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 effort is associated with increased wealth. The propensity to plan is uncorrelated with survey measures of the discount factor and the bequest motive, raising a question as to why it is associated with wealth accumulation. Part of the answer may lie in the very strong relationship we uncover between the propensity to plan and how carefully households monitor their spending. It appears that this detailed monitoring activity helps households to save more and to accumulate more wealth.

I. Introduction

According to the life cycle model, the central determinants of wealth accumulation are age, household structure, lifetime earnings, and a relatively small set of preference parameters, such as the discount rate and the bequest motive. Yet recent empirical research in the behavioral tradition suggests that other variables, with no explicit role in the life cycle model, are strongly related to wealth accumulation. For example, Madrian and Shea [2001] show that default rules in defined contribution pension plans can have a strong influence on wealth accumulation. Lusardi ([1999], [2000]) finds that households who have given little thought to retirement have far lower wealth than those who have given the subject more thought.

We view such empirical results as extremely provocative, but somewhat disconnected from the main stream of research on life cycle saving. In large part, this separation is a result of data limitations. While there are many data sets relevant to examination of the life cycle model, available data typically include few variables of direct relevance to testing behavioral hypotheses.

In this paper, we overcome these limitations using new data from two recent surveys, both of which were completed by some 2,000 TIAA-CREF participant households. As we describe in Section II below, these surveys produced high quality data on household portfolios of assets (both inside and outside of pension plans) and debts, and on lifetime earnings profiles. In addition, following the pioneering work of Barsky, Juster, Kimball, and Shapiro [1997] (henceforth BJKS), the surveys included questions designed to provide measures of classical preference parameters, such as the discount factor. The surveys also contained questions regarding household behavior related to financial planning, as well as questions intended to measure a variety of individual and household behavioral and psychological characteristics.

The main empirical results in this paper focus on the relationship between financial planning and wealth accumulation. Our first set of findings confirm and enrich

Lusardi's earlier results: in Section III we describe the robust positive relationship between financial planning and wealth accumulation. In Section IV we establish that the line of causation runs from planning to wealth accumulation, rather than vice versa. We use a set of nonfinancial survey questions to identify variation in the underlying "propensity to plan" of the survey respondents. These questions were asked precisely to provide natural instruments for exploring the direction of causation in the relationship between planning and wealth. We show that differences in planning effort associated with variation in this propensity are in turn strongly associated with differences in wealth accumulation.

Why are differences in the propensity to plan associated with differences in wealth accumulation? In contrast with the results of Lusardi [2000], Section V shows that differential patterns of equity holding are not responsible for the connection between planning and wealth accumulation. Rather, our findings suggest that planners save more. Section VI explores whether or not the connection between financial planning and wealth accumulation is due to a correlation with measures of classical preference parameters, such as the discount factor. We find no evidence to support this hypothesis.

If differences in the propensity to plan are unrelated to differences in the discount factor, why are they associated with differences in wealth accumulation and savings? The following simple story suggests one possible explanation:

> A close friend of the authors was recently surprised to find that the size of his bank account had declined dramatically over the last year. To understand how this could have happened, he carefully reviewed his spending, and was shocked at how much money seemed to have dissipated in various directions. To ensure that this pattern did not repeat itself, he resolved to keep a closer watch on his day-to-day spending. The end result was an increase in savings.

If this is not an isolated case, it suggests there may be a link between how closely

2

one monitors one's spending and the level of savings. If in addition there is a high correlation between such monitoring behaviors and the propensity to plan, then this could provide an intuitive explanation for our findings. The survey results presented in Section VII suggest that this may indeed be an important line of explanation.

The larger goal of our research project is to dig deeper into what determines individual differences in wealth accumulation. Currently, "the discount factor" stands in as a convenient mathematical representation for most of these differences. Useful as this abstraction may be for certain purposes, it does not provide much in the way of guidance to policy makers. Yet if savings and wealth accumulation are indeed impacted by shifts in the propensity to plan, this suggests entirely new mechanisms by which to encourage saving. 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?

II.   The Surveys and the Sample

1.   The Sample

The data used in this paper are drawn from two surveys sent 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.[1]

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.[2] 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

3

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 analysis 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 remove 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.

