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The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States

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The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States

Abstract

This paper summarizes the empirical evidence on how defaults impact retirement savings outcomes. After outlining the salient features of the various sources of retirement income in the U.S., the paper presents the empirical evidence on how defaults impact retirement savings outcomes at all stages of the savings lifecycle, including savings plan participation, savings rates, asset allocation, and post-retirement savings distributions. The paper then discusses why defaults have such a tremendous impact on savings outcomes. The paper concludes with a discussion of the role of public policy towards retirement saving when defaults matter.

Disciplines

Economics

Comments

The published version of this Working Paper may be found in the 2008 publication: *Lessons from Pension Reform in the Americas*.

Chapter 3

The Importance of Default Options for Retirement Saving Outcomes: Evidence from the USA

*John Beshears, James J. Choi, David Laibson,
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If transaction costs are small, standard economic theory would suggest that defaults have little impact on economic outcomes. Agents with well-defined preferences will opt out of any default that does not maximize their utility, regardless of the nature of the default. In practice, however, defaults can have sizable effects on economic outcomes. Recent research has highlighted the important role that defaults play in a wide range of settings: organ donation decisions (Johnson and Goldstein 2003; Abadie and Gay 2004), car insurance plan choices (Johnson et al. 1993), car option purchases (Park, Jun, and McInnis 2000), and consent to receive email marketing (Johnson, Bellman, and Lohse 2003).

This chapter summarizes the empirical evidence on defaults in another economically important domain: savings outcomes. The evidence strongly suggests that defaults affect savings outcomes at every step along the way. To understand how defaults affect retirement savings outcomes, one must first understand the relevant institutions. Because the empirical literature on how defaults shape retirement savings outcomes mostly focuses on the USA, we begin by describing the different types of US retirement income institutions and some of their salient characteristics. We then present empirical evidence from the USA and other countries, including Chile, Mexico, and Sweden, on how defaults influence retirement savings outcomes at all

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stages of the savings life cycle, including savings plan participation, savings rates, asset allocation, and postretirement savings distributions. Next, we examine why defaults have such a tremendous impact on savings outcomes. Finally, we consider the role of public policy toward retirement saving when defaults matter.

Retirement Income Institutions in the USA

There are four primary sources of retirement income for individuals in the USA: (a) social security payments from the government, (b) traditional employer-sponsored DB pension plans, (c) employer-sponsored DC savings plans, and (d) individual savings accounts that are tied neither to the government nor to private employers. We briefly describe each of these institutions in turn.¹

The US social security system provides retirement income to qualified workers and their spouses. While employed, workers and their firms make mandatory contributions to the social security system. Individuals are eligible to claim benefits at age 62, although benefit amounts are higher if individuals postpone their receipt until a later age. Individuals must proactively enroll to begin receiving social security benefits, and most individuals do so no later than aged 65. The level of benefits is primarily determined by either an individual's own or his or her spouse's earnings history, with higher earnings corresponding to greater monthly benefit amounts according to a progressive benefits formula. Benefits are also indexed to the cost of living and so tend to increase over time. They are paid until an individual dies, with a reduced benefit going to a surviving spouse until his or her death.

On average, social security replaces about 40 percent of pre-retirement income, although this varies widely across individuals. Replacement rates tend to be negatively related to income due to the progressive structure of the benefits formula. Benefits are largely funded on a PAYGO basis, with the contributions of workers and firms made today going to pay the benefits of currently retired individuals who worked and paid contributions in the past. There is no private account component to the US social security system, although this is something that has received much discussion in recent years.

Traditionally, the second largest component of retirement income has come from employer-sponsored DB pension plans. These plans share many similarities with the social security system. Benefits are determined by a formula, usually linked to a worker's compensation, age, and tenure. Benefits are usually paid out as a life annuity, or in the case of married individuals as a joint-and-survivor annuity, although workers do have some flexibility in selecting the type of annuity or in opting instead for a lump-sum payout.

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Because traditional DB pension plans are costly for employers to administer and impose funding risk on employers, there has been a movement over the past two decades away from traditional pensions and toward DC savings plans. There are now more than twice as many active participants in employer-sponsored DC savings plans as in DB pension plans, with total assets in DC plans exceeding those in DB plans by more than 10 percent (US Department of Labor 2005).

These DC savings plans come in several different varieties. The most common one is the 401(k), named after the section of the US tax code that regulates these types of plans. The typical DC plan allows employees to make elective pretax contributions to an account over which the employee retains investment control. Many employers provide matching contributions up to a certain level of employee contributions. The retirement income ultimately derived by the retirees depends on how much they elected to save while working, how generous the employer match was, and the performance of their selected investment portfolios. At retirement, benefits are usually paid in the form of a lump-sum distribution, although some employers offer the option of purchasing an annuity. Relative to traditional DB pension plans, DC savings plans impose substantially more risk on individuals while reducing the risks faced by employers.

The final significant source of retirement income comes from personal savings accounts that are not tied to an employer (or the government). There are many different ways that individuals can save their own for retirement but one particular vehicle, the IRA (Individual Retirement Account), is very popular because it receives favorable tax treatment. After IRAs were first created, the primary source of funding came from direct individual contributions. Over time, however, restrictions have been placed on the ability of higher-income individuals to make direct tax-favored contributions, and the primary source of IRA funding has shifted to rollovers—transfers of assets from a former employer's DC savings plan into an IRA. In general, individuals employed at a firm with a DC savings plan that has an employer match would find that savings plan more attractive than directly contributing to an IRA. Direct IRA contributions largely come from individuals whose employers do not sponsor a DC savings plan, individuals who are not eligible for their employer's savings plan, or individuals who are not working.

The relatively low social security replacement rate (compared to other developed countries) in conjunction with the recent shift toward DC savings plans and IRAs in the USA has spurred much of the research interest into how defaults and other plan design parameters affect savings outcomes. With individuals bearing greater responsibility for ensuring their own retirement income security, understanding how to improve

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their savings outcomes has become an important issue both for individuals themselves and for society at large.

The Impact of Defaults on Retirement Savings Outcomes: Empirical Evidence

We now turn to the evidence on how defaults affect retirement savings outcomes, discussing first the effect of institutionally specified defaults, then ‘elective’ defaults—mechanisms that are not a pure default but that share similar characteristics with the institutionally chosen defaults, in terms both of their structure and of their outcomes.

Savings Plan Participation

In a DC savings environment, savings plans—employer-sponsored, government-sponsored, or privately sponsored—are useful only to the extent that employees actually participate. Recent research suggests that when it comes to savings plan participation, the key behavioral question is not *whether* individuals participate in a savings plan but rather how long it takes before they actually sign up. The most compelling evidence on the impact of defaults on savings outcomes comes from changes in the default participation status of employees at firms with DC savings plans.

In most companies, savings plan participation requires an active election on the part of employees. That is, if the employee does nothing, the default is that the employee is not enrolled (standard enrollment). An alternative but less widely used approach is to enroll employees in the savings plan automatically, requiring the employee to actively elect to opt out.² This simple change in the default participation status that affects employees who do nothing has a dramatic impact on participation outcomes.

To illustrate the effect of automatic enrollment on both participation and other savings outcomes, we present the experience of a medium-sized US chemicals company (Company A). This particular firm has a standard DC savings plan: employees can direct up to 15 percent of pay into the plan, employee contributions are matched dollar-for-dollar up to 6 percent of pay, and employees have seven investment options from which to choose. This company is interesting to consider because it implemented automatic enrollment in two different ways for three different groups of employees.

Company A initially adopted automatic enrollment in December 2000 with a default contribution rate of 3 percent of pay. The first group of employees affected was new hires going forward, which is how automatic enrollment is most commonly implemented. However, this firm also applied automatic enrollment to previously hired employees not then

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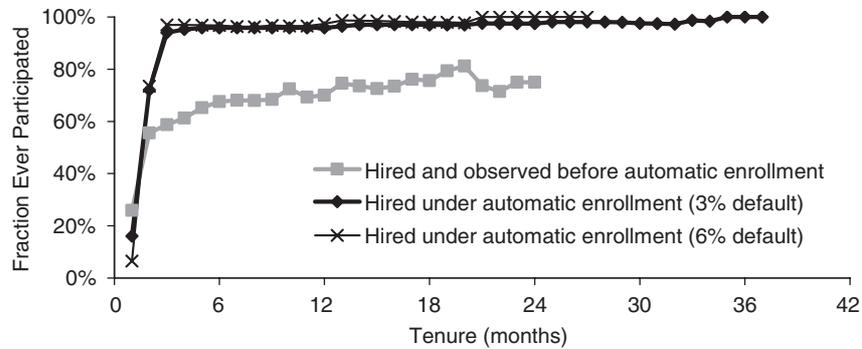


Figure 3-1. Automatic enrollment for new hires and savings plan participation (Company A). (Source: authors' calculations.)

participating in the plan. In October 2001, the company increased its default contribution rate to 6 percent, affecting only new hires going forward.

Figure 3-1 shows the effect of automatic enrollment on the participation rates of new hires at Company A. For employees hired and observed before automatic enrollment, savings plan participation is initially low and increases slowly with employee tenure. Under automatic enrollment, however, participation jumps to approximately 95 percent once it takes effect (one to two months after hire) and increases only slightly thereafter. At low levels of tenure, the difference in participation rates under the standard and automatic enrollment regimes is substantial, with a difference of 35 percentage points at 3 months of tenure. As participation increases with tenure under standard enrollment, this difference diminishes but remains sizable even after a long time. For example, at 24 months of tenure, employees under automatic enrollment have a participation rate more than 25 percentage points higher than that of employees hired before automatic enrollment. The impact of automatic enrollment on existing nonparticipants is no less dramatic, as shown in Figure 3-2. These differences are borne out in other firms, as documented in Madrian and Shea (2001), Choi et al. (2002, 2004a, 2004b), and The Vanguard Group (2001).

Most firms with automatic enrollment have adopted a relatively low default contribution rate, typically 2–3 percent of pay (Profit Sharing/401(k) Council of America 2005). The reason commonly cited for the low rate is a concern that more employees will opt out of the savings plan with a higher default contribution rate. The experience of Company A, as shown in Figure 3-1, suggests that this concern may be unfounded. The participation rate under automatic enrollment is virtually identical

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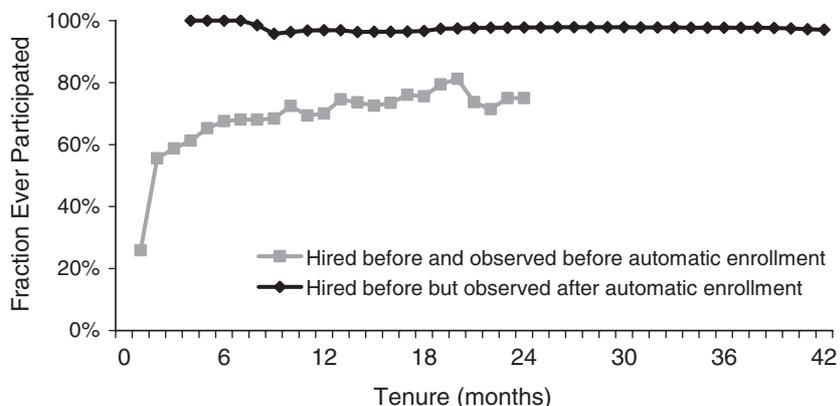


Figure 3-2. Automatic enrollment for existing nonparticipants and savings plan participants (Company A). (Source: authors' calculations.)

with either a low 3 percent contribution rate or a higher 6 percent contribution rate, a result corroborated for other firms in Choi et al. (2004a, 2004b). This finding should not in fact be much of a surprise, as employee contributions up to 6 percent of pay receive a generous dollar-for-dollar employer match at this firm. Most employees should thus have a strong incentive to contribute at least this amount to the savings plan (even if automatically enrolled at the lower 3% default contribution rate!).

Savings Plan Contributions

While automatic enrollment is effective in getting employees to participate in their employer-sponsored savings plan, it is less effective at motivating them to make well-planned decisions about how much to save. Consider, for example, the distribution of contribution rates in Figure 3-3 for employees at Company A hired under automatic enrollment at a 3 percent default contribution rate (the black bars) versus that of employees hired under automatic enrollment at a 6 percent default rate (the gray bars). The sample under both default regimes in Figure 3-3 is restricted to employees with the same level of tenure so that the results are not confounded by differences in the time that employees have had to move away from the default.

The distributions of contribution rates are strikingly different for the two regimes. Under the 6 percent default regime, only 4 percent of employees have a 3 percent contribution rate; 49 percent of employees have a 6 percent contribution rate (the default); and fully 79 percent of employees

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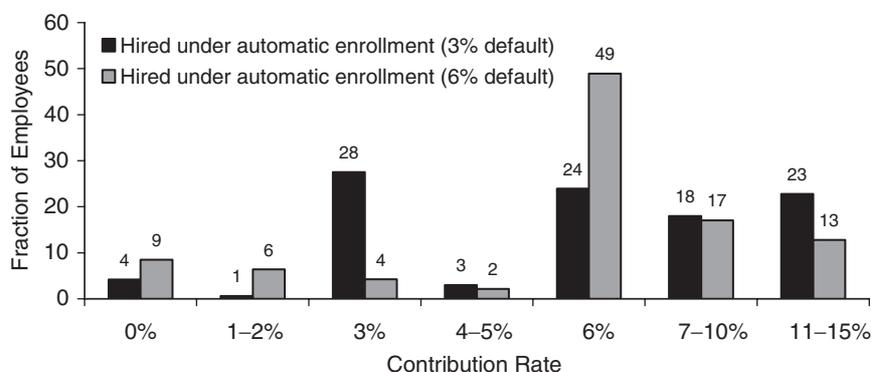


Figure 3-3. Automatic enrollment for new hires and the distribution of 401(k) contribution rates (Company A, 15–24 months tenure). (*Source:* authors' calculations.)

have a contribution rate at or above the 6 percent match threshold. In contrast, under the 3 percent default regime, 28 percent of employees are contributing at the default 3 percent contribution rate (a sevenfold increase relative to the 6% regime), while only 24 percent are contributing 6 percent of pay (half the fraction in the 6% regime). Sixty-five percent of employees overall are at or above the match threshold under the 3 percent regime, which is 14 percentage points lower in the 6 percent regime despite the very strong financial incentive to contribute at least 6 percent of pay due to the generous employer match.

The influence of the 3 percent default contribution rate is somewhat smaller in Company A than in other companies documented in the existing literature on automatic enrollment (Madrian and Shea 2001; Choi et al. 2002, 2004a, 2004b). This circumstance is likely due to the extremely generous employer match at Company A, which provides a stronger incentive for employees at this firm relative to those at other firms to take action and increase their contribution rate to the match threshold. But clearly, the default contribution rate still has a sizable impact on the savings outcomes of employees hired under automatic enrollment at Company A.

This impact is even more apparent if we examine the distribution of contribution rates for employees subject to automatic enrollment after being hired. Recall that employees not currently participating in the 401(k) plan were subject to automatic enrollment in December 2000 unless they specifically elected to opt out. Figure 3-4 compares the distribution of contribution rates for employees not subject to automatic enrollment in December 2000 because they had already elected to participate in the 401(k) plan (the black bars) with that of employees subject to automatic enrollment with a 3 percent default contribution rate (the gray bars).

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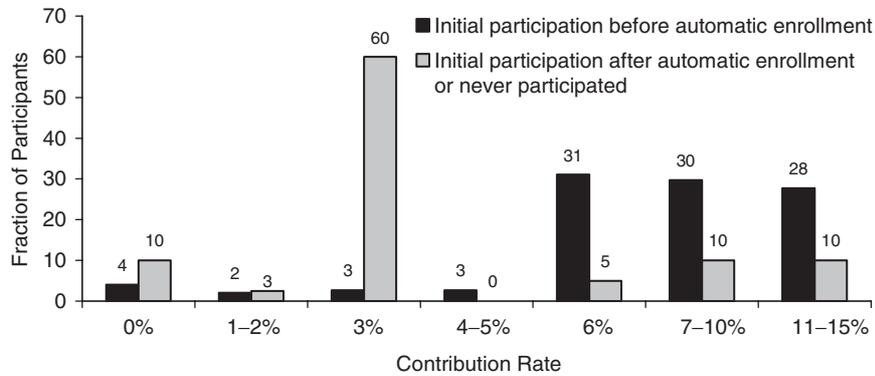


Figure 3-4. Automatic enrollment for existing hires and the distribution of 401(k) contribution rates (Company A, 25–48 months tenure). (Source: authors' calculations.)

Among employees who elected to participate in the 401(k) plan before automatic enrollment, only 3 percent chose a 3 percent contribution rate, 31 percent chose the 6 percent match threshold, and fully 89 percent of these employees were contributing at or above the match threshold. In contrast, among employees subject to automatic enrollment, 60 percent contribute at the 3 percent automatic enrollment default, while only 5 percent are at the 6 percent match threshold and 25 percent are at or above the match threshold.

The comparison between the two groups of employees in Figure 3-4 is not as clean as that in Figure 3-3—we might expect the employees subject to automatic enrollment by virtue of the fact that they had not yet enrolled in the 401(k) plan to be different from more savings-motivated employees not subject to automatic enrollment. Nonetheless, the fraction of those subject to automatic enrollment at the 3 percent default contribution is large indeed. The general tenor of these results—the impact of the default contribution rate on the distribution of savings rates, both for new hires and for existing employees—has been corroborated for other firms in Madrian and Shea (2001) and Choi et al. (2002, 2004a, 2004b).

Asset Allocation

Just as automatic enrollment tends to anchor employee contribution rates on the automatic enrollment default contribution rate, it also tends to anchor employee asset allocations on the automatic enrollment default

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TABLE 3-1 Automatic Enrollment and Asset Allocation Outcomes (Company A)

	<i>Hired after Automatic Enrollment (15–24 months tenure)</i>		<i>Hired Before Automatic Enrollment (25–48 months tenure)</i>	
	<i>3% Default Contribution Rate (%)</i>	<i>6% Default Contribution Rate (%)</i>	<i>Participated Before Automatic Enrollment (%)</i>	<i>Participated after Automatic Enrollment (%)</i>
Any balances in default fund	33.8	46.5	9.9	86.1
All balances in default fund	25.6	39.5	1.4	61.1
100% default fund + default contribution rate	18.1	32.6	0.0	52.8

Source: Authors' own calculations.

asset allocation. This is shown for Company A in Table 3-1, which gives the fraction of participants with any balances in the default fund, all balances in the default fund, and the combination of having all balances in the default fund along with the default contribution rate (the default automatic enrollment asset allocation in Company A is a money market fund). The employee groups shown are the same as those in Figure 3-3 (columns 1 and 2) and Figure 3-4 (columns 3 and 4).

Consider first the asset allocation of employees who were hired and initiated savings plan participation before automatic enrollment (column 3) and were thus not subject to automatic enrollment. None of these employees is saving at the automatic enrollment default contribution rate of 3 percent in conjunction with an asset allocation entirely invested in the automatic enrollment default fund. Only 1 percent have all of their assets wholly invested in the default fund at any contribution rate. Finally, only 10 percent have any of their assets invested in the default fund. In general, investment in the automatic enrollment default fund is not widespread among employees who actively elected participation in the Company A savings plan.

For those employees subject to automatic enrollment, because they had not initiated participation in the Company A savings plan by December 2000, the picture is very different. A whopping 86 percent have some of their assets allocated to the default fund (compared to 10% for their counterparts not subject to automatic enrollment), with 61 percent having everything invested in the default fund (compared to 1% for those not subject to automatic enrollment). Over half have retained both the default

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contribution rate of 3 percent and a 100 percent asset allocation in the default fund.

For employees subject to automatic enrollment as new hires, the impact of the default fund on asset allocation outcomes is not quite as stark as that for existing but nonparticipating employees subject to automatic enrollment, but it is nonetheless clear (columns 1 and 2). Between 34 and 47 percent of these participants have something invested in the default fund, and between 26 and 40 percent have everything invested in the default fund. Interestingly, the default investment allocation is much more prevalent among those hired with a 6 percent default contribution rate than for those hired with a 3 percent default contribution rate. The likely explanation has to do with the incentives for moving away from the automatic enrollment defaults. Employees hired with the 3 percent default contribution rate have two reasons to change their savings parameters: first, to choose a higher contribution rate to fully exploit the employer match and, second, to choose a nondefault asset allocation. For employees hired with a 6 percent default contribution rate, the first of these motives is missing and the cost/benefit calculation for making any change shifts toward doing nothing.

The automatic enrollment default asset allocation is not the only type of default that affects employee portfolio outcomes. As noted earlier, most US organizations offering a DC savings plan match employee contributions to some extent. In most of them, the employer matching contributions are invested in the same manner as the employee's own contributions. In many large publicly traded companies, however, the match is directed into employer stock, sometimes with restrictions on when employees can diversify their matching balances out of employer stock and sometimes not.^{3,4} Choi, Laibson, and Madrian (2005*b*, 2007) document a strong flypaper effect when it comes to matching contributions directed into employer stock: the money sticks where it lands, even when employees are free to diversify.

A final example of how savings outcomes are impacted by a default asset allocation comes from the DC component of different social security systems. Cronqvist and Thaler (2004) study the asset allocation outcomes of participants in the Swedish social security system and find that despite heavy advertising encouraging Swedes to actively elect their own asset allocation at the time that private accounts were instituted, one-third of the investments of those who were initially enrolled were directed to the default fund. After the initial rollout, when advertising was much diminished, the contributions of over 90 percent of new participants were invested in the default fund. Similarly, Rozinka and Tapia (n.d.) report that in Chile, over 70 percent of participants have retained the default fund.

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Pre-retirement Cash Distributions

Another phase in the retirement savings accumulation process is changing jobs. When savings plan participants in the USA leave their employment, they may request a cash distribution, a direct rollover of savings plan balances into a new employer's savings plan, or a rollover of plan balances into a qualified individual savings account (e.g. an IRA). If terminated employees do not make an explicit request, the default treatment of those balances depends on how large their accounts are. For balances in excess of \$5,000, balances remain in the former employer's savings plan by default. For balances below the \$5,000 threshold, employers can compel a cash distribution.⁵ Anecdotally, most employers choose the cash distribution option as their default for terminated employees. Choi et al. (2002, 2004a, 2004b) document the important relationship between balance size and the likelihood that terminated employees receive a cash distribution. In an analysