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## SESSION 3: KOTLIKOFF PRESENTATION

# Is Conventional Financial Planning Good for Your Financial Health?

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Economic theory predicts, and casual observation confirms, that households seek to maintain their living standards (smooth their consumption) as they age and face life's various contingencies. Seeking a stable living standard and actually achieving one, however, are two very different things. We cannot insure against aggregate shocks, including economic downturns, natural disasters, and epidemics, nor can we buy actuarially fair insurance against a range of individual shocks, such as job loss, excessive longevity, and disability. And we generally lack the self-control to save and insure adequately even given attractive opportunities to do so.

These concerns with consumption smoothing are well known and have been amply studied.<sup>1</sup> But another problem—namely, the computation challenge posed by consumption smoothing—has received little attention, which is surprising because consumption mistakes could well swamp these other considerations. Certainly, the calculations required to minimize consumption disruptions over time and across states of nature are highly complex. Just consider the number and range of current and future variables involved in consumption smoothing: The list includes household demographics; labor earnings; retirement dates; federal, state, and local taxes; U.S. Social Security benefits; pension benefits; regular and retirement assets; borrowing constraints; rules for retirement account contributions and withdrawals; home ownership; mortgage finance; economies in shared living; the relative costs of children; changes in housing; choice of where to live; the financing of college and weddings; gifts made or received; inheritances; paying for one's dream boat; and so on. And each of these variables demands consideration under each and every survival contingency.<sup>2</sup>

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<sup>1</sup>As an example, see <http://post.economics.harvard.edu/faculty/laibson/papers.html> for a long list of excellent papers by David Laibson and his colleagues contributing to the field of behavioral finance.

<sup>2</sup>Survival contingencies are distinguished by which spouse/partner dies and when he or she dies. The reason is that the survivor will inherit different amounts of wealth, collect different amounts of life insurance, and receive different levels of Social Security survivor and retirement benefits depending on the age at which his or her spouse/partner dies.

Taxation by itself is a factor worthy of a high-speed computer processor. Figuring out the federal and state taxes when both spouses are alive and in each future survivor state (years in which one spouse is deceased) requires determining whether they will itemize their deductions, whether they will receive any of the many potentially available tax credits, whether they will have to pay the Alternative Minimum Tax, whether they will pay taxes on their Social Security benefits, whether they will be contributing to or withdrawing from retirement accounts, and whether they will be in high or low tax brackets. And as if this list were not bad enough, determining future taxes introduces a nasty simultaneity problem. We cannot figure out the future taxes until we know the current spending (which determines, in part, the future taxable capital income), but we cannot figure out the current spending without knowing the future taxes (which determines, in part, what the couple has available to spend).

Computing Social Security benefits is another nightmare. With 2,528 separate rules in the *Social Security Handbook*, figuring out what retirement, dependent, survivor, divorce, mother, father, and child benefits one will receive can be maddening, particularly in light of the system's complex average indexed monthly wage and primary insurance amount benefit formulae as well as its ancillary adjustments to the primary insurance amount. These adjustments include the earnings test, the early retirement reduction factors, the delayed retirement credit, the recomputation of benefits, the family benefit maximum, the windfall elimination and offset formulae for workers with noncovered employment, and the phase-in to the system's ultimate age 67 normal retirement age.<sup>3</sup> How many households can even list all these interrelated factors, let alone process them accurately?

The standard fallback in economics is that households do not need to know all the details or have PhDs in math to make correct life-cycle decisions. Indeed, we economists view the mathematical formulation of optimal intertemporal choice as simply descriptive modeling. "Households," we tell ourselves, "do not do the math but act *as if* they do. Yes, households will make mistakes, but these mistakes will be small and average out."

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<sup>3</sup>Unfortunately, the handbook is remarkably uninformative about many details of these adjustments, particularly the order in which they are applied. Several of the old-timers knocking about in the U.S. Social Security Administration's Office of the Actuary know these details, but when they go, this information may literally disappear. One might think that the computer code that generates the hundreds of billions of dollars worth of actual Social Security benefit payments would be easy to check regarding such matters. But this code is, as I have been told, documented very poorly and written in an ancient computer language, namely, COBOL, that no one at the Social Security Administration apparently understands. Furthermore, it cannot necessarily be reproduced from scratch because many Social Security rules were apparently made administratively.

Unfortunately, studies of saving and insurance adequacy and portfolio diversification—including Kotlikoff, Spivak, and Summers (1982); Auerbach and Kotlikoff (1987, 1991); Bernheim, Carman, Gokhale, and Kotlikoff (2003); Bernheim, Forni, Gokhale, and Kotlikoff (2000, 2003); and Bernheim, Berstein, Gokhale, and Kotlikoff (2006)—believe this proposition. Vast numbers of households save, insure, and avoid risk either far too much or far too little. The fact that households make both types of mistakes and that, as a consequence, generate *average* behavior that, on its face, is not extreme offers little professional consolation. The medical community would not declare that heart disease has been cured if half of peoples' hearts beat too fast and the other half too slow.

