some factor importances were elicited only among stock market non-participants (N = 376). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Don't like to think about my finances*	I don't like to think about my finances	35.6% (4.7)	--	35.6% (4.7)	29.6% (7.7)	36.4% (5.2)	28.3% (7.2)	36.9% (5.4)
Low trust in market participants	Concern that companies, managers, brokers, or other market participants might cheat me out of my investments	35.0% (2.8)	31.8% (3.0)	40.1% (5.3)	35.4% (3.4)	35.0% (4.1)	24.3% (3.1)	40.0% (3.8)
Lack of knowledge about how to invest	My lack of knowledge about how to invest	33.9% (2.6)	31.0% (3.2)	37.5% (4.5)	31.0% (3.4)	35.9% (3.7)	26.3% (3.1)	37.4% (3.5)
Lack of trustworthy advisor	Difficulty in finding a trustworthy advisor	29.2% (2.4)	27.3% (2.8)	32.3% (4.4)	31.7% (3.3)	27.8% (3.3)	22.3% (2.8)	32.5% (3.3)
Experience of living through returns	The feelings, attitudes, and beliefs about the stock market I've gotten from living through stock market ups and downs (whether or not I was invested in stocks at the time)	25.4% (2.2)	28.5% (2.8)	22.0% (3.6)	34.8% (3.3)	19.8% (2.8)	28.9% (3.2)	23.7% (2.8)
Advice from professional financial advisor	Advice from a professional financial advisor I hired	25.2% (2.3)	31.7% (3.0)	16.4% (3.1)	32.4% (3.1)	21.0% (3.1)	25.7% (3.0)	25.0% (3.0)
Personal experience investing in stock market	The feelings, attitudes, and beliefs about the stock market I've gotten from my personal experiences of investing in the stock market	24.4% (2.2)	27.3% (2.8)	21.2% (3.6)	30.8% (3.3)	20.6% (2.9)	27.0% (3.2)	23.2% (2.9)
Religion	My religious beliefs, values, and experiences	24.2% (2.3)	22.5% (2.6)	26.0% (4.2)	20.0% (2.6)	26.9% (3.4)	16.7% (2.9)	27.7% (3.1)
Advice from friend, family, or coworker	Advice from a friend, family member, or coworker	14.7% (2.0)	11.7% (2.3)	19.4% (3.8)	6.7% (1.9)	19.8% (3.1)	13.1% (3.0)	15.5% (2.7)
Advice from media	Advice from a book or an article I read, or from somebody on TV, radio, or the internet	11.7% (1.9)	11.3% (2.4)	12.6% (3.0)	8.9% (2.3)	13.5% (2.7)	8.6% (2.5)	13.1% (2.5)
Intended to invest but never got around to it*	I intended to invest in stocks but never got around to it	4.4% (1.5)	--	4.4% (1.5)	1.9% (1.1)	4.7% (1.8)	7.3% (3.5)	3.8% (1.7)

* Among stock market non-participants only.

Table 10: Other Factors

This table presents the percent of respondents who described the factor in the first column as very or extremely important, either for the entire sample (N= 1,098) or split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Need cash on hand for routine expenses	The amount of cash I need to have on hand to pay routine expenses	43.9% (2.9)	35.9% (3.2)	56.2% (4.8)	38.1% (3.5)	47.7% (4.1)	33.2% (3.5)	48.9% (3.8)
Stocks take too long to convert to cash in emergency	Concern that stock investments will take too long to convert into spendable cash in an emergency	27.4% (2.9)	22.7% (2.9)	34.9% (5.5)	21.3% (3.2)	31.3% (4.2)	16.8% (2.8)	32.3% (3.9)
Default allocation in retirement savings plan	The default investment allocation in my (and/or my spouse/partner's, if applicable) work-based retirement savings plan (for example, 401(k), 403(b), Thrift Savings Plan)	24.3% (2.8)	25.5% (2.8)	23.5% (5.6)	22.1% (2.8)	25.9% (4.1)	19.1% (2.9)	26.7% (3.8)
Stock market returns before I was born	What I know about the stock market's returns during the decades before I was born	15.4% (2.1)	13.7% (2.5)	18.3% (3.8)	15.8% (2.8)	15.2% (2.9)	15.1% (2.8)	15.5% (2.8)
Rule of thumb	A rule of thumb (for example, "The percent you invest in stocks should be 100 minus your age" or "Invest one-third in stocks, one-third in bonds, and one-third in real estate")	12.4% (1.8)	10.7% (2.1)	14.4% (3.0)	11.5% (2.4)	13.1% (2.4)	7.0% (1.8)	14.9% (2.4)

Table 11: Fixed Costs of Stock Market Participation

This table presents, among respondents who said that "the amount of money I have available to invest in stocks is too small" is a very or extremely important factor in their not holding stocks, the percent who described the factor in the first column as very or extremely important in causing the amount of money they have to be too small. The percentages are calculated over either the entire subsample (N = 299) or over the subsample split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). The question about home crowd-out is asked only of homeowners in the subsample (N = 109). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Wealth		Education	
			High	Low	High	Low
Costs of staying up-to-date	The **ongoing** time, money, and/or effort it would take to stay up-to-date on the stock market	44.9% (6.8)	71.4% (13.7)	42.9% (7.0)	46.7% (9.9)	44.4% (8.2)
Costs of learning about stocks	The amount of time, money, and/or effort it would take to learn about stocks	41.1% (6.4)	70.7% (13.8)	38.9% (6.5)	40.0% (9.2)	41.5% (7.9)
Costs of hiring an adviser	The amount of time, money, and/or effort it would take to hire an investment adviser	39.4% (6.4)	61.3% (15.7)	37.7% (6.5)	31.2% (8.3)	41.8% (8.0)
Costs of maintaining an adviser	The **ongoing** time, money, and/or effort it would take to **maintain** a relationship with an investment advisor **after** hiring him or her	37.6% (6.1)	30.9% (15.0)	38.1% (6.5)	34.8% (8.8)	38.4% (7.5)
Costs of maintaining an account	The **ongoing** time, money, and/or effort it would take to **maintain** an investment account **after** setting it up	37.6% (6.2)	29.8% (14.8)	38.2% (6.6)	37.0% (9.1)	37.8% (7.5)
Costs of setting up an account	The amount of time, money, and/or effort it would take to set up an investment account	31.5% (5.6)	30.8% (14.9)	31.5% (6.0)	23.5% (7.6)	33.8% (7.1)
Tax complexity	Stock investments would make my tax returns harder to prepare	28.6% (5.4)	17.9% (9.9)	29.4% (5.7)	25.3% (8.4)	29.5% (6.5)
Home crowd-out****	You said you own your home. How important is that in causing you to not have enough money to make it worthwhile to invest in stocks?	24.3% (6.3)	41.6% (18.6)	21.3% (6.6)	25.0% (9.0)	24.0% (8.1)

**** Among homeowners only.

Table 12: Actively Managed Mutual Funds

Panel A presents, among respondents who said that they had ever purchased shares in an actively managed stock mutual fund (N = 468), the percent who described the factor in the first column as very or extremely important in their decision to invest in an actively managed stock fund instead of a passive stock fund. Panel B presents, among all survey respondents (N = 1,098), the percent who agree or strongly agree with the statement in the first column. The percentages are calculated over either the entire sample for the panel or over the panel's sample split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Participant		Wealth		Education	
			Yes	No	High	Low	High	Low
Panel A: How important were the following factors in your decision(s) to invest in an actively managed stock fund instead of a passively managed stock fund? Percent responding factor is very or extremely important								
Higher returns	A belief that the actively managed stock mutual fund would give me **higher returns** on average than a passively managed stock mutual fund	50.9% (3.9)	49.0% (4.1)	62.7% (10.3)	48.2% (4.6)	55.9% (7.0)	44.6% (5.0)	58.1% (5.9)
Adviser recommendation	The recommendation of an investment advisor I hired	48.2% (3.9)	48.9% (4.1)	43.8% (11.7)	45.8% (4.5)	52.8% (7.3)	50.9% (5.0)	45.2% (6.0)
Hedging	A belief that even though the actively managed stock mutual fund would have **lower returns** on average than a passively managed stock mutual fund, the actively managed fund would have higher returns than the passively managed fund when the economy does poorly (for example, during recessions or stock market crashes)	28.0% (3.5)	26.7% (3.6)	36.3% (11.5)	23.2% (3.4)	36.8% (7.2)	26.6% (4.8)	29.5% (5.1)
Passive not available	A suitable passively managed stock mutual fund wasn't available in my employer-sponsored retirement savings plan	18.8% (3.5)	19.8% (3.9)	12.6% (5.0)	15.8% (3.7)	24.2% (7.1)	15.1% (4.0)	23.1% (5.8)
Panel B: How much do you agree with the following statement? Percent responding agree or strongly agree								
Managerial skill	When an actively managed stock mutual fund has had significantly higher past returns than the overall stock market, this is strong evidence that its manager has good stock-picking skills	43.0% (2.7)	49.7% (3.3)	34.0% (4.4)	52.1% (3.4)	37.6% (3.6)	46.6% (3.7)	41.3% (3.5)
Decreasing returns to scale	When an actively managed stock mutual fund gets more money to manage, it becomes harder for it to generate higher returns than the overall stock market	17.2% (2.1)	18.9% (2.4)	14.1% (3.8)	22.8% (3.0)	13.9% (2.8)	16.7% (2.5)	17.5% (2.9)

