

# Standard and Behavioral Life-Cycle Theories and Public Policy

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**L**ife-cycle theory, which complements portfolio theory, is about the accumulation of assets into portfolios (converting cash into investments) and decumulation (converting those investments into cash). We accumulate mostly by saving during the working years of our life cycle and decumulate by spending during our nonworking years, such as when we are at school and in retirement.

Standard life-cycle theory is the theory of standard finance, and behavioral life-cycle theory is the theory of behavioral finance. Modigliani and Brumberg [1954] and Friedman [1957] formulated standard life-cycle theory. Shefrin and Thaler [1988] laid the foundation of behavioral life-cycle theory (Exhibit 1).

Describing Modigliani and Brumberg's theory, Deaton [2005] wrote: "By building up and running down assets, working people can make provision for their retirement, and more generally, tailor their consumption patterns to their needs at different ages, independently of their incomes at each age." Modigliani and Brumberg focused on the behavior of the economy as a whole, not on the behavior of individuals. Deaton wrote further: "This simple theory leads to important and non-obvious predictions about the economy as a whole, that national saving depends on the rate of growth of national income, not its level, and that the level of

wealth in the economy bears a simple relation to the length of the retirement span."

Friedman called his life-cycle theory *the permanent income hypothesis* and focused it squarely on the behavior of individuals. He recognized that consumption provides a range of benefits but chose to define consumption in terms of purchases rather than in terms of value of services.

We derive three kinds of benefits—value of services—from purchases and consumption of all products and services: utilitarian, expressive, and emotional (Statman [2017]). Utilitarian benefits are about what products and services do for us and our pocketbooks—their basic usefulness. Expressive benefits are about what products and services say about us to others and ourselves. Emotional benefits are about how products and services make us feel.

According to standard life-cycle theory, individuals begin by estimating, explicitly or implicitly, their life-cycle wealth: their current income, current capital, and the present value of future income, reflecting the expected growth of their wages and salaries (their human capital). They continue by choosing a spending path that will smooth their spending over the rest of their life. The theory predicts that people spend *permanent income* (roughly speaking, average income) each year, an amount that exhausts life-cycle wealth during the life cycle, even as current income fluctuates from year to year.

## EXHIBIT 1 Standard and Behavioral Life-Cycle Theories

Standard Life-Cycle Theory	Behavioral Life-Cycle Theory
1. People want to smooth spending during their entire life cycle and easily resolve conflicts between wants for spending and wants for saving.	1. People want more than to smooth spending during their entire life cycle. They want the full range of utilitarian, expressive, and emotional benefits of wealth, including the expressive and emotional benefits of owning wealth without spending it.  Moreover, even people who want to smooth spending during their entire life cycle find it difficult to resolve conflicts between wants for spending and wants for saving.
2. People need no tools and no help in executing their saving and spending plans and resolving conflicts between wants.	2. People execute their saving and spending plans and reconcile conflicts between wants by using tools such as framing, mental accounting, and self-control rules that set spending sources and spending uses pyramids and restrict dips into other-than-designated mental accounts.  Public policy helps execute saving and spending plans and reconcile conflicts between wants by offering programs such as Social Security. Policy also helps overcome cognitive and emotional errors via laws and regulations, such as fiduciary regulations.

We, the normal people described in behavioral life-cycle theory, find it difficult to match spending to permanent income because we find it difficult to estimate our life-cycle wealth, longevity, and future spending needs (e.g., for medical expenses) and because we struggle to reconcile the desirability of saving when income is relatively high with the urge to splurge. These difficulties leave us exposed to the risk of running out of money before running out of life or running out of life before running out of money.

Behavioral life-cycle theory says that we work to overcome these difficulties by framing, mental accounting, and self-control rules. Whereas standard life-cycle theory predicts that we regard current income,

current capital, and future income as mere components of life-cycle wealth, behavioral life-cycle theory predicts that we regard current income, current capital, and future income as distinct. Current income includes current wages and current interest and dividends from bonds and stocks, among other investments. Current capital includes the current value of our portfolio of bonds, stocks, and other investments and the present value of future income that includes future wages, future interest and dividends, and future income from other investments. We sort current income, current capital, and future income into separate mental accounts and set self-control rules that restrict dips into other-than-designated mental accounts. This includes, for example, restrictions against dipping into our children's education mental account for today's groceries or dipping into our retirement savings mental account for a new car.

### SELF-CONTROL

Standard life-cycle theory does not mention self-control, assuming implicitly that people with perfect self-control execute their saving and spending competently and easily overcome the temptation to spend too much or too little. In practice, advocates of this approach may acknowledge that some people have imperfect self-control. Imperfect self-control, however, is central in behavioral life-cycle theory.

Self-control is rarely easy to muster, and some fail to muster it at all. National Football League (NFL) players enjoy very large income spikes that amount to substantial life-cycle wealth, even if they play for only a few years. Median earnings across all players are about \$3.2 million (in year-2000 dollars). That wealth can provide substantial smoothed life-cycle spending, but Carlson et al. [2015] found that the urge to spend it all today overwhelms the recognition of the importance of saving for tomorrow. Bankruptcy filings of NFL players begin soon after the end of their careers and reach 15.7% by year 12. Moreover, having played for a long time and been well paid does not provide much protection against bankruptcy: Bankruptcy rates are not affected by players' total earnings or career length. The rate of bankruptcies among the corresponding overall population is equal to that of NFL players, according to one study, and much lower according to another study. Average earnings among that corresponding overall population, however, are much lower than among NFL players.

