Expected Horizon and Household Finance

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Abstract

We examine the empirical relation between subjectively expected life horizon (i.e., self-assessed life expectancy minus age) and household financial decisions. Using data from the Survey of Consumer Finances, we document substantial variation in expected horizon, even after controlling for age, gender, income, wealth, health status, and survey year. We show that equity portfolio shares follow a hump-shaped pattern over expected horizon. This result is robust to instrumenting expected horizon with parental survival. Moreover, variation in expected horizon also correlates with (pension) savings behavior, household leverage, real estate ownership, and life insurance ownership. Finally, we show that bequest motives can offset the effects of a shortening horizon. Our findings provide new evidence on savings and investment choices over the life cycle, and highlight the importance of subjective expectations in individual economic decision-making.

JEL classifications: D12; D14; D80; D91; E21; G11.

Keywords: household finance; portfolio choice; investment horizon; life expectancy; bequests.

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1. Introduction

A central issue in household financial decision-making is how to modify one's savings and investment behavior over the life cycle. Several papers have studied the explanatory power of age on portfolio choice (e.g., Ameriks and Zeldes, 2004; Fagereng et al., 2012). For many decisions, however, the relevant variable may not be age itself, but rather the planning horizon. How much to save for precautionary and life cycle motives is a problem that is informed by expectations about remaining life span. But also the optimal risky asset allocation may depend on retirement and life horizons, either because of labor income risk (e.g., Viceira, 2001; Cocco et al., 2005; Benzoni et al., 2007) or because of return predictability (e.g., Merton, 1973; Barberis, 2000; Campbell and Viceira, 2002). The importance of horizon in theoretical models coincides with the existence of tailored financial products (e.g., target-date funds), and with popular investment advice (e.g., Malkiel, 2011, p. 364: "the longer the time period over which you can hold on to your investments, the greater should be the share of common stocks in your portfolio"). However, little evidence exists on how variation in expectations of remaining life span affects the behavior of households in practice, even though horizon beliefs do not only vary across but also within age groups. Therefore, in this paper, we investigate to which extent self-reported expected life horizon can contribute to explaining observed savings and investment decisions.

Our analysis starts from the premise that an individual's behavior is determined by his own beliefs, even if those beliefs may turn out to be incorrect. A recent literature has acknowledged the importance of individuals' assessments of the probabilities of certain outcomes in explaining economic choices (Manski, 2004). Moreover, Hurd (2009) argues that such "subjective probabilities" are particularly relevant when concerning parameters about which people have private information, such as mortality risk. While subjective survival probabilities have been related to saving and consumption patterns among the elderly (e.g., Bloom et al., 2006), no study has investigated the empirical relation between expectations of life span and household finance more generally.

Our data come from the Survey of Consumer Finances (SCF), a triennial survey of U.S. households. Each iteration of the Survey since 1995 has included the following question: "About how old do you think you will live to be?". We compute a respondent's subjectively expected horizon as this self-assessed life expectancy minus his or her current age. We find substantial variation in expected horizons; for example, in the category of 45-year olds, the interquartile

range covers horizons from 30 to 45 years. About one third of the variation in horizons cannot be explained by differences in age, gender, income, wealth, health status, and survey year between respondents.

Our initial empirical tests examine how investors consider their expected life horizon when making equity investment decisions. To ensure that the conditional correlations between horizon and financial decisions are not spuriously driven by variation in optimism (Puri and Robinson, 2007), health status (Rosen and Wu, 2004), or some other factor, we control for a wide range of demographic and socio-economic characteristics and for economic attitudes. We find that, conditional on stock market participation, the share of financial assets allocated to equities shows a hump-shaped pattern over the expected horizon, peaking at a horizon of approximately 38 years. Keeping other characteristics unchanged, an investor with such a horizon is predicted to allocate about 7% more to equities than a respondent with a one-year horizon.

To test the robustness of this result, we use data from the Health and Retirement Study to construct an alternative horizon measure that is moreover instrumented with the current age or age at death of the respondent's parents. This procedure mitigates concerns about measurement error, focal points, and reverse causality (Bloom et al., 2006) – and about optimism driving our results. As before, we find a statistically significant hump-shaped pattern.

We also examine to which extent our finding of a hump-shape in the allocation to equities can be explained by changes in portfolios over working careers, as many models highlight the importance of human capital in generating life-cycle patterns. For those respondents in the SCF survey that are employed full-time, we have information on their subjectively expected horizon until retirement. The results of a model that replaces our expected horizon variables with retirement horizon variables imply a peak in equity portfolio shares at 20 years prior to the expected year of retirement. Nevertheless, from an analysis that combines both horizon types we conclude that retirement horizon does not completely explain away the previously described life horizon effects.

Next, we examine how expected horizon affects various other financial decisions, namely (pension) savings behavior, household leverage, and the ownership of real estate and life insurance. The likelihood of saving shows a U-shape over expected horizon, with the longest and shortest horizons associated with elevated probabilities. The amount of pension savings is higher for households with longer horizons, all else equal. In terms of leverage, we document lower

indebtedness for short-horizon households. Not surprisingly, life insurance ownership shoots up and real estate ownership drops slightly when the horizon gets very short. This is further evidence that households take into account their expected life horizon when making financial household decisions.

In our final set of analyses, we examine how horizon effects interact with bequest motives. In line with the hypothesis that households with bequest motives behave as if their investment horizon is infinite (Barro, 1974; Jappelli, 1999), we find evidence that the presence of children attenuates the impact of a shortening horizon on equity shares and life insurance ownership. Furthermore, we show that the higher average savings rates when horizons shorten can be attributed entirely to households with bequest motives.

This paper contributes to the literature in a number of ways. First, many papers have argued that the optimal investment portfolio varies over the life cycle, for example because of the importance of labor income risk, or because of the predictability of stock returns (cf. supra). Despite this research, the empirical evidence on the presence of life-cycle effects in household portfolios is mixed. The lack of consensus may be partially driven by the difficulty of simultaneously identifying age, time, and cohort effects (Ameriks and Zeldes, 2004; Campbell, 2006), and by the limitations of existing data sets (Fagereng et al., 2012). We suggest an additional complicating factor: age is a noisy proxy for investment horizon, which itself plays an important role in many models of life-cycle behavior. Our point is not that age is irrelevant in decision-making; economic attitudes, background risks, and other determinants of portfolio choice may show age-related patterns. Our goal is rather to document the empirical relevance of horizon effects, which we aim to disentangle from other variables that vary with age. Moreover, in contrast to much of the existing literature, we do not only investigate the determinants of equity investments, but explore the covariance of expected horizon with a wider range of household financial decisions.

A second contribution follows from our focus on subjective survival rates. An existing literature stresses the importance of using subjective beliefs in analyzing economic choices (Manski, 2004; Hurd, 2009), and a number of studies specifically examine how individual financial decisions are influenced by beliefs about mortality. Hurd et al. (1998) find that the probability of saving depends on subjective beliefs about longevity, but their analysis does not control for health status. Brown et al. (2012) document that the expected likelihood of survival affects the choice between different types of streams of pension payments. Gan et al. (2004) argue that subjective survival

rates perform better than objective probabilities in predicting wealth levels in a dynamic life-cycle model. Bloom et al. (2006) report that, at least for couples, a longer expected life horizon leads to more wealth accumulation, but has no effect on the timing of retirement. Salm (2010) shows that consumption growth is smaller for individuals with lower subjective survival probabilities, which is in line with the predictions of the standard life-cycle model of saving and consumption. However, in contrast to our work, these papers are based on surveys among elderly individuals only and do not consider investment choices.

Third, the paper adds to the discussion on how the desire to leave a bequest affects household behavior. Research on wealth patterns among ageing individuals faces difficulties in identifying the effects of bequest motives; saving for a bequest may be hard to disentangle from precautionary saving (Modigliani, 1988; Dynan et al., 2002), while wealth decumulation during retirement may reflect gifts to children rather than selfish behavior (Jappelli, 1999). We take a different approach to examining the relevance of bequests for financial decision-making, by studying how expected horizon manifests itself differently for households with and without children. We thus provide an indirect test of the hypothesis that bequest motives extend households' investment horizons (Barro, 1974; Jappelli, 1999).

