WEALTH ACCUMULATION AND THE PROPENSITY TO PLAN*

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Abstract

Why do similar households end up with very different levels of wealth? We show that differences in the attitudes and skills with which they approach financial planning are a significant factor. We use new and unique survey data to assess these differences and to measure each household's "propensity to plan." We show that those with a higher such propensity spend more time developing financial plans, and that this shift in planning is associated with increased wealth. These findings are consistent with broad psychological evidence concerning the beneficial impacts of planning on goal pursuit. Those with a high propensity to plan may be better able to control their spending, and thereby achieve their goal of wealth accumulation. We find direct evidence supporting this effortful self control channel in the very strong relationship we uncover between the propensity to plan and budgeting behavior.

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1 Introduction

Households with similar economic and demographic characteristics accumulate radically different amounts of wealth.[1] In the context of the life cycle hypothesis, natural explanations are based on divergent preferences. Differences in discount factors and bequest motives are particularly obvious candidates. We would expect patient households to accumulate more wealth than impatient households due to their lesser desire for current consumption. Differences in risk aversion may also be important, since the returns on wealth are strongly influenced by the willingness to take financial risks. For example, given the remarkably high return on equities over the 1990's, we would expect those with lower levels of risk aversion to have accumulated significantly more wealth by the end of the decade.

While preference-based explanations for wealth differentials hold theoretical promise, they have not been found to be of great empirical value. Bernheim, Skinner, and Weinberg [2001] found that differences in discount factors were of little value in explaining wealth differentials. Their technique of measurement was indirect, and involved inferring discount factors from rates of consumption growth. Barsky, Juster, Kimball, and Shapiro [1997] took an entirely different approach, using direct survey techniques to measure key preference parameters, including the discount factor, the rate of risk aversion, and the bequest motive. Again, these measures did little to explain observed wealth differences.

The profession is left with something of a mystery on its hands. How can households with apparently similar preferences end up with such different levels of wealth? In this paper we focus on differences across households in attitudes and skills related to financial planning. We show that these differences play a significant role in explaining otherwise mysterious wealth differentials.

Our focus on planning is motivated in part by psychological findings. Ajzen [1991] and Gollwitzer [1996], [1999] have identified specific planning activities that appear to enhance the probability of achieving pre-specified personal goals. Could wealth accumulation be just such a goal? The pioneering work of Annamaria Lusardi [1999], [2000] suggests that this question may have an affirmative answer. She found that households that had given little thought to retirement had far lower wealth than those that had given the subject more thought. We investigate two follow-up hypotheses:

1. There exist a set of attitudes and skills that influence the manner in which any given household approaches to the task of financial planning: that household's "propensity to plan."

2. Differences across households in the propensity to plan help to explain differential patterns of wealth accumulation.

Using new economic, demographic, and behavioral data from two custom-designed surveys, we provide evidence in favor of both hypotheses. We find that those with a high propensity to plan not only accumulate more wealth, but also save more than those with a low such propensity. Moreover, we identify a tight connection between the propensity to plan and the extent to which households set budgets for their overall spending. Furthermore, we find evidence that many households that set regular budgets regard this activity as contributing to a reduction in their spending.

These results support a theory in which the channel connecting wealth accumulation and the propensity to plan operates through a form of "effortful self-control." We hypothesize that households are sometimes spending at an excessively high rate given their actual preferences and resources. Those with a high propensity to plan both notice this pattern of over-spending relatively early, and find it relatively easy to correct. Those with a low such propensity notice problems later, and find them more difficult to correct. According to this vision, saving may be as much a matter of skill as of preference.

Our propensity to plan theory represents a significant departure from the classical life-cycle model. It is therefore incumbent upon us to consider alternative theories of the relationship between wealth accumulation and planning that are consistent with the classical model. We examine three such theories: that wealth causes planning (reverse causation); that differences in discount rates and other classical preference parameters cause both wealth and planning; and that planning reduces uncertainty concerning future asset returns and future income, which in turn causes wealth to increase. In our data, none of these theories provide a satisfactory explanation for the observed relationship between planning and wealth. Our findings are not readily explained within the classical life cycle model of wealth accumulation.

Our ability to test our theory against the alternatives rests on our use of novel data. We are aware of no data source, other than the one we use, rich enough to test our hypotheses concerning the propensity to plan against the various more standard alternatives. It is only because we were able to custom-design two new surveys, one economic and one "behavioral," that we were able to make progress. The behavioral survey was designed in part to provide us with instrumental variables relevant to assessing the direction of causation in the relationship between planning and wealth. Such "designer instruments" may prove useful in identifying the direction of causation in other areas of macroeconomics, and beyond.

2 Four Theories

In this section we outline four theories that might explain a broad positive relationship between financial planning and wealth accumulation, beginning with our propensity to plan theory.

2.1 The Propensity to Plan

There are two fundamental hypotheses underlying our vision of how the propensity to plan impacts wealth accumulation.

1. **Control Problems:** We hypothesize that it is far from straightforward for agents to match long-term motive with current action. They may have an underlying desire to delay consumption to the future, yet find such a policy somewhat difficult to put into practice.

2. **Control Skills:** Agents differ in attitudes and aptitudes of value in overcoming these control problems. The propensity to plan is a reflection of these underlying control skills.

There are two different approaches to modeling the first component of our theory, the control problem.

- **Temptation and self-control:** An agent with present-biased preferences, in the sense of Laibson [1997], may experience a tension between the consumption plan that is most desirable and the consumption plan that is feasible to follow. An agent who is naive in the sense of O'Donoghue and Rabin [1999] may be particularly frustrated by the inability to delay consumption. Even a fully rational and dynamically consistent agent may have to battle with temptation [Gul and Pesendorfer 2001]. Problems are even more extreme for an agent who has an urge to consume that is difficult to suppress, as in Benhabib and Bisin [2002] and Bernheim and Rangel [2001].

- **Bounded rationality and default behavior:** Even if preferences are not present-biased, there are many reasons why agents may not continually fine tune their level of consumption over time. With fixed costs of monitoring wealth, consumption may be insensitive to short-term wealth fluctuations [Gabaix and Laibson 2001]. Other forms of adjustment cost can rationalize many other forms of inattention and inertia. In psychological terms, this period of inattention may correspond to a period of "automatic" behavior, in the sense analyzed by Bargh and Chartrand [1999]. In such circumstances, there is every reason to expect a gap to develop between ideal and actual consumption choices. The adoption of rigid personal rules may also prevent rapid reaction to changing circumstances [Benabou and Tirole 2000].

Given these problems of control, the question arises as to how and when different agents take note of the divergence, and how much effort is involved in rectification. This is where control skills come into play. Those who are willing and able to actively engage in their financial affairs, and who keep a careful watch on their patterns of spending, will be best able to notice and to overcome problems associated with excessively high spending. Relevant skills may include technical abilities in the financial planning arena, monitoring abilities, as well as budgeting skills relevant to efficiently reducing spending that has become excessive.

Our hypothesis that planning and monitoring may aid in the achievement of a long-term goal such as wealth accumulation has an important precedent in the psychological literature. Extending ideas with deep roots in earlier psychological theory, Peter Gollwitzer has recently outlined a general vision of decision-making in which planning is crucial to the achievement of long-term goals:

> "My colleagues and I believe that planning helps to alleviate crucial volitional problems of goal achievement, such as being too easily distracted from a goal pursuit or giving up in the face of difficulties when increased effort and persistence are needed instead". [Gollwitzer 1996, p. 287.]

2.2 Reverse Causation

Our theory suggests that variations in planning across individuals may cause differences in wealth. It is possible however that causation runs in the opposite direction. Planning

may be largely a by-product of wealth accumulation. Different agents may accumulate different amounts of wealth for reasons unmeasured in our data (for example, due to differences in actual or anticipated inheritances of wealth). In turn, these wealth differences may motivate different levels of planning effort.

There are many different channels by which wealth shocks might impact planning. It may be that it takes a great deal of additional time to plan a larger portfolio. Wealthy individuals may also have access to more investment opportunities, and therefore need to devote more time to the activity. In addition, it may simply be more enjoyable to plan more if one can look forward to a comfortable retirement. These are all reasons why additional wealth may increase the amount of time spent planning. On the other hand, there are forces working in the opposite direction. Those who are less well off may have more to gain in terms of utility from planning activities that increase their ability to use resources efficiently. In addition, the opportunity cost of time spent planning is lower. Finally those who are wealthier may be better placed to hire advisors to do their planning for them.

In order to identify the impact of wealth on planning, we would need instruments for wealth. Unfortunately, no such instruments are available. Fortunately, we do have instruments for planning, so that we can isolate the impact of exogenous shocks to planning on wealth.

2.3 Classical Preference Parameters

Planning is plausibly correlated with classical preference parameters. In particular, those who prefer to consume more in later life, to leave larger bequests, or who have stronger precautionary savings motives may be induced to plan more. Moreover there may be a correlation between the propensity to plan and risk aversion. If those who plan more are also more risk averse, this may induce them to hold more stocks, which may in turn explain divergent paths of wealth accumulation.

2.4 Planning and Uncertainty Reduction

Those who plan may as a result be better informed about both asset returns and future income prospects. There is a strong argument to be made that the resulting reduction in uncertainty about *asset returns* may, under certain conditions, increase wealth accumulation. In particular, Lillard and Willis [2000] provide theoretical and empirical considerations linking low knowledge about future stock returns with low stock holding and low rates of return on assets. Their model has the property that an ignorant individual attaches greater subjective uncertainty to stocks than does a knowledgeable one. In certain circumstances, this makes it rational for the ignorant individual to refrain altogether from holding stocks. This channel may be of more than theoretical interest. Using data from the Health and Retirement Study (HRS), Lusardi [2000] found that increased planning was associated with an increased probability of stock ownership. Given the higher expected rate of return on stocks, and the actual experience of the 1990's, such a pattern of increased stock holding might explain a large wealth differential.

The case that a planning induced reduction in uncertainty about *future income* should increase wealth accumulation is not nearly as strong as that for asset returns. The

standard assumption in the consumption literature is that a reduction in uncertainty will *decrease* wealth accumulation, by reducing the need for precautionary savings. We find no evidence in our sample to contradict this standard view. If planning improves an individual's knowledge of future income, this would better explain a negative than a positive relationship between planning and wealth.

3 The Empirical Framework

3.1 The Econometric Model

The first testable hypotheses implied by the propensity to plan theory concerns the positive impact of increases in financial planning on wealth accumulation. The second concerns the existence of specific attitudes and skills that influence financial planning. The following simple two equation econometric model captures these hypotheses:

$$w = \alpha_0 + \alpha_1' \mathbf{x} + \alpha_2 p + \epsilon_w \quad (1)$$

$$p = \beta_0 + \beta_1' \mathbf{x} + \beta_2 w + \beta_3' \mathbf{z} + \epsilon_p \quad (2)$$

where w is (log) wealth, p is the reported intensity of planning activity, $\mathbf{x}$ is a vector of exogenous individual characteristics affecting both wealth and planning behavior, and $\mathbf{z}$ is a vector of characteristics affecting only planning (i.e., the "propensity to plan"). The error terms ϵ_w in the wealth equation and ϵ_p in the planning equation arise from unobserved shocks and heterogeneity, and are not assumed to be independent.

The key predictions of the propensity to plan theory are that the coefficients α_2 in equation (1) and β_3' in equation (2) are significantly different from zero, with $\alpha_2 > 0$. These coefficients measure respectively the impact of the propensity to plan on financial planning, and the impact of financial planning on wealth accumulation.

Our three alternative theories can also be identified in this framework. They have in common that they rule out $\alpha_2 > 0$: there is no positive impact of planning on wealth accumulation. In other respects they differ. The reverse causation theory implies that $\beta_2 > 0$: it is shifts in wealth that have a positive impact on planning rather than vice versa. The preference parameter theory implies that if the relevant parameters are included in the $\mathbf{x}$-vector of exogenous individual characteristics affecting both wealth and planning behavior, we will find that the corresponding coefficients in α_1' are significant. Finally, the "knowledge of asset returns" theory of Lillard and Willis implies that if subjective uncertainty concerning future returns (or actual equity holdings) were to be included in the $\mathbf{x}$-vector, they would have direct explanatory power while driving the effect of planning to zero.

3.2 Data Requirements

In order to empirically implement our model, we need high quality data on all of the key variables in equations (1) and (2). This data must satisfy some stringent requirements. Specifically, in order for the wealth equation to be identified, we need our $\mathbf{z}$ variables to be uncorrelated with the error terms in both equations, ϵ_w and ϵ_p. In addition, we need data

on actual financial planning behavior in order to measure p. The other data we need are good measures of total wealth, w, and a rich set of $\mathbf{x}$ variables affecting both wealth and planning behavior. This set of variables should ideally include details on demographic characteristics, education, current income, past and expected future income, as well as measures of preference parameters and of equity holdings.

There is no existing source of data that is adequate to meet our stringent requirements. The most promising "off-the-shelf" data set would appear to be the HRS. This is one of the few surveys that contains information relevant to financial planning, which explains its central role in the earlier research of Lusardi ([1999] and [2000]). Yet even the HRS has little to contribute with respect to the critical $\mathbf{z}$ variables defining the propensity to plan. This is apparent from the difficulties that Lusardi encountered in her search for instrumental variables appropriate for addressing the issue of reverse causation. She made the identifying assumption that several variables related to family structure, such as the number of older siblings, are uncorrelated with the errors in the wealth equation. The problem is that an individual with older siblings may as a result be subject to current and possible future expenses, and may also anticipate receiving a relatively small inheritance. This would give rise to a greater need to accumulate wealth independent of any effect these events may have on the level of planning.

Overall, the gaps in existing data are so severe that entirely new data is needed to discriminate between the four theories outlined above. We were particularly fortunate to be in a position to gather just such data in two new surveys. As described below, our surveys provide rich details on asset holdings as required for measuring w, a suitably rich set of $\mathbf{x}$ variables, several measures of financial planning, p, and several measures of the propensity to plan, $\mathbf{z}$. Our $\mathbf{z}$ variables were deliberately constructed to satisfy the orthogonality conditions necessary for identification. In this sense, we used our survey to design instrumental variables well-suited to establishing the direction of causation in the key empirical relationship. Similar efforts to construct designer instruments may be of value in other settings. One has to be particularly lucky to find valid instruments in off-the-shelf data.

4 The Two Surveys

4.1 The Sample

We sent two surveys to a sample of TIAA-CREF participants: the Survey of Participant Finances (henceforth SPF), fielded in January 2000, and the Survey of Financial Attitudes and Behavior (henceforth FAB), fielded in January 2001. The SPF was designed to examine in detail the type and the amount of financial assets owned by a large group of TIAA-CREF participants. The FAB explored these participants' financial preferences, expectations, and attitudes.[2]

In this paper, we focus attention on wealth accumulation for households in which neither the respondent nor the partner (if applicable) are at or above 65 years of age.[3] Of the 2,064 households who filled out the FAB, 1,191 satisfied this criterion, and they make up the under-65 universe from which all other samples discussed in the paper are drawn. Note that because early retirement may itself be a consequence of planning-related shifts

in wealth, we do not restrict our universe to those who are currently working.

In most of the statistical analyses and regressions in this paper, we limit attention to a subsample of our universe that supplied complete data on all variables of interest. As a first step in ensuring data completeness, we remove all households receiving life-annuity income from TIAA-CREF from the sample, because it is not clear how to interpret the TIAA-CREF asset values reported by annuitants. Of the 1,067 remaining households in the under-65 universe, 513 supplied complete data and could be included in the regression analysis. Of these, we removed from the regression analysis an additional 10 with nonpositive net worth, and 3 extreme outliers with more than $5 million in financial assets. We refer to the 500 remaining households as the regression sample. Most of our results are based on this sample. In some cases, especially in analyses which do not require complete data on wealth, we make use of most of the 1,067 observations in the under-65 universe.

4.2 Basic Demographic and Economic Variables

Table I shows the basic demographic characteristics of households in both the under-65 universe and in the regression sample. We tabulate answers to questions concerning the respondent's gender, marital status (married, never married, previously married), number of dependent children, and age. We also tabulate educational and occupational characteristics. Note that for most demographic characteristics, there appears to be little difference between the under-65 universe and the regression sample. The regression sample is somewhat younger and contains fewer who are widowed or divorced, possibly due to the removal of annuitants.

Table II summarizes households' economic characteristics. Data on earnings is from the FAB in which we asked households to provide estimates of their overall taxable income from employment in 1999.[4] The asset and debt information is drawn from the SPF. We record not only the total level of wealth, but also the division between retirement assets and nonretirement assets. Within the nonretirement assets, we separate out real estate wealth, which comprises both owner-occupied and investment assets. With regard to debt, we distinguish between mortgage debt, and all other forms of debt, including credit card and educational debts.

It is clear from the table that our sample is far from representative. In particular, respondents are extremely well-educated: the vast majority completed college, and roughly 1 in 3 have Ph.Ds. In terms of employment, roughly 1 in 3 are teaching faculty, with most of the remainder having management or professional positions. However, while many of our respondents are well educated, there is a significant number of more "blue-collar" respondents. In particular, the "other" employment category corresponds to secretarial, maintenance, and other support positions.

In terms of the ecconomic characteristics, households in our sample are on average wealthier than the general population. Net worth is some 2.5–3 times higher in our sample than it is among working households in the 1998 Survey of Consumer Finances (SCF) . Also in contrast with the SCF, the vast majority of households in our sample have significant nonretirement financial assets, and very few have high levels of personal debt.

4.3 Data Quality

Our data on portfolios of assets and debts is unusually detailed. For example, our survey requests a quantitative division of assets in defined contribution retirement plans into separate classes, such as cash and equities.[5] Our survey also separates employer-sponsored TIAA-CREF accounts from all other retirement assets (which are themselves broken down into other sub-categories) and from nonretirement assets. Within each such category the survey provides for a precise quantitative breakdown describing how much of the total is held in various different forms. At a minimum, these breakdowns allow us to discriminate between cash assets, fixed income assets, equities, and other assets. The survey also contains comprehensive numerical questions concerning real estate assets, and all forms of debt. Where relevant, the survey requests information on the assets of the respondent's spouse or partner.

Our item response rates were in excess of 90 percent for most of the larger asset categories. We also had high response rates on the breakdown of these assets among different types of investment instruments. As indicated in Table II, when we look across *all* of these responses and insist on having sufficient information to calculate net worth, we retain 671 of the 1,191 households in the under-65 universe.

Asking quantitative questions and getting quantitative answers is not by itself an assurance of high data quality. Greater assurance of accuracy can be found by comparing one of our self-reported data items against accounting records. We have appended accounting information from TIAA-CREF to the survey responses of all respondents with retirement assets at TIAA-CREF.[6] Before comparing the self-reports and accounting numbers, we remove a number of individuals for whom the two numbers are not strictly comparable, for reasons that are institutional in nature. With these issues handled, Table III reports results of a log-log regression of the reported TIAA-CREF asset totals on the accounting totals for the 738 sample households for whom the comparison is relevant, and whose records and self-reports indicated at least $10,000 in TIAA-CREF retirement assets. (We asked respondents to report amounts in thousands; the "greater than $10,000" rule is applied to reduce the influence of rounding errors.)

The coefficient on the TIAA-CREF accounting data is extremely close to 1, while the constant term is extremely close to zero, suggesting a very high correlation between the self-reports and the accounting data. The average absolute deviation between the response and the accounting data is on the order of 10 percent, while the median is less than 2 percent. We note that Gustman and Steinmeier [2001] document far larger discrepancies between the pension benefits reported by respondents to the HRS and a careful estimate of the benefits that these same respondents have accumulated based on administrative records.

In the regressions that follow, unless otherwise indicated, we calculate net worth and gross financial assets using self-reported data for all asset categories, including TIAA-CREF assets. We report also in Section IV on the results of regressions in which we replace self-reported TIAA-CREF asset total with accounting data (and in which we restrict the sample to avoid the obvious cases described above in which the TIAA-CREF data is likely to be inappropriate). In the context of that analysis, we provide a more detailed discussion of the various possible reasons for differences between the accounting data and the self-reports.

5 Wealth and Planning: the Correlation

5.1 Defining Financial Planning

To highlight our interest in financial planning, our questions on this subject were placed at the very beginning of the survey, preceded by the statement:

> We are interested in your behavior related to planning for your household's long-term financial future, and the types of advice (if any) you may have used in developing your financial plan.

We used two different approaches to measuring financial planning, based respectively on the input and output sides of the planning activity. With respect to the input side, we asked survey participants to respond to the following general statement:

- Question 1a: I have spent a great deal of time developing a financial plan.

Answers to this question and to many other questions on the survey were placed on a qualitative 1-6 scale. Survey participants were asked to indicate which of six statements (1 = disagree strongly, 2 = disagree, 3 = disagree somewhat, 4 = agree somewhat, 5 = agree, 6 = agree strongly) best characterized their reaction to the statement.

With respect to the output side, we asked households a yes/no question concerning their preparation of a clearly defined financial plan.

- Question 2a: Have you personally gathered together your household's financial information, reviewed it in detail, and formulated a specific financial plan for your household's long term future? [yes/no]

Those who replied in the affirmative were asked also to specify the age at which this activity was first undertaken, since one might expect the impact of planning on wealth to depend on how long one has had that plan in place. In regressions based on this second measure, we include both an indicator for whether or not a plan has been developed, and a measure of the time for which any such plan has been in place.

Answers to questions 1a and 2a are presented in Table IV. The majority of respondents agreed (to some degree) that they had spent a great deal of time developing a financial plan, and at the same time claimed to have put together just such a detailed plan. The correlation between these two measures of planning in our regression sample is 0.48. Overall, it appears that our sample is far more involved with long term planning than are their counterparts in the HRS, where only one-third of respondents claimed to have given a lot of thought to retirement, even though all of them are within ten years of retiring. In addition, our households are relatively homogeneous, wealthy, and well-educated. Despite these differences, Lusardi's insight generalizes: financial planning and wealth accumulation are strongly positively correlated.

5.2 Results

Table V presents simple reduced-form regressions of wealth on planning and exogenous household characteristics. Our wealth measure, w, is either net worth or gross financial assets. The planning measure, p, is question 1a. The vector $\mathbf{x}$ of exogenous individual characteristics includes variables familiar from standard life cycle regressions, including gender, marital status, and number of children. We also include information on earnings in 1998 and expected earnings from 2005 along with age and earnings in 1999 to control for the life-cycle pattern of earnings. Natural logarithms of the earnings measures are used in the regressions; for respondents reporting zero earnings, the log measure is given a value of 0, and a corresponding dummy variable is set to 1. We include a separate set of dummies for household retirement status (working, semi-retired, fully retired). We use age and age squared to control for the humped-shaped pattern of wealth accumulation. Measures of education and occupation are also included in $\mathbf{x}$ to provide additional controls for past and future earnings. Finally, since defined contribution pensions are included in our measure of wealth, but defined benefit pensions are not, we include a dummy for households reporting one or more defined benefit pension plans. In what follows we refer to this set of $\mathbf{x}$ variables as "the standard controls."

Our central finding is that the correlation of planning with both net worth and gross financial assets is positive and highly statistically significant. With respect to the economic significance of the correlation with planning, the standard deviation of the answer to question 1a in this sample is around 1.2. Given the coefficients on question 1a in Table V, this implies that a one standard deviation increase in the answer to the planning question is associated with roughly a 20 percent increase in net worth and in gross financial assets.

With respect to key life cycle variables, the regression coefficients in Table V are generally similar across the two regressions, and broadly consistent with the classical model of life cycle saving. Both net worth and gross financial assets are increasing and concave in age, increasing in current and past earnings, and little impacted by future earnings. As expected, possessing a defined benefit plan tends to reduce wealth accumulation. The demographic controls, including the education and occupation dummies, tend to be insignificant, with the notable exception of being single, divorced, or widowed, all of which are associated with less wealth accumulation than being married.[7]

5.3 Alternative Specifications

The effect of planning survives when we change from an input to an output measure of planning. When we use the answers from question 2a in place of the input-based measure of question 1a as the p-variable, we find that both having a plan and having that plan in place for a longer time are associated with higher net worth and gross financial assets.[8]

One artificial feature of the regressions reported in Table V is that we treat the planning variable as continuous. When we replace this variable with dummy variables for each different level of planning, there is strict monotonicity in the estimated coefficients, and the variables are strongly jointly significant. A higher reported level of planning is always associated with higher levels of net worth and gross financial assets.

A final point to note about our questions is that, while they measure strictly *personal*

characteristics, we use them in regressions for *household* wealth. To assess the importance of this distinction, we asked two questions on the survey designed to gauge the importance of the respondent in household financial and spending decisions. These questions concerned the extent to which the respondent took the lead in making investment decisions and/or spending decisions in the household. Most respondents do appear to play a very significant role in household financial decision-making: indeed a high level of financial responsibility may have been viewed by responding households as an important determinant of who should fill out the questionnaire. At any rate our findings concerning the effects of planning on wealth are unchanged if we restrict attention to those answering these questions in the affirmative. We conclude that our results are not significantly impacted by the respondent-household distinction.

6 The Propensity to Plan

6.1 Measuring the Propensity to Plan

To identify the effect of planning on wealth we need a set of instruments, the **z** variables in equation 2. Our approach involves characterizing an individual's propensity to plan. One hypothesis is that there are some individuals who are generally more inclined than others to plan, and that this inclination shows up in many aspects of their life. Question 3d was designed to measure this general propensity. We chose to ask a question about vacation planning, because it is a situation in which planning is important, without being obviously connected either with financial planning *per se*, or with broad measures of long-term patience such as the long-term discount factor. As with all of the planning questions, the answers were on the 1-6 scale from disagree strongly to agree strongly.

- Question 3d: Before going on a vacation, I spend a great deal of time examining where I would most like to go and what I would like to do.

Our second hypothesis takes the planning characteristic idea one step further. We hypothesize that the propensity to plan involves a somewhat broader desire for order and understanding. Question 3s was designed to measure this kind of fastidiousness.

- Question 3s: My workspace is generally very tidy.

Our third and final hypothesis concerns the specific mental processes required to construct a financial plan. More than other forms of planning, financial planning calls for specific skills in the area of numeracy. A financial plan may be far easier to construct for one who is highly numerate than for one who has few computational skills. Questions 3e and 3q were designed to capture this hypothesis.

- Question 3e: I am highly confident in my computer skills.
- Question 3q: I am highly confident in my mathematical skills.

In the estimation that follows, we drop the questions concerning a tidy workspace and computer skills from the propensity to plan, since they are not significantly correlated with planning, either individually or jointly.[9] In contrast, the vacation planning and mathematical skills questions are very strongly connected to planning.

With respect to the empirical model outlined in equations (1) and (2) above, the key question is whether or not our instruments are uncorrelated with the errors in the wealth equation. In as much as these errors reflect true shocks to wealth, such as unanticipated bequests, it seems reasonable to assume that they are not.

The aspect of the orthogonality that is less easy to come to grips with concerns missing variables. It is highly unlikely that our empirical measure of the exogenous determinants of wealth, $\mathbf{x}$, is complete. In particular, the measures of expected future earnings are incomplete. Hence our instruments may be compromised to the extent that they are correlated with an unmeasured component of future income. In this respect, it is notable that the correlation between vacation planning and current earnings is statistically and economically insignificant. Even mathematical skills are not highly correlated with earnings (the correlation in the regression sample is only 0.09). Hence even with our imperfect measure of future earnings, our identifying assumptions do not seem unreasonable.[10]

6.2 Estimation

We estimate our model (equations (1) and (2) above) via two-stage least squares. As in the last section, our wealth measure, w, is either net worth or gross financial assets. The planning measure, p, is question 1a. The vector $\mathbf{x}$ of exogenous individual characteristics comprise the standard controls. Our instruments $\mathbf{z}$ are the math skills and vacation planning questions above.

Table VI presents the first stage results (equation (2)) of our two-stage least squares regression. The F-statistic for the joint significance of the two $\mathbf{z}$ variables is in excess of 13, and the hypothesis that both are zero is rejected at the .0001 level.

Table VII presents the second-stage results (equation (1)). The central result is that α_2, the coefficient on planning, is still positive, statistically significant, and larger than its OLS value.[11] Other coefficients are fairly close to their OLS values of the last section. As a basic specification test, we perform a Basman-Sargan test of the overidentifying restrictions. In neither case do we reject the overidentifying restrictions at the 5 percent level (8 percent for net worth, 12 percent for gross financial assets).

