Quantifying the Economic Benefits of Personal Financial Planning

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Abstract

To estimate the monetary value of ideal financial planning advice, we address three types of benefits that planners provide: increasing wealth, preventing loss, and smoothing consumption. We use theoretical examples based on comparisons of optimal decisions to naïve alternatives to estimate the value of each type of advice. Based on these analyses, we conclude that the value of advice varies with a client's risk aversion and the percentage of wealth that could be gained or lost. The more risk averse a household, the more valuable is advice that reduces risk. The higher the percentage of a household's wealth that could be lost, the more valuable is the advice that prevents the loss. Advice that reduces the risk of a low probability loss is valuable if the potential loss represents a high proportion of a household's wealth. The more risk averse a household, the less valuable is advice that might increase wealth. For risk averse households, the higher the percentage of a household's wealth that could be gained, the less valuable is the advice relative to that expected gain. Advice that results in a relatively small increase in wealth is worth almost the amount of the expected value of the increase, but advice that is likely to result in an increase that is a high proportion of initial wealth has less value for a more risk averse household. Advice on saving that prevents a substantial decrease in consumption can have a substantial monetary value. Financial planners could use some of the insights from our analyses to better articulate and market the value of their advice. In general, the most risk averse households are likely to place the highest value on comprehensive financial planning advice.

Warschauer (2008) noted:

"For many years planners accepted the idea that properly done financial planning was worth well more than its cost … as an article of faith. … It was our intent to appraise the possible value to consumers in purchasing a financial plan. … it is time that scholars begin the discussion of the possible value to be gained by an individual or family in retaining a professional financial planner and in their efforts to complete and follow a comprehensive personal financial plan."

Although there has been some research on the types of households that use financial planners (Elmerick, Montalto, & Fox, 2002; Chang, 2005), and what consumers look for in financial planners (Bae & Sandager, 1997) there is little rigorous research quantifying the benefits of financial planning. Industry surveys (e.g., Schulaka, 2009; FPA and Ameriprise Value of

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Financial Planning Study, 2008) typically show that those who use financial planners are more confident about the future, but do not address the issue of whether financial planning clients are in better financial condition because of using financial planners or they seek advice because of greater resources. To obtain some insights into the potential benefits of using a financial planner, consider the possible benefits of using other professionals -- a medical professional or an attorney. If a physician provides a diagnosis of a potentially fatal disease and prescribes a remedy that avoids death, the value of the service is extremely high. Most people would, if necessary, pay a substantial part of their wealth for that benefit. A diagnosis that gives a patient comfort in knowing that there are no problems might also be worth a substantial amount, even if measuring that benefit in monetary terms is difficult. Likewise, when an attorney obtains an acquittal on a criminal charge, thus avoiding a prison term, that service obviously is worth a substantial amount of money.

The potential benefits of using a financial planner include increasing wealth, protecting wealth, and smoothing consumption. Because money is involved, it should be possible to quantify benefits related to increasing wealth, but it is less clear how to quantify the benefits of protecting wealth or smoothing consumption. However, the economics literature offers an established procedure for estimating the value of reducing risk and of smoothing consumption. The basic approach involves assumptions about the characteristics of an individual's utility function, including the degree of risk aversion, and estimating the monetary equivalence of the increase in expected utility by comparing Certainty Equivalent Wealth of expected utility levels.

In this paper we discuss the challenges to using household survey data to produce an aggregate estimate of the value of financial planning advice in the economy.
We then discuss approaches to quantifying the benefits of optimal advice. We outline some rigorous methods that could be used to quantify the value of advice, and suggest ways for financial planners to articulate the benefits to potential clients.

What Are the Benefits of Financial Planning Advice?

Warschauer (2008) listed six areas in which financial planners make recommendations: emergency fund management, debt management, insurable risk reduction, investment risk control, goal assessment, and tax and estate assessment. Some benefits of financial planning advice are difficult to quantify, for instance, helping a client to feel more organized and aware of their situation. Some recommendations could increase a client's wealth, for instance a portfolio reallocation that is likely to produce a higher return over the long-run, refinancing high interest loans with lower interest and/or tax deductible debt, and increasing the aftertax return on investments based on income tax considerations. Other recommendations could reduce risk, for instance through the purchase of insurance, by decreasing the withdrawal of retirement savings to reduce the chance of outliving funds, or making an investment portfolio less likely to incur substantial losses. Estate planning strategies can increase the amount that intended beneficiaries receive after the client's death and, in some cases such as with charitable remainder trusts, produce benefits to the client before death. In addition to the types of benefits from specific advice, Stango and Zinman (2009) noted that households with behavioral limitations such as exponential growth bias can reduce the damage from their biases by reliance on outside financial advice.

Calculating the monetary benefits of financial planning advice may seem obvious when applied to wealth increasing advice, but some potential wealth increases may take place far into the future, so discounting the benefit back to today should be considered in any estimate of value. Investment advice for long-run goals may be likely to increase wealth, but if there are risks of losses, those should be considered in the calculations. Calculating the monetary value of risk reducing advice requires some assumptions about a household's utility function. It is difficult to estimate a household's risk aversion level for standard utility functions, but there is a substantial literature on this topic (Barsky, Juster, Kimball & Shapiro, 1997; Hanna & Lindamood, 2004). Advice that helps a household balance spending over its life cycle can be quantified with assumptions about the intertemporal utility function of the household. Cocco, Gomes, and Maenhout (2005) provided an example of a rigorous approach to estimating the value of optimal portfolio and consumption choices over a lifetime. However, their goal was to compare optimal behavior to typical behavior, rather than specifically considering the value of optimal advice. In the next section we discuss limitations of using survey data to estimate the value of financial planning advice.