The remainder of this paper is structured as follows. Section 2 presents the data. Section 3 investigates the relation between expected horizon and equity investments. Section 4 studies the impact of horizon on other financial decisions. Section 5 investigates how bequest motives mediate the impact of expected horizon on savings and investment behavior. Section 6 concludes.

2. Measuring expected horizon

2.1. Data collection

This study uses pooled cross-sectional data on U.S. households from the triennial Survey of Consumer Finances, which is conducted by the Federal Reserve Bank. Until 2007, each survey covered approximately 4,400 households; in 2010, more than 6,000 households were interviewed. The sample is designed to overrepresent higher-income individuals. In this study, we use data from the SCF over the period 1995-2010, giving us a sample of 28,464 households. Because of missing values, range answers, and disclosure limitations, the SCF provides multiple imputations for its data (Kennickell, 1998). Each household therefore appears five times in our

sample. Throughout our analysis, we account for these multiple imputations by adjusting our standard errors following techniques described by Little and Rubin (1987) and Montalto and Sung (1996). In line with prior work, we aggregate financial-economic data per household, while other information is collected at the level of the household head.

2.2. Subjectively expected horizon (SEH)

The SCF data has been used by a number of previous studies that examine lifetime asset allocation, such as Poterba and Samwick (1997) and Ameriks and Zeldes (2004). However, while these studies examined age effects, we want to evaluate the role of investor horizon. To do so, we use data from a question added to the SCF in 1995: "About how old do you think you will live to be?". We define each respondent's subjectively expected horizon (SEH) by subtracting his or her age from this self-assessed life expectancy:

$$SEH = \text{expected age at death} - \text{current age} \quad (1).$$

Expected life span data were also utilized by Puri and Robinson (2007), who construct a measure of optimism by subtracting actuarial life expectancies (based on age, gender, and race, and with a correction for smoking behavior and education) from expected age at death. In other words, while our focus is on personal horizon beliefs, Puri and Robinson (2007) are interested in a miscalibration in beliefs. Importantly, a number of papers have established that variation in longevity expectations do not just reflect optimism relative to life tables. Subjective survival probabilities covary with factors such as income and health status, which are known to impact life expectancy but are not considered in the relatively coarse life tables (Hurd and McGarry, 1995, 2002). Moreover, subjective survival probabilities predict mortality even after controlling for a wide range of observable characteristics (Smith et al., 2001; Hurd and McGarry, 2002). Individuals thus possess private information on their mortality risk. Nevertheless, we recognize the need to carefully control for different aspects of optimism throughout our study.

The average household head in our study is 50.5 years old, and has a horizon of 32.1 years. However, examining the conditional correlation between investor horizon and portfolio choice is only relevant if horizons vary sufficiently *within* age groups. Figure 1 shows the average SEH per age group for our sample of households. Unsurprisingly, we observe that expected horizon is a decreasing convex function of age. Also, in each group, the mean SEH is close to the gender-weighted average objectively expected horizon that is computed from the life tables for each

survey year provided by the National Center for Health Statistics (2012). Respondents report life expectancies that are on average 2.3 years greater than those warranted by the expected mortality rates in life tables; the discrepancy is slightly more pronounced for males than for females. These findings are in line with Puri and Robinson (2007). A small positive difference may be expected as the SCF only surveys the non-institutionalized population, for whom the average life horizon exceeds that of institutionalized individuals (Hurd and McGarry, 2002). In addition, a positive difference between the subjective and the objective life horizon may reflect anticipated longevity increases over the respondent's life.

[Insert Figure 1 about here]

Figure 1 also shows the 25th and 75th percentiles; there is substantial variation in SEH within each age group. For example, in the category of 45-year olds, the interquartile range covers horizons from 30 to 45 years. (The 5th and 95th percentiles (not shown) of the distribution of expected horizons for 45-year olds are 18 years and 55 years.) The quartiles converge to the average estimates for older respondents.

2.3. Financial decisions and control variables

The data available in the SCF allow us to study a number of household financial outcomes. We know for each respondent whether he participates in the equity market (directly or indirectly, for example through investments in mutual funds or IRAs). For those respondents with equity investments, we compute the equity share relative to all financial assets, and the amount of equities that is directly held as a fraction of the total equity portfolio. To capture savings behavior, we have a dummy variable that equals one if the household spent less than it earned over the year prior to the survey, and another variable with the total amount of pension savings. Household leverage is measured as total household debt over the sum of financial and non-financial assets. Finally, we have dummy variables that indicate whether the household owns a house and whether the respondent possesses a term life insurance policy.

The SCF contains data on many demographic and socio-economic characteristics known to have explanatory power for financial decisions, such as race, household composition, employment, education, and household income and wealth. We also create dummy variables that capture the health status and smoking behavior of respondents, which could be correlated both with life expectancy and with financial decisions (Rosen and Wu, 2004). Finally, we construct a number

of variables related to economic attitudes, for reasons described before. Economic optimism is captured by a dummy variable that equals one for respondents who believe that the economy as a whole will do better over the next five years than it has done over the past five years. Another indicator variable measures income optimism; it equals one if the respondent expects the household's total income to go up more than prices over the next year. A last dummy variable proxies for risk aversion, and equals one if the respondent declares not to be willing to accept any financial risks, regardless of the expected returns.

A detailed description of all dependent and control variables used in this study is provided in Table 1. Table 2 shows the descriptive statistics, which are informative about the composition of our sample. 59% of our sample invests in the equity market; conditional on participation, respondents have on average approximately half of their financial assets invested in equities. Slightly more than half of all households indicate to have saved in the preceding year. The median household has a leverage ratio of 9%. Almost three quarters of the households in our sample own the house they live in, and a small majority has term life insurance. 78% of all household heads in the survey are male, 79% are white, 59% are married, and 86% have children. In terms of education and employment, we find that 46% of survey participants have a college degree, 24% are self-employed, and 17% are retired.

[Insert Table 1 and Table 2 about here]

2.4. Explaining SEH

In Table 3 we regress SEH on a number of controls and characteristics at the individual and household level, using ordinary least squares (OLS). The results in the first column show that gender, age effects, and survey year effects together explain 66% of the variation in SEH in our sample. In the second column, we add our proxies for income, wealth, and health status, which covary with objective life expectancy, to the model. All supplementary variables enter with the expected signs, but the R-squared increases by not much more than one percentage point. Approximately one third of the variation in SEH remains unexplained.

[Insert Table 3 about here]

3. Expected horizon and equity investments

We now turn to examining how subjective life horizon affects savings and investment decisions. In this section, we study the relation between expected horizon and equity investments. The next section focuses on other financial decisions.

3.1. Equity shares

In Table 4 we show the average fraction of financial assets allocated to equities, conditional on equity market participation, for a range of age and SEH groups. We exclude age-SEH combinations with fewer than ten observations. The next-to-last column shows that the risky share allocation follows a pronounced hump-shaped pattern across age groups, in line with previous studies using SCF data, including Yoo (1994) and Ameriks and Zeldes (2004). However, there are also differences in the risky share allocation across horizon groups, even within age categories. For example, in the group of 50- to 59-year olds, the average equity percentage is substantially lower for investors with a horizon of under 10 years (0.44) and investors with horizons of 50 to 59 years (0.46) than for investors with a horizon of 30 to 39 years (0.53).

[Insert Table 4 about here]

To study the risky share allocation decision more formally, and to control for factors that can affect both horizon and portfolio choice, we now estimate a multivariate regression model. Our regression equation can be expressed as follows:

$$Equity\ share_i = \alpha + \beta_1 \times SEH_i + \beta_2 \times SEH_i^2 + \theta' X_i + A + Y + C + \varepsilon_i \qquad (2),$$

where *SEH* and its square are our main variables of interest, *X* is a vector of control variables, *A* represents the age dummies, *Y* is a vector of survey year effects, and *C* are cohort effects. (McIntosh and Schlenker (2006) show that, even in the presence of fixed effects, a squared term captures a "global" quadratic form across units.) A particular methodological issue in household finance research is the multicollinearity between age, survey year, and year of birth effects (Ameriks and Zeldes, 2004). In this paper, we break the collinearity by creating cohorts for five-year intervals of year of birth; the results are robust to using different interval widths. An alternative identification strategy consists of proxying for cohort effects by the stock market returns during the respondent's youth, because individuals who experience higher stock market returns during their lives may be more likely to invest in equities (Malmendier and Nagel, 2011;

Fagereng et al., 2012). All presented results are robust to replacing the cohort dummies by a variable that equals the return of the S&P500 during the respondent's youth (age 15 to 25), mitigating concerns about multicollinearity issues or misidentification of cohort effects driving our results.