With respect to the economic significance of the planning effect, note that the standard deviation of the answers to question 3d on vacation planning is around 1.2, similar to that for question 3q. This means that a one standard deviation increase in either answer is associated roughly with a 0.2 increase in the level of planning, and therefore with a 6.5 percent increase in net worth and an 8 percent increase in gross financial assets. More broadly, the standard deviation of instrumented planning in the sample is 0.455, so that a one standard deviation change in its level is associated with increases of roughly 15 percent in net worth and an 18 percent in gross financial assets.

6.3 Alternative Specifications

The broad result is unchanged when we replace question 1a with question 2a as the measure of planning. The joint effects on net worth and gross financial assets of having made a comprehensive plan and having that plan in place for a number of years are positive for the vast majority of the sample. In both the net worth and the gross financial assets regressions, the test that both coefficients are zero is rejected at the 5 percent level.

As in the reduced form regressions of Section III, we test the importance of our assumption of linearity given that several of the variables we use are in fact discrete. We re-estimate the system using dummy variables for the different levels of both instruments. We find that the impact of both instruments on planning is monotonically increasing in the expected direction. The only exception to monotonicity occurs in the comparison between those who "disagree somewhat" and those who "agree somewhat" that they spend a lot of time planning for vacations (this difference is statistically insignificant). We also re-estimate the model using two different transformations of the left-hand side planning variable, one a concave transformation (square-root) and the other convex (quadratic). Our results are essentially unchanged, although statistical significance in the second stage is slightly higher for the quadratic version of planning and slightly lower for the square-root version. In addition, we re-estimate our basic model including only age and gender as independent exogenous variables. Our results are again little changed: the coefficients on the instruments in the first stage remain large and statistically significant, and the coefficient on the planning variable rises to .43 in the net worth second stage regression, and .49 for gross financial assets, and is significant at better than the 1 percent level in both cases.

Gale [1999] has raised important questions concerning the economic as opposed to the statistical significance of Lusardi's findings concerning the wealth-planning relationship. One of the issues he raised is that for the households in the HRS, unmeasured social security wealth is the dominant source of retirement income. This wealth is largely independent of planning. Even if planning has a large effect on these households' non-social security wealth, the effect on total wealth and on total consumption may be far smaller due to the buffering effect of social security. This objection is far less powerful for our sample, for whom social security income forms a far smaller share of total retirement income. Gale's second question concerns whether the effect of planning, large as it may be in percentage terms, may nevertheless be very small in dollar terms. This would be true if the effect of planning was significant only for those with low levels of wealth. However, when we repeat our net worth IV-regression for the 300 households in the regression sample with net worth between $50,000 and $750,000, the coefficient on instrumented planning rises to .40, significant at the 2 percent level. When we do likewise for the gross asset IV-regression for the 315 sample households with gross financial assets between $50,000 and $750,000, the coefficient on instrumented planning falls slightly to .363, significant at the 3 percent level.

6.4 Using TIAA-CREF Accounting Data

We repeat the above analysis substituting TIAA-CREF accounting data for the self-reported TIAA-CREF data for those households for whom this is not a clearly inappro-

priate substitution. As pointed out in Section II above, inaccuracies are to be expected when the household owns a particular type of IRA at TIAA-CREF, and in cases in which both partners in a household have TIAA-CREF assets and the self-reported data refers to a different individual than does the accounting data. When we rule out these cases, our sample size falls from 500 to 438.

The change in sample per se makes very little difference to our results when we use the self-reported data for wealth and net worth. Yet the results change somewhat when we replace the self-reported measure of wealth with the accounting data in the net worth and gross financial assets regressions. In particular, there is a reduction in the coefficient on planning in both the simple OLS regressions and the IV-regressions. The coefficient in the net worth IV-regression falls to .237, and is significant at the 9 percent level. The coefficient in the gross financial assets IV-regression falls to .217, and is significant at the 11 percent level.

What accounts for the differences between the results based on the self-reports and the results based on the accounting data? To answer this with any degree of confidence, we would first have to know why the two numbers differ. There are at least three candidate explanations. One candidate is simple random misreporting, in which survey respondents make random errors in reporting their TIAA-CREF asset total. A second candidate is miscategorization, in which an error in the reported TIAA-CREF total corresponds to an equal and opposite error in another asset category.[12] A third candidate is that the accounting data and the self-reported data may refer to different dates. On the front of the survey, it is stated that all asset information should be accurate as of December 31, 1999, and this is the date of the accounting information we use. Yet in the body of the SPF, respondents were asked to provide the "current value" of their holdings of various assets. In essence, one might expect answers to this question for each asset to refer to some recent date, rather than to December 31, 1999. Indeed, given that significant numbers of survey responses were received in February 2000, the actual number may even be more up-to-date.[13]

It is well beyond the scope of this paper to sort out which of the above explanations for the difference between the self-reports and accounting data is closest to the truth. The best that we can do at this stage is to investigate the impact of planning for those who make the smallest errors, and therefore for whom the findings should be less dependent on which source of data we use. Table VIII summarizes the results of regressions in which we restrict the sample to households for whom the difference between self-reported and accounting data is relatively small. Specifically, the sample includes only those households for whom this difference is either under $10,000 in absolute value, or reflects less than a 10 percent difference in the TIAA-CREF balance. With this restriction, differences larger than 10 percent are allowed only if they are small in absolute terms (e.g rounding down from $100 to $0), and large absolute errors are allowed only if they are small in proportionate terms (e.g. $15,000 of accounts totaling $250,000). This restriction reduces the sample from 438 to 361 households.

As the table shows, the coefficients on planning in these regressions are very close to the coefficients reported in Table VII. In fact, the coefficients in the net worth regressions are slightly higher than in Table VII, and in all four regressions in Table VIII, statistical significance is at or around the 5 percent level. In the first stage regression (which is the same for all four of the regressions), the coefficients on question 3d and question 3q

are little changed from their values in the full regression sample, and they have a joint F statistic of 8.37, significant at the .0003 level. Finally, the second stage regressions underlying Table VIII all pass tests of the overidentifying restrictions.

7 The Alternative Theories

The results of the last section are obviously consistent with the propensity to plan theory outlined in section 2. However they are entirely inconsistent with another of the theories there outlined: the reverse causation theory. If the correlation between wealth and planning was entirely due to the impact of wealth on planning, we should have estimated $\alpha_2 = 0$ in equation (1) above.

What of the other two theories outlined in section 2: the preference parameter theory and the uncertainty reduction theory? In principle, these theories may explain our results. In this section we provide evidence against these channels, thereby buttressing the case for our theory.

7.1 Preference Parameters

The key implication of the preference parameter theory is that these parameters should be included in our measure of $\mathbf{x}$, the exogenous individual characteristics affecting both wealth and planning behavior in equations (1) and (2) above. If the theory is correct, and the preference parameters are well-measured, their coefficients should be significant in the wealth regression (1), while at the same time reducing to insignificance the impact of planning in the wealth equation. In order to test this theory, we add to the list of $\mathbf{x}$-variables from the last section additional survey-based measures of four of the key preference parameters from the classical life cycle model: the discount factor, the bequest motive, the level of risk aversion, and the precautionary motive.

Our measures of all key preference parameters derive from a series of hypothetical choice question of the type introduced by Barsky *et al* [1997]. The precise questions that we posed are recorded in the Appendix.

As detailed in the Appendix, the discount rate and the bequest motive are both derived from the answer to one question concerning the respondent's ideal pattern of spending. The discount rate reflects ideal division of spending between ages 50-64 relative and ages 65-79. Many of the answers to this question had to be discarded as unreasonable (e.g. assigning nothing to the first 15 years). Among those that were reasonable, we find a general preference for equal consumption in the two life periods (in fact more than 40 percent of respondents allocate an equal amount to each period). Yet there is substantial variation around this happy medium. The bequest motive reflects the ideal allocation of resources to heirs and beneficiaries.

With respect to risk aversion, we measure this using both a qualitative question and a quantitative question concerning preferences among lotteries. In the regressions that follow, we use only the qualitative measure, since the quantitative measure seems to contain little, if any, additional information. Finally, our measure of the precautionary motive asks respondents to specify how an increase in the uncertainty of future income would impact their spending out of current income. As in the case of risk aversion, we

asked not only for a qualitative answer concerning the direction of change, but also for quantitative information concerning how much additional money they would spend or save. We use the quantitative answer in the regressions that follow.

Table IX shows the impact on the crucial coefficients of including our preference parameters as additional right hand side variables in our model. One important point to note is the significant reduction in sample size. Rather than 500 observations, the sample contains only 316 observations. The primary reason for this is the large number of individuals whose answer concerning the preference for future consumption was discarded as unreasonable.

The most significant observation concerning the results of this regression is that our estimate of α_2, the coefficient on planning in the wealth regression, is somewhat higher than in the regression without preference parameters. In addition, there is absolutely no loss of statistical significance, despite the fall in sample size. Finally, our instruments are still strongly jointly significant in the first stage. These results appear to contradict the preference parameter theory. According to this theory, α_2 should lose significance once the preference parameters are included.[14]

The power of our result depends on how accurate are our survey measures of preference parameters. In this respect, it is notable that preference for future consumption, the precautionary motive, and the bequest motive all show up as insignificant in the wealth regression. Yet our survey measures do not appear to be complete noise. In particular, there are striking findings concerning the impact of the bequest motive on planning and on wealth accumulation. The bequest motive has a significant positive impact on planning, and has a separate positive impact on wealth accumulation. Those with higher bequest motives accumulate more not only because of their greater concern with the size of their bequest, but also because the desire to leave a bequest induces higher planning. This seems plausible. While our survey measures are surely imperfect, if the preference parameter theory were true, we would have expected to see some decrease in the statistical and economic significance of the propensity to plan. If anything, the opposite is true.