Empirical Research on Use of Financial Planners

There has been limited research on who uses financial planners, mainly sponsored by financial planning organizations. Bae and Sandager (1997) discussed some early surveys, and present results of their own survey of consumer perceptions of financial planners. In 2006, the National Longitudinal Survey of Youth (Zagorsky, 1997) added a question on use of financial planners for retirement planning, but its sample was limited to respondents who were age 41 and 49 that year. The triennial Survey of Consumer Finances (SCF) has had questions related to use of financial planners since 1998. (In 1995 the financial planner category was combined with the broker category for similar questions.) The questions are not specific in terms of when a financial planner was used, and contain nothing about the training or professional designations of the financial planner. One question is:

> Please tell me which sources of information you (and your family) use to make decisions about borrowing or credit. Do you call around, read newspapers, magazines, material you get in the mail, use information from television, radio, the internet or advertisements? Do you get advice from a friend, relative, lawyer, accountant, banker, broker, or financial planner? Or do you do something else?

Another question starts with "What sources of information do you (and your family) use to make decisions about saving and investments?" The question then continues with the same list of sources as the question about credit. Elmerick, et al. (2002) reported that in the 1998 SCF, 21% of households chose "financial planner" as a response for one or both of these questions, a finding which was similar to the percentages reported in industry surveys. Our own analyses of more recent SCF datasets found that 20% of households in 2001, 22% in 2004, and 25% in 2007 chose "financial planner" for one or both of these questions.

The SCF is the best U.S. dataset for household financial information, so it might seem possible to analyze the benefits of financial planning using an SCF dataset (Bucks, Kennickell, Mach, & Moore, 2009). In our analysis of the 2007 SCF, only 10% of households in the lowest net worth decile reported using a financial planner while 46% of those in the highest decile used a financial planner. The median net worth of those who used a financial planner, $275,700, is over three times as high as the level for those who did not, $87,500. There are a substantial number of households who used a financial planner, 1,435 in the 2007 SCF. (This represents 32% of the households, even though on a weighted basis the proportion is only 25% because of the sampling design of the SCF.)

Challenges in Inferring Causality

Correlation does not prove causation. Evaluating the effects of using a financial planner has challenges similar to those of evaluating teacher performance based on standardized tests. There is a selection effect. For instance, those who use financial planners are likely to be motivated by having higher income and net worth, so not all of the differences in net worth and other indicators should be attributed to use of a financial planner. Multivariate analysis of the SCF could lead to some interesting insights, for instance, controlling for net worth, what is the effect of risk tolerance on use of financial planners? However, a cross-sectional survey such as the SCF or any industry sponsored survey cannot yield any definitive results on the benefits of financial planning. Phillips and Calder (1979) discussed the pitfalls of the "after-only" research design, which would be the implicit approach used with any cross-sectional survey with information on use of financial planners.

A panel survey, where households are re-interviewed after several years, could provide more valid insights into the value of financial planning. However, even with a panel survey there might be a selection effect in terms of who is using financial planners. The element of time is crucial, and only knowledge of when a household started using a financial planner, as well as intervening household and societal events, can provide strong evidence of causation. The ideal research would involve randomly providing a comprehensive financial plan by competent financial planners to some households, and not providing one to a similar group of households. Phillips and Calder (1980) discussed the threats to validity that exist even for research designs with before-after comparisons with randomly selected control groups, so it seems unlikely we can draw rigorous conclusions about the effects of using a financial planner based on survey data.

In the rest of this paper, we present theoretical analyses using simple expected utility frameworks for examples of the potential benefits of financial planning advice. There are alternatives to using expected utility frameworks. For instance, Calvet, Campbell, and Sodini (2007) assessed welfare costs of investment mistakes of Swedish households by comparing Sharpe ratios. However, we feel that the expected utility framework provides the potential of better estimates of benefits of financial planning advice, and allows for diversity of preferences in the estimation of benefits.

Obviously the examples are useful only to the extent that a financial planner provides optimal advice to a naïve consumer who follows the advice. Calvet, et al. (2007) compared financially unsophisticated consumers to sophisticated consumers. We do not explore this issue in our paper. However, we do provide a starting point for rigorous analyses of the benefits of financial planning.

Expected Utility Analysis of Financial Decisions

Standard Approaches in the Economics Literature

Poterba, Rauh, Venti, and Wise (2003) provided an example of using expected utility analysis to compare the value of alternate investment portfolios for retirement savings. Poterba et al. assumed that households have a constant relative risk aversion utility function, that the objective is to maximize the expected utility of total wealth at retirement, and that non-retirement wealth is nonstochastic. Obviously all of these assumptions are subject to debate, but in this paper we use a similar approach for an exploratory analysis of the benefits of financial planning advice. Table 1 presents selected results from the Poterba, et al. (2003) paper. A risk neutral college educated household (relative aversion level of 0) would have total wealth at retirement of $973,100 with an all stock retirement portfolio, and $248,200 with a risk-free retirement portfolio, a difference of $724,900. For risk averse households, the advantage of the all stock portfolio has to be evaluated by comparing the Certainty Equivalent Wealth (CEW), the certain wealth that would produce the same expected utility as the expected utility of the risky portfolio. For instance, in the example shown in Table 1, a household with a relative risk aversion level of 1 (natural log utility function) would have a CEW of $831,200 for the all stock portfolio and $248,200 for the riskfree portfolio, a difference of $583,000. For a household with a relative risk aversion level of 4, the advantage of the all stock portfolio is only $361,600. For a high enough level of risk aversion, the all stock portfolio is inferior to some mixed stock-bond portfolios.