We trim observations at the 1st and 99th percentile of SEH per age group prior to running our regressions, but all reported results are robust to trimming observations at the 5th and 95th percentiles. This should reduce worries that our findings are driven by extreme beliefs, or by respondents refusing to answer the question truthfully.

The results of the OLS estimation of Equation (2) are reported in Table 5. The first column includes SEH, its square, and the age, year, and cohort effects as independent variables, but not the vector of additional controls. We find that the risky asset share is a statistically significant hump-shaped function of expected horizon. When adding the control variables in the second column, the R-squared of the regression increases by more than half. Nonetheless, the coefficients on SEH and its square change little; they imply a peak in the equity share at a horizon of 38 years. Comparable results are obtained in a non-parametric set-up that replaces the SEH variables with five-year SEH interval dummies (not reported). Most of the coefficients on the other control variables have the expected signs. For example, male, highly-educated, and wealthy respondents hold more of their financial assets in equities. By contrast, individuals who are retired, self-employed, or risk averse are less likely to elevated high equity shares.

[Insert Table 5 about here]

Panel A of Figure 2 plots the predicted average equity shares, as implied by the results just described, starting at an expected horizon of 50 years. Keeping other characteristics unchanged, an investor with a horizon of 38 years is predicted to allocate 3.6 percentage points more to equities than a respondent who has a horizon of one year. (To put this result in perspective: owners of a college degree allocate 3.7 percentage points more to equities, while self-employed individuals have a risky share that is 3.3 percentage points lower, ceteris paribus.) Since the average equity share is 0.49, this absolute difference corresponds to a relative difference of more than 7% in the allocation to equities. The horizon effects are thus not only statistically but also economically significant.

[Insert Figure 2 about here]

To examine whether it is really the *subjectively* expected horizons that drive the results, we replace the age dummies by objectively expected horizons, as implied by life tables taken from National Center for Health Statistics from each survey year, and rerun our model. The coefficient estimates for subjectively expected horizon do not change much and remain statistically significant (not reported). In another test, we find that replacing the subjective horizon expectancies in Equation (2) by objective horizon estimates yields statistically insignificant, less precisely estimated coefficients (not reported). These results highlight the relevance of subjective assessments.

Rosen and Wu (2004) argue that pooling single household heads with married ones leads to estimation issues. In the third and fourth column of Table 5 we therefore report the estimated coefficients for singles and couples separately. While the estimates for the subsample of singles are statistically insignificant in this smaller sub-sample, the horizon coefficients are comparable to those reported before. For couples, the horizon effects remain statistically significant. The results are also robust to adding the partner's horizon beliefs (not reported).

3.2. Expected horizon vs. optimism

One concern about our horizon measure, which is based on self-assessed life expectancy, is that it may be picking up differences in optimism rather than variation in investment horizons. Therefore, it is important that we control for different proxies of optimism in our models. Economic optimism positively affects the equity share. This finding is in line with the research of Kaya (2012) on stock market optimism and portfolio allocation. By contrast, Puri and Robinson (2007) argue that individuals with a positive general outlook do not necessarily have higher equity allocations on average, but are more likely to participate in the equity market, and to be stock-pickers conditional on participation. We therefore replace our dependent variable by an indicator that equals one if the household participates in the equity market, and zero otherwise. We limit our sample to households that own at least $5,000 in financial assets to reduce the potential bias arising from fixed participation costs, but the results are similar without this filter. We estimate a probit model using maximum likelihood in the fifth column of Table 5. We do not find a statistically significant relation between equity market participation and expected horizon. We see the anticipated signs for many of our control variables. We also examine the proportion of equity wealth that is held directly, conditional on equity market participation. The results are reported in the last column of Table 5. We find that, in contrast to income optimism, expected

horizon is not statistically significantly related to individual stockholdings. These results further support our argument that expected life horizon is not just a proxy for optimism.

3.3. Instrumenting expected horizon

Potential disadvantages of using subjective probabilities or expectations include measurement errors, focal point answers, and reverse causality (Bloom et al., 2006). As there is strong evidence that people rely on the longevity of relatives when forming expectations of their own age at death (Hurd and McGarry, 1995, 2002; Smith et al., 2001), instrumenting subjective life expectancy with parental survival may correct for these issues. Indeed, Bloom et al. (2006) find that instrumented survival probabilities better predict mortality than non-instrumented ones. Instrumenting expected horizon also mitigates concerns about optimism driving our results.

As the SCF does not provide detailed information on the respondents' parents, we use data provided by the Health and Retirement Study (HRS). This longitudinal study surveys a panel of American individuals of 50 years or older every two years. We use the RAND HRS data files, which contain cleaned and derived variables, for the years 1992-2010. We consider each household in the year in which it entered the survey for the first time. The HRS asks for the subjective probabilities of reaching 75 and 85, not the expected age at death, but we translate these probabilities into an implied subjectively expected horizon measure (iSEH). The details of this procedure can be found in Appendix A. We then instrument this alternative expected horizon measure with the age of the respondent's parents at the time of the survey or their age at death. Following Bloom et al. (2006), we consider 12 instrumental dummies for the mortality experience of the parents. For both mother and father, we have the following six indicator variables: alive and younger than 75, alive and between 75 and 85, alive and older than 85, age at death below 75, age at death between 75 and 85, and age at death above 85.

Table 6 re-examines the relation between equity shares and expected horizon when instrumenting horizon. We include the same demographic and socio-economic controls as before, except the variables capturing past income increases, and economic and income optimism, which are not available in the HRS database. For the first stage, we see that expected horizon generally increases with the current age or age at death of the parents. The F-test on the instruments gives a value of 7.09. In the second stage, we find a statistically significant hump-shaped pattern, like before. The Anderson-Rubin Wald test for robust inference in the case of weak instruments is

rejected at the 5% level, implying that the endogenous regressors are jointly significant. The allocation to equities now peaks at a horizon of 35 years.

[Insert Table 6 about here]

3.4. Retirement horizon and equity investments

A potential explanation for the profile of equity shares over horizon can be found in the literature that highlights the importance of human capital for optimal portfolio choice. For example, in Benzoni et al. (2007), young individuals' human capital is "stock-like" because of the cointegration between labor income and dividends. Therefore, equity shares should show a hump-shape pattern over working careers. To examine whether our results are mainly driven by effects prior to retirement, we re-estimate our equity share model separately on the working individuals in our sample. The results are reported in the first column of Table 7. Again, we see a hump-shaped horizon pattern.

[Insert Table 7 about here]

For those respondents in the SCF survey that are working full-time, we also have information on their expected retirement age. We can thus define the subjectively expected horizon until retirement (SER) as follows:

$$SER = \text{expected age at retirement} - \text{current age} \quad (3).$$

Figure 3 shows the average expected horizon until retirement, and also the 25^{th} and 75^{th} percentiles, for each age level. The retirement horizons vary markedly within age groups, although less than the life horizons. In the category of 45-year olds, the interquartile range now goes from 14 to 20 years. In the same age group, the 5^{th} and 95^{th} percentiles of the distribution of expected horizons until retirement are 6 and 25 years (not shown).