Table 13: Cross-Section of Stock Returns

This table presents the distribution of responses to questions about the risks and expected returns of value stocks versus growth stocks, and high-momentum stocks versus low-momentum stocks. The high wealth subsample is those with at least $75,000 of investible assets. Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

Panel A: Risk				
	Compared to a growth stock, I expect a value stock to normally be… over the next year, on average		Compared to a stock whose price fell a lot over the past year, I expect a stock whose price rose a lot over the past year to normally be… over the next year on average	
	All	High wealth	All	High wealth
Riskier	13.2%	16.2%	22.7%	23.0%
	(1.6)	(2.7)	(2.9)	(3.3)
Equally risky	14.9%	14.5%	31.5%	42.5%
	(1.8)	(2.2)	(2.3)	(3.4)
Less risky	40.6%	48.6%	13.4%	12.3%
	(2.9)	(3.4)	(1.8)	(1.8)
No opinion	25.8%	15.3%	26.9%	16.8%
	(2.3)	(2.1)	(2.4)	(2.2)
No response	5.5%	5.4%	5.5%	5.4%
	(1.2)	(1.5)	(1.2)	(1.5)
Panel B: Expected returns				
	Compared to a growth stock, I expect a value stock to normally have… over the next year, on average		Compared to a stock whose price fell a lot over the past year, I expect a stock whose price rose a lot over the past year to normally have… over the next year on average	
	All	High wealth	All	High wealth
Higher returns	23.0%	24.7%	22.5%	26.3%
	(2.1)	(2.8)	(2.7)	(3.1)
About the same	19.1%	28.2%	29.9%	31.2%
	(1.8)	(3.1)	(2.5)	(3.2)
Lower returns	26.2%	23.2%	13.4%	18.3%
	(3.0)	(3.2)	(1.8)	(2.9)
No opinion	26.3%	18.6%	28.7%	18.9%
	(2.3)	(2.7)	(2.4)	(2.3)
No response	5.5%	5.4%	5.5%	5.4%
	(1.2)	(1.5)	(1.2)	(1.5)

Appendix Table 1: Why Did You Not Get Around to Investing in Stocks?

This table presents, among respondents who said that "I intended to invest in stocks but never got around to it" is a very or extremely important factor in their not holding stocks, the percent who described the factor in the first column as very or extremely important in causing them to not get around to investing in stocks. The percentages are calculated over either the entire subsample ($N = 97$) or over the subsample split by stock market participation, wealth (at least or below $75,000 in investible financial assets), and education (with or without a bachelor's degree). Standard errors are in parentheses below the point estimates. All statistics are calculated using sampling weights.

	Survey text	All	Wealth		Education	
			High	Low	High	Low
Less money available now	I have less money available now than when I originally planned on investing in stocks	40.3% (11.3)	49.5% (20.5)	39.7% (11.8)	58.0% (13.0)	36.4% (12.5)
Too costly	I discovered that it takes more time, money, and/or effort to invest in stocks than I expected	30.6% (9.1)	27.0% (17.9)	30.8% (9.7)	60.1% (12.6)	24.0% (8.8)
Too busy	I was too busy	20.4% (7.5)	26.0% (17.1)	20.0% (7.9)	36.6% (13.5)	16.8% (8.1)
Procrastinated	I procrastinated for no good reason	15.5% (5.4)	64.1% (17.3)	12.1% (4.8)	11.4% (6.4)	16.4% (6.7)
Not important enough	I decided it wasn't important enough to think about it	11.3% (4.7)	17.3% (16.3)	10.8% (4.9)	27.5% (14.5)	7.6% (3.8)