Table 1
Certainty Equivalent Wealth (CEW) at Retirement for 100% Stock Portfolio Versus Risk-Free Bond Portfolio

Relative risk aversion	Retirement investments 100% stocks	Retirement investments 100% risk-free	Increase in CEW for stock portfolio
0	973,100	248,200	724,900
1	831,200	248,200	583,000
2	734,100	248,200	485,900
4	609,800	248,200	361,600

Based on portion of Table 10 of Poterba, et al., with stock returns based on historical averages rather than projected reduction.

Poterba, et al. (2003) were interested in public policy implications rather than quantifying the benefits of advice, but we can interpret their analyses in terms of the benefits of financial planning advice if we make some additional assumptions. For instance, if the typical college educated household in the Poterba analysis had a relative risk aversion level of 4 but mistakenly chose the riskfree retirement portfolio, a planner who persuaded the household to choose the all stock portfolio would prove an increase in expected utility that had a monetary value (CEW) of $361,600.

A key question, as Poterba et al. (2003) and Brown and Poterba (2000) noted, is estimation of utility function parameters. For static evaluations of the expected utility of wealth levels, the key parameter is relative risk aversion. Barsky et al. (1997) provided some insights based on analyses of hypothetical income gamble questions in the Health and Retirement Study. Hanna and Lindamood (2004) provided some evidence based on a graphical presentation of hypothetical pension gamble questions. For evaluations of intertemporal savings/consumption decisions, there are two important parameters, elasticity, and the personal discount rate, the rate at which the utility of future consumption is discounted. In the next section of the paper, we present some of our own simplified analyses of quantifying the benefits of financial planning advice. We provide more detailed analyses of stylized risk reduction, wealth increasing, and optimal saving pattern prescriptions. We also discuss plausible assumptions about utility function parameters.

Some Examples of Estimating the Monetary Value of Risk Reduction

Assume some utility function U(W). Assume initial wealth (W_0). Assume that two states of the world are possible if you *do not* purchase insurance, loss of an amount L, with probability p that the wealth level is W_0- L, and no loss, with probability 1-p that the wealth level is W_0. The expected utility of the decision not to purchase insurance is:

$EU_1 = pU(W_0-L) + (1-p)\ U(W_0)$ (1)

Assume that you could purchase insurance against the loss, for a cost of C=pL (1+M), where M is the load. The expected utility of the decision to purchase insurance is:

$EU_2 = U(W_0-C)$ (2)

Is it worthwhile purchasing the insurance? Assuming that it is worthwhile, what is the value of knowing that you should purchase the insurance? If $EU_2 > EU_1$ then it is worthwhile to purchase the insurance, though we have to take an additional step to estimate the value of knowing that the insurance should be purchased.

If you purchase the insurance, you have wealth lower than your initial wealth because of the cost of the insurance, so you have W_0-I. If you do not purchase the insurance, what is the Certainty Equivalent Wealth (CEW) of the expected utility? What is the certain wealth that would produce the same utility as EU_1? For a utility function with standard mathematical property, it may be possible to take the function inverse.

For instance, if the utility function is the natural log of wealth, U = Ln(W), then the function inverse is W = exp(U). Therefore, for Equation 1, if U(W) = Ln(W), then the CEW is

$EU_1 = \exp(EU_1)$. (3)

There is a class of constant relative risk aversion utility functions (CRRA) commonly used in expected utility analyses. The natural log utility function has a relative risk aversion level of 1.0. Hanna & Lindamood (2004) suggested that most people have higher levels of relative risk aversion, and a majority of adults might have levels higher than 5. One class of CRRA utility functions can be expressed as:

$U(W) = W^{(1-x)} / (1-x))$ (4)

Where x is the coefficient of relative risk aversion.

For this type of utility function, the CEW is the function inverse and can be found by simple algebra:

$W = [(1-x)U]^{\{1/(1-x)\}}$ (5)

Consider a simple example, Scenario 1. A household has total wealth of $2,500,000. There is one chance in a thousand (p=0.001) of a judgment against the household for damages in the amount of $2,000,000. An insurance company will sell the household a liability policy to cover such the $2,000,000 loss, for the expected value of the loss (pL = $2,000) plus a load of 20%, for a premium of $2,400. If the household is even slightly risk averse, for instance, with a relative risk aversion level of 0.5 (square root utility) it will be better to purchase the insurance than to go without insurance. If the household did not know to purchase the insurance, what is the value of advising it to purchase the insurance? The monetary value of the advice can be obtained by comparing the Certainty Equivalent Wealth (CEW) of no insurance to the CEW of insurance. Table 1 shows the results of calculations at different levels of relative risk aversion. A risk neutral household (relative risk aversion of 0) would be $400 worse off in CEW to purchase the insurance, but one with a natural log utility function (relative risk aversion of 1) would have a CEW $1,620 higher if it purchased the insurance than if it did not. Therefore, the value of the advice for a household with relative risk aversion of 1 is $1,620.

With Scenario 1, the higher the relative risk aversion level, the higher the value of the advice to purchase the insurance (Table 1). Hanna and Lindamood (2004) concluded that the average level of relative risk aversion might be over 5, so the value of the advice to the hypothetical household in Scenario 1 might be over $200,000. Figure 1 shows the relationship between the value of advice and relative risk aversion for Scenario 1.

Table 2.
The Monetary Value of Differences in Expected Utility for Risk Reduction Strategies for Two Scenarios

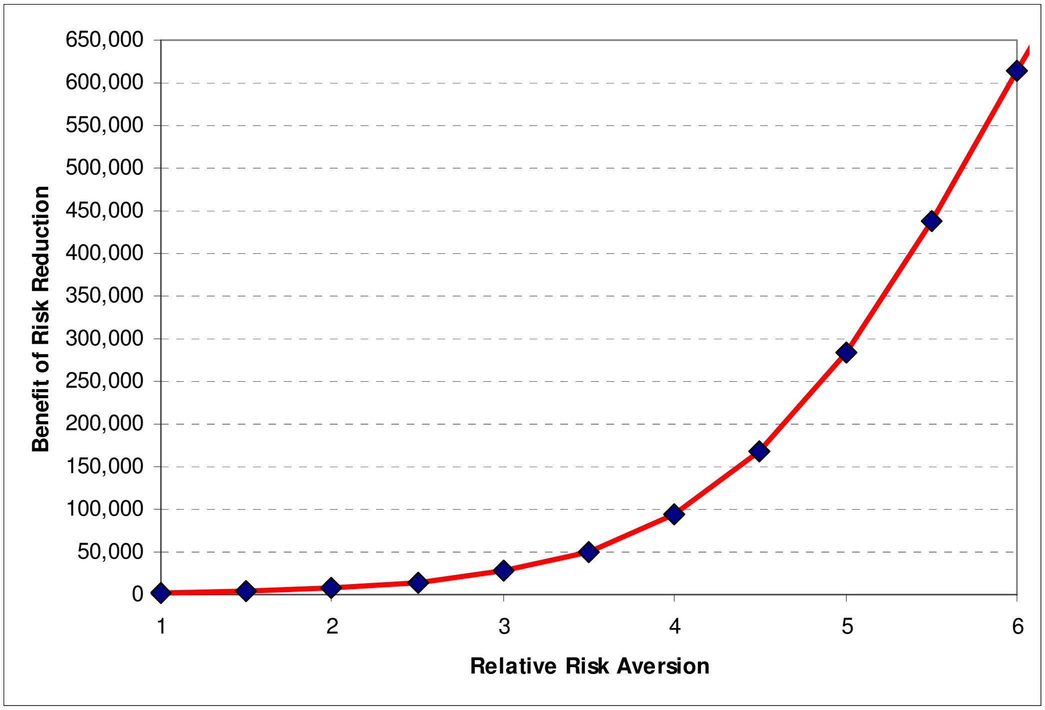
	Value of Advice to Purchase Insurance (Differences in Certainty Equivalent Wealth)	
Relative risk aversion	Scenario 1: 0.1% chance of loss of 80% of wealth	Scenario 2: 1% chance of loss of 20% of wealth
0	-400	-4,000
1	1,620	-428
2	7,560	234
3	27,071	1,002
4	93,138	1,893
5	283,009	2,928
6	614,487	4,810
7	932,709	5,539
Premium	*$2,400*	*$6,000*

Assuming the household's initial wealth is $2,500,000, and each insurance policy has a load of 20%. The value of the advice is calculated as the difference between the Certainty Equivalent Wealth (CEW) of insurance and the CEW of no insurance.

Now consider a different example, Scenario 2. A household has total wealth of $2,500,000. There is one chance in a hundred (p=0.01) of a judgment against the household for damages in the amount of $500,000. An insurance company will sell the household a liability policy to cover such the $500,000 loss, for the expected value of the loss (pL = $5,000) plus a load of 20%, for a premium of $6,000. If the household is somewhat risk averse, for instance, with a relative risk aversion level of 2 or higher it will be better to purchase the insurance than to go without insurance. If the household did not know to purchase the insurance, what is the value of advising it to purchase the insurance? Table 2 shows the results of calculations at different levels of relative risk aversion. A risk neutral household (relative risk aversion of 0) would be $1,000 worse off in CEW to purchase the insurance, and one with a natural log utility function (relative risk aversion of 1) would have a CEW $428 lower if it purchased the insurance than if it did not. However, the higher the relative risk aversion level, the higher the value of the advice to purchase the insurance. The value of the advice for a household with relative risk aversion of 5 is $2,928, and for a level of 6 is $4,810.

Figure 1

Monetary Benefit of Hypothetical Personal Liability Umbrella Policy for $2,000,000, if Probability of Judgment is 0.0001, by Relative Risk Aversion.



Based on Scenario 1 in Table 2, assuming that initial total wealth of household is $2,500,000, and insurance has a 20% load. Monetary benefit is difference between Certainty Equivalent Wealth (CEW) of expected utility of having insurance and the CEW of having no insurance.

Obviously these two scenarios are very simplistic, but they can be generalized to a wide range of risk reduction advice involving not only insurance purchases but portfolio choices and other types of risk reduction strategies. In general, the more risk averse a household is, the more valuable is advice that will reduce risk. The higher the percentage of a household's wealth that could be lost, the more valuable the advice. Advice that reduces the risk of very low probability losses can be very valuable if the losses represent high proportions of the household's total wealth.

Some Examples of Estimating the Monetary Value of Wealth Increases

Assume an initial wealth (W_0) and you plan in invest a part of your wealth (I) at a real rate of return (r). Assume that two states of the world are possible if you choose a risky portfolio, a loss of your investment (I), with probability p, and an increase resulting in value I (1+r), with probability 1-p. The expected utility is:

$$EU_1 = pU(W_0\text{-}I) + (1\text{-}p)\ U(W_0 + rI) \qquad (6)$$

Assume that you could instead invest I in a safe investment with a zero aftertax real return. The expected utility if you invest in the safe investment is:

$EU_2 = U(W_0)$ (7)

Is it worthwhile to choose the risky portfolio? Assuming that it is worthwhile, what is the value of knowing that you should choose the risky portfolio?

If $EU_2 > EU_1$ then it is worthwhile to purchase the insurance. If you choose the safe investment, you have expected wealth (1-p) rI less than if you choose the safe investment.