[Insert Figure 3 about here]

We then repeat the previous analysis with this new variable. The results are reported in the second column of Table 7. As in the preceding analysis, we see a positive linear horizon estimate and a statistically significant negative coefficient on the quadratic term. The coefficients imply a

peak in equity portfolio shares at 20 years prior to the expected retirement age.[1] The last column of Table 7 shows that estimating our model with both the life horizon and the retirement horizon variables does not change the signs or relative magnitudes of the coefficients. While only the expected retirement horizon coefficients are statistically significant, the life horizon variables have p-values under 0.17. These results suggest that retirement horizon is not the only driving force behind the observed life horizon effects.[2]

4. Expected horizon and other financial decisions

Households make many financial choices other than how much to invest in equities. Therefore, in this section, we explore how (pension) savings behavior, household leverage, real estate ownership, and the holding of life insurance are related to expected horizon. Our regression set-up is similar to the one used before. However, to decide on the appropriate degree of the polynomial horizon function in our models, we follow a sequential analysis of variance procedure for each dependent variable. We only report the results for the optimal specifications. The signs of the control variables are mostly in line with expectations, and will therefore not be discussed.

We first look at savings; whether to save for precautionary and life cycle motives or not is a key decision in household finance. Households with longer subjective life horizons can be expected to be more likely to save. Our first dependent variable is a dummy that equals one for households that spent less than their income over the year prior to the interview. The first column in Table 8 reports the regression outcome of a probit model using maximum likelihood. The results point to a U-shape of the probability of saving over expected horizons.

[Insert Table 8 about here]

[1] In additional analysis, we construct proxies for the magnitude of the correlation between labor income and market returns, such as education, job title, industry beta, and self-employment status. We interact these variables with SER and its square to examine whether there is cross-sectional variation in equity share profiles that can be explained by differences in labor income riskiness. However, the results are weak (not reported). Cocco et al. (2005) argue that cross-sectional differences in labor income risk are often small.

[2] In a separate analysis, we examine the direct effect of life horizon on the time to retirement, controlling for the same household characteristics as in Table 3. On average, a 10-year longer life horizon increases the planned retirement horizon by 0.48 years, indicating a small but statistically significant effect (not reported).

Panel B of Figure 2 plots the predicted likelihood of saving over SEH, as implied by the regression results. Keeping other characteristics constant, an individual with a 50-year horizon is on average 2.6 percentage points more likely to save than one with a horizon of 22 years (i.e., the horizon associated with the lowest fraction of saving). As about half of the households in the sample indicate to save, the maximum relative difference in the likelihood of saving explained by variation in horizon beliefs is around 5%. The higher likelihood of saving for households with the shortest horizons may be surprising; however, we will see that this result can be attributed entirely to the behavior of households with children.

As an alternative to the variable measuring self-reported saving behavior, we examine the total dollar amount accumulated in retirement accounts and other annuity accounts, conditional on owning such accounts. The second column in Table 8 shows a statistically significant positive effect of horizon on the amount allocated to annuities. Panel C of Figure 2 plots the relationship between SEH and predicted pension savings; a horizon that is longer by 10 years is associated with pension savings that are approximately 9% higher. (There is only a minor non-linearity in the relationship.)

Next, we turn to household leverage. Yilmazer and DeVaney (2005) report households' debt-to-asset ratio to be a decreasing and concave function of age. The third column in Table 8 reports statistically significant horizon effects. Panel D of Figure 2 illustrates that, starting at a horizon of 42 years, we are observing a decrease in leverage as SEH gets smaller. The absolute difference between the minimum and maximum of the function over the considered horizon interval is 2.9 percentage points, corresponding to a 13.7% difference relative to the average leverage in our sample.

Also the decision to own rather than rent housing may be impacted by expected horizon. Popular real estate advice states that owning is mainly preferable to renting for individuals with long horizons (e.g., Varanasi, 2012: "[whether] buying a house becomes financially beneficial compared to renting the house is a function of the number of years one plans to stay in the house"). This advice is supported by Sinai and Souleles (2005), on the grounds that house ownership can hedge against rent risk. Therefore, we would expect longer life horizons to be associated with higher probabilities of real estate ownership. The fourth column in Table 8 shows that households may indeed consider their horizon, although the effect is rather weak. Panel E of

Figure 2 plots the average predicted real estate ownership against expected horizon. The graph shows that the predicted probability of owning real estate varies by less than 2 percentage points.

Finally, we examine the ownership of term life insurance. The importance of the life cycle in the decision to purchase life insurance has long been acknowledged (Fischer, 1973). If respondents time the purchase of life insurance based on expected horizon, the probability of ownership should increase dramatically once the horizon gets very short, even when controlling for age effects. The last column of Table 8 shows that the second and third degree polynomial factors are statistically significant. Panel F of Figure 2 confirms the hypothesis of an increase in the likelihood of owning a life insurance as the expected horizon shortens to less than 20 years.

5. Expected horizon and bequest motives

For household with bequest motives, variation in expected life horizon should matter less for decision-making, because these households can be expected to behave as if their horizon were infinite (Barro, 1974; Jappelli, 1999). In this section, we investigate whether there are indeed differences in the effects of horizon on equity investments, savings behavior, and life insurance ownership between respondents with and without bequest motives. We limit our analysis to these financial decisions, as the role of bequest motives is more ambiguous for the other financial decisions.

In line with prior work by Hurd (1987, 1989) and Inkmann and Michaelides (2012), we assume that a respondent has bequest motives if he has children. In order to examine how the relationship between horizon and financial decisions is affected by bequest motives, we add interaction terms between the children indicator and the horizon variables in our regression models. We expect each interaction term to take the opposite sign of the main horizon effect.

The first column in Table 9 shows how expected horizon determines the risky share allocation for bequest households versus no-bequest households. For households without children, the effect of horizon is more pronounced than before. Although the interaction terms take opposite signs, in line with expectations, they are statistically insignificant. Still, an F-test on the joint significance of the two interaction terms returns a value of 6.30. Bequest motives thus appear to partially offset the horizon effect on equity allocation. Panel A of Figure 4 plots the predicted average equity shares, and illustrates that households with children sell off less of their equity positions as

horizons shorten. The difference between the minimum and maximum predicted equity share is more than three times larger for households without bequest motives than for households with children, consistent with the hypothesis that bequest households are affected less by changing horizons.

[Insert Table 9 and Figure 4 about here]

Next, we consider the savings behavior of households. The second column in Table 9 reports statistically insignificant coefficients on the main and on the interaction terms. The results, also illustrated in Panel B of Figure 4, nevertheless suggest that the previously-discussed increase in the saving probability as the horizon gets short is driven by households with bequest motives.

Finally, recent papers by Inkmann and Michaelides (2012) and Sauter et al. (2010) argue that the life insurance market may be a particularly good setting to explore the impact of bequest motives on household decisions; because term life insurance only pays out if the insurance holder passes away before a pre-specified date, it is a direct bequest instrument. We therefore examine how the relationship between horizon and life insurance ownership is affected by bequest motives. The last column in Table 9 shows the regression results. All three terms of the polynomial horizon function are statistically significant; the three interaction terms are also significant, and have the opposite signs. Panel C of Figure 4 plots the predicted life insurance ownership patterns. We see a much flatter curve over expected horizons for households with children than for respondents without children. Households with children thus appear to "speculate" less based on their subjectively expected horizon when deciding whether to purchase life insurance. This result indicates that bequest motives may indeed cancel out horizon effects. The jump in the ownership of life insurance among households without bequest motives suggests that respondents without children have other relatives for whom they are willing to purchase life insurance when they believe they do not have long to live.

6. Conclusion

This paper examines the relationship between subjective life horizon beliefs and financial household decisions. We argue that for many financial decisions expectations about remaining life span should play an important role, and that age is a noisy proxy for expected life horizon. Even after controlling for age, gender, health status, optimism, and various socio-economic and

demographic characteristics, equity shares follow a hump-shape pattern over expected life horizons. This result is robust to instrumenting expected horizon with the mortality experience of the parents. Expected horizon also correlates with other financial decisions, such as (pension) savings behavior, household leverage, and the ownership of real estate and life insurance policies. Households thus appear to consider their horizon when making economically important financial decisions. Moreover, we find that bequest motives may interact with variation in expected horizon in explaining economic choices. Indeed, the effects of a shortening life horizon can be offset by bequest motives, providing evidence in support of the hypothesis that bequest motives extend households' investment horizons. Our results contribute to the literature on portfolio choice over the life cycle. They also highlight the potential of subjective beliefs to address empirical puzzles in household finance.

Appendix A: Computation of implied subjectively expected horizon

For each respondent we compare the subjective survival probability to reach age 75 to the objective probability, based on the respondent's transition probabilities by age and gender (Richards, 2010). For example, a 60-year old woman may have a subjective probability of reaching age 75 of 90%, above the objective probability of 80% that follows from life tables. We then map the deviation from the actuarial survival probability, Δ_p, into a discrepancy in horizon relative to life tables, Δ_h, as shown in Figure A1. The same 60-year old woman as before has an objective probability of 90% of living another 10 years, while she believes to have a probability of 90% of living another 15 years. We add this difference of five years to the objectively expected horizon for a 60-year old woman, again from Richards (2010), to get a proxy for her SEH. We repeat the procedure starting from the respondent's subjective probability to reach 85, giving us a second approximation of the respondent's SEH. We then take the average of the two values, and call this measure the implied subjectively expected horizon (iSEH).

[Insert Figure A1 about here]

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Table 1: Definitions of variables

This table presents definitions for the dependent variables and control variables used in this study. The data come from the Survey of Consumer Finances (1995-2010).

Variable	Description	Values
Equity	Does the household have a non-zero investment in directly held stock, stock mutual funds, or retirement and saving accounts in stocks?	yes=1; no=0
Equity share	(Directly held stock + stock mutual funds + retirement and saving accounts in stock) / financial assets	
Direct holdings	Directly held stock / (directly held stock + stock mutual funds + retirement and saving accounts in stock)	
Saving	'Over the past year, would you say that your spending exceeded your income, that it was about the same as your income, or that you spent less than your income?'	spent less than income=1; other=0
Ln(pensions)	Ln(total retirement accounts + other annuities)	
Leverage	Debt / (financial assets + non-financial assets)	
Real estate	'Do you and your family living here own this [house / apartment / lot / condo / mobile home]?'	yes=1; other=0
Life insurance	'Are any of your policies individual term insurance?'	yes=1; no=0
Age	Year of survey - year of birth	
Male	Sex of the respondent	male=1; female=0
White	'Which of these categories do you feel best describe you: white, black or African-American, Hispanic, Asian, Native American, or another race?'	white=1; other=0
Married	'Are you currently married, or living with a partner, separated, divorced, widowed, or (have you) never been married?'	married=1; other=0
Children	Does the respondent indicate to have at least one child?	yes=1; no=0
College	'Did you get a college degree?'	yes=1; no=0
Retired	'Are you working now, temporarily laid off, unemployed and looking for work, disabled and unable to work, retired, a student, a homemaker, or what?'	retired=1; other=0
Self-employed	'Do you work for someone else, (are you) self-employed, or what?'	self-employed or partnership=1; other=0
Ln(net income)	Ln(net income + 1)	
Increasing income	'Over the past five years, did your total income go up more than prices, less than prices, or about the same as prices?'	up more=1; other=0
Ln(net worth)	Ln((total assets - total liabilities) + 1)	
Business equity	'Do you own or share ownership in any privately-held businesses, farms, professional practices, limited partnerships or any other types of partnerships? Do not include corporations with publicly-traded stock.'	yes=1; no=0
Poor health	'Would you say your health is excellent, good, fair, or poor?'	poor=1; other=0
Smoker	'Do you currently smoke?'	yes=1; no=0
Economic optimism	'Over the next five years, do you expect the U.S. economy as a whole to perform better, worse, or about the same as it has over the past five years?'	better=1; other=0
Income optimism	'Over the next year, do you expect your total income to go up more than prices, less than prices, or about the same as prices?'	up more=1; other=0
Risk aversion	'Which of the statements on this page comes closest to the amount of financial risk that you are willing to take when you save or make investments?'	not willing to take any financial risks=1; other=0

Table 2: Descriptive statistics

This table presents descriptive statistics (number of observations, mean, 25th percentile, median, and 75th percentile) for the variables used in this study. SEH is defined as self-assessed life expectancy minus current age. All other variables are defined in Table 1. Leverage is trimmed at zero and one. Net income and net worth are trimmed at the 1st and 99th percentile. The data come from the Survey of Consumer Finances (1995-2010).

Variable	N	Mean	P25	P50	P75
SEH	142,319	32.10	19	31	44
Equity	142,319	0.59			
Equity share	84,397	0.49	0.25	0.48	0.73
Direct holdings	84,397	0.37	0.00	0.00	0.51
Saving	142,319	0.51			
Pensions	82,184	283,731	15,000	66,000	263,300
Leverage	130,099	0.21	0.00	0.09	0.34
Real estate	142,319	0.71			
Life insurance	142,319	0.52			
Age	142,319	50.53	38	50	62
Male	142,319	0.78			
White	142,319	0.79			
Married	142,319	0.59			
Children	142,319	0.86			
College	142,319	0.46			
Retired	142,319	0.17			
Self-employed	142,319	0.24			
Net income	135,211	158,265	24,674	51,712	115,897
Increasing income	142,319	0.27			
Net worth	135,198	1,782,767	17,000	146,955	815,000
Business equity	142,319	0.29			
Poor health	142,319	0.05			
Smoker	142,319	0.21			
Economic optimism	142,319	0.36			
Income optimism	142,319	0.25			
Risk aversion	142,319	0.34			

Table 3: Explaining SEH

This table reports the results of OLS regressions of SEH on demographic and socio-economic characteristics. SEH is defined as self-assessed life expectancy minus current age. All other variables are defined in Table 1. The data come from the Survey of Consumer Finances (1995-2010). Standard errors are reported below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	SEH	**SEH**
Male	-0.4613***	-1.6276***
	(0.1572)	(0.1655)
Ln(net income)		0.3483***
		(0.0674)
Ln(net worth)		0.2351***
		(0.0429)
Poor health		-6.2982***
		(0.3349)
Age effects	Yes	Yes
Year effects	Yes	Yes
R-squared	0.6597	0.6704
Observations	124,191	124,191

Table 4: Equity asset allocation, by age and by SEH

This table presents the average equity share of households holding equities in our sample, by age and by SEH groups. SEH is defined as self-assessed life expectancy minus current age. The data come from the Survey of Consumer Finances (1995-2010). Groups with fewer than 10 observations are excluded.

	SEH										
Age	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Avg.	Freq.
20-29		0.33	0.50	0.47	0.46	0.45	0.41	0.47	0.33	0.45	6.1%
30-39		0.37	0.43	0.48	0.52	0.48	0.46	0.44	0.41	0.49	14.6%
40-49	0.46	0.47	0.51	0.53	0.51	0.51	0.50			0.52	24.5%
50-59	0.44	0.49	0.51	0.53	0.53	0.46				0.52	25.0%
60-69	0.46	0.49	0.50	0.53	0.41					0.50	16.7%
70-79	0.46	0.52	0.51	0.54						0.50	9.5%
80-89	0.47	0.48	0.39							0.47	3.2%
90-99	0.46	0.62								0.49	0.4%
Average	0.46	0.50	0.50	0.53	0.51	0.48	0.44	0.46	0.36	0.49	
Frequency	7.0%	17.2%	24.2%	23.6%	16.0%	8.1%	2.9%	0.9%	0.0%		100.0%

Table 5: Expected horizon and equity investments

This table shows the results of a set of regressions explaining equity investments. All models are estimated using OLS, except the probit model in the fifth column, which is estimated using maximum likelihood. SEH is defined as self-assessed life expectancy minus current age. All other variables are defined in Table 1. Cohort effects group together respondents born in the same half decade. The data come from the Survey of Consumer Finances (1995-2010). Standard errors are reported below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Equity share full sample	**Equity share** full sample	**Equity share** singles only	**Equity share** couples only	**Equity** full sample	**Direct holdings** full sample
SEH	0.0043***	0.0020**	0.0021	0.0020**	0.0043	-0.0008
	(0.0008)	(0.0008)	(0.0016)	(0.0010)	(0.0038)	(0.0009)
SEH^2	-4.86e-05***	-2.63e-05***	-2.30e-05	-2.77e-05**	-0.0001	-1.12e-05
	(1.11e-05)	(1.11e-05)	(1.98e-05)	(1.35e-05)	(0.0001)	(1.26e-05)
Male		0.0162*	0.0243**	0.0416	-0.0440	0.0137
		(0.0089)	(0.0101)	(0.0535)	(0.0414)	(0.0103)
White		0.0244***	0.0248*	0.0255**	0.3253***	0.0038
		(0.0080)	(0.0144)	(0.0103)	(0.0343)	(0.0091)
Married		-0.0094			0.1158***	-0.0311***
		(0.0069)			(0.0341)	(0.0081)
Children		0.0003	-0.0102	0.0062	-0.1042***	-0.0195**
		(0.0083)	(0.0124)	(0.0121)	(0.0399)	(0.0094)
College		0.0367***	0.0173	0.0456***	0.2685***	0.0042
		(0.0056)	(0.0125)	(0.0063)	(0.0269)	(0.0061)
Retired		-0.0174**	-0.0434**	-0.0079	-0.1004**	0.0506***
		(0.0085)	(0.0178)	(0.0095)	(0.0450)	(0.0099)
Self-employed		-0.0325***	-0.0360**	-0.0307***	-0.4377***	0.0055
		(0.0070)	(0.0170)	(0.0076)	(0.0403)	(0.0085)
Ln(net income)		0.0015	-0.0033	0.0018	0.1622***	0.0160***
		(0.0029)	(0.0057)	(0.0034)	(0.0167)	(0.0035)
Increasing income		0.0178***	0.0087	0.0193***	0.1313***	-0.0048
		(0.0060)	(0.0120)	(0.0068)	(0.0355)	(0.0068)
Ln(net worth)		0.0088***	0.0068*	0.0101***	0.1655***	0.0455***
		(0.0022)	(0.0038)	(0.0027)	(0.0112)	(0.0025)
Business equity		-0.0126*	-0.0063	-0.0162**	-0.0869**	0.0066
		(0.0074)	(0.0183)	(0.0078)	(0.0392)	(0.0082)
Poor health		-0.0296	-0.0273	-0.0350	-0.2380***	0.0271
		(0.0203)	(0.0350)	(0.0281)	(0.0732)	(0.0230)
Smoker		-0.0186**	-0.0075	-0.0267***	-0.1124***	0.0257***
		(0.0076)	(0.0132)	(0.0090)	(0.0346)	(0.0082)
Economic optimism		0.0128***	0.0131	0.0129**	0.0168	0.0003
		(0.0050)	(0.0098)	(0.0059)	(0.0265)	(0.0058)
Income optimism		0.0040	0.0016	0.0036	-0.0158	0.0158**
		(0.0058)	(0.0123)	(0.0069)	(0.0323)	(0.0070)
Risk aversion		-0.0842***	-0.0747***	-0.0900***	-0.6709***	0.0170**
		(0.0075)	(0.0123)	(0.0094)	(0.0286)	(0.0080)
Age effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.0260	0.0447	0.0589	0.0682	0.2223	0.1854
Observations	79,377	79,377	21,905	57,472	97,234	79,377

Table 6: Instrumenting expected horizon

This table reports the results of a two-step regression analysis in which an implicit expected horizon measure (iSEH) is instrumented with parental survival in a first stage, and the effect of expected horizon on equity shares is examined in the second stage. The computation of iSEH is detailed in Appendix A of this paper. The data come from the Health and Retirement Study (1992-2010). Controls similar to those used in Table 5 are included, with the exception of the variables capturing past income increases and economic and income optimism. Cohort effects group together respondents born in the same half decade. Standard errors are reported below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	First stage **iSEH**	Second stage **Equity share**
iSEH		0.1493**
		(0.0677)
iSEH^2		-0.0021**
		(0.0010)
Mother deceased at age < 75	-0.5149	
	(1.2910)	
Mother deceased at age 75-85	0.4313	
	(1.3025)	
Mother deceased at age > 85	0.7640	
	(1.3479)	
Father deceased at age <75	-0.7977	
	(1.0617)	
Father deceased at age 75-85	0.1026	
	(1.0752)	
Father deceased age > 85	0.2800	
	(1.1322)	
Mother alive and age < 75	0.5636	
	(1.3700)	
Mother alive and age 75-85	0.9272	
	(1.2869)	
Mother alive and age > 85	2.7227***	
	(1.3375)	
Father alive and age < 75	0.1534	
	(1.4034)	
Father alive and age 75-85	1.0450	
	(1.0929)	
Father alive and age > 85	0.3417	
	(1.2192)	
Control variables	Yes	Yes
Age effects	Yes	Yes
Year effects	Yes	Yes
Cohort effects	Yes	Yes
F-test (first stage)	7.09***	
Observations	3,212	3,212

Table 7: Expected horizon, retirement, and equity shares

This table shows the results of OLS regressions explaining equity shares for the non-retired part of our sample. SEH is defined as self-assessed life expectancy minus current age. SER is defined as the self-reported expected age at retirement minus current age. All other variables are defined in Table 1. Cohort effects group together respondents born in the same half decade. The data come from the Survey of Consumer Finances (1995-2010). Standard errors are reported below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Equity share	**Equity share**	**Equity share**
SEH	0.0019**		0.0019
	(0.0009)		(0.0013)
SEH^2	-2.54e-05**		-1.82e-05
	(1.25e-05)		(1.30e-05)
SER		0.0022*	0.0020*
		(0.0012)	(0.0012)
SER^2		-0.0001**	-0.0001**
		(0.0000)	(0.0000)
Male	0.0169*	0.0178	0.0175
	(0.0098)	(0.0117)	(0.0117)
White	0.0245***	0.0289***	0.0287***
	(0.0083)	(0.0093)	(0.0093)
Married	-0.0095	-0.0094	-0.0093
	(0.0079)	(0.0089)	(0.0089)
Children	-0.0041	-0.0067	-0.0067
	(0.0087)	(0.0093)	(0.0093)
College	0.0339***	0.0399***	0.0399***
	(0.0062)	(0.0069)	(0.0070)
Self-employed	-0.0315***	-0.0387***	-0.0387***
	(0.0077)	(0.0095)	(0.0095)
Ln(net income)	0.0042	0.0069*	0.0069*
	(0.0031)	(0.0038)	(0.0038)
Increasing income	0.0222***	0.0225***	0.0224***
	(0.0066)	(0.0073)	(0.0074)
Ln(net worth)	0.0056**	0.0041	0.0040
	(0.0025)	(0.0029)	(0.0029)
Business equity	-0.0085	-0.0048	-0.0047
	(0.0083)	(0.0096)	(0.0095)
Poor health	-0.0152	0.0027	0.0052
	(0.0268)	(0.0410)	(0.0411)
Smoker	-0.0183**	-0.0227**	-0.0226**
	(0.0080)	(0.0093)	(0.0093)
Economic optimism	0.0116**	0.0151**	0.0152**
	(0.0055)	(0.0063)	(0.0063)
Income optimism	-0.0004	0.0012	0.0013
	(0.0061)	(0.0071)	(0.0071)
Risk aversion	-0.0826***	-0.0867***	-0.0866***
	(0.0084)	(0.0098)	(0.0098)
Age effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes
R-squared	0.0570	0.0645	0.0647
Observations	65,669	49,353	49,353

Table 8: Expected horizon and other financial decisions

This table shows the results of a set of regressions examining other financial decisions. The probit models in the first, fourth, and fifth column are estimated using maximum likelihood; the linear regression models in the second and third column are estimated using OLS. SEH is defined as self-assessed life expectancy minus current age. All other variables are defined in Table 1. Cohort effects group together respondents born in the same half decade. The data come from the Survey of Consumer Finances (1995-2010). Standard errors are reported below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Saving	**Ln(pensions)**	**Leverage**	**Real estate**	**Life insurance**
SEH	-0.0042	0.0075**	0.0014***	0.0061	-0.0098
	(0.0028)	(0.0038)	(0.0005)	(0.0038)	(0.0064)
SEH^2	9.9e-04***	-7.67e-05	-1.71e-05***	-1.44e-04**	-3.26e-03***
	(3.55e-05)	(5.09e-05)	(6.61e-06)	(5.97e-05)	(1.83e-03)
SEH^3					-2.98e-06*
					(1.56e-06)
Male	0.1139***	0.2369***	-0.0055	-0.1351***	0.0105
	(0.0286)	(0.0426)	(0.0050)	(0.0338)	(0.0278)
White	0.0086	0.1232***	0.0215***	0.2579***	0.1710***
	(0.0233)	(0.0352)	(0.0040)	(0.0282)	(0.0233)
Married	-0.0382	0.1651***	0.0439***	0.6270***	0.3079***
	(0.0249)	(0.0331)	(0.0042)	(0.0301)	(0.0238)
Children	-0.2532***	-0.1265***	0.0295***	0.2890***	0.1830***
	(0.0286)	(0.0386)	(0.0049)	(0.0341)	(0.0275)
College	0.0435**	0.4301***	-0.0070**	-0.1572***	0.1320***
	(0.0203)	(0.0264)	(0.0034)	(0.0279)	(0.0197)
Retired	-0.0884***	-0.1097**	-0.0725***	0.1030**	-0.2023***
	(0.0326)	(0.0429)	(0.0053)	(0.0513)	(0.0307)
Self-employed	-0.0238	-0.2392***	-0.0448***	-0.2014***	-0.2427***
	(0.0282)	(0.0356)	(0.0046)	(0.0425)	(0.0268)
Ln(net income)	0.1774***	0.0474***	-0.0166***	-0.1827***	0.0330***
	(0.0113)	(0.0148)	(0.0013)	(0.0165)	(0.0098)
Increasing income	0.2899***	0.1294***	-0.0115***	-0.0394	0.0700***
	(0.0232)	(0.0277)	(0.0039)	(0.0321)	(0.0223)
Ln(net worth)	0.1042***	0.4776***		0.4935***	-0.0201***
	(0.0066)	(0.0119)		(0.0099)	(0.0061)
Business equity	-0.1090***	-0.2898***	-0.0650***	-0.2170***	-0.0672**
	(0.0280)	(0.0359)	(0.0046)	(0.0415)	(0.0276)
Poor health	-0.2844***	-0.2040**	0.0030	0.0448	-0.1700***
	(0.0497)	(0.0913)	(0.0084)	(0.0597)	(0.0465)
Smoker	-0.1023***	-0.2034***	-0.0065	-0.1007***	-0.1244***
	(0.0229)	(0.0348)	(0.0042)	(0.0283)	(0.0224)
Economic optimism	0.0566***	-0.0207	0.0085***	-0.0004	0.0230
	(0.0186)	(0.0238)	(0.0031)	(0.0252)	(0.0182)
Income optimism	0.0219	-0.0792***	-0.0029	-0.2000***	-0.0611***
	(0.0227)	(0.0285)	(0.0039)	(0.0297)	(0.0215)
Risk aversion	-0.1131***	-0.3923***	-0.0114***	0.0408	-0.2080***
	(0.0248)	(0.0321)	(0.0037)	(0.0335)	(0.0245)
Age effects	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.1864	0.5752	0.2345	0.4064	0.0940
Observations	124,191	77,226	124,191	124,191	124,191

Table 9: Bequest motives and the effect of expected horizon

This table shows the results of a set of regressions that interact the SEH variables with children dummies. The linear regression model in the first column is estimated using OLS; the probit models in the second and third column are estimated using maximum likelihood. SEH is defined as self-assessed life expectancy minus current age. All control variables are defined in Table 1. Cohort effects group together respondents born in the same half decade. The data come from the Survey of Consumer Finances (1995-2010). Standard errors are reported below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Equity share	**Saving**	**Life insurance**
SEH	0.0043**	0.0029	-0.0588***
	(0.0018)	(0.0058)	(0.0150)
SEH^2	-4.34e-05**	8.51e-06	0.0014***
	(2.17e-05)	(7.09e-05)	(0.0004)
SEH^3			-9.80e-06***
			(3.41e-06)
Children x SEH	-0.0024	-0.0084	0.0522***
	(0.0018)	(0.0060)	(0.0152)
Children x SEH^2	1.53e-05	0.0001	-0.0011***
	(2.25e-05)	(0.0001)	(0.0004)
Children x SEH^3			6.75e-06*
			(3.66e-06)
Children	0.0641*	-0.1271	-0.4334***
	(0.0344)	(0.1080)	(0.1582)
Control variables	Yes	Yes	Yes
Age effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Cohort effects	Yes	Yes	Yes
F-test (interaction terms)	6.30**	2.15	23.05***
R-squared	0.0605	0.1865	0.0949
Observations	79,377	124,191	124,191

Figure 1: Distribution of SEH per age group

This figure presents the average, and the 25th and 75th percentile of SEH for each age group. SEH is defined as self-assessed life expectancy minus current age. The data come from the Survey of Consumer Finances (1995-2010). The figure also shows the average objectively expected horizon (OEH), adjusted for the for the gender composition of our sample, for each age group, using the life tables from each survey year provided by the National Center for Health Statistics.

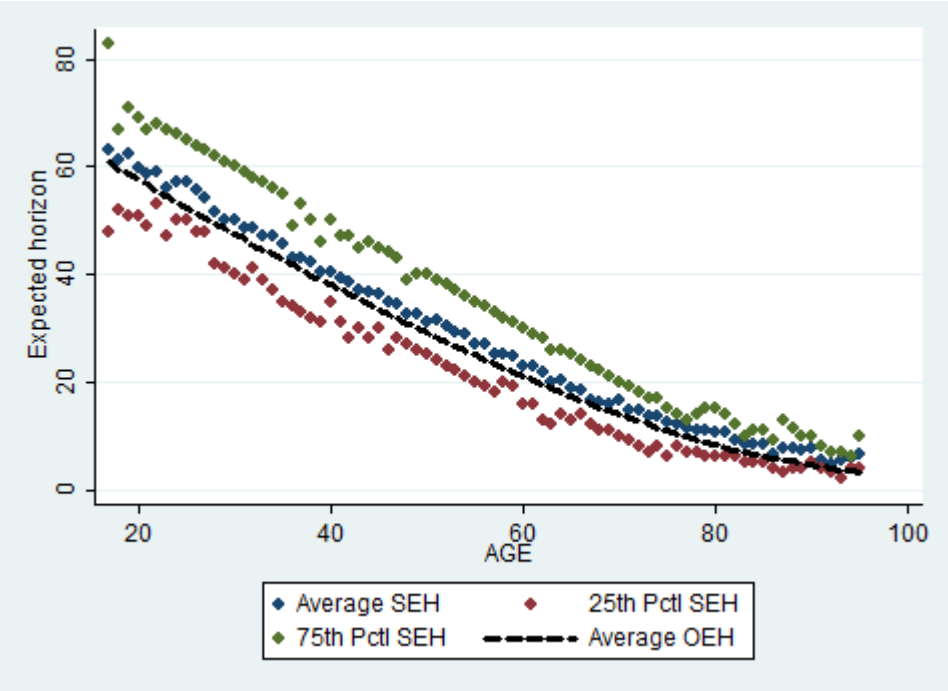
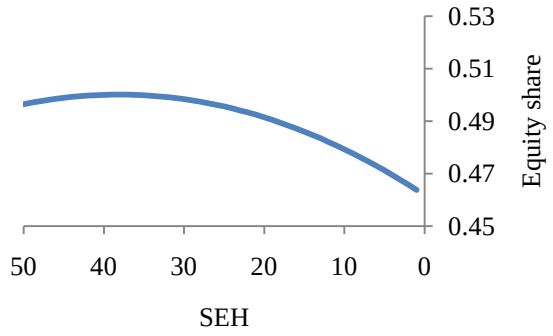


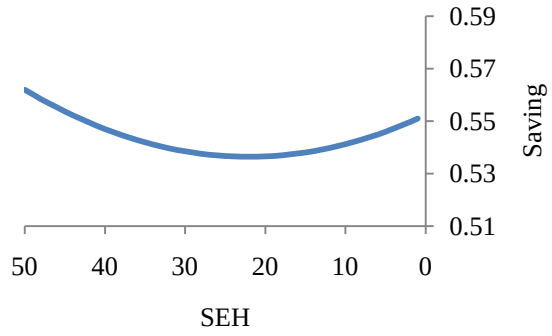
Figure 2: Expected horizon, equity investment and other financial decisions

This figure shows the predicted average values of the dependent variables, for expected horizons (SEH) going from 50 years to one year, based on the regression results reported in Table 5 and Table 8.