People hampered by weak self-control and its associated lack of planning skills suffer financial distress. McCarthy [2011] found that differences in self-control, reflected in the degree of an individual's impulsiveness, propensity for organization or lack of it, and preference for living for today or caring about tomorrow, affect the incidence of financial distress more than differences in education or financial literacy. She classified people as being impulsive if they agreed with the statement "I am impulsive and tend to buy things even when I can't really afford them." She classified people as being organized if they agreed with the statement "I am very organized when it comes to managing my money day-to-day." She also classified people as living for today if they agreed with the statement "I tend to live for today and let tomorrow take care of itself."

McCarthy further classified people into four categories of financial distress according to their choice of statements that describe how well they keep up with bills and credit commitments: "Falling behind," "Constant struggle," "Struggle from time-to-time," and "No difficulties keeping up." Controlling for demographic factors such as age, marriage, and employment, as well as for income and debt, she found that people in each of the first three categories, reflecting a state of financial distress, are likely to be impulsive, lacking in organization, and living for today.

Wants for spending on luxury goods join weak self-control in undermining savings and increasing financial distress. Vissing-Jorgensen [2011] studied the behavior of customers of a large Mexican retail chain catering to middle- and lower-income people. She found that defaults were most common among those who spent large portions of their incomes on luxuries.

We are better at identifying deficient self-control in others than in ourselves. Fedyk [2016] asked people who were engaged in an effortful task to predict their own future behavior and the behavior of others. They displayed virtually no awareness of their own self-control deficiencies but saw significant self-control deficiencies in others.

Poverty undermines self-control, breeding scarcity and narrowing the range of available options. A middle-class person rushing to an important appointment has the option of paying a taxi fare, but a poor person might lack the money for that option and miss the appointment. Scarcity and narrow options overload people's cognitive and emotional resources and hamper savings,

job performance, and decision-making. Furthermore, poverty is regularly exploited. Sule, Dumitrescu, and Loranth [2013] found that people who exhaust their credit card limits, indicating narrow slack, do not reduce their demand for credit even when interest rates are increased by as much as three percentage points. Mian and Sufi [2014] found that subprime lenders advertised expensive mortgages before the 2008 financial crisis, misleading borrowers into inferior mortgage choices. Gurun, Matvos, and Seru [2016] found that advertising was most persuasive when targeted at the uninformed, who tend to be less-educated, members of minorities groups, and poor.

Some people are savers by nature, whereas others are not. Conscientiousness is the personality trait most closely associated with self-control. Conscientiousness is high among people who are adequately prepared for retirement. Hurd et al. [2012] found that both spending and wealth increase with conscientiousness, but wealth increases faster, indicating that more conscientious people save more.

Conscientiousness and self-control can be excessive, however. Ameriks et al. [2007] found that excessive self-control is as prevalent as insufficient self-control. Excessive self-control is evidenced in the tendency to spend less today than the ideal level of spending, driving tightwads to extremes beyond frugality. The prospect of spending money inflicts emotional pain on tightwads even when it might otherwise be in their interest to spend. The interplay between emotion and cognition is evident in functional magnetic resonance imaging of the brain of people who are shown a product followed by its price and then asked to decide whether to buy it or not. Knutson et al. [2007] found that seeing the price caused greater activation in the brain's insula (the region associated with painful sensations such as social exclusion and disgusting odors) among people who decided not to buy the product than among people who decided to buy it.

## MENTAL ACCOUNTS OF CAPITAL AND INCOME

A question separating standard life-cycle theory from behavioral life-cycle theory asks whether we distinguish capital from income as we make spending choices. Standard life-cycle theory predicts that we do not because dollars of capital are indistinguishable from dollars of income in the total of our life-cycle wealth.

Behavioral life-cycle theory predicts, however, that we do make the distinction, as described by Shefrin and Statman [1984]. We are ready to spend income but reluctant to dip into capital and spend its proceeds. The evidence therefore is consistent with behavioral life-cycle theory. Baker, Nagel, and Wurgler [2007] found that U.S. investors are more likely to spend dividends than to sell shares and spend their proceeds. Kaustia and Rantapuska [2012] found that Finnish investors spend almost all of their dividends but rarely dip into capital.

Two related behavioral life-cycle hypotheses predict that older people have a greater preference for stocks with high dividend yields compared with younger people and that people with lower labor income have a greater preference for stocks with higher dividend yields compared with people with higher labor income. This is because spending dividends does not require a decision regarding the amount of stock to sell and avoids the self-control problems posed when tempted to sell more stock than is prudent. These two hypotheses are supported by a study of more than 60,000 families conducted by Graham and Kumar [2006], who found that older investors with lower labor income hold stocks with higher dividend yields than younger investors with higher labor income.

### HINDSIGHT AND REGRET, FINANCIAL LIQUIDITY, AND MENTAL LIQUIDITY

Standard life-cycle theory is consistent with investors who convert capital into cash just in time for spending. It is also consistent with considerations of financial liquidity, where financially liquid investments are cashed before illiquid ones—investments are financially liquid when they can be cashed quickly at prices equal to their current market values. Yet standard life-cycle theory is inconsistent with holdings of substantial amounts of cash for spending needs when considerations of utilitarian benefits direct people to hold stocks and bonds but not cash. Behavioral life-cycle theory, however, is consistent with such holdings.