Table 3.
The Monetary Value of Differences in Expected Utility for Portfolio Strategies for Two Scenarios

	Value of Advice to Choose More Aggressive Portfolio		
Relative risk aversion	Scenario 3: 1% chance of loss of investment (19.7% of wealth at stake)	Scenario 4: 10% chance of loss of investment (20.4% of wealth at stake)	Scenario 5: 10% chance of loss of investment (2% of wealth at stake)
0	$5,000	$50,000	$5,000
1	4,428	44,832	4,943
2	3,766	39,024	4,885
3	2,998	32,521	4,827
4	2,107	25,273	4,768
5	1,072	17,242	4,708
6	-134	8,407	4,647
7	-1,539	-1,230	4,586

Scenario 3. Assume the household's initial wealth is $2,490,000, of which $490,000 is to be invested for one year, either in a safe investment with a 0% aftertax real rate, or in an investment with a 2.04082% return, but with a 1% chance of being worthless. The value of the advice is calculated as the difference between the Certainty Equivalent Wealth (CEW) of the more aggressive investment and the CEW of the safe investment.

Scenario 4. Assume the household's initial wealth is $2,400,000, of which $400,000 is to be invested for one year, either in a safe investment with a 0% aftertax real rate, or in an investment with a 25% return, but with a 10% chance of being worthless. The value of the advice is calculated as the difference between the CEW of the more aggressive investment and the CEW of the safe investment.

Scenario 5. Assume the household's initial wealth is $2,000,000, of which $40,000 is to be invested for one year, either in a safe investment with a 0% aftertax real rate, or in an investment with a 25% return, but with a 10% chance of being worthless. The value of the advice is calculated as the difference between the CEW of the more aggressive investment and the CEW of the safe investment.

Consider a simple example, Scenario 3. A household has total wealth of $2,490,000, of which $490,000 is to be invested, either in a safe investment with a 0% aftertax real rate, or in an investment with a 2.04082% return, but with a 1% chance of being worthless. The value of the advice is calculated as the difference between the Certainty Equivalent Wealth (CEW) of the household's wealth if with the risky investment and the CEW of wealth if the safe investment is chosen. Table 3 shows the benefit of the advice to choose the risky investment. The risky investment has an expected value $5,000 higher than the safe investment, so that is the value of the advice for a risk neutral household (relative risk aversion = 0). For higher risk aversion levels, the value of the advice is lower, and for those with relative risk aversion levels of 6 or higher, the value of advice to choose the risky portfolio is negative.

Consider another simple example, Scenario 4. Assume the household's initial wealth is $2,400,000, of which $400,000 is to be invested for one year, either in a safe investment with a 0% aftertax real rate, or in an investment with a 25% return, but with a 10% chance of being worthless. Table 3 shows the value of the advice to choose the risky investment. The risky investment has an expected value $50,000 higher than the safe investment, so that is the value of the advice for a risk neutral household. For higher risk aversion levels, the value of the advice is lower, and for those with relative risk aversion levels of 7 or higher, the value of advice to choose the risky portfolio is negative.

Finally, consider Scenario 5. Assume the household's initial wealth is $2,000,000, of which $40,000 is to be invested for one year, either in a safe investment with a 0% aftertax real rate, or in an investment with a 25% return, but with a 10% chance of being worthless. Table 3 shows the value of the advice to choose the risky investment. The risky investment has an expected value $5,000 higher than the safe investment, so that is the value of the advice for a risk neutral household. Because the investment represents only 2% of the household's wealth, the value of the advice to choose the risky investment does not decrease much with increases in relative risk aversion.

Obviously these three scenarios are very simplistic, but they can be generalized to a wide range of wealth increasing advice. In general, the more risk averse a household is, the less valuable is advice that might increase wealth. The higher the percentage of a household's wealth that could be gained, the less valuable the advice is relative to the expected gain for risk averse households. Advice that results in relatively small increases in wealth are worth almost the amount of the expected value of the increases, but advice that is likely to result in an increase in wealth that is a high proportion of initial wealth has less value for more risk averse households.

Overview of Evaluation of Risk Reduction and Wealth Increasing Advice

The analyses presented suggest that risk aversion is important in valuations of the benefits of wealth increase and risk reduction strategies. The Survey of Consumer Finances (SCF) includes a measure of risk tolerance, but it is not directly connected to the economic concept of risk aversion. Barsky et al. (1997) suggested that the income gamble questions in the Heath and Retirement Study provide an estimate of risk aversion that is the inverse of risk tolerance. Hanna and Lindamood (2004) found that in a student sample, the SCF risk tolerance measure was correlated with a pension gamble measure of risk aversion. Our analysis of the 2007 SCF found that the highest mean net worth level was for households with above average risk tolerance, \$981,213, followed by those with substantial risk tolerance, \$957,959, then those with average risk tolerance, \$723,626. Those unwilling to accept any investment risk had a mean net worth of \$199,137. The proportion of households who in 2007 reported using a financial planner was roughly the same for the above average and the substantial risk tolerance levels (39% and 37%) and 32% for the average risk tolerance level. Hanna and Lindamood suggested that the average to substantial risk tolerance levels of the SCF might correspond to predicted relative risk aversion levels of 5.4 to 2.7, so it seems likely that many high net worth households would place high values on risk reduction strategies and relatively low values on wealth increasing strategies.

Estimating the Monetary Value of Consumption Smoothing Advice

Some financial planning advice can help clients better prepare for the future, for instance, by suggesting an amount to save each year in order to have a comfortable retirement. Estimating the value of such advice is challenging. Cocco, et al. (2005) discussed approaches to estimating the cost of mistakes in consumption smoothing. To illustrate, we present a very simplistic example. The key to estimation is assuming a standard intertemporal additive utility function, and lifetime utility from consumption EU is the sum of the discounted utility over the lifetime.

$$EU = \sum U(C_t) / (1+ \rho_t) \qquad (8)$$

Where ρ_t is the personal discount rate, which could vary by age.

The typical utility function assumed is similar mathematically to the function assumed for the analysis of static risky choices.

$$U(C_t) = C_t^{(1+ \varepsilon)} / (1+\varepsilon)) \qquad (9)$$

Where ε is the elasticity of marginal utility with respect to consumption (White, 1978). We discuss estimates of this parameter and of the personal discount rate in the Appendix. Equation 10 shows the conditions for optimal growth in consumption.

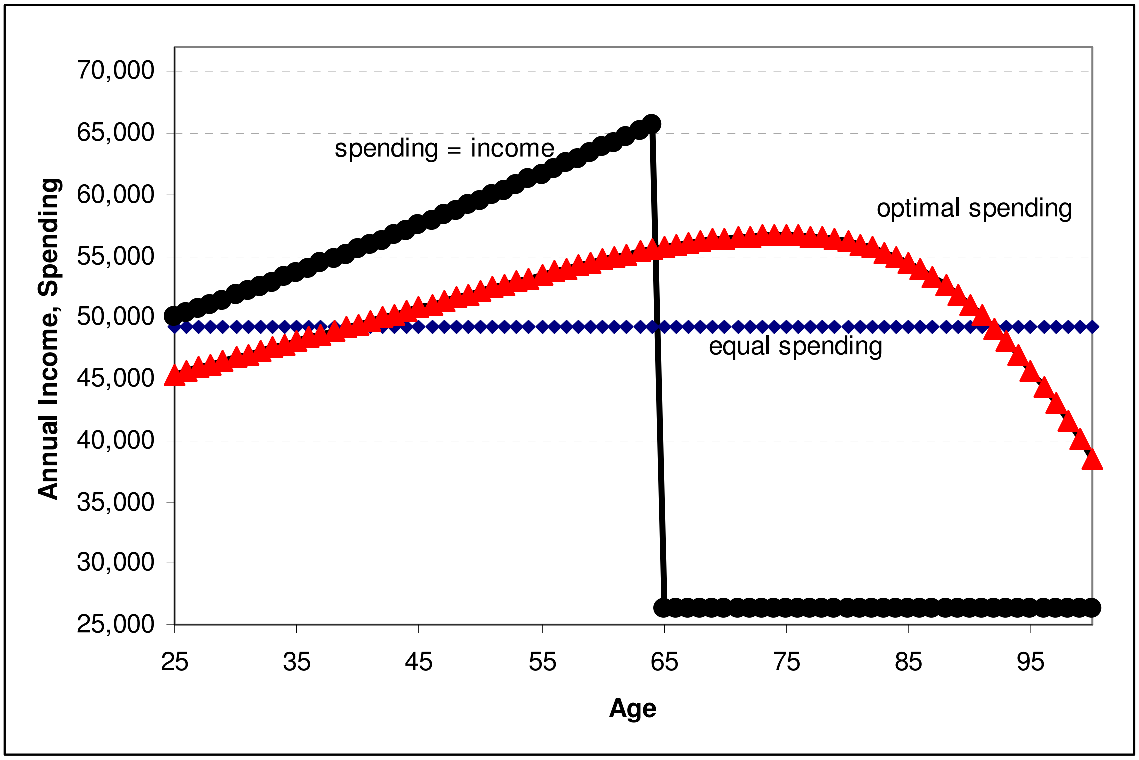
$$G_c = [(1+r) / (1+ \rho_t)]^{(-1/ \varepsilon)} -1 \qquad (10)$$

Figure 2 shows a simple example of three possible spending paths over a household's lifecycle. Aftertax real income is \$50,000 at age 25, and increases 0.7% per year through age 64, then a pension of \$26,253 per year through age 100. Investments earn a real rate of return of 3%. The elasticity of marginal utility with respect to consumption is -5. The personal discounting of the utility of future consumption, ϱ_t equals the annual risk of death. The constant spending line is based on saving just enough each year while employed to maintain the same spending in retirement as before retirement. The optimal spending line is based on an optimal growth of spending to maximize lifetime utility, using Equation 10.

If the household never saves, it will spend each year its aftertax income, so there will be a big decrease in spending at age 65. With the traditional financial planning approach, there will be some target spending assumed for retirement, and the amount to save each year before retirement will be calculated to achieve this goal. With a 3% real return, it would be possible to spend \$49,273 per year over the lifetime, saving about 1.5% of income at age 25 and 24.9% the year before retirement. For the optimal spending path, based on Equation 10, optimal spending increases each year, with 9.2% of income saved at age 25 and 15.4% of income saved at age 64.

Figure 2

Three Spending Paths: No Saving; Save Constant Percent of Income While Working; Optimal Spending.



Assumptions: Aftertax real income is $50,000 per year at age 25, with 0.7% increases through age 64, then Social Security pension of $26,253 per year through age 100. Investments earn a real rate of return of 3%. The elasticity of marginal utility with respect to consumption = -5. Personal discounting of the utility of future consumption equals the annual risk of death. The constant spending line is based on saving just enough each year while employed to maintain the same spending in retirement as before retirement, assuming no annuitization of accumulated assets. The optimal spending line is based on an optimal growth of spending to maximize lifetime utility.

A simplistic approach to comparing the spending paths would be to take the total spending over the lifetime. With no saving, the household could spend $3,243,965, while with the constant spending pattern, total spending would be $3,744,746. The optimal spending plan would produce $4,069,755. Table 4 shows the total undiscounted lifetime spending for each spending path, and Table 5 shows the differences of the constant spending and the optimal spending paths to the naïve spending equals income path. Obviously the $500,781 increase in spending for the constant spending path compared to the naïve path, and the even larger increases in spending for the optimal paths exaggerate the true advantage of these plans over the naïve spending path. We can estimate the value of the increased utility of choosing a better spending path by using mathematical techniques similar to those discussed for risk reduction advice. The method requires calculating the total lifetime utility of each spending path using Equations 9 and 10, and finding the constant consumption that would produce the same lifetime utility. Then the present value of the equivalent constant consumption levels can be compared. Table 4 shows the total of constant consumption that would produce the same utility of each path (discounted by the probability of being alive at each age.) Table 5 shows the advantage of the two spending plans over the naïve path in total discounted constant equivalent consumption terms. The benefits of the constant spending and the optimal spending plans over the naïve path depend on the elasticity parameter, and are higher for higher absolute values of elasticity, but are substantial. The optimal spending plan has substantial advantages over the constant spending plan, with a $141,008 advantage in constant consumption equivalent terms for an elasticity of -2 and a $47,286 advantage for an elasticity of -9.

Table 4.
The Monetary Value of Differences in Total Spending and in the Discounted Monetary Equivalent of Lifetime Utility for Three Spending Paths

Elasticity	Spending = Income		Constant Spending		Optimal Spending	
	Total Spending	Discounted Total Equivalent Consumption	Total Spending	Discounted Total Equivalent Consumption	Total Spending	Discounted Total Equivalent Consumption
-2	3,243,965	1,713,866	3,744,746	2,015,755	4,069,755	2,156,763
-5	3,243,965	1.109.454	3,744,746	1,589,686	3,913,535	1,653,056
-9	3,243,965	942,025	3,744,746	1,528,001	3,243,965	1,575,287

Obviously these are unrealistic assumptions, but the examples give an estimate of possible benefits of advice on how to reach savings goals. Typical financial planning clients are unlikely to follow the naïve spending path, but the estimates shown in Table 5 provide some insight into the possible benefits of financial education and other measures that could increase saving among middle income households that might not be currently saving enough.

Table 5.

Differences in the Monetary Value of Differences in Total Spending and in the Discounted Monetary Equivalent of Lifetime Utility for Two Consumption Paths Compared to Spending=Income.

Elasticity	Constant Spending		Optimal Spending	
	Total Spending	Discounted Total Equivalent Consumption	Total Spending	Discounted Total Equivalent Consumption
-2	500,781	301,889	825,790	442,897
-5	500,781	480,232	669,570	543,602
-9	500,781	585,976	626,442	632,262

Conclusions

Our simple theoretical examples are based on comparisons of optimal decisions to naïve alternatives, so our estimates of the monetary value of utility gains or prevention of utility losses are high compared to the benefit of a good financial planner's advice to a somewhat informed client. However, the following generalizations seem reasonable. The more risk averse a household is, the more valuable is advice that will reduce risk. The higher the percentage of a household's wealth that could be lost, the more valuable is the advice. Advice that reduces the risk of very low probability losses can be very valuable if the losses represent high proportions of the household's total wealth. The more risk averse a household is, the less valuable is advice that might increase wealth. The higher the percentage of a household's wealth that could be gained, the less valuable the advice is relative to the expected gain for risk averse households. Advice that results in relatively small increases in wealth are worth almost the amount of the expected value of the increases, but advice that is likely to result in an increase in wealth that is a high proportion of initial wealth has less value for more risk averse households. Advice on saving that prevents substantial decreases in consumption can have a substantial monetary value.

Some of the types of financial planner recommendations noted by Warschauer (2008), for instance, income tax recommendations and debt management, can be evaluated reasonably well without use of assumptions about utility functions, as they typically involve changes in wealth that are small relative to total household wealth. If a planner can save a household $5,000 on income taxes or on finance charges, that benefit is obvious and easy to explain to a client. The benefit of estate planning advice is challenging to quantify, both because of the uncertainty of the timing of many of the potential benefits, and because the decision-maker might not be alive at the time of some of the benefits. However, economists have attempted to model estate planning decisions in expected utility frameworks, so that literature provides a starting point for analysis of the benefits of such financial planning advice.

High income, high net worth households are more likely to perceive the benefits of financial planning advice, but there could be value of advice even for moderate income households, especially those that are somewhat risk averse. Financial planners could use some of the insights from our analyses to better articulate and market the value of their advice. In general, the most risk averse households are likely to place the highest value on comprehensive financial planning advice. Obtaining aggregate estimates of the value of financial planning in the economy is subject to many difficult challenges in terms of research questions, but attempts to obtain estimates should produce useful insights.

Appendix: Plausible Intertemporal Utility Function Parameters

A crucial part of rigorous estimation of the monetary benefits of financial planning advice using an expected utility approach is choosing plausible utility functions and plausible parameters of utility functions. The goal is reasonable normative analysis (Campbell, 2006). There are analyses that investigate risky choices over time, considering consumption consequences of investment and saving choices in a lifecycle investment context, but it is simpler to consider intertemporal consumption choices with certain income and investment return projections.

With the original lifecycle model of savings, the objective is specified as maximizing lifetime utility of consumption in each remaining period, and the typical assumption is that the utility of consumption in each period is additive and independent. The assumption of independence is not as restrictive as one might think, because with typical utility functions, such as the natural log, allowing consumption to drop to zero in one period has a utility of minus infinity. The original lifecycle model and many analyses over the past 50 years have assumed maximization of lifetime utility. Freyland (2004) provided an example of the optimization framework, starting with the lifetime budget constraint:

$$\sum_{t=1}^{T} C_t (1+r)^{-t} \leq A_0 + \sum_{t=1}^{T} Y_t (1+r)^{-t}$$

And the maximization problem:

$$\max_{\{C_1 \ldots C_T\}} \sum_{t=1}^{T} (1+\rho)^{-t} U(C_t)$$

Freyland expressed the optimal condition for consumption growth rate as

$$\frac{U'(C_{t+1})}{U'(C_t)} = \left(\frac{1+\rho}{1+r}\right)$$

If the intertemporal utility function has constant elasticity, ε, Hanna, Fan and Chang (1995) showed that the optimal growth rate in consumption can be approximated by

$$G_c \approx \frac{r-\rho}{-\varepsilon}$$

Hanna, Fan and Chang (1995) reviewed estimates of ε and ρ, with various studies using macroeconomic data, household data, and introspective thinking. Using different hypothetical questions, Barsky et al. (1997) with a sample of adults over 50 and Hanna, Gutter, and Fisher (2003) with a student sample estimated the mean value of -ε as roughly 5. The personal discount rate, ρ, is sometimes assumed in economic theory to be equal to the real rate of return (e.g., Findley & Caliendo, 2008), but that assumption originates from models of the economy based on a representative household. Other studies have attempted to infer personal discount rates from consumer choices, for instance, for models of household appliances with different levels of energy efficiency. However, for normative purposes, these studies may not be very appropriate, given the likelihood of consumer ignorance, lack of computational ability, and various household budget constraints that are difficult to assess.

An introspective approach can help illustrate the issue of estimating plausible values of ρ for normative applications. Imagine a world with a zero real interest rate. What value would you place on the utility of consumption next year compared to the utility of consumption this year?

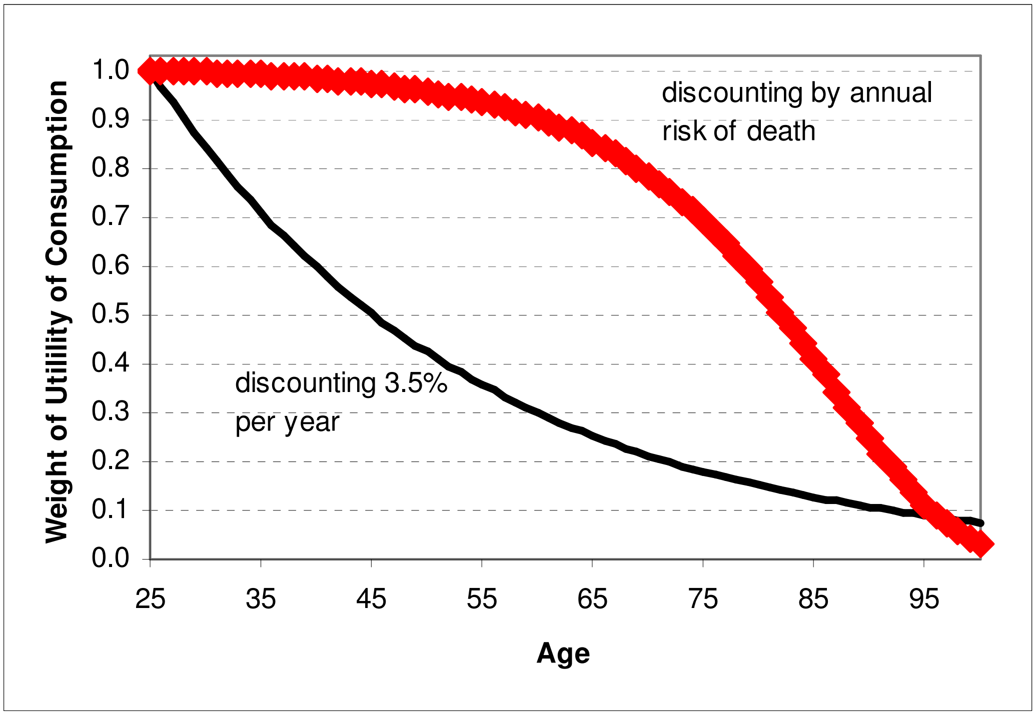
If your household and health situation will be the same, and you can imagine the consumption, it seems plausible that you should value the utility of consumption next year the same as this year. On the other hand, if you are comparing the value for this year compared to the value of the utility of consumption 50 years from now, you might place a lower value on the future consumption because of the probability that you would be dead then. For normative purposes Hanna et al. (1995) assumed that ρ should be based on the annual risk of death, so it would have a value of roughly 0.001 for somebody age 20, and the cumulative effect would be substantial in terms of decades of compounding the effects. They also assumed that ρ is related to planned changes in household size, so that a couple planning to have two children would value the utility of consumption this year less than they value the utility of consumption when both children have been born.

Figure 3 shows the impact of alternate assumptions about the personal discount rate. An assumption of a constant discount rate, e.g., 3.5% per year (e.g., Findley & Caliendo, 2008) implies that from the point of view of a 25 year old, utility of consumption even 15 years in the future should be heavily discounted. In contrast, discounting only by the risk of death implies low discounting by a 25 year old for the utility of consumption well into middle age. The optimal consumption path in each case would depend on the intertemporal utility function and the elasticity of marginal utility with respect to consumption.

If we accept the Hanna et al. (1995) assumptions, then most households under the age of 75 who do not plan to have a larger household size in the future should plan to have positive consumption growth. They will attempt to smooth consumption but with an upward pattern as long as the real rate of return r is higher than ρ.

Figure 3

Discounting the Utility of Future Consumption: Constant Rate of 3.5% Per Year, Versus Annual Risk of Death



Discounting at annual risk of death represents the cumulative effect of annual death rate, e.g., a 25 year old would value the utility of consumption at age 81 about than half as much as the utility of consumption at age 25 because the chance of survival until age 81 is roughly 50%. Discounting by risk of death is based on United States Life Tables, 2003, National Center for Health statistics, http://www.cdc.gov/nchs/datawh/statab/unpubd/mortabs/lewk3_10.htm

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