7.2 Planning and Uncertainty Reduction

The two channels through which a planning-induced reduction in uncertainty might influence wealth accumulation involve, respectively, reduced uncertainty about future income, and reduced uncertainty about future asset returns. We take these up in turn.

7.2.1 Income Uncertainty and the Precautionary Motive

The hypothesis that the relationship between planning and wealth accumulation can be explained by the resulting changes in uncertainty concerning future income is a joint hypothesis on the formation of beliefs and on the precautionary motive. It requires both that planning reduce uncertainty, and that this reduction in uncertainty increase wealth accumulation. The data suggest that while the hypothesis on beliefs may be valid, that on the precautionary motive is false.

The survey has several questions relating to income uncertainty. In fact, all of our questions in which we asked for estimates of future variables followed a statement that made explicit our interest in the dispersion of beliefs.[15] Following this statement, we

obtained estimates of future income from employment as well as future income from Social Security in various years. While the results are not entirely clear-cut, there is some evidence that those with a high propensity to plan indeed have lower subjective uncertainty concerning future income, in particular Social Security income.[16]

Despite this, there is no reason to believe that this reduction in uncertainty explains their higher level of wealth. Specifically, the answers to our question on precautionary saving reveal that the vast majority of our sample would respond to an increase in uncertainty by saving more. Only 4 of 488 respondents to the precautionary planning question would save less, while 286 would save more. The planning-induced reduction in uncertainty better explains a negative impact of planning on wealth than vice versa.

7.2.2 Equity Effects

Does planning increase stock market participation, and thereby increase wealth accumulation? It turns out that this channel has no power whatsoever in our sample. More than 90 percent of the households in our regression sample own stocks, so that the extensive margin plays no role whatsoever in our results. If we limit our analysis to agents who own stock, the coefficient on planning is virtually unchanged.

Could it be that planners simply hold more stocks and that the dramatic rise in stock prices explains the increased wealth? The answer is no. On average stocks make up approximately 63 percent of financial assets in our regression sample. Even those who report low planning levels have 60 percent of their financial wealth in equities. If we regress the share of stocks in financial assets on instrumented planning and controls, planning is insignificant. Finally, if planning affected wealth through stock holding, we might expect including stock holding in the planning regression to reduce the effect of planning on wealth. We therefore included stock holding in the IV planning regressions. While the stock share is positively correlated with net worth and gross financial assets, the coefficient on planning remains essentially unchanged in both regressions. In our sample, stock holding does not appear to explain the effect of planning on wealth.

The fact that portfolio differences are not enough to explain the observed wealth differences in our finding connects to a broader finding of Venti and Wise. In their analysis of households in the HRS, they found that controlling for observed portfolio choice did little to explain observed wealth differences at retirement among households with similar levels of lifetime income. In combination with additional findings concerning the limited impact of bequests and other "shocks" on observed wealth differences, this led them to conclude that the bulk of the explanation for wealth differences must lie in differences in choices concerning how much to save. It is to this channel we now turn. We look for evidence on whether or not those with a high propensity to plan save more than those with a low such propensity.

8 The Propensity to Plan: Saving and Budgeting

The results of section V above establish our two primary hypotheses: that there are individual differences in the propensity to plan, and that these differences are associated

with differences in wealth accumulation. The results of sections VI and VII suggest strongly that there is some non-classical channel in operation, and that this channel is not related to asset holdings. In this section we present further affirmative evidence on the mechanisms underlying the impact of the propensity to plan and wealth accumulation.

Our first finding points to a positive relationship between the propensity to plan and the rate of savings: those with a high propensity to plan appear to save more. This brings to mind the "costly self control" theory outlined in the introduction, and the specific story of our friend for whom increased planning and monitoring translated into an increased the rate of savings. We close the section by providing first insights into the more general relevance of this story. In particular, we explore the links between the propensity to plan and the keeping of household budgets. We find that those with a high propensity to plan set more detailed budgets. We find also that many who keep such budgets regard this activity as helping to keep their spending under control. It appears that our friend is not alone in finding budgeting to be a useful technique for controlling spending.

8.1 Savings and the Propensity to Plan

It is very difficult to measure savings with any degree of accuracy in a survey. The correct economic definition of income includes all income from assets including capital gains, as well as employer contributions to pension plans. Yet this is not the common sense definition of income. Similarly, the terms consumption and expenditure may mean different things to the average person than they do to an economist (for example, an economist would not include principal payments on a debt as expenditure, while the average person probably would).

Given these definitional difficulties, our approach was to ask a straightforward question relating to income from employment in comparison with expenditures, and then to use our other data to try to make appropriate adjustments. We asked households the following question:

- Question 13: On average over **the past five years** has your total household spending (i.e. all spending including debt or mortgage payments) been **more** or **less** than the after tax income that your household has received from employment? (In other words, did you spend more than your income from employment and rely on other financial assets to cover your household spending, or did you spend less and rely solely on your employment income?)

Of the households in the universe who answered this question, 63 percent reported that income exceeded spending, 21 percent reported that spending exceeded income, while the remaining 16 percent reported income equal to expenditure.

Our interest is in whether the propensity to plan appears to play a significant role in determining the qualitative answer to this question. In a first cut, we include the same controls as in the wealth regressions. The sample expands to 915 due to the fact that we no longer require a comprehensive measure of wealth. The coefficient on instrumented planning is positive in this regression, and significant at the 3 percent level. Those with a high propensity to plan are more likely to be saving in the sense of question 13.

Because there may be differences between the answers to question 13 and the true economic definition of saving, we use the detailed financial information in our survey to control for possible discrepancies. On the income side, question 13 excludes asset income and is likely to exclude employer contributions to defined benefit plans; we therefore include these two variables in the regression. We measure income from assets using data from the SPF which distinguishes income from employment, income from savings and investments, income from rental properties, as well as income from all forms of pension (unfortunately, we have no measure of capital gains). We also have data from the SPF on employer contributions to all defined contribution pension plans as a proportion of employment income. On the expenditure side, question 13 instructs households to include all mortgage payments in spending, yet the repayment of principal should be counted in savings. Since we do not have a breakdown of mortgage payments between principal and interest, we do the next best thing and use the SPF to measure the ratio of total mortgage payments to income from employment. When we include these three constructed variables and the controls together with instrumented planning in our savings regression, the sample shrinks to 321 households. However, the coefficient on instrumented planning remains positive (it is actually higher in this regression than in the larger regression), and is significant at the 6 percent level.

8.2 Saving, Budgeting, and the Propensity to Plan

The story of the introduction suggests that a household that monitors its spending more closely may be better able to keep its spending under control. Such monitoring behaviors may be more closely related to short-term budgeting than they are to long-term financial planning. To look for insight on this issue, respondents were asked to use the previously described 1 to 6 scale to reflect on the applicability of the following statement concerning their budgeting behavior:

- Question 3i: My household regularly sets a detailed budget for our overall spending.

What is the relationship between budgeting and planning? Budgeting is less prevalent in our regression sample than is financial planning. Some 37 percent of households in the under-65 universe agree to any degree that they keep a budget. In contrast 65 percent agreed to some degree that they had spent a great deal of time developing a financial plan. Despite this difference, there is a strong relationship between budgeting and planning. The correlation between the answers to the two questions is 0.3. This close relationship becomes far closer when one relates budgeting to the propensity to plan. In a regression of budgeting on instrumented planning and our other controls in the under-65 universe, the coefficient on instrumented planning is 1.12 with a standard error of .213. When the propensity to plan increases, it has even greater impact on budgeting than it does on planning itself.

Even if it is true that the propensity to plan has a strong influence on budgeting, it is not immediately evident that this has any relevance to our results on savings and wealth accumulation. We asked one additional question with a view to advancing our understanding of this issue. Our question reflects the following common-sense observation. The everyday definition of budgeting involves not only the keeping of a financial plan, but

also the use of that plan as a device to help cut back on spending. We asked the following question designed to assess how many households had in mind this common-sense notion of "belt-tightening" in their definition of budgeting.

- Question 3j: If my household were to never set a budget, our spending would rise a great deal.

It was up to the respondents themselves to decide whether or not they set a budget and hence should respond to the question. Of particular interest are the responses to question 3j for the 37 percent of sample households whose responses to question 3i were 4 or above (i.e. those who agreed at least to some extent that they set a detailed spending budget). These responses reveal an even split, with almost 50 percent of responses indicating some form of agreement: 6 percent agreeing strongly, 15 percent unequivocally agreeing, and 24 percent agreeing only somewhat. A substantial minority of sample households agree that their budgeting activities help them to restrain their spending.

8.3 Budgeting in the Wealth Regressions

The results of the last section suggest a channel whereby the propensity to plan raises households' ability to tighten their belts, thereby raising savings and wealth accumulation. If this is an important part of the story, then it is of interest to repeat our analysis of planning and wealth using budgeting in place of planning. When we do this, we immediately identify a qualitative difference. In reduced form regressions, there is a *negative* relationship between the budgeting variable and both net worth and gross financial assets (in both cases, there is significance at better than a 10 percent level). This is quite the opposite of the findings with financial planning. Controlling for other factors, higher levels of wealth are associated with *lower* levels of budgeting.

What happens when we replace planning in our two equation system of section 5 with budgeting? We use the same $\mathbf{z}$ variables to measure the "propensity to budget" as were used to measure the propensity to plan: vacation planning (question 3d) and math confidence (question 3q). Table X presents the results of the resulting wealth regressions, using respectively net worth and gross financial assets as left hand side variables. In the common first stage regression, the F-statistic for the joint significance of questions 3d and 3q is above 13.

The coefficients on budgeting in both wealth regressions are positive. While the sizes of the coefficients and their significance levels are lower than was found for planning in the planning regressions, the results are possibly more surprising in light of the negative association between budgeting and wealth in the reduced form OLS regressions. The IV regression estimates for budgeting are both significantly different from the reduced from estimates at the 5 percent level. When we limit attention to those households with net worth between \$50,000 and \$750,000, the effect of instrumented budgeting on net worth is significantly different from zero at the 5 percent level, and that on gross financial assets is significant at the 10 percent level. These findings suggest that our instruments are doing more than simply reducing measurement error in budgeting. In fact, the results suggest that the feedback effect from wealth to budgeting is negative, possibly because those who are exogenously wealthier may not need to watch their spending so closely. Finally, when

we replace instrumented planning with instrumented budgeting in the savings regression of Section V, the coefficients and their statistical significance change only marginally. Those who budget carefully because they have a higher propensity to plan appear also to save more.

9 Concluding Remarks

Our findings concerning the importance of the propensity to plan for the process of wealth accumulation suggest several new directions for future research. The central item on the agenda is to develop a suitably rich dynamic model of planning and wealth accumulation consistent with our findings. In doing this, it will be crucial to incorporate policy issues. To the extent that wealth accumulation can be impacted by shifts in the propensity to plan, this suggests entirely new mechanisms by which to encourage saving.[17] Do the high school curriculum mandates analyzed by Bernheim, Garret, and Maki [1997] impact the propensity to plan? Does this explain their apparent impact on the savings rate? Are there alternative policies that may be even more effective at impacting the propensity to plan and the savings rate?

The strength of our findings derives in large part from our ability to custom-design survey instruments around the questions of interest. We believe that new surveys will be needed to shed light on other recent findings from the behavioral economics literature. We have in mind in particular the findings of Madrian and Shea [2001] on default rules in defined contribution pension plans, and of Ameriks and Zeldes [2002] on inertia in changing portfolio allocations.[18]

10 Appendix

Our measures of discounting and of the bequest motive derive from the answer to question 10.

- Question 10. Suppose that you (and your spouse/partner, if applicable) are currently 50 years old, and that you are certain you (both) will live to be exactly 80 years old. We are interested in how you would like to allocate your total lifetime resources (savings, income and other financial resources), depending on your assumptions about retirement. Assume that any resources you do not spend are held as cash, and therefore do not grow in value over time. Assume also that there is no inflation, and any medical expenses you may have will be fully covered by insurance.

  - In the boxes below, please indicate what proportion of your total lifetime resources (saving, income and other financial resources) you would like to devote to:

    1. Spending during the time from age 50 to age 64.
    2. Spending during the time from age 65 to age 79.
    3. A bequest or inheritance to your heirs or other beneficiaries.

Respondents were asked to consider two scenarios: one in which they retire at age 65 and one in which they never retire. For each scenario they were asked to enter a number from 0 percent to a 100 percent for spending during ages 50-64, spending during ages 65-79, and for a bequest. They were prompted to make sure that the numbers totaled 100 percent.[19] It turns out that conditioning on retirement has little impact on the answers. We therefore chose to work with the version of the question in which agents were asked to imagine retirement at 65.

Our measure of risk aversion derives from the answer to question 6.

- Question 6. Suppose you have a choice between a certain and an uncertain path for your future household income. Your options are either (A) or (B) below.
  - (A) Your household income rises immediately and permanently by 25 percent from its current level.
  - (B) There is an equal chance that each of the following outcomes will occur:
    - B-1. Your household income decreases immediately and permanently by 33 percent (to two-thirds of its current level), or
    - B-2. Your household income increases immediately and permanently by 100 percent (to twice its current level).

In answer to this question, respondents could either state a preference for A or B, or state that they had no preference. We followed up this qualitative question with a further quantitative question designed to refine the measure of risk aversion.

- Question 7. By what percentage would your household's income have to increase in outcome B-2 to make option A and option B equally attractive to you? (Note that if you preferred A to B in the previous question, we would expect your answer to this question to be greater than 100 percent. If your preferred B to A, we'd expect your answer to be smaller than 100 percent).

Our measure of the precautionary motive derives from the answer to question 8.

- Question 8. Suppose that you [and your spouse/partner] are 50 years old, and have a fixed, annual after tax income of $50,000, which you expect to continue indefinitely. Assume also that you have paid off any debts (including your mortgage) and have no other significant financial obligations. All of a sudden you become aware of an increase in income uncertainty: in one year's time your annual after-tax income will change permanently to either $60,000 or $40,000, with a 50-50 chance of either outcome. How would this news impact your total level of savings our of this year's income of $50,000?
  - I would save more
  - I would save less
  - I would not change my level of savings

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Notes

[1]Venti and Wise [2000] break households in the Health and Retirement Study into deciles based on their lifetime income as identified in Social Security records. They find massive disparities in wealth at retirement *within* each decile: for example in the fifth decile, the 90th quantile in the wealth distribution has 35 times as much wealth as does the 10th quantile. Controlling for household size and marital status does little to reduce this dispersion.

[2]These survey samples are not representative of the TIAA-CREF population. The sampling procedure is described in greater detail in a companion paper on retirement consumption (Ameriks, Caplin, and Leahy [2002]).

[3]While respondents always reported their own age, there was a high nonresponse rate for year of birth for the spouse/partner; the spousal age restriction is enforced only if we have the spouse's age data.

[4]We use 1999 income from the FAB, since this corresponds most closely to the wealth data from the SPF.

[5]In contrast, the Federal Reserve Board's triennial Surveys of Consumer Finances do not ask households to provide numerical information on the breakdown of retirement assets into different asset classes. Rather, respondents provide qualitative answers, and additional assumptions are necessary to obtain numerical data on portfolio shares.

[6]The anonymity and confidentiality of the survey respondents has been, and continues to be, strictly enforced and maintained. The identities of specific respondents remain unknown to all of the investigators.

[7]While the coefficients in these wealth regressions are not unusual, the high degree of explanatory power certainly is. Even when we remove planning, we get R^2's of above 50% in both regressions. In contrast, wealth regressions in the HRS typically get R^2's below 10% (e.g. Lusardi [1999] and Bernheim, Skinner, and Weinberg [2001]). A small part of this is due to differences in sample definition (e.g. the HRS focuses only on households close to retirement). However the lion's share of the difference appears to be due to other distinctions between the data sets, in particular the fact that we have more wealthy individuals in our sample. It is also likely that our sample is more homogeneous in the omitted variables.

[8]For brevity, we do not provide a full report of these regressions. The results of all regressions that we summarize in the text but do not fully report are available from the authors upon request.

[9]While question 3e on computer skills is not significantly correlated with question 1a, the input-based measure of planning, it is significantly correlated with question 2a, the output-based measure. This suggests that computer skills increase the productivity of time spent developing a financial plan.

[10]A different argument concerning incompleteness is addressed in section 6 below, in which we impact of classical preference parameters such as the discount factor on both planning and wealth accumulation.

[11]The increase in the coefficient on planning when we instrument is supportive of the view that exogenous increases in wealth reduce planning. However we cannot reject the alternative interpretation that instrumenting simply reduces measurement error in planning.

[12]For example, while the survey makes clear that supplemental retirement assets were to be included in the total of "employer-sponsored" accounts, it would be easy to understand a miscategorization in which the respondent treated them instead as IRAs, since there may be no employer contribution in some types of plans.

[13]The issue of timing is especially important given the significant role of equities in the TIAA-CREF portfolios of the survey respondents, and the fact that accumulation unit values for the various CREF

equity-based accounts varied from their end-millenium values by some 5 percent-10 percent in the weeks surrounding December 31, 1999.

[14]Our results on the significance of planning, and of the various parameters in the analysis are basically unchanged when we add them to the regression either one at a time, or in various other combinations.

[15]

- Because of the uncertainty that is inherent in any question about your financial future, the following questions ask you to provide three estimates:
  - a **LOW** estimate, where you are 90 percent sure that the correct answer is **above** this number
  - your **CLOSEST** estimate of the most accurate answer
  - a **HIGH** estimate, where you are 90 percent sure the correct answer is **below** this number.

[16]Specifically, the average distance between the high and low estimates for Social Security income among those who indicated agreement or strong agreement to the basic planning question (Q1a) was roughly $7,000, while for all other respondents to the planning question, this was $10,000. Even controlling for age, the average distance between the high and low estimates for Social Security income is significantly narrower among the "high planners."

[17]It seems unlikely that either the extent of planning for an upcoming vacation or self-assessed comfort with mathematical computations is fixed once-and-for-all at birth.

[18]In this respect, it is of interest to note that those with a low propensity to plan not only fail to monitor their spending, but also are more financially inert. Precisely how this relationship works and how it may feed back onto the process of wealth accumulation itself are important open questions.

[19]There are two differences between this question and that asked by BJKS. First, they ask respondents to allocate resources between two period of life, whereas we allow the additional option of a bequest. Second, we condition the answers on whether or not the respondent retires at age 65 in the hypothetical scenario, whereas they consider only the case of retirement.

Table I
Demographic Characteristics of
2001 Survey Respondents

	Under 65 Universe		Regression Sample	
Characteristic	(n)	(%)	(n)	(%)
Age				
Below 35	120	10.1	61	12.2
35-39	109	9.2	58	11.6
40-44	110	9.2	61	12.2
45-49	173	14.5	82	16.4
50-54	244	20.5	106	21.2
55-59	215	18.1	70	14.0
60-64	220	18.5	62	12.4
Gender				
Female	550	46.2	205	41.0
Male	641	53.8	295	59.0
Marital Status				
Curr. married	777	65.2	332	66.4
Prev. married	193	16.2	61	12.2
Never married	221	18.6	107	21.4
Education				
College or below	342	28.7	128	25.6
Masters or Prof.	466	39.1	206	41.2
Ph.D.	383	32.2	166	33.2
Occupation				
Teaching faculty	397	33.3	162	32.4
Mgmt., Sen. Admn.	249	20.9	103	20.6
Other Tech./Prof.	304	25.5	150	30.0
Other	231	19.4	85	17.0
Num. children				
0	747	62.7	303	60.6
1	162	13.6	66	13.2
2	205	17.2	96	19.2
3+	77	6.5	35	7.0

Source: Authors' tabulations of 2000 SPF and 2001 FAB survey data.
Notes: The "under 65 universe" is all respondents to the FAB survey who were under age 65 and, if applicable and available, whose spouse reported an age of less than 65 (1,191 respondents/households). Some respondents in this sample did not report data for all the above characteristics. The "regression sample" is all individuals in the under 65 universe who: (1) provided complete information regarding the demographic characteristics above, (2) provided complete information regarding their household's net worth, (3) provided complete information on their past, present, and expected future labor earnings, (4) have no life annuity income from TIAA-CREF, (5) have positive net worth, and (6) have less than $5 million in gross financial assets.

Table II
Financial and Earnings Data for Surveyed Households

Sample and measure	Mean ($000)	Median ($000)	Std. Dev. ($000)	# Obs. (N)
Under 65 universe*				
Net worth	705	379	933	671
Gross financial assets	575	270	1,004	735
Ret. fin. assets	424	210	795	885
Non-ret. fin. assets	188	45	427	938
Real estate assets	250	160	530	1,145
Total debt	89	55	275	1,048
Mortgage debt	79	46	259	1,124
Personal debt	8	0	51	1,089
1998 Employment income	77	67	62	1,133
1999 Employment income	81	70	68	1,144
Expected 2005 emp. income	87	75	82	1,015
Regression sample**				
Net worth	700	394	810	500
Gross financial assets	555	306	661	500
Ret. fin. assets	390	216	450	500
Non-ret. fin. assets	165	44	308	500
Real estate assets	230	153	319	500
Total debt	85	60	106	500
Mortgage debt	79	50	104	500
Personal debt	6	0	12	500
1998 Employment income	81	68	62	500
1999 Employment income	85	72	67	500
Expected 2005 emp. income	93	80	80	500

Source: Authors' tabulation of 2000 and 2001 survey data.
Notes: "Gross financial assets" is the sum of all retirement account balances, mutual funds (except real estate mutual funds), directly held stocks, directly held bonds, checking accounts, savings accounts, and CDs. "Net worth" is total assets minus mortgage debt, outstanding educational loans, outstanding personal loans, and credit card balances. All aggregates exclude the value of real estate mutual funds, whole life insurance policies, trusts, and educational savings accounts (Education IRAs and 529 plans). Respondents were instructed to provide values as of December 31, 1999. Note these data include only the information reported by respondents on the surveys, and may therefore differ from data reported in Ameriks, Caplin & Leahy (2002).
*For the under 65 universe, statistics are tabulated for all individuals who provided complete data for each individual item (in each row). The number of observations in each row varies, as item response varies.
**The "regression sample" members are the 500 individuals in the under 65 universe who: (1) provided complete information regarding the demographic characteristics in Table I above, (2) provided complete information regarding their household's net worth, (3) provided complete information on their past, present, and expected future labor earnings, (4) have no life annuity income from TIAA-CREF, (5) have positive net worth, and (6) have less than $5 million in gross financial assets.

Table III
OLS Regression:
Reported TIAA-CREF Assets on Accounting Data

Sample & RHS Variables	Coeff.	Std. Err.	Pr > |t|
Under 65 universe			
ln(TCData)	0.995	0.008	0.000
Constant	-0.017	0.039	0.659
Regression sample			
ln(TCData)	0.997	0.009	0.000
Constant	-0.014	0.047	0.761

Source: Authors' calculations using 2001 survey data and 1999 accounting data. Note: This is a log-log regression of respondent's report of the value of his or her TIAA-CREF assets on actual accounting data for the respondent. For both the under 65 universe and the regression sample, the data include only those who reported and had more than $10,000 in TIAA-CREF assets, with no immediate (payout) annuities, or TIAA-CREF IRAs, and whose reported age and gender matched the age and gender recorded in the TIAA-CREF database. For the universe, 738 observations are included in this regression; the R^2 is .958; root MSE is 0.247. For the regression sample, 381 observations are included, the R^2 is .968; root MSE is 0.214.

Table IV
Responses to Basic Planning Questions among Regression Sample Members

	Q2a Response: Has Detailed plan		No Detailed Plan		Total	
Q1a Response	(n)	(%)	(n)	(%)	(n)	(%)
Disagree strongly	3	0.8	9	6.7	12	2.4
Disagree	28	7.7	47	35.1	75	15.0
Disagree somewhat	40	11.0	35	26.1	75	15.0
Agree somewhat	152	41.6	38	28.4	190	38.1
Agree	105	28.8	4	3.0	109	21.8
Agree strongly	37	10.1	1	0.7	38	7.6
Total	365	100.0	134	100.0	499	100.0

Source: Authors' tabulations of 2001 FAB survey data.
Note: One individual in the regression sample did not respond to the detailed planning question (Q2a).

Table V
Basic OLS Wealth Regression Results

	Net Worth			Gross Financial Assets		
Variable	Coeff.	S.E.	Pr $> \|t\|$	Coeff.	S.E.	Pr $> \|t\|$
Planning variable	0.160***	0.035	0.000	0.186***	0.035	0.000
Log 1999 income	0.319**	0.160	0.046	0.371**	0.163	0.024
Zero 1999 income	1.860**	0.815	0.023	2.234***	0.833	0.008
Log past income	0.248	0.156	0.114	0.207	0.160	0.196
Zero past income	0.616	0.885	0.486	-0.209	0.905	0.817
Log future income	0.061	0.093	0.512	0.099	0.095	0.300
Zero future income	0.392	0.418	0.349	0.502	0.428	0.241
Age	0.211***	0.048	0.000	0.177***	0.049	0.000
Age^2	-0.001***	0.001	0.005	-0.001**	0.001	0.037
Empl. status						
Working		*Omitted*			*Omitted*	
Partially retired	0.174	0.198	0.382	0.300	0.203	0.140
Retired	0.327	0.265	0.217	0.330	0.271	0.224
Occupation						
Faculty		*Omitted*			*Omitted*	
Mgmt./Sen. Admin.	-0.111	0.120	0.357	-0.135	0.123	0.271
Tech./Professional	0.079	0.112	0.481	0.067	0.115	0.558
Other	-0.112	0.136	0.409	-0.152	0.139	0.276
Education						
College or below	-0.197*	0.111	0.076	-0.337***	0.113	0.003
M.A./Profesional		*Omitted*			*Omitted*	
Ph.D.	-0.158	0.099	0.112	-0.159	0.102	0.117
R. has DB plan	-0.138	0.100	0.170	-0.235**	0.103	0.023
S. has DB plan	-0.124	0.123	0.314	-0.246*	0.126	0.052
Marital status						
Curr. married		*Omitted*			*Omitted*	
Prev. married	-0.511***	0.144	0.000	-0.504***	0.147	0.001
Never married	-0.299**	0.128	0.020	-0.184	0.131	0.159
Male respondent	-0.010	0.090	0.912	0.067	0.092	0.462
Num. kids	0.044	0.047	0.351	0.018	0.048	0.706
Constant	-3.798***	1.098	0.001	-3.567***	1.123	0.002
N	500			500		
R^2	0.577			0.569		
F	29.61			28.59		
Pr$> F$	0.000			0.000		

Source: Authors' calculations based on 2000 & 2001 survey data.
Note: Dependent variables are natural logarithms of the quantities listed at head of each set of columns. Asterisks indicate the level of statistical confidence for rejection of the hypothesis that the relevant coefficient is (independently) equal to zero: "***" indicates rejection at better than a 1% level of confidence, "**" indicates rejection at better than a 5% level, and "*" indicates rejection at better than a 10% level.

Table VI
First-stage Planning/Wealth Regression Results

	Regression sample		
Variable	Coeff.	S.E.	Pr $> \|t\|$
Vacation planning	0.166***	0.043	0.000
Math confidence	0.150***	0.044	0.001
Log 1999 income	0.138	0.207	0.504
Zero 1999 income	0.839	1.052	0.425
Log past income	0.249	0.202	0.218
Zero past income	2.058*	1.140	0.072
Log future income	-0.151	0.120	0.210
Zero future income	-0.601	0.541	0.267
Age	-0.181***	0.062	0.003
Age^2	0.002***	0.001	0.005
Empl. status			
Working		*Omitted*	
Partially retired	0.506**	0.256	0.049
Retired	0.293	0.342	0.392
Occupation			
Faculty		*Omitted*	
Mgmt./Sen. Admin.	0.017	0.156	0.914
Tech./Professional	-0.067	0.145	0.642
Other	0.087	0.176	0.620
Education			
College or below	0.073	0.143	0.613
M.A./Profesional		*Omitted*	
Ph.D.	-0.050	0.129	0.699
R. has DB plan	0.050	0.130	0.698
S. has DB plan	0.150	0.160	0.349
Marital status			
Curr. married		*Omitted*	
Prev. married	-0.117	0.186	0.529
Never married	-0.173	0.165	0.296
Male respondent	0.011	0.116	0.926
Num. kids	-0.065	0.061	0.283
Constant	5.651***	1.409	0.000
N	500		
R^2	0.139		
F	3.35		
Pr$> F$	0.000		

Source: Authors' calculations based on 2000 & 2001 survey data.
Note: Dependent variable in the regression above is the answer to Question 1a, degree of agreement (1=Disagree strongly, 2=Disagree, 3=Disagree somewhat, 4=Agree somewhat, 5=Agree, 6=Agree strongly) with the statement "I have spent a great deal of time developing a financial plan." Asterisks indicate the level of statistical confidence for rejection of the hypothesis that the relevant coefficient is (independently) equal to zero: "***" indicates rejection at better than a 1% level of confidence, "**" indicates rejection at better than a 5% level, and "*" indicates rejection at better than a 10% level.

Table VII
Second-stage Planning/Wealth Regression Results

	Net Worth			Gross Financial Assets		
Variable	Coeff.	S.E.	Pr $> \|t\|$	Coeff.	S.E.	Pr $> \|t\|$
Planning variable (IV)	0.324**	0.154	0.035	0.398**	0.159	0.013
Log 1999 income	0.304*	0.164	0.065	0.351**	0.170	0.040
Zero 1999 income	1.724**	0.843	0.041	2.059**	0.873	0.019
Log past income	0.190	0.168	0.259	0.133	0.174	0.447
Zero past income	0.276	0.957	0.774	-0.648	0.992	0.513
Log future income	0.085	0.098	0.385	0.129	0.101	0.201
Zero future income	0.475	0.435	0.275	0.609	0.450	0.177
Age	0.241***	0.056	0.000	0.216***	0.058	0.000
Age^2	-0.002***	0.001	0.004	-0.002**	0.001	0.016
Empl. status						
Working		*Omitted*			*Omitted*	
Partially retired	0.101	0.214	0.638	0.206	0.221	0.354
Retired	0.269	0.276	0.330	0.255	0.286	0.373
Occupation						
Faculty		*Omitted*			*Omitted*	
Mgmt./Sen. Admin.	-0.100	0.123	0.415	-0.122	0.127	0.338
Tech./Professional	0.095	0.116	0.410	0.088	0.120	0.463
Other	-0.124	0.140	0.374	-0.167	0.145	0.249
Education						
College or below	-0.210*	0.114	0.066	-0.354***	0.118	0.003
M.A./Profesional		*Omitted*			*Omitted*	
Ph.D.	-0.143	0.103	0.164	-0.140	0.106	0.189
R. has DB plan	-0.153	0.104	0.140	-0.254**	0.107	0.018
S. has DB plan	-0.145	0.128	0.258	-0.272**	0.132	0.041
Marital status						
Curr. married		*Omitted*			*Omitted*	
Prev. married	-0.502***	0.147	0.001	-0.492***	0.153	0.001
Never married	-0.274**	0.133	0.039	-0.152	0.137	0.268
Male respondent	-0.019	0.092	0.836	0.056	0.095	0.560
Num. kids	0.053	0.049	0.278	0.030	0.051	0.556
Constant	-4.947***	1.534	0.001	-5.048***	1.589	0.002
N	500			500		

Source: Authors' calculations based on 2000 & 2001 survey data.
Note: Dependent variables are natural logarithms of the quantities listed at head of each set of columns. Asterisks indicate the level of statistical confidence for rejection of the hypothesis that the relevant coefficient is (independently) equal to zero: "***" indicates rejection at better than a 1% level of confidence, "**" indicates rejection at better than a 5% level, and "*" indicates rejection at better than a 10% level.

Table VIII
Coefficient on IV Planning Variable for Households with Small Differences between Self-Reports and Accounting Data

	Data Used					
	Self-Reported Data			TIAA-CREF Data		
Dependent variable	Coeff.	S.E.	Pr $> \|t\|$	Coeff.	S.E.	Pr $> \|t\|$
Net Worth	0.368*	0.187	0.050	0.360*	0.185	0.053
Gross Financial Assets	0.357**	0.178	0.046	0.344**	0.173	0.048
N	361			361		

Source: Authors' calculations based on 2000 & 2001 survey data.
Note: Coefficients in the table above are for the planning variable in the second stage of an IV regression with the same specification as reported in Tables VI and VII. For brevity, other coefficients are omitted from the table above, but are included in the underlying regressions. These regressions include only the 361 individuals in the regression sample whose self-reported age and gender match the accounting data, who have no TIAA-CREF IRAs, and for whom either: (1) the absolute difference between self-reported TIAA-CREF balances and the TIAA-CREF accounting data is $10,000 or less, or (2) the absolute log difference between self-reported TIAA-CREF balances and the TIAA-CREF accounting data is .10 log points or less. Asterisks indicate the level of statistical confidence for rejection of the hypothesis that the relevant coefficient is (independently) equal to zero: "***" indicates rejection at better than a 1% level of confidence, "**" indicates rejection at better than a 5% level, and "*" indicates rejection at better than a 10% level.

Table IX
Two-stage Least Squares Regression Results
Including Preference Parameter Measures

Variable	Coeff.	S.E.	Pr > |t|
Second Stage Results, Net Worth			
Planning (IV)	0.393**	0.175	0.026
Discounting	-0.166	0.727	0.819
Precaution	-0.012	0.011	0.273
Risk aversion	0.016	0.077	0.835
Bequest	0.012**	0.006	0.039
Second Stage Results, Gross Financial Assets			
Planning (IV)	0.467**	0.188	0.014
Discounting	-0.277	0.779	0.722
Precaution	-0.008	0.011	0.456
Risk aversion	-0.059	0.083	0.474
Bequest	0.011*	0.006	0.068
First Stage Results (Dep. Variable is Q1a)			
Discounting	-0.235	0.860	0.785
Precaution	0.019	0.012	0.115
Risk aversion	0.165*	0.086	0.056
Bequest	0.017***	0.006	0.005
Vacation planning	0.184***	0.052	0.000
Math confidence	0.185***	0.057	0.001

Source: Authors' calculations based on 2000 & 2001 survey data.
Note: There were 316 observations used in all regressions. For the second stage regressions (top two panels), the dependent variables are natural logarithms of the given wealth measures (net worth in the top panel, and gross financial assets in the middle panel). See the text for a description of the construction of the preference measures. Other right-hand-side variables included the same controls as in our basic specification: current, past, and future income measures; age and age squared; number of children; and indicators for employment status, occupation, education, marital status, gender and participation in a DB plan (respondent and spouse). For brevity, these coefficients are not reported above. Asterisks indicate the level of statistical confidence for rejection of the hypothesis that the relevant coefficient is (independently) equal to zero: "***" indicates rejection at better than a 1% level of confidence, "**" indicates rejection at better than a 5% level, and "*" indicates rejection at better than a 10% level.

Table X
Second-stage Budgeting/Wealth Regression Results

	Net Worth			Gross Financial Assets		
Variable	Coeff.	S.E.	Pr $> \|t\|$	Coeff.	S.E.	Pr $> \|t\|$
Budgeting variable (IV)	0.209	0.146	0.154	0.277*	0.154	0.072
Log 1999 income	0.348**	0.175	0.048	0.409**	0.185	0.028
Zero 1999 income	1.973**	0.892	0.027	2.375**	0.941	0.012
Log past income	0.257	0.173	0.138	0.210	0.183	0.250
Zero past income	0.902	0.966	0.351	0.111	1.019	0.913
Log future income	0.104	0.110	0.341	0.157	0.116	0.176
Zero future income	0.613	0.495	0.217	0.794	0.523	0.129
Age	0.181***	0.052	0.001	0.144**	0.055	0.010
Age^2	-0.001*	0.001	0.052	-0.001	0.001	0.241
Empl. status						
Working		*Omitted*			*Omitted*	
Partially retired	0.221	0.217	0.310	0.349	0.229	0.129
Retired	0.178	0.322	0.580	0.122	0.340	0.720
Occupation						
Faculty		*Omitted*			*Omitted*	
Mgmt./Sen. Admin.	-0.118	0.133	0.377	-0.149	0.141	0.292
Tech./Professional	0.108	0.126	0.391	0.109	0.133	0.413
Other	-0.124	0.150	0.411	-0.169	0.159	0.288
Education						
College or below	-0.164	0.122	0.181	-0.293**	0.129	0.024
M.A./Profesional		*Omitted*			*Omitted*	
Ph.D.	-0.127	0.112	0.258	-0.114	0.118	0.335
R. has DB plan	-0.127	0.111	0.250	-0.228*	0.117	0.051
S. has DB plan	-0.154	0.139	0.268	-0.287*	0.146	0.050
Marital status						
Curr. married		*Omitted*			*Omitted*	
Prev. married	-0.507***	0.158	0.001	-0.497***	0.166	0.003
Never married	-0.300**	0.140	0.033	-0.185	0.148	0.212
Male respondent	0.054	0.106	0.610	0.154	0.112	0.171
Num. kids	0.056	0.053	0.291	0.035	0.056	0.528
Constant	-3.673***	1.376	0.008	-3.592**	1.452	0.014
N	498			498		

Source: Authors' calculations based on 2000 & 2001 survey data.
Note: Dependent variables are natural logarithms of the quantities listed at head of each set of columns. Asterisks indicate the level of statistical confidence for rejection of the hypothesis that the relevant coefficient is (independently) equal to zero: "***" indicates rejection at better than a 1% level of confidence, "**" indicates rejection at better than a 5% level, and "*" indicates rejection at better than a 10% level.