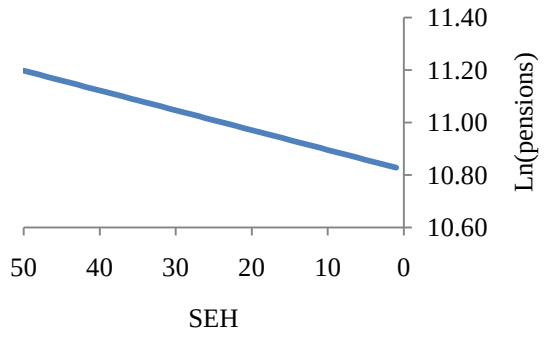
PANEL A – EQUITY SHARE



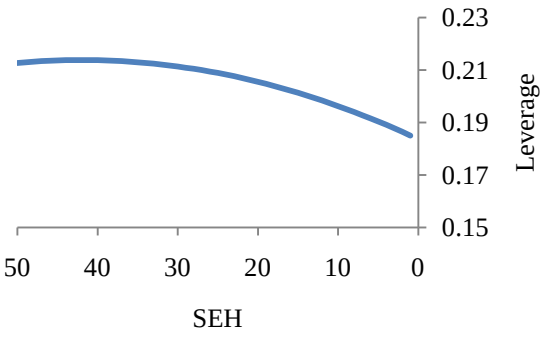
PANEL B – SAVING



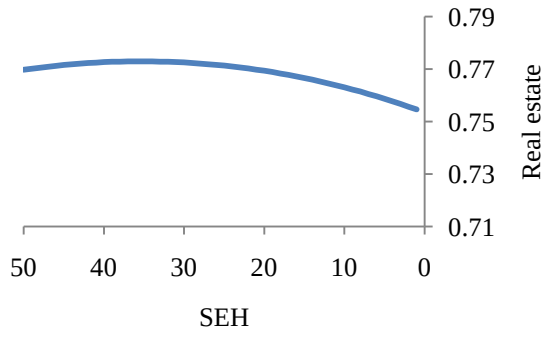
PANEL C – PENSIONS



PANEL D – LEVERAGE



PANEL E – REAL ESTATE



PANEL F – LIFE INSURANCE

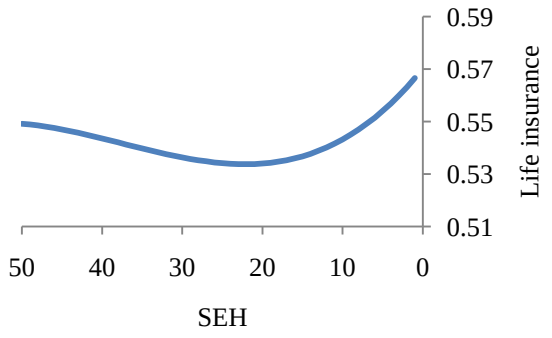


Figure 3: Distribution of SER per age group

This figure presents the average, and the 25th and 75th percentile of SER for each age group, based on the respondents in our sample that are working full-time. SER is defined as the self-reported expected age at retirement minus current age. The data come from the Survey of Consumer Finances (1995-2010).

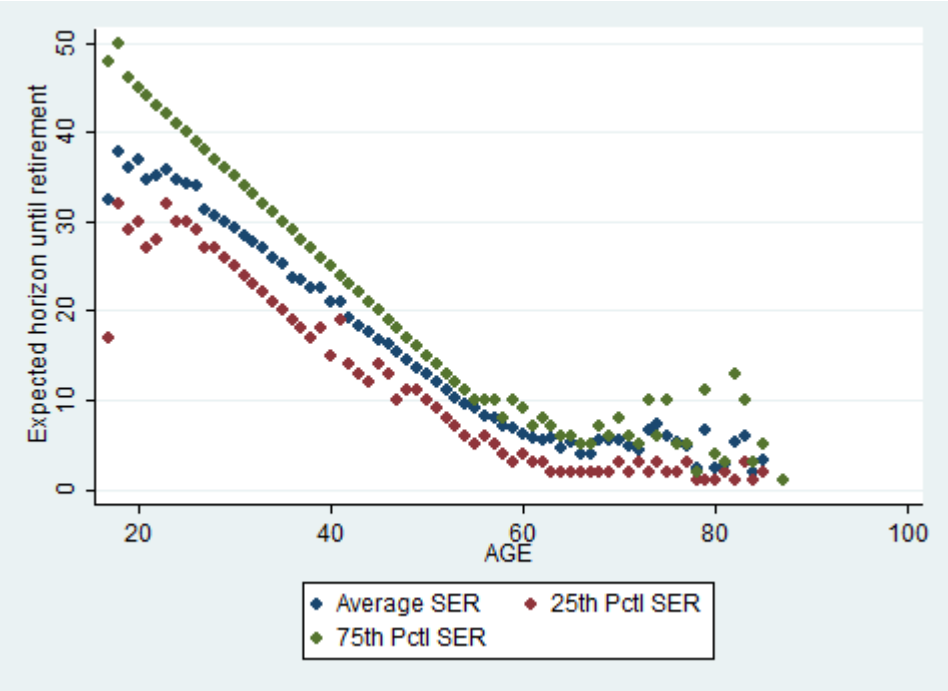
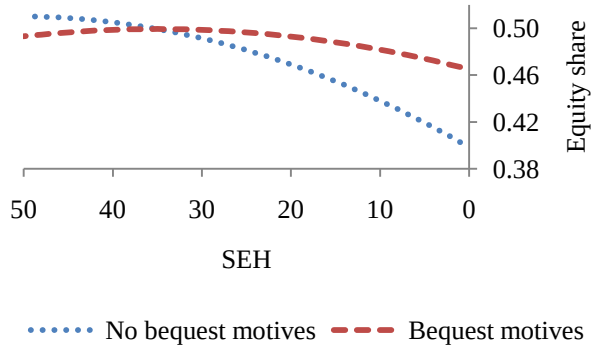


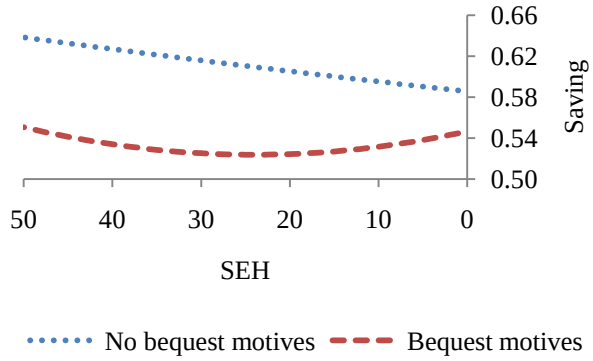
Figure 4: Bequest motives and the effect of expected horizon

This figure shows the predicted average values of the dependent variables, for expected horizons (SEH) going from 50 years to one year and for households without and with bequest motives, based on the regression results reported in Table 9.

PANEL A: EQUITY SHARE



PANEL B: SAVING



PANEL C: LIFE INSURANCE OWNERSHIP

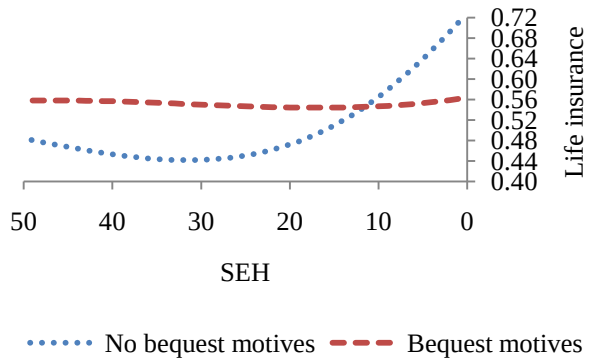


Figure A1: Computation of implied subjectively expected horizon

This figure shows how we map a difference between the subjective survival probability and the actuarial survival probability, Δp, into a discrepancy in horizon relative to life tables, Δh. The example uses the case of a 60-year old woman who believes she has a 90% chance of reaching 75 years, while her objective probability of reaching that age is 80%.