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.

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 the majority of the others having management or professional positions. The "other" employment category corresponds to secretarial, maintenance, and other support positions. Finally, note that there appears to be little difference between the

4

under-65 universe and the regression sample in terms of most demographic characteristics, although 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.[3] 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.

In Ameriks, Caplin, and Leahy [2002] we compare characteristics of our sample with those of working households in the 1998 Survey of Consumer Finances (SCF). Net worth is some 2.5–3 times higher in our sample, while debt levels are generally lower. 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. There is also far greater homogeneity in our sample than in the SCF.

3. Data Quality

We believe our data on portfolios of assets and debts to be of high quality. For example, our survey requests a quantitative division of assets in defined contribution retirement plans into separate classes, such as cash and equities. 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. Additional assumptions are necessary to obtain numerical data on portfolio shares. 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 non-

retirement assets. Within each such category we asked for a precise quantitative breakdown describing how much of the total was held in various different forms. At a minimum, these breakdowns were designed to allow us to discriminate between cash assets, fixed income assets, equities, and other assets. We also asked comprehensive numerical questions concerning real estate assets, and all forms of debt. Where relevant, we asked for information on the assets of the respondent's spouse or partner.

Our item response rates were in excess of 90% 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.[4] Yet before comparing the self-reports and the accounting data, we must take account of two important points of difference between the two types of data. The first issue involves the treatment of individual IRAs. In the SPF, we asked respondents to report the total of their TIAA-CREF employer-sponsored retirement assets, and separately to record all (both TIAA-CREF and non-TIAA-CREF) of their individual IRA holdings. In contrast, the TIAA-CREF data we use combine TIAA-CREF assets in employer-sponsored plans with some types of TIAA-CREF IRAs that the individual may hold, making it inappropriate for us to compare the reported employer-sponsored plan total with this data. A second important difference arises in cases in which both the respondent and the respondent's partner have TIAA-CREF assets. In these cases, the survey may have been filled in by the partner rather than by the addressee, breaking the connection between the self-reports and the accounting records. Both of these issues

must be addressed before it is valid to compare the two sources of data.

With respect to the treatment of IRAs, the accounting data include an indicator of the existence of the problematic IRA accounts. Before comparing the self-reports and accounting numbers, we condition on the individual who responded to the survey having no IRAs, since this condition is necessary for the two numbers to coincide. With respect to households in which both partners have TIAA-CREF assets, we restrict attention to those for whom data on the age and gender of the respondent agree with those from the corresponding accounting record. 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 statistically insignificant, 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%, while the median is less than 2%. 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

7

between the accounting data and the self-reports.

III. Wealth and Planning: the Correlation

1. Prior Literature

A basic assumption in the life cycle model is that households form complete contingent plans prescribing consumption and asset holdings in all possible states of nature. Yet there is survey evidence suggesting that this is very far from accurate. Using data from the Retirement Confidence Survey, Yakoboski and Dickemper [1997] document a pervasive lack of planning for retirement. They find that only 36% of current workers in their survey have tried to determine how much they need to save to fund a comfortable retirement. They also report that 37% of current workers report having given little or no thought to their retirement.

If one translates the notion of poor planning into the language of the life cycle model, it presumably corresponds to greater uncertainty about the level of consumption implied by different states of nature. If anything, one might expect such an increased uncertainty to give rise to an increase in wealth accumulation, especially for households for whom the precautionary motive is large. Yet Lusardi [1999], using data from the Health and Retirement Study (HRS), found that those who have given "little or no" thought to retirement have financial wealth significantly lower than those who have given the subject more thought, even when one controls for the usual suspects in the life cycle model, such as age and lifetime income. Of course this does not answer the question of causation: maybe it is wealth that drives thinking about retirement. It is this subject that is addressed in Lusardi [2000], and to which we turn our sights in the next section.

In the remainder of this section, we explore whether our data indicate a connection between financial planning activities and wealth accumulation. In contrast with HRS households, our households generally appear to have done significant amounts

of financial planning, as described in the next section. In addition, our households are relatively homogeneous, wealthy, and well-educated. Despite these differences, it turns out that Lusardi's insight generalizes: financial planning and wealth accumulation are strongly positively correlated.

2.   Defining Financial Planning

Clearly, the HRS question concerning "thinking about retirement" is unsatisfactory, since it makes no direct mention of financial planning per se. To highlight this topic, we posed our questions at the very beginning of the survey, and they were 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.

How best to measure financial planning? At this exploratory stage we do not know precisely how planning is supposed to influence wealth, nor do we know what constitutes an effective form of planning. Absent such a complete model, we focus our attention on two different approaches to measurement, based respectively on the input and output sides of the planning activity. With respect to the input side, we believe that most people have a sense of when they are and when they are not engaged in financial planning activities. 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.

Turning to the output side, it seems clear that one of the essential outputs of the planning activity is a well-articulated financial plan. Hence we asked households a yes/no question concerning their preparation of just such a clearly defined 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]

For those who say yes to this question, we ask them 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, which shows that 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. In self description, our sample is far more involved with long term planning than are their counterparts in the HRS, where only one-third of respondents claim to have given a lot of thought to retirement, even though all of them are within ten years of retiring (Lusardi [1999]).

One point to note about our questions is that, while they measure strictly *personal* characteristics, we will 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.

- Question 3h: I take the lead in making *investment* decisions in my household.

- Question 3o: I take the lead in making discretionary *spending* decisions in my household.

10

Both questions were answered on the 1-6 scale. Most respondents do appear to play a very significant role in household financial decision-making: almost 90% responding affirmatively to question 3h and roughly 75% to question 3o. 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. Our findings concerning the effects of planning on wealth are unchanged if we condition on the answers to questions 3h and 3o exceeding some cutoff value. We conclude that our results are not significantly impacted by the respondent-household distinction.

3.   Results

Table V presents our basic regressions of net worth and gross financial assets on planning and a set of variables familiar from standard life cycle regressions, including gender, marital status, and number of children. We use information on income in 1998 and expected income from 2005 along with age and income in 1999 to control for the life-cycle pattern of earnings. Natural logarithms of the income measures are used in the regressions; for respondents reporting zero income, 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. Education and occupation are also included to provide additional controls for past and future income. 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 variables as "the 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

11

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% 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 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 income, and little impacted by future income. 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.[5]

4. 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, 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.[6]

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.

IV. Financial Planning and Wealth

1. A Question of Causation

As discussed above, establishing a correlation is relatively uninteresting if the line of causation runs from high wealth to high levels of planning. Hence it is natural to search for instruments. Lusardi [2000] searches for such instruments in the HRS, and makes ingenious use of a number of variables that are descriptive of family structure, such as the number and age of one's older siblings, as well as variables related to parental health outcomes in old age. Her idea is that their example and experience may promote attention to retirement by a younger family member. Seeing an older sibling who arrived at retirement with inadequate preparation may provide a powerful incentive for the younger sibling to begin thinking about retirement at a younger age.

The results of her IV procedures are somewhat mixed, but broadly supportive of the idea that causation runs from planning to wealth accumulation. The instruments, however, are not entirely appealing at the theoretical level. Any family structure variable or family health variable may be connected to wealth accumulation through any number of different channels, depending on the nature of the family connections. An individual with far older siblings or sick parents may as a result be subject to current and possible future expenses, and may also anticipate receiving a relatively small inheritance.

The fact that the HRS does not contain natural instruments for investigating the relationship between wealth and planning should not be surprising, since this issue was not central to the design of the survey. In contrast, this issue was absolutely central in our survey design. The end result is that we choose to follow an entirely different approach to sorting out issues of causation than did Lusardi. Rather than looking for exogenous life events to shift planning, our approach is to focus on personal characteristics. We search for characteristics that are likely to be correlated with high levels of financial planning, and then attempt to ensure that any other correlation

13

that they may have with wealth accumulation is already accounted for by our data on income and demographic characteristics.

2.   Measuring the Propensity to Plan

What hypotheses are available to guide the design of our instruments for financial planning? Our first hypothesis is that there are some individuals who are globally more inclined than others to plan. 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 patience such as the 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 technical 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.