The other professional fallback is that households that look financially sick are, in fact, financially healthy but simply have unusual preferences or prior beliefs about future events. Thus, a household that invests only in cash can be viewed as being extremely risk averse and also convinced that deflation is around the corner. Because preferences and priors are taken as economic primitives that are above reproach, there is no scientific basis for classifying extreme financial behavior as financial pathology. Imagine the medical profession declaring cancer a perfectly healthy manifestation of genetic free will.

Perhaps it is time to identify financial disease according to the financial pain it engenders. Based on this criterion, we are, generically speaking, financially quite sick. Indeed, the ravages of financial pathology are clearly seen among today's elderly, one-third of whom are wholly dependent or almost wholly dependent on Social Security.

Many households seek to cure their financial ills by turning to the financial planning industry for advice. In so doing, they effectively let financial planners or financial planning software decide what their preferences are and how they should be maximized. For such households, the study of their financial behavior may simply boil down to understanding what planners or software they are using and what these planners or programs are leading them to do.

If conventional financial planning corresponds closely to what economics prescribes, then households taking this advice will improve their financial health. But what if conventional financial planning generates recommendations that are far afield from proper consumption smoothing? In this case, "financial planning" will represent a cure-all, not real penicillin, and potentially leave one in worse financial shape.

In this paper, I examine one aspect of conventional financial planning: namely, the requirement that households set their own retirement and survivor spending targets. I show that from the perspective of consumption smoothing (the goal of achieving a stable living standard), even small targeting mistakes, on the order of 10 percent, can lead to enormous mistakes in recommended saving and insurance

levels and to major living standard disruptions (on the order of 30 percent) at retirement. Given the computational difficulties involved in achieving proper consumption smoothing on one's own, targeting mistakes of 10 percent or greater appear inevitable.

In soliciting spending targets, the traditional approach asks households to tally up all of their current expenditures and to use this level of spending as a target for retirement and survivor spending with some adjustment for changes in spending needs. The goal here seems to be that of consumption smoothing (i.e., to achieve the same living standard before and after retirement and in survivor states).

The rub, however, is that the current level of spending, which underlies the targeting, may be higher or lower than the sustainable level. Given the computation problems referenced earlier, this is almost inevitable. If current spending is higher than the sustainable level, the targets will be set too high. In this case, households will be told to save and insure more than is consistent with consumption smoothing. If current spending is lower than the sustainable level, the targets will be set too low. In this case, households will be advised to save and insure less than is consistent with consumption smoothing.

If the target is set too high, the household will be told to oversave and overinsure and will end up with a lower living standard prior to retirement and a higher one after retirement and in survivor states. If the target is set too low, the household will be told to undersave and underinsure and will end up with a higher living standard prior to retirement and a lower one after retirement and in survivor states. Both types of targeting mistakes will lead to consumption disruption rather than consumption smoothing.

This conclusion depends, of course, on whether the household takes the advice being given. Telling households that are currently overspending to substantially cut their current living standard may lead them to ignore the advice, decide to retire later, or accept a much lower future living standard. And telling households that are currently underspending to start spending at what they perceive as crazy rates may lead them to discount financial planning altogether.

Why can small targeting mistakes lead to such bad financial advice and such large disruptions in living standard when the household retires or loses a head or spouse/partner? First, in the case of retirement, the targeting mistake is being made for roughly 30 years—from roughly age 65 to roughly age 95. In the case of survivorship, the targeting mistake is being made for all of the survivor's potential remaining years. Second, spending more (less) than one should in retirement and survivor states means spending less (more) than one should prior to retirement in states when no one is deceased, which magnifies the living standard disruption (gap) beyond the original targeting mistake. Finally, the oversaving (undersaving) and overinsuring (underinsuring) associated with targeting for living standards that are

too high (low) lead to higher (lower) taxes and insurance premium payments than would otherwise be paid. This induces further cuts (increases) in the preretirement living standard than would otherwise arise.

As I will show, targeted spending also underlies and undermines conventional financial planning's portfolio advice, potentially leading households to take on much more investment risk than is prudent. What households need to assess in considering risky investments is the variability of their future living standards. But standard planning assumes households will spend precisely their targeted amounts year after year regardless of the returns they receive unless and until they run out of money. This approach focuses attention on the probability of the plan (i.e., the target) working rather than on the spending consequences of it not. Because riskier investing can raise the probability of a plan's "success," households may be encouraged to take more risk than is appropriate. They may also get the idea that adjusting their portfolios rather than their lifestyle is the prudent response to low returns.

## Methodology

Maximizing and preserving one's living standard is the hallmark of consumption smoothing—the economic approach to financial planning. Although conventional financial planning attempts to achieve consumption smoothing by having households set targets based on their current spending, this practice is essentially guaranteed to provide poor saving, insurance, and investment advice and to promote consumption disruption rather than consumption smoothing.

One might then wonder whether a better approach would be to use the conventional planning methodology but adjust the spending target to equalize living standards across one's working life, retirement, and widow(er)hood. Such target practice can, in theory, work. But doing so for any given set of assumptions could take hours, not seconds. The reason for the added complexity is that many, if not most, households are borrowing constrained, meaning that they or their financial planner would need to simultaneously set and adjust spending targets for each borrowing-constrained interval.<sup>4</sup> When one adds to this picture return uncertainty, we are no longer talking hours but weeks because the household would need to solve not for one spending path but for all possible (and potentially borrowing-constrained) spending paths that would arise under each path of return realizations.

The only practical way to handle these problems mathematically is via dynamic programming, developed in the early 1950s by Richard Bellman. Specifically, one formulates a general plan for consumption smoothing in the last period (the maximum age of life), which I will call  $T$ . It then uses the period  $T$  plan to formulate a plan for the next to last period (i.e.,  $T - 1$ ). The  $T - 1$  plan is used to formulate

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<sup>4</sup>Bernheim, Berstein, Gokhale, and Kotlikoff (2006) found that roughly three-fifths of Boston University participants in a study of saving and insurance adequacy were borrowing constrained.

the  $T - 2$  plan and so forth, back to the current time period, which I will call 0. This Time 0 plan is then used to determine how much to spend, save, and insure in the current year.

Although mathematicians, economists, and engineers are well versed in dynamic programming, the architects of traditional financial planning software are not. Or if they are, they are constrained by their superiors to keep things simple, which, in this context, means failing to elicit much of the information—such as the path of future labor earnings, prospective changes in housing, and plans for retirement account withdrawals—needed to generate an accurate dynamic program.

## **Results**

A dynamic programming model, as described above, is used to generate sample consumption-smoothing results for a prototypical family. These results are then compared with those given by a conventional targeting approach. First, I will review some general features of the consumption-smoothing results.

The amount of recommended consumption expenditures needed to achieve a given living standard varies from year to year in response to changes in the household's composition. It also rises when the household moves from a situation of being liquidity constrained to one of being unconstrained (i.e., not needing or wanting to borrow). Finally, as mentioned, recommended household consumption will change over time if users intentionally specify that they want their living standard to change.

The simultaneity issue with respect to taxes mentioned earlier is just one of two such issues that needs to be considered. The second is the joint determination of life insurance holdings of potential decedents and survivors. Widows and widowers may need to hold life insurance to protect their children's living standard through adulthood and to cover bequests, funeral expenses, and debts (including mortgages) that exceed the survivor's net worth inclusive of the equity on her or his house.

But the more life insurance is purchased by the potential decedent, the less life insurance survivors will need to purchase, if one assumes they have such a need. Thus, survivors will pay less in life insurance premiums and have less need for insurance protection from their decedent spouse/partner. Hence, one cannot determine the potential decedent's life insurance holdings until one determines the survivor's holdings. But one cannot determine the survivor's holdings until one determines the decedent's holdings.

Dealing with the tax and life insurance simultaneity issues as well as the borrowing and nonnegative life insurance constraints all within a single dynamic program seems well beyond the computing power of a desktop personal computer, particularly given the speed required for a commercial product.

The difficulty, time, and luck required to solve this simultaneous consumption-smoothing, borrowing-constrained, saving, life insurance, and tax problem may explain why financial planning software producers have universally adopted the computationally trivial targeted-spending approach. As indicated, this approach puts the onus on the household heads and spouses/partners of doing literally millions of complex calculations in their heads in order to set their targets appropriately. Because none of us has computer chips implanted in our brains, let alone the right neuronware, the chance of making at least small targeting mistakes is extremely high.

## Consumption Smoothing vs. Mis-Targeting Spending

Consider a middle-aged, middle-class, married household with two children. Both spouses are age 40 in 2005. One child is age 10, and one is age 7. The couple lives in California. The husband earns \$75,000 a year, and the wife, \$50,000. Neither spouse has a pension or a retirement account, but the couple does have \$75,000 in regular assets. The couple owns a \$300,000 home with a \$125,000 20-year mortgage with monthly payments of \$1,250. Property taxes, homeowners' insurance, and maintenance total \$6,000 a year. The couple plans to spend \$25,000 in today's dollars on college tuition and other expenses for each child for four years. Each spouse will retire at age 65 and begin collecting Social Security benefits in that year. Past "covered" earnings (i.e., used to determine Social Security benefits) for the husband (wife) were \$37,500 (\$25,000) in 1987 when he (she) was 22, and they grew by 4 percent each year through 2004. The couple expects inflation to run at 3 percent annually and to earn a 6 percent nominal rate of return on savings. The remaining inputs are the economies in shared living and the relative cost of children. Based on previous work, I assumed that two can live as cheaply as 1.6, that to provide the same living standard to a child as to an adult costs only 70 percent as much, and that taxes and Social Security provisions in the future are those suggested by current law.

**Consumption Smoothing.** Table 1 shows annual recommendations for selected years for the consumption-smoothing case. All values in these and other tables are in 2005 dollars. Note that the couple's living standard per equivalent adult, given in the last column, equals \$31,337. This amount remains constant through 2060, when each spouse reaches age 95, assuming they both live that long. The recommended total consumption expenditure, in contrast, initially equals \$71,852 but declines in 2014 and again in 2017 as the two children reach age 19 and are assumed to leave the household. In 2017 and thereafter, recommended total consumption expenditure equals \$50,139. For 2005, the recommendation for consumption smoothing would be \$484,947 and \$128,554 in term life insurance holdings for the husband and wife, respectively. Over time, recommended holdings decline.

**Table 1. Consumption Smoothing Annual Recommendations**  
(in constant 2005 dollars)

Year	H's Age	W's Age	Consumption	Saving	H's Life Insurance	W's Life Insurance	Living Standard per Adult
2005	40	40	\$71,852	\$ 1,440	\$484,947	\$128,554	\$31,337
2006	41	41	71,852	1,678	479,364	131,024	31,337
2007	42	42	71,852	1,906	467,677	132,826	31,337
2008	43	43	71,852	2,117	452,332	135,409	31,337
2009	44	44	71,852	2,309	435,512	139,488	31,337
2010	45	45	71,852	2,458	425,461	144,822	31,337
2011	46	46	71,852	2,597	415,998	151,089	31,337
2012	47	47	71,852	2,701	407,888	158,198	31,337
2013	48	48	71,852	2,767	401,155	166,140	31,337
2014	49	49	61,455	-12,770	388,883	169,766	31,337
2015	50	50	61,455	-12,895	377,052	173,952	31,337
2016	51	51	61,455	-13,057	365,666	178,683	31,337
2017	52	52	50,139	-27,760	333,541	165,914	31,337
2018	53	53	50,139	-2,930	301,025	152,962	31,337
2019	54	54	50,139	-2,849	268,095	139,801	31,337
2020	55	55	50,139	-2,775	234,700	126,405	31,337
2021	56	56	50,139	22,250	207,122	112,783	31,337
2022	57	57	50,139	22,525	179,143	98,908	31,337

Note: H = husband; W = wife.

Table 2 details the couple's total spending, which includes consumption, special expenditures on college, life insurance premiums, and housing. Note that real housing expenditures (expenditures valued in 2005 dollars) decline over time as the assumed 3 percent rate of inflation reduces the purchasing power of nominal mortgage payments. Once the mortgage is fully paid off, housing expenses are \$6,000 a year. These expenses are property taxes, maintenance, and homeowners' insurance, all three of which remain fixed in real terms. Term life insurance premiums first rise and then fall as the household ages. This reflects the increase with age in premium per dollar of coverage as well as the decline over time in recommended life insurance holdings.

Table 3 displays selected years of the couple's regular asset balance sheet. It shows four things. First, households never exceed their debt limit, which in this case is zero. Second, all assets and income are spent (i.e., the household dies broke if the head and spouse/partner make it to their maximum ages of life). Third, a household's living standard per equivalent adult is smooth over any interval of years within which the household is not borrowing constrained. Fourth, if consumption, and thus the living standard, is increased in any year, the household will die in debt. This implies that the living standard is maximized.

**Table 2. Consumption Smoothing Total Spending**  
(in constant 2005 dollars)

Year	H's Age	W's Age	Consumption	Special Expenditures	Housing Expenditures	Life Insurance Premiums	Total Spending
2005	40	40	\$71,852	\$ 0	\$20,563	\$ 983	\$ 93,398
2006	41	41	71,852	0	20,139	1,093	93,084
2007	42	42	71,852	0	19,727	1,198	92,777
2008	43	43	71,852	0	19,327	1,302	92,481
2009	44	44	71,852	0	18,939	1,408	92,199
2010	45	45	71,852	0	18,562	1,538	91,952
2011	46	46	71,852	0	18,196	1,678	91,726
2012	47	47	71,852	0	17,841	1,831	91,524
2013	48	48	71,852	0	17,496	2,000	91,348
2014	49	49	61,455	25,000	17,161	2,140	105,756
2015	50	50	61,455	25,000	16,836	2,288	105,579
2016	51	51	61,455	25,000	16,521	2,445	105,421
2017	52	52	50,139	50,000	16,214	2,422	118,775
2018	53	53	50,139	25,000	15,917	2,373	93,429
2019	54	54	50,139	25,000	15,628	2,301	93,068
2020	55	55	50,139	25,000	15,348	2,203	92,690
2021	56	56	50,139	0	15,075	2,119	67,333
2022	57	57	50,139	0	14,811	2,008	66,958

*Note:* H = husband; W = wife.

**Mis-Targeting Spending.** Now suppose that in 2005, this household is spending not \$71,852 on consumption but 10 percent more (less), namely, \$79,037 (\$64,667). Furthermore, suppose that this household uses its current consumption to set its retirement and survivor consumption spending levels but that in setting these targets, it appropriately adjusts for changes in the household's demographic over time and across survivor states. In this case, the household will specify a retirement consumption target that is 10 percent greater (smaller) than \$50,139, or \$55,153 (\$45,125). It will also specify survivor consumption spending targets that are 10 percent higher (lower), on a year-by-year basis, than those generated in this consumption-smoothing run.

How will these targeting mistakes affect the household's living standard, consumption expenditure, saving, life insurance holdings, assets, and taxes over its life cycle? The answers are provided in Tables 4 through 7. To start, the household's living standard is shown in **Table 4**. The fifth column, labeled CS for consumption smoothing, indicates that the household's living standard per equivalent adult is \$31,337 each year. This is the amount of consumption spending that a single adult would need to earn to enjoy the same living standard as she or he enjoys living in the household.

**Table 3. Consumption Smoothing Regular Asset Balance Sheet**  
(in constant 2005 dollars)

Year	H's Age	W's Age	Income	Total Spending	Taxes	Saving	Regular Assets
2044	79	79	\$51,191	\$56,139	\$3,783	-\$ 8,732	\$162,454
2045	80	80	50,937	56,139	3,686	-8,888	153,566
2046	81	81	50,678	56,139	3,584	-9,045	144,521
2047	82	82	50,415	56,139	3,479	-9,203	135,317
2048	83	83	50,147	56,139	3,369	-9,362	125,955
2049	84	84	49,874	56,139	3,257	-9,522	116,433
2050	85	85	49,597	56,139	3,140	-9,683	106,750
2051	86	86	49,314	56,139	3,020	-9,845	96,905
2052	87	87	49,028	56,139	2,896	-10,007	86,898
2053	88	88	48,736	56,139	2,768	-10,171	76,727
2054	89	89	48,440	56,139	2,637	-10,336	66,390
2055	90	90	48,139	56,158	2,502	-10,521	55,869
2056	91	91	47,833	56,253	2,363	-10,784	45,085
2057	92	92	47,518	56,338	2,219	-11,039	34,046
2058	93	93	47,197	56,392	2,070	-11,266	22,780
2059	94	94	46,869	56,368	1,917	-11,417	11,363
2060	95	95	46,536	56,139	1,760	-11,363	0

*Note:* H = husband; W = wife.

The fourth column presents the household's living standard path if it overtargets retirement and survivor spending by 10 percent and is thus directed to oversave and overinsure. The result is a \$26,289 living standard prior to retirement and a \$34,439 living standard after retirement. The ratio of the latter to the former amount is 1.31, indicating that the targeting mistake causes a 31 percent disruption in living standard at retirement. This is a huge discrepancy given the maintained assumption that the household seeks to smooth its living standard.

In the case that the household undertargets retirement and survivor spending by 10 percent, it will spend more before retirement and less thereafter than in the consumption-smoothing case. But as Column 6 shows, the preretirement living standard for this household is not constant. Instead, it rises from \$32,673 to \$39,109 because of the binding of the household's liquidity constraint—the assumption is that the household cannot take on any debt beyond the original mortgage balance, which is a constraint that most households operate under. After retirement, the household's living standard drops to \$28,159. The ratio of \$28,159 to \$39,109 is 0.72, indicating that the household suffers a 28.0 percent reduction in its living

**Table 4. Consumption and Saving Recommendations: Consumption Smoothing vs. Mis-Targeting, Living Standard**  
(in constant 2005 dollars)

Year	H's Age	W's Age	Living Standard			Percentage Difference in Living Standard Relative to CS	
			+10%	CS	-10%	+10%	-10%
2005	40	40	\$26,289	\$31,337	\$32,673	-16.1%	4.3%
2010	45	45	26,289	31,337	32,673	-16.1	4.3
2015	50	50	26,289	31,337	32,673	-16.1	4.3
2020	55	55	26,289	31,337	32,673	-16.1	4.3
2025	60	60	26,289	31,337	39,109	-16.1	24.8
2030	65	65	34,439	31,337	28,159	9.9	-10.1
2035	70	70	34,439	31,337	28,159	9.9	-10.1
2040	75	75	34,439	31,337	28,159	9.9	-10.1
2045	80	80	34,439	31,337	28,159	9.9	-10.1
2050	85	85	34,439	31,337	28,159	9.9	-10.1
2055	90	90	34,439	31,337	28,159	9.9	-10.1
2060	95	95	34,439	31,337	28,159	9.9	-10.1

*Notes:* H = husband; W = wife. CS references consumption smoothing, +10 percent references a 10 percent positive targeting mistake; -10 percent references a 10 percent negative mistake.

standard with respect to its pre- and postretirement spending. Again, we see a major disruption at retirement in the household's living standard because of mis-targeting.<sup>5</sup>

Because the overspending household was, by assumption, enjoying a 2005 living standard of \$34,471 (10 percent higher than \$31,337) when it visited its financial planner or used conventional financial planning software, it would have been advised to cut its current living standard by 23.7 percent ( $1 - 26,289/34,471$ ) to meet its target. The underspending household was enjoying a \$28,203 living standard (10 percent lower than \$31,337). It would have been told to raise its spending by 15.8 percent ( $32,673/28,203 - 1$ ). These are big adjustments. It is also ironic that the overspending household is being led to underspend and the underspending household is being led to overspend.

Clearly, adjusting upward is easier than adjusting downward. Hence, the underspending household is more likely than the overspending household to take the mistaken advice. Thus, the household that may be most concerned with maintaining its living standard in retirement will be led by standard financial planning to experience a 28.0 percent drop in its living standard when it retires—

<sup>5</sup>A small, but growing, body of research is examining living standard changes at retirement. Bernheim, Skinner, and Weinberg (2001), for example, provide evidence that living standards drop, on average, at retirement by 14 percent, with a median drop of 12 percent.

precisely what it is trying so hard to avoid. Of course, households could well be making targeting mistakes from a situation of currently spending the correct amount: All they need to do is make mistakes in adding up their current expenditures or miscalculate the appropriate demographic adjustments. I refer here to the adjustment for the absence of children in retirement or the absence of a spouse in widow(er)hood. Adjusting for this change in the number and sizes of mouths to feed requires thinking through economies in shared living and the relative cost of children. These are not easy considerations even for very well educated households.

If  $\pm 10$  percent mistakes occur with equal likelihood, the spread in preretirement living standards for two otherwise identical households could easily be 48.8 percent—the difference in the \$26,289 and \$39,109 preretirement living standards of households that set their spending targets 10 percent too high and 10 percent too low, respectively. The corresponding postretirement spread in living standards is 22.3 percent. For a source of age-specific consumption inequality, this seems like a good place to look.

**Mistakes in Consumption, Saving, and Insurance Recommendations.** Table 5 and Table 6 report saving and life insurance recommendations for the three cases. The proportionate consumption differences across the cases are the same as for the living standard differences just discussed. Hence, here I focus on saving and insurance recommendations. As one can quickly see, the differences are tremendous. In 2005, for example, the +10 percent saving recommendation is \$11,955 compared with  $-\$810$  in the  $-10$  percent case. At age 60, the two saving recommendations are \$38,818 and \$19,711, respectively. At 75, they are  $-\$13,891$  and  $-\$4,240$ .

Life insurance recommendations in the  $\pm 10$  percent cases are equally day and night. In 2005, the +10 percent targeting mistake leads to a recommendation of \$814,600 in life insurance for the husband whereas the  $-10$  percent targeting mistake leads to a recommendation of only \$106,436. Both of these values are far away from \$484,947—the desired consumption-smoothing amount. For the wife, the +10 percent mistake leads to a \$460,405 term life insurance recommendation for 2005. In contrast, the  $-10$  percent mistake leads to a recommendation of zero life insurance. The recommended consumption-smoothing amount in this case is \$128,554. The dramatically higher level of life insurance in the +10 percent case entails dramatically higher life insurance premiums. For example, at age 50, the +10, consumption-smoothing, and  $-10$  households pay premiums of \$4,017, \$2,288, and \$497, respectively. Table 7 shows equally wild disparities in assets and tax payments across the three cases. At retirement, the household with the +10 percent targeting mistake holds \$488,412 in assets. This is 1.8 times the consumption-smoothing assets holdings of \$270,715 and 3.4 times the \$144,405 for  $-10$  percent holdings.

**Table 5. Consumption and Saving Recommendations: Consumption Smoothing vs. Mis-Targeting, Saving**  
(in constant 2005 dollars)

Year	H's Age	W's Age	Recommended Consumption			Recommended Saving		
			+10%	CS	-10%	+10%	CS	-10%
2005	40	40	\$60,278	\$71,852	\$74,915	\$11,955	\$ 1,440	-\$ 810
2010	45	45	60,278	71,852	74,915	13,146	2,458	520
2015	50	50	51,555	61,455	64,074	-3,619	-12,895	-13,923
2020	55	55	42,062	50,139	52,276	4,798	-2,849	-3,000
2025	60	60	42,062	50,139	62,575	38,818	31,423	19,711
2030	65	65	55,102	50,139	45,054	-10,168	-6,594	-3,189
2035	70	70	55,102	50,139	45,054	-11,894	-7,350	-3,719
2040	75	75	55,102	50,139	45,264	-13,891	-8,112	-4,240
2045	80	80	55,102	50,139	45,054	-16,083	-8,888	-4,758
2050	85	85	55,102	50,139	45,054	-18,611	-9,683	-5,278
2055	90	90	55,102	50,139	45,054	-21,356	-10,521	-5,805
2060	95	95	55,102	50,139	45,054	-16,262	-11,363	-6,343

Notes: H = husband; W = wife. CS references consumption smoothing, +10 percent references a 10 percent positive targeting mistake; -10 percent references a 10 percent negative mistake.

**Table 6. Life Insurance Recommendations: Consumption Smoothing vs. Mis-Targeting, Life Insurance**  
(in constant 2005 dollars)

Year	H's Age	W's Age	Husband's Life Insurance			Wife's Life Insurance		
			+10%	CS	-10%	+10%	CS	-10%
2005	40	40	\$814,600	\$484,947	\$106,436	\$460,405	\$128,554	\$0
2010	45	45	690,432	425,461	112,015	414,861	144,822	0
2015	50	50	582,515	377,052	119,611	384,669	173,952	0
2020	55	55	399,515	234,700	9,982	296,195	126,405	0
2025	60	60	220,819	92,366	0	186,569	55,269	0
2030	65	65	63,139	0	0	85,191	0	0
2035	70	70	85,191	0	0	63,139	0	0
2040	75	75	45,822	0	0	45,822	0	0
2045	80	80	32,261	0	0	32,261	0	0
2050	85	85	22,807	0	0	22,807	0	0
2055	90	90	17,603	0	0	17,603	0	0
2060	95	95	0	0	0	0	0	0

Notes: H = husband; W = wife. CS references consumption smoothing, +10 percent references a 10 percent positive targeting mistake; -10 percent references a 10 percent negative mistake.

**Table 7. Assets and Taxes: Consumption Smoothing vs. Mis-Targeting (in constant 2005 dollars)**

Year	H's Age	W's Age	Assets			Taxes		
			+10%	CS	-10%	+10%	CS	-10%
2005	40	40	\$ 89,205	\$ 78,690	\$ 76,440	\$32,411	\$32,411	\$32,411
2010	45	45	152,732	89,159	76,548	34,100	33,114	32,916
2015	50	50	186,022	71,558	51,470	36,735	34,776	34,421
2020	55	55	176,192	22,188	0	38,540	35,812	35,403
2025	60	60	335,873	144,250	66,660	42,868	39,309	38,082
2030	65	65	488,412	270,715	144,405	7,078	4,737	2,640
2035	70	70	423,520	235,480	126,865	6,542	4,488	2,674
2040	75	75	367,143	196,448	106,706	5,914	4,136	2,623
2045	80	80	291,190	153,566	83,951	5,188	3,686	2,493
2050	85	85	203,311	106,750	58,602	4,442	3,140	2,290
2055	90	90	101,868	55,869	30,633	3,421	2,502	2,018
2060	95	95	0	0	0	1,839	1,760	1,679

Notes: H = husband; W = wife. CS references consumption smoothing, +10 percent references a 10 percent positive targeting mistake; -10 percent references a 10 percent negative mistake.

Because higher asset levels imply higher taxable asset income, taxes are highest for the +10 percent household and lowest for the -10 percent household. At age 65, the high, middle, and low tax payments are \$7,078, \$4,737, and \$2,640, respectively. As indicated, these discrepancies in tax and insurance premium payments exacerbate the consumption disruption at retirement and at widow(er)hood that arises from mis-targeting future retirement and survivor spending.

**Sensitivity of Consumption Disruption to Assumptions.** Consumption disruption caused by mis-targeted spending is likely to be greater for older households because they have fewer years over which to adjust their preretirement spending to avoid the difficulty of spending too much or too little in retirement. Households that are liquidity constrained are likely to set their spending targets too low because their current spending is limited by the availability of their liquid funds. If they retain these targets after their liquidity constraint is relaxed, they will, of course, be induced to undersave and underinsure for the future. Households earning low rates of return will experience larger consumption disruptions because larger adjustments to current spending will be needed to fund a given targeting mistake. Finally, households with higher maximum ages of life will face larger disruptions because one needs to fund targeting mistakes for more potential retirement and survivorship years.

## Portfolio “Advice”

Conventional planning’s use of spending targets also distorts its portfolio advice. Given the household’s retirement spending target and portfolio mix, conventional planning runs Monte Carlo simulations that determine the household’s probability of running out of money. These simulations typically assume that households make no adjustment whatsoever to their spending as a result of doing well or poorly on their investments. But consumption smoothing dictates such adjustments and precludes letting oneself get into the position of completely running out of money (i.e., ending up with literally zero consumption). It is precisely the range of these living standard adjustments that households need to understand to assess their portfolio’s risk. Conventional portfolio analysis not only answers the wrong question; it may also improperly solicit risk taking because riskier investments may entail a lower chance of financial exhaustion thanks to their higher mean.

To see this point in its starkest form, take, as an example, a single 60-year-old man named Joe whose only economic resource is \$500,000 in assets. Assume Joe’s maximum age of life is 95 and that he faces no taxes of any kind. Suppose Joe sets his spending target at \$30,000 a year. Also assume that Joe holds only a properly laddered portfolio of TIPS—Treasury Inflation-Protected Securities (i.e., inflation-indexed bonds)—yielding 2 percent after inflation. These bonds are essentially riskless and permit Joe to consume, at most and at least, \$20,413 in today’s dollars each year. What is Joe’s probability of meeting his target—\$30,000—each year? It is zero, of course, because spending \$30,000 will drive Joe broke unless he fortuitously dies beforehand.

Now, suppose that Joe invests in an S&P 500 Index fund of large-cap stocks rather than in TIPS. Since 1926, the real return on large caps has averaged 9.16 percent on an annual basis.<sup>6</sup> If Joe is able to earn this return for sure, he will be able to spend \$48,264 a year. But large-cap stocks are risky, with a standard deviation of, say, 20 percent. Nonetheless, there is still almost a 60 percent chance that Joe will be able to spend \$30,000 a year. So, if Joe uses a standard Monte Carlo portfolio analyzer, he will find that investing in TIPS fails completely to meet his goal but that investing in stocks gives him a chance to meet his goal. Joe may view this as a good bet given the way this investment outcome information is being presented.

Suppose then that Joe invests all his assets in large caps and then experiences in the next three years the large-cap returns (including dividends) recorded in 2000, 2001, and 2002—specifically, -9.1 percent, -11.9 percent, and -22.1 percent. Will Joe continue to spend \$30,000 a year and remain in the stock market given that his wealth after three years has dropped from \$500,000 to \$238,013? Probably not. At that point, Joe may well switch to holding just TIPS and be forced to live from that point on at about a third of his desired yearly spending rate. In not showing

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<sup>6</sup>This is the average of annual real returns rather than the geometric mean, based on data in Ibbotson’s 2005 yearbook.

such large and sudden adverse potential living standard adjustments, standard financial planning seems to be encouraging more risk taking than is appropriate. This concern is heightened by the prospect of many households being induced as part of the same planning exercise to set their future spending targets at higher levels than are appropriate.

## **Conclusion**

Economics teaches us that we save, insure, and diversify in order to mitigate fluctuations in our living standards over time and across contingencies. Although the goals of conventional financial planning appear consonant with such consumption smoothing, the actual practice of conventional planning is anything but. Conventional planning's disconnect with economics begins with its first step, namely, forcing households to set their own retirement and survivor spending targets. Setting spending targets that are consistent with consumption smoothing is incredibly difficult, which makes large targeting mistakes almost inevitable. But as shown here, even small targeting mistakes, on the order of 10 percent, can lead to enormous mistakes in recommended saving and insurance levels and to major disruptions (on the order of 30 percent) in living standards in retirement or widow(er)hood.

There are three reasons why small targeting mistakes lead to such bad saving and insurance advice and such large consumption disruptions. First, the wrong target spending level is being assigned to each and every year of retirement and widow(er)hood. Second, planning to spend too much (little) in retirement and widow(er)hood requires spending too little (much) before those states are reached, which magnifies the living standard differences. Third, both saving and insuring the wrong amounts affect tax and insurance premium payments, further exacerbating consumption disruption.

Conventional planning's use of spending targets also distorts its portfolio advice. Given a household's spending target and its portfolio mix, standard practice entails running Monte Carlo simulations to determine the household's probability of running out of money. These simulations assume that households make no adjustment whatsoever to their spending regardless of how well or how poorly they do on their investments. But consumption smoothing dictates such adjustments and, indeed, precludes running out of money (i.e., ending up with literally zero consumption). It is precisely the range of these living standard adjustments that households need to understand to assess their portfolio risk. Conventional portfolio analysis not only answers the wrong question; it may also improperly encourage risk taking because it focuses on the fact that riskier investments may entail a lower chance of financial exhaustion (thanks to their higher mean) rather than on the risk or worst-case scenario.

Purveyors of financial advice have an ethical, if not a fiduciary, responsibility to ensure that the advice they provide is sound. Financially protecting one's family is a very serious business that requires careful analysis and a real commitment of time. It also requires posing and correctly answering the right question—namely, How can I preserve my family's living standard through time and in unforeseen, but not unforeseeable, circumstances?

Perhaps a final medical analogy will help explain the situation. None of us would go to a doctor for a 60-second checkup, nor would we elect surgery performed by a meat cleaver over surgery with a scalpel. And any doctor who provided such services would quickly be drummed out of the medical profession. Financial planning, like brain surgery, is an extraordinarily precise business. Small mistakes and the wrong tools can just as easily undermine as improve financial health.

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