No-load stock and bond mutual funds, common in investors' portfolios, possess financial liquidity because investors can cash them at no cost at the end of each trading day at prices equal to current market values. However, even such funds lack *mental liquidity*. Investments possess mental liquidity when investors can cash them without exposing themselves to the cognitive errors of hindsight and the emotional costs of regret.

Investors who choose to cash shares of a stock fund today carry responsibility for a choice that might inflict losses if stock prices increase tomorrow. Tomorrow's hindsight would mislead them into thinking that they have foreseen that stock prices would increase. The utilitarian costs of lost money are accompanied by the emotional costs of regret.

Consistent with behavioral life-cycle theory, financial advisors recommend holding three to five years' worth of spending needs in cash and replenishing that cash according to a strict schedule, such as at the end of each quarter. The rationale for this advice is similar to the rationale for dollar cost averaging, described by Statman [1995]. A strict schedule of conversion from stocks and bonds to cash reduces responsibility and alleviates potential for regret.

### ANNUITIES AND THE ANNUITY PUZZLE

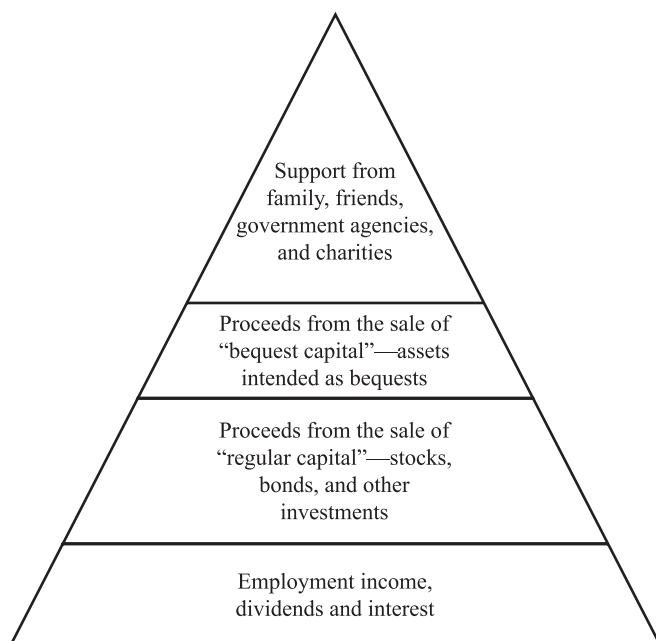
Purchases of annuities are consistent with standard life-cycle theory. Annuities facilitate smoothing of spending and eliminate longevity risk by converting life-cycle wealth, such as a sum of \$100,000, into permanent income, such as \$500 each month for life. Annuities mitigate longevity risk even if only portions of savings are annuitized at retirement. Ameriks, Veres, and Warshawsky [2001] found that people with conservative portfolios and no pension or annuity incomes expose themselves to a 67.4% probability of running out of money during a 30-year time horizon when their annual inflation-adjusted withdrawal rate is 4.5%. The corresponding probability of running out of money is only 18.7% when half the portfolio is annuitized. Yet people are reluctant to annuitize, a reluctance we know as the *annuity puzzle*.

It is sometimes argued that lack of annuitization reflects a bequest motive. Yet, as Davidoff, Brown, and Diamond [2005] noted, bequest in the absence of annuitization is random in both timing and size. Such random bequest is likely dominated by giving heirs fixed sums at fixed dates and annuitizing the rest.

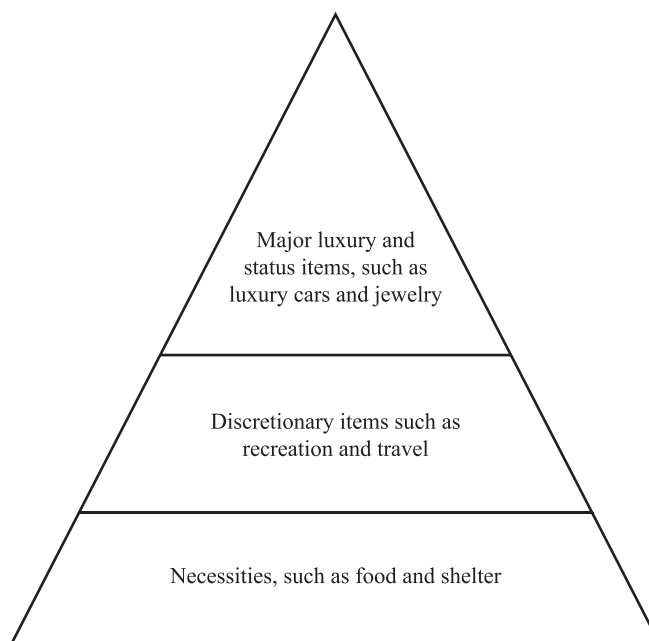
Behavioral impediments to annuitization include an aversion to transparent dips into capital. People dip into their capital account when they buy an annuity, converting capital into income. *Money illusion* is another behavioral impediment, explored by Goldstein, Hershfield, and Benartzi [2016], making a lump sum of \$100,000 seem larger than its equivalent as a \$500 monthly annuity payment.

## EXHIBIT 2 Spending Pyramids

Panel A: Spending-Sources Pyramid



Panel B: Spending-Uses Pyramid



Availability errors, explored by Hu and Scott [2007], further deter people from annuitizing because images of outliving life expectancy are not as readily available as images of the many kinds of death that might befall them soon after they sign an annuity contract. Availability errors interact with regret aversion as people contemplate the possibility that their heirs would receive only pennies of their annuity dollars if death comes soon after buying an annuity.

Last, and perhaps most important, annuities emit a “smell of death,” reminding people that they are relinquishing the hope of riches. Contrary to the prediction of standard life-cycle theory, people’s wants include not only downside protection, satisfied by smoothed permanent income, but also upside potential as they hope to see their \$100,000 portfolio mushroom somehow into a \$10 million portfolio they can spend, bequeath, or merely hoard, enjoying the social status and pride that accompany riches.

### SPENDING SOURCES AND USES

Behavioral life-cycle theory includes spending-sources and spending-uses pyramids, depicted in Exhibit 2.

The layers of spending-sources pyramids are arranged from those tapped first to those tapped last. The layers of spending-uses pyramids are arranged from those with higher spending priority to those with lower priority.

The bottom layer of the spending-sources pyramid consists of a broad category of income, including employment income, dividends and interest, Social Security benefits, and payments from defined benefit (DB) plans. Above it is a layer of dips into regular capital, consisting of proceeds from the sale of stocks and bonds among other investments, including those in 401(k) accounts, individual retirement accounts (IRAs), and other saving accounts. Above these is a layer of dips into bequest capital, consisting of proceeds from the sale of investments intended as bequests. Houses are the most common form of bequest capital. Above this is a layer of support from family, friends, government agencies, and charities for those who have little or nothing in the lower layers of the pyramid.

The bottom layer of the spending-uses pyramid consists of spending on necessities, such as food, shelter, and support of minor children. For some, this layer also includes support of needy adult children, elderly parents, and disabled siblings. For others, these spending

uses belong in the higher discretionary layer that also includes recreation, travel, gifts to grandchildren, and minor charitable contributions. For some, savings belong in the bottom layer of necessities, whereas for others savings belong in the higher discretionary layer. Above these layers is a layer of luxury and status goods, such as expensive cars, jewelry, major charitable contributions, and bequests.

Evidence is consistent with a reluctance to dip into bequest capital. Housing equity is the principal asset of a large fraction of older Americans, second only to Social Security and, for some, employer-provided pensions. Yet, Venti and Wise [2004] found that, on average, homes are not sold to support nonhousing consumption as people age. Moreover, homeowners are reluctant to enter into reverse-mortgage contracts that pay homeowners while they continue to live in their homes; Davidoff [2014] found that only 2% of homeowners eligible for reverse mortgage contracts enter into them.

Evidence is also consistent with a reluctance to dip into regular capital. People barely touch their 401(k), IRA, and other saving accounts in their early retirement years, let alone deplete these accounts. Poterba et al. [2011] found that among people aged 60 to 69, only 7% of people with defined contribution (DC) accounts took annual distributions exceeding 10% of their balances, and only 18% made any withdrawals in a typical year. Moreover, withdrawal rates were low between the actual time of retirement and age 70½, when required minimum distributions from DC accounts must begin. Proportions of assets withdrawn from DC accounts remained small even after age 70½. The proportion withdrawn averages 1% to 2% between ages 60 and 69, rising to about 5% at age 70½ and fluctuating around that level through age 85. Indeed, balances in DC accounts continue to grow among people older than 70½ who are still employed.

## STANDARD AND BEHAVIORAL LIFE-CYCLE THEORIES IN PUBLIC POLICY

Public policy prescriptions for saving and spending range from libertarian to libertarian paternalism and paternalism. Libertarians advocate *hands-off* policies, granting people freedom to save and spend as they wish, whether saving much when young and spending much when old or saving little when young and spending little when old. Libertarian prescriptions conform to

standard life-cycle theory for people who arrange their saving and spending so as to enjoy smoothed permanent income throughout their life-cycle.

Libertarian paternalists advocate policies that *nudge* people toward saving when young and judicious spending when old. Paternalists go further, advocating mandates that *shove* people into saving when young and judicious spending when old. Both conform to behavioral life-cycle theory, in which people are hampered by conflicts over whether to save or spend and by cognitive and emotional errors.

Standard life-cycle theory is libertarian in essence, at least implicitly. People save money for themselves during their working years and spend it on themselves before entering the labor force and in retirement. Friedman [1957] discussed bequests in his permanent income hypothesis, implying support of family, but only to note that people who receive bequests add them to their life-cycle wealth and spend from them gradually, by the rules of permanent income. There is nothing explicit in standard life-cycle theory about public policy prescriptions or the role of corporations and governments in programs such as pensions or Social Security.

However, there is an explicit and prominent place for public policy prescriptions and a role for corporations and governments in behavioral life-cycle theory—in policies that protect us from our own cognitive and emotional errors; nudge, shove, and educate us to reconcile internal conflicts between saving and spending; and redistribute income from the well off to the poor. Public policy prescriptions and the role of government are evident in all of investing, saving, and spending. This includes direct government provisions, such as Social Security, Medicare and Medicaid, and indirect government provisions, such as laws and regulations that defer taxes on DC accounts and require minimum distributions from these accounts when reaching age 70½.

Social Security is paternalistic. Its mandatory nature overcomes insufficient self-control by shoving people into saving, limiting today's spending to what is left after Social Security contributions have been deducted. The paternalistic nature of Social Security is also evident in the absence of an option of lump-sum payments in place of monthly payments. DB plans are also paternalistic because they are mandatory for employees of companies and government entities that provide them. However, most corporate DB plans permit lump-sum payments at retirement, tempting

those retirees with insufficient self-control. Combined corporate and government paternalism is evident in the pension benefit guarantee corporation that insures workers who might lose corporate pension benefits if their pension funds default.

Protection of investors from their own cognitive and emotional errors underlies many financial regulations. Margin regulations limit leverage: Stock buyers cannot borrow more than 50% of the value of their stock purchases. The paternalistic nature of margin regulations is reflected in a passage from the analysis of the Senate version of the bill underlying the Securities Exchange Act of 1934, quoted by Karmel [1970]: “Margin transactions involve speculation in securities with borrowed money... A Federal judge furnished this committee with instances from his long experience on the bench, indicating that a large proportion of business failures, embezzlements and even suicides in recent years were directly attributable to losses incurred in speculative transactions.”

Suitability regulations are also paternalistic, designed to counter cognitive and emotional errors. These regulations require that brokers recommend securities to customers only if they have reasonable grounds for believing that their recommendations are suitable for their customers’ financial situation and needs.

Mundheim [1965] described the difference between libertarian and paternalistic notions in the context of suitability, writing that “Imposition of any suitability doctrine has a revolutionary flavor, because it shifts the responsibility for making inappropriate investment decisions from the customer to the broker-dealer. It does so in what seems to me the correct belief that disclosure requirements and practices alone have not been wholly effective in protecting the investor—including protecting him from his own greed.” Suitability standards are paternalistic, but they set a low paternalism bar. For example, a broker was judged to be in violation of suitability standards when he recommended to an 85-year old client a single investment amounting to two-thirds of her life savings, the proceeds of which would be available only in five years. However, suitability standards permit a broker to recommend to a client a high-cost mutual fund paying the broker a high commission over an identical low-cost fund paying low commission as long as both funds are suitable for that investor. Fiduciary standards set a higher paternalism bar, requiring brokers to place the interests of investors ahead of their own—they

do not allow a broker to recommend a high-cost mutual fund over an identical low-cost fund.

The most prominent libertarian-paternalistic nudge in the context of savings is automatic enrollment into DC plans such as 401(k), discussed by Thaler and Sunstein [2008] in their book, *Nudge*. Making enrollment in companies’ retirement saving plans the default choice is a nudge that counters the tendency to procrastinate in saving and place wants for spending over wants for saving. Congress incorporated nudges into the Pension Protection Act of 2006, and corporations apply nudges as they implement the act. The act authorizes corporations to establish programs for automatic enrollment of employees into DC plans at specified contribution levels and to increase these levels automatically over time.

Automatic enrollment into DC plans increases the proportion of employees who enroll. Madrian and Shea [2001] found that enrollment of new employees in one plan increased from 37% to 86% after the introduction of automatic enrollment. Blanchett [2017] noted that approximately 27% of 401(k) plans, especially those of large employers, offered automatic enrollment in 2014. A substantial proportion of employees stayed, however, at the automatic default contribution of an annual 3% of salary a year later, despite a 50% employer match on contributions up to 6%. Employees seem anchored to the default contribution level, considering it a contribution level recommended by the company. Choi et al. [2002] found that increasing the contribution default rate to 6% did not decrease participation in DC plans, although default rates higher than 6% were accompanied by decreases in participation. Indeed, Blanchett found that employees are more likely to enroll in a 401(k) program when the default rate is 6% than when it is 3%.

Studying saving policies in Denmark, Chetty et al. [2014] found that policies that require no employee action—such as automatic employer contributions to retirement accounts—increased total savings substantially. Approximately 85% of employees are passive savers, whose ranks include those least prepared for retirement. The 15% of active savers who responded to tax subsidies did so primarily by shifting savings across accounts.

Policies that require contributions by employees, however, have proven less effective at increasing total savings. Beshears et al. [2016] studied the effects of the U.S. Army’s decision to begin automatically enrolling its civilian employees in the Thrift Savings Plan (TSP),

the federal government's version of a 401(k). Employees were enrolled at a default contribution rate of 3% of salary. Employees also received an automatic employer contribution of 1% of pay regardless of their participation, a 100% match on the first 3% of salary contributed by the employee, and a 50% match on the next 2% of pay contributed.

Automatic enrollment increased participation in the TSP, and employees' TSP account balances rose over time. However, Beshears et al. found that increases in debts—particularly credit card debt and installment loans—offset much of the increase in TSP savings. They wrote that they “cannot reject the hypothesis that all of the increase in employee contributions induced by automatic enrollment is financed by debt, and that saving increases only because of the employer match.”

Some people resist nudges, exercising their right to opt out of voluntary DC plans, and some who enroll extract liquidity from their accounts by borrowing or withdrawing money long before retirement, even when discouraged by taxes and penalties. Some withdrawals are necessary, such as for purchasing a house, or are made necessary by bouts of unemployment. Other withdrawals, however, are less necessary.

A multinational comparison of liquidity provisions (i.e., the ability to make early withdrawals) of DC plans conducted by Beshears et al. [2015] indicated that all countries, with the sole exception of the United States, have made their systems overwhelmingly illiquid before age 55. Liquidity in the United States generates significant preretirement leakage: For every dollar contributed to DC accounts by people under age 55 (not counting rollovers), \$0.40 simultaneously flows out of DC accounts (not counting loans or rollovers).

Early withdrawals are prohibited in Germany, Singapore, and the United Kingdom; only disabled or terminally ill people may withdraw early. Singapore, however, allows withdrawals from DC accounts for medical expenses, home purchases (which must be repaid with interest if the home is sold), and education (which must be repaid with interest in 12 years). Withdrawals are prohibited in Canada under normal circumstances but are allowed if annual income is very low, below approximately U.S. \$32,400. Withdrawals in Australia are prohibited as long as members of a household remain employed, no matter how low income falls.

In the United States, however, workers can roll over balances from a previous employer's DC plan

into an IRA and then liquidate these balances with a maximum 10% penalty. Moreover, not all U.S. companies offer retirement saving plans, and not all that offer them encourage retirement savings by matching employee contributions. Indeed, Rauh, Stefanescu, and Zeldes [2015] found that many companies offering DB plans chose to freeze them, reducing payroll costs by approximately 3.5% by ceasing contributions.

State governments have recently stepped into the savings breach with plans such as the Illinois Secure Choice Savings Program. The program requires employers that do not offer retirement saving plans to automatically place 3% of a worker's paycheck into a Roth IRA retirement savings account unless the employee opts out. The federal government also has stepped into the savings breach recently with its plan for the My Retirement Account (myRA). In his 2014 State of the Union address, President Obama announced myRA as “a new way for working Americans to start their own retirement savings.” Accounts will earn interest at the rate available to federal employees for their retirement accounts. Key features of the myRA program include automatic contributions from paychecks with no minimum, overcoming the traditional IRA \$1,000 minimum. Contributions can be withdrawn tax-free, and interest earnings can be withdrawn tax-free after five years if savers are older than 59½. The Trump administration, however, rescinded that plan.

Mandatory DC plans are paternalistic shoves into saving, going beyond libertarian-paternalistic nudges. They complement the shoves of Social Security and substitute for the shoves of increasingly rare DB plans. Mandatory DC plans exist in a number of countries, Australia being prominent among them. Australian employers are mandated to contribute a specified percentage of employee earnings into employees' retirement savings accounts. This percentage, which is now 9.5%, is scheduled to increase gradually to 12% by 2019–2020. Employees can contribute voluntarily beyond the mandatory amount. Tax provisions encourage people to withdraw their money gradually after age 60, rather than in a lump sum.

## **PUBLIC POLICY QUESTIONS WORTH EXPLORING AND ANSWERING**

Discussions about which public policies are best at promoting adequate life-cycle saving and spending,



whether libertarian hands-off approaches, libertarian-paternalistic nudges, or paternalistic shoves, call for exploring and answering questions regarding the goals of public policy, including the promotion of financial well-being, alleviation of retirement crises, features of good DC plans, and the benefits of financial literacy and its alternatives. I present these questions here, along with my own explorations, and suggest positive answers.

## FINANCIAL WELL-BEING AND THE RETIREMENT CRISIS

Explorations of life-cycle policies are unfocused when we fail to distinguish people by their wealth, income, and personal characteristics, especially self-control. We can focus discussions by distinguishing people by levels of financial well-being. Pownall, Statman, and Koedijk [2016] assessed financial well-being using shortfalls from financial aspirations. People with low financial well-being feel that they have less money than they need, find it difficult to pay bills, and consider their financial situation worse than that of their parents at the same age. Financial well-being is closely related to income but is not identical to it. Pownall et al. found substantial positive, albeit far from perfect, correlations between financial well-being and income. Indeed, some people with very high incomes perceive themselves as having lower financial well-being than some with very low incomes.

Financial well-being is high among people who earn adequate incomes throughout their working years and save enough for adequate retirement spending. Some are wealthy, but many more are middle-class people who earn adequate incomes and live within their means. Most people with low financial well-being are low earners who earn inadequate income during their working years, leaving little for retirement spending, but some are high spenders, like bankrupt NFL players, who spend their more-than-adequate incomes during their working years, leaving little for retirement spending.

We often hear about a general U.S. retirement crisis, in which people save too little during their working years for adequate retirement spending. Yet the term “crisis” describes properly only people with low financial well-being. We can glean the proportions of such people in Madamba and Utkus’ [2017] survey of satisfaction with financial situation in four countries, the United States, Canada, the United Kingdom, and

Australia. Satisfaction with financial situation likely corresponds to financial well-being.

In the United States, 53% of pre-retirees and 65% of recent retirees expressed high satisfaction with their financial situation, whereas only 21% of pre-retirees and 16% of recent retirees expressed low satisfaction. The remainder expressed medium satisfaction. In the United States, 83% of pre-retirees and 90% of recent retirees said that they are able to spend freely, within reason, or to cover needs with some discretionary spending, whereas only 17% of pre-retirees and 10% of recent retirees said that they are on a strict budget. Proportions are generally similar in Canada, the United Kingdom, and Australia.

The Madamba and Utkus survey suggests that the drumbeat of retirement crisis is too loud; there is no general retirement crisis. In the United States, 59% of pre-retirees said that they “believe there is a national retirement crisis,” but only 10% said they “would describe [their] own retirement situation as a crisis.” The corresponding percentages among post-retirees are even more striking: 54% believe that there is a national retirement crisis, but only 4% describe their own retirement situation as a crisis. Here, too, proportions among people in Canada, the United Kingdom, and Australia are generally similar to those in the United States.

The findings in the 2017 Retirement Confidence Survey of Employee Benefit Research Institute (EBRI [2017]) are generally similar to those of Madamba and Utkus. Six in ten U.S. workers feel confident in their ability to retire comfortably. The level of confidence of those already in retirement about having enough money to live comfortably throughout their retirement years is even greater, at 78%, whereas only 8% say they are not at all confident.

Attempts to nudge low earners into saving more tend to fail because the poor have few resources available for saving. A series of field experiments by Loibl et al. [2016] focused on saving rates in a federally funded program for low-income families—the Individual Development Account program. The experiments examined whether savings can be increased by four nudges: holding savers accountable, relying on phone calls for making deposits before and after deposit deadlines; increasing the frequency of deposits from monthly to biweekly; a lottery-based incentive structure; and an increase in the ratio of savings match by the program from \$2 for every \$1 saved by a person to \$4 for every \$1 when half of the savings goal was reached.

None of the four interventions brought about the desired increase in savings. Loibl et al. concluded that poverty, rather than insufficient self-control or other cognitive or emotional errors, is the primary barrier to saving. Poor people invest much time and energy into making ends meet, leaving less time and energy for other goals. Follow-up interviews with savers bolstered that conclusion. For example, people said that telephone calls “could be overwhelming when you are busy, almost like a bill collector” and “were like telemarketing calls. I knew I had to save, so I just hung up on the calls.” They also said that calls “were annoying. Any call that calls you when you don’t expect it and you don’t know what it is... I got calls when I was talking to an employer and I thought it was another potential employer or something.”

Financial security solutions for the low-earning segment of the population require transfer payments. Galiani, Gertler, and Bando [2016] studied a program in Mexico centered on cash transfers to rural adults older than 70. The program leads to higher spending levels and better mental health.

## FEATURES OF GOOD DC PLANS

There was no public policy debate preceding the shift from paternalistic DB plans to libertarian DC plans. Instead, we are debating today libertarian-paternalistic nudge policies that expend much effort to make DC plans accomplish what DB plans do with relative ease.

The shift from DB to DC came by happenstance, offering an out to corporations. The Revenue Act of 1978 included a provision, section 401(k), specifying that deferred income would not be taxed. The law firm serving Hughes Aircraft Company noticed this provision and recommended that the company incorporate it into its savings plan. Other companies followed suit, replacing old after-tax savings plans with the new before-tax 401(k) plans and adding 401(k) options to profit-sharing and stock bonus plans. Within two years, nearly half of all large companies were offering 401(k) plans or considering them. By now, DC plans dominate DB plans, exposing both the advantages and disadvantages of the switch from paternalism to libertarianism. Blanchett [2017] noted that from 1989 to 2014, the proportion of private-sector full-time workers participating in DB plans declined from 42% to 19%, while the share participating in DC plans increased from 40% to 52%.

DB plans have many deficiencies, including a tendency to underfunding and restricted portability as employees move from one company to another. A return to DB plans is neither feasible nor desirable. It makes little sense for governments (i.e., taxpayers) and corporations to pay large guaranteed amounts to retirees when economic times are bad. It makes more sense to combine relatively low but guaranteed downside protection in the form of Social Security, with possibly high but variable upside potential in the form of DC plans, so all share in good economic times and bad.

Indeed, further switching from DB plans to DC plans is warranted, especially in the public sector, where unions press for generous pensions and politicians find it all too easy to obligate taxpayers to such pensions, expecting not to be in office when pension obligations come due. Mandatory DC plans along the lines of the Australian plan are better than either DB plans or voluntary DC plans. A mandatory DC plan would do much for the high-spending segment of the high-earning population by replacing weak self-control with strong outside control. Such a plan would not financially hurt members of the high financial well-being segment of the population because they likely save more than mandated amounts. It would, however, be distasteful to libertarians, who favor hands-off policies and object to mandates even if they do not affect them personally.

A mandatory DC plan can be bolstered by limiting early withdrawals from retirement saving accounts, incorporating features of plans in Germany, Singapore, and the United Kingdom. Limited withdrawals are a better policy than the current policy of unlimited withdrawals with a 10% penalty on withdrawals before the age of 59½ but no penalty after. The penalty does not always deter high spenders and unnecessarily hurts those who must withdraw money for good reasons, such as major medical expenses or down payments on houses.

The switch from DB to DC plans has one feature that is commonly highlighted and another that deserves highlighting. The feature that is commonly highlighted is the shift in risk-bearing from employers to employees. The feature that deserves highlighting is the reduction in contributions by employers. Table 1 in Vanguard’s [2017] “How America Saves” shows that employees’ median contribution rate in DC plans was 6% in 2012–2015, and the median total employer and employee contribution

was 10%, implying a 4% employer contribution. Median contribution rates of employers into DB plans are not readily available but are probably double the 4% figure. Indeed, a reduction in contributions is much of the reason for employers' switch from DB to DC plans. As Blanchett noted, employers are careful to calibrate their match in DC plans so their contributions stay within bounds.

DC plans at U.S. universities and some other not-for-profit institutions are worth considering as a model for all employers. Employers make high unconditional contributions rather than low matching contributions. Ragnoni [2012] found that employer contributions average 10.1% at private universities and 9.5% at public ones. Some universities go further, mandating contributions by employees, averaging approximately 5%, for a total of approximately 15%. Replacing matching contributions with unconditional contributions would help low-earning employees who forgo employer match because they have too little for their own contributions and prevent the wasteful strategy, uncovered by Beshears et al. [2016], in which employees borrow money, possibly at high rates, to make DC contributions that would qualify them for employer match.

Another feature worth considering is limiting the menu of investments in DC plans to diversified market-matching index funds with annual fees not exceeding a low limit, perhaps 0.20%, and excluding from the menu active funds that promise market-beating returns. The rationale goes beyond evidence that, on average, active funds fail to beat the market: Active fund management changes the *distribution* of returns among investors, without changing *overall* returns. The total investments in DC plans are vast, likely encompassing most of the financial assets of all but the richest segment of the population. This implies that active funds providing positive extra returns to some DC investors are matched by other active funds imposing negative extra returns on other DC investors. This is true even if we exclude consideration of high active fund fees and additional active fund expenses resulting from high turnover.

A related feature worth considering is paying the administrative costs of DC plans by directly charging each plan member. Employers can make that feature more generous by paying the administrative cost themselves. Currently, many DC plans pay their administrative costs using rebates from high fees paid to active funds. This provides DC plan administrators a perverse

incentive to retain high-fee active funds in their menus and not discourage employees from choosing them.

## FINANCIAL LITERACY, COMPREHENSION, AND BEHAVIOR

Promotion of financial literacy can be good public policy, but only if it yields financial comprehension and promotes behavior demonstrating financial comprehension. Mitchell and Lusardi [2011] developed a prominent set of questions measuring financial literacy and dubbed them the *Big Three*:

1. Suppose you had \$100 in a savings account, and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow: more than \$102, exactly \$102, or less than \$102?
2. Imagine that the interest rate on your savings account was 1% per year, and inflation was 2% per year. After one year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?
3. Do you think that the following statement is true or false? "Buying a single company stock usually provides a safer return than a stock mutual fund."

Answers to the Big Three questions indicate that financial literacy is widely lacking. Mitchell and Lusardi [2015] found that only half of Americans older than 50 correctly answered the first two questions, and only one-third correctly answered all three. The answers of people in some countries were more accurate than those of Americans, but financial literacy is lacking even in rich countries with well-developed financial markets, such as Canada, Germany, Japan, and Australia. Financial literacy is especially lacking among women, minorities, the poor, and those without college degrees.

The Big Three questions are about financial literacy, but financial literacy is different from financial comprehension, and both are different from financial behavior demonstrating comprehension. A debate exists about the effectiveness of financial literacy education in fostering behavior demonstrating financial comprehension. Fernandes, Lynch, and Netemeyer [2014] concluded that efforts at improving financial literacy do little to improve financial behavior, but Miller et al.

[2014] came to a more positive conclusion about the effectiveness of financial literacy.

The difference between financial literacy and financial comprehension can be seen in answers to the question “Do you think that people who save much when young accumulate more savings in time for retirement than people who save little?” It is doubtful that many would fail to answer this question correctly, even if they fail to answer correctly the first of the Big Three questions, which test knowledge of the facts of exponential growth of savings. A person who saves much when young accumulates much in time for retirement, regardless of whether he or she is literate about the facts of exponential growth. However, a person who is literate about the facts of exponential growth still accumulates little in time for retirement if he or she saves little when young.

Questions probing financial comprehension might include the following: “Do you think that a person who invests in widely diversified low-cost index mutual funds that aim to match the market is likely to accumulate more money in time for retirement than a person who invests in less diversified and higher-cost active mutual funds that aim to beat the market?” And “Do you think that a person who buys a handful of stocks and trades them frequently is likely to accumulate more money in time for retirement than a person who buys and holds widely diversified low-cost index mutual funds?”

Probes into financial behavior to test financial knowledge should be complemented by an examination of people’s savings and investment activities. Do they save regularly? Do they shun high-cost active mutual funds in favor of low-cost index funds? Do they buy and hold low-cost index mutual funds or buy a handful of stocks and trade them frequently?

One piece of evidence pointing to gaps between financial literacy, financial comprehension, and behavior demonstrating financial comprehension is the finding by Mitchell and Lusardi [2015] that men in all countries are more financially literate, on average, than women and are better at answering the Big Three questions. Yet men, on average, are also more overconfident than women, and they trade investments more frequently. Some frequent traders are aware of the utilitarian costs of trading but trade nevertheless because they derive expressive and emotional benefits from trading. Frequent trading among others indicates a

lack of financial comprehension and financial behavior demonstrating comprehension.

Another piece of evidence pointing in the same direction comes from personal saving orientation, an indicator of consistent and sustainable saving activities. Dholakia et al. [2016] concluded that “simply teaching factual knowledge about how personal finance works as is done in conventional financial literacy programs may not be enough; it may be necessary to teach people habits that encourage consistent saving and ways to create and maintain a saving-oriented lifestyle.” We can foster behavior consistent with financial comprehension even in the absence of financial literacy and financial comprehension, such as by limiting the menu of investments in DC plans to low-cost index funds, mandatory DC plans, and unconditional contributions by employers into DC plans.

## CONCLUSION

Standard life-cycle theory is the theory of standard finance, centered on the hypothesis that people want to smooth spending during their entire life cycle and do so easily, balancing saving and spending from life-cycle wealth. Behavioral life-cycle theory is the theory of behavioral finance, centered on the hypothesis that even people who want smooth spending during their entire life cycle find it difficult to avoid cognitive and emotional errors and to balance wants for spending now and wants for saving for tomorrow.

Behavioral life-cycle theory says that we reconcile the conflicts between our wants via personal devices and public policies of nudges and shoves by government and employers. Personal devices include framing, mental accounting, and self-control rules that prohibit dips into other-than-designated mental accounts. Public policies include nudges (e.g., automatic enrollment into voluntary DC plans) and shoves (e.g., mandatory Social Security).

Debates about the relative merits of nudges, shoves, and hands-off approaches as instruments of public policy are sure to continue, combining self-interest with ideology. Public policies that involve transfers from the well off to the poor and policies mandating retirement saving are likely to face special resistance in the United States because U.S. culture is more individualistic than other cultures. That said, a more activist approach is necessary to alleviate financial distress.

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