14

The questions concerning a tidy workspace and computer skills are not significantly correlated with planning, either individually or jointly. We therefore drop them as instruments. Fortunately, the vacation planning and mathematical skills questions turn out to be very strongly connected to planning, and are used as instruments in the remainder of the paper. We recognize that there is a potential correlation between mathematical ability and income, and therefore include a number controls for income in our regressions, in an attempt to soak up any effect of math ability on wealth through income. The correlation between vacation planning and income is statistically insignificant. We discuss further the validity of our instruments after presenting the results.

3. IV Regressions: First Stage

Table VI presents the first stage results of our two-stage least squares regression of net worth and gross financial assets on planning and controls. Both of the instruments are significantly correlated with planning. The F-statistic for the joint significance of the instruments is in excess of 13, and the hypothesis that both instruments are zero is rejected at the .0001 level.

4. The IV Regressions: Second Stage

Table VII presents the second-stage results for both regressions. In neither case do we reject the overidentifying restrictions at the 5% level (8% for net worth, 12% for gross financial assets), based on a Basman-Sargan test.

The coefficients are fairly close to their OLS values, with the notable exception of the coefficients on planning, which are larger and still statistically significant.[7] With respect to their economic significance, 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% increase

in net worth and an 8% 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% in net worth and an 18% in gross financial assets.

5. 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% 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 "somewhat disagree" and those who "somewhat agree" 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 his discussion of Lusardi, Gale [1999] raised important questions concerning the economic as opposed to the statistical significance of her findings. 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. Since this is largely indepen-

16

dent of planning, the planning effect is correspondingly less important as a source of reduced consumption. 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 Lusardi's effects, large as they 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% 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% level.

6.   Interpretation

How strong is the intuitive argument that questions 3d and 3q are potential instruments for the wealth-planning relationship? What is most important to us is to rule out reverse causation, whereby shifts in wealth that occur for reasons that are not controlled for in our regressions end up correlated with the instruments. It seems very unlikely that receipt of large wealth transfers is correlated with time spent in planning for a vacation, especially since the answer to this question is essentially uncorrelated with income. Even mathematical skills are not highly correlated with income (the correlation in the regression sample is only 0.09). This makes it almost equally unlikely that mathematical skills are correlated with high wealth transfers, especially transfers that are uncorrelated with personal life time income or education, both of which are included on the right-hand side of the wealth regressions.

While our instruments seem largely effective in ruling out reverse causation, we do not wish to press the opposite interpretation too far. Our results at this stage *do not* establish that exogenous shifts in the propensity to plan give rise to large shifts

17

in wealth. We do not have any such shifts in planning, since we use differences across agents rather than differences over time to identify planning effects. What our results *do* suggest is that higher levels of the propensity to plan are associated with increased wealth accumulation. The remaining sections explore how this association arises.

7.   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 inappropriate 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% level. The coefficient in the gross financial assets IV-regression falls to .217, and is significant at the 11% 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.[8]

18

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.[9]

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. Indeed the subject of how self-reports and actual accounting data differ is a fascinating and important question that warrants additional research in its own right. Given this underlying complexity, 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% difference in the TIAA-CREF balance. With this restriction, differences larger than 10% 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, there is no significant difference between the results using the accounting as opposed to the self-reported data. 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

19

in all four regressions in Table VIII, statistical significance is at or around the 5% 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.

V. Asset Returns or Asset Accumulation?

To arrive at a higher level of wealth, households either must have earned higher returns on their asset portfolios, or must have accumulated assets at a faster rate. An obvious candidate for improved asset returns is increased equity holdings, given that wealth is measured at the end of the long equity boom of the 1990's. An obvious candidate with respect to accumulation is the savings rate. In this section, we use survey data to shed light on the relative importance of these channels.

1. Equity Effects

In the HRS, Lusardi finds evidence that planning increases stock market participation, and argues that this is a potential reason that planning is associated with wealth accumulation. Stock market participation is only 26% in Lusardi's HRS sample, and is therefore a potentially important margin for wealth accumulation. In contrast, well above 90% of the households in our regression sample own stocks. If we limit our analysis to agents who own stock, the coefficient on planning is virtually unchanged. Stock market participation does not appear to explain the planning-wealth correlation in our sample.

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% of financial assets in our regression sample. Even those

who report low planning levels have 60% 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.

2. Planning and Saving

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 that saving is the difference between an economist's measure of income and consumption, it is very difficult to measure saving with any degree of accuracy in a brief survey. 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% reported that income exceeded spending, 21% reported that spending exceeded income, while the remaining 16% 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% 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%

22

level.

VI.   Planning and Preference Parameters

From the viewpoint of the life cycle model, the positive association between planning, savings, and wealth accumulation is most readily explained if there is a strong correlation between the propensity to plan and parameters in the classical model that motivate high levels of saving. The most obvious candidate is the discount factor. Even though it is not obvious why our instruments should be correlated with the discount rate, it is possible that agents who care more about the future may be natural planners. It is therefore the correlation between discounting and the propensity to plan that is the subject of the bulk of this section. In the remainder of the section we turn to other preference parameters that were measured in our survey, in particular the bequest motive, and explore their impact on the planning-savings relationship.

1. Planning and Patience

In order to assess the relationship between planning and discounting, we attempted to measure the discount factors of our agents. Our questions on discounting were variants of the hypothetical choice questions introduced by BJKS:

- 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 of 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% to a 100% 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%.[10] 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.

We construct the variable "preference for future consumption" by dividing the percentage of resources allocated to the later period of life by the percentage of resources not allocated to bequests. This variable is a measure of the desire to shift consumption to the future. All else equal, a higher value is associated with a lower discount rate or a higher discount factor. Before working with this variable, we first eliminate responses in which the allocation to one of the two life periods was unreasonably close to zero.[11] When we filter in this way, our universe is reduced to 720 individuals. Within this group the mean value is almost exactly 0.5, indicating a general preference for equal consumption in the two life periods (in fact more than 40% of respondents allocate an equal amount to each period). The standard deviation of these responses is .076, so that there is substantial variation around this happy medium.

Do those in our sample who have a higher preference for future consumption plan more? The answer is definitively not. In fact, the raw correlation between this pref-

erence and planning in the regression sample is negative. Even when we regress the preference for future consumption on instrumented planning and the controls, the coefficient on planning is insignificantly different from zero. Not only is the preference for future consumption orthogonal to the propensity to plan, it also appears to be orthogonal to wealth accumulation. When we include it in any of our instrumental variables regressions of wealth on planning, its coefficient is close to zero and insignificant, and the coefficient on planning is essentially unchanged by its inclusion.

The low explanatory power of our measure of the preference for future consumption suggests that finding a direct, theoretically-inspired question to assess the discount factor is a serious challenge. It is in fact possible that the propensity to plan is a better measure of the underlying discount factor than are the direct questions we posed. Unfortunately this hypothesis is not easily tested.

2. Other Preference Parameters

We investigate the relationship between the propensity to plan and other preference parameters that may affect wealth accumulation. In particular, we consider risk aversion, the precautionary savings motive, and the bequest motive. The bequest motive is measured using the quantitative answer to question 10 above. Qualitative and quantitative measures of the precautionary motive and of risk aversion are described in the Appendix. In no case do we find a significant relationship with the propensity to plan, and in no case does the inclusion of these preference parameters significantly impact the relationship between instrumented planning and net worth.

VII.   Budgeting and Wealth Accumulation

In this section we follow up on the story presented in the introduction, and explore whether or not the ability to closely monitor and to tightly control short-term spending is enhanced by the propensity to plan. The results are affirmative, suggesting

that this is at least part of the story.

1. Budgeting and Planning

In order to measure financial monitoring behaviors, respondents were asked to respond, using the previously described 1 to 6 scale, to the following statement on their budgeting behavior:

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

Budgeting is less prevalent in our regression sample than is financial planning. Roughly 40% of households in the under-65 universe agree to any degree that they keep a budget. In contrast 65% agreed to some degree that they had spent a great deal of time developing a financial plan.

While far from identical, there is nevertheless 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.

2. Budgeting and Wealth Accumulation

The same logic that led us to the selection of our planning instruments applies in the case of budgeting. Both activities require numeracy and a generalized tendency to plan. In this section we explore similarities and differences in the impact of instrumented planning and instrumented budgeting on wealth accumulation.

The big difference is that 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% 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. However, when instrument for budgeting using the measures of tendency to plan vacations (question 3d) and math confidence (question 3q) as instruments, we find instead a positive relationship between wealth and the instrumented budgeting variable. Table IX presents the results of this regression for net worth and gross financial assets. In the common first stage regression, the F-statistic for the joint significance of the instruments is above 13.

The coefficients on budgeting and their significance are lower than what we found for planning in the planning regressions. However, the results are surprising in light of the negative association between budgeting and wealth in the OLS reduced form regressions. (The IV regression estimates for budgeting are both significantly different from the reduced from estimates at the 5% 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% level, and that on gross financial assets is significant at the 10% 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.

Just as with planning, we cannot insist on a causal interpretation. Budgeters may save more either because budgeting itself promotes saving, or because the type of people who budget tend to be savers. We therefore look for additional direct evidence on the link between budgeting behaviors and savings.

3.   A Direct Question

Given our belief in the potential importance of short-term budgeting as a restraining influence on spending, we designed survey questions to directly explore whether or not the story of the introduction was an isolated case. In particular we asked a direct question on whether households who kept a budget felt that this activity significantly reduced their spending.

- 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% 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% of responses indicating some form of agreement: 6% agreeing strongly, 15% unequivocally agreeing, and 24% agreeing only somewhat. A substantial minority of sample households agree that their budgeting activities help them to restrain their spending. Our close friend of the introduction is not alone in finding budgeting a useful technique for controlling spending. This suggests that there may be a link between our findings on budgeting and the literature on self-control due to Laibson [1997].

VIII.   Concluding Remarks

We derive strong new results on the nature of the relationship between financial planning and wealth accumulation. The strength of our findings derives in large part from a series of survey questions that were explicitly designed to act as instruments in identifying causality. We believe that increased use of such "designer instruments" will prove useful in identifying the direction of causation in other areas of macroeconomics,

and beyond.

Our particular findings concerning the importance of the propensity to plan in the process of wealth accumulation suggest several new directions for future research. What combination of intrinsic and extrinsic factors determine the propensity to plan? Should policy makers interested in encouraging savings push educational programs intended to build planning skills? How much does budgeting behavior influence the savings rate, and how does this connect to classical models of the discount factor, and of self control?

The propensity to plan may be significant not only as an indicator of potential wealth accumulation, but also of financial inertia. The results of Ameriks and Zeldes [2002] and Madrian and Shea [2001] both highlight the importance of inertia in changing portfolio allocations. Preliminary investigations using our survey data suggest 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.

IX.   Appendix

1.   Risk Aversion

Our question on risk aversion is a variant of that of BJKS:

- 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% 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% (to two-thirds of its current level), or

* B-2. Your household income increases immediately and permanently by 100% (to twice its current level).

In answer to this question, they 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.

2. Precautionary Savings

Our measure of the precautionary motive is as follows:

- 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

Again, we followed up this qualitative question with a further quantitative question designed to refine the answer.

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Notes

1. 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]).

2. 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.

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

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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%-10% in the weeks surrounding December 31, 1999.

10. 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.

11. Some respondents literally allocated zero resources to one of the two periods of life, suggesting that they had difficulty in understanding the question. Others put in tiny positive numbers. We eliminated all observations in which the allocation to either period of life was less than 25%. Our irrelevance results survive no matter what cutoff we choose.

Table I
Demographic Characteristics of
2001 Survey Respondents

Characteristic	Under 65 Universe (n)	Under 65 Universe (%)	Regression Sample (n)	Regression Sample (%)
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)	0.992	0.006	0.000
Constant	-0.006	0.032	0.859
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).

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Table V
Basic OLS Wealth Regression Results

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Variable	Net Worth			Gross Financial Assets		
	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

Variable	Coeff.	S.E.	Pr > |t|
		Regression sample	
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

Table VII
Second-stage Planning/Wealth Regression Results

Variable	Net Worth			Gross Financial Assets		
	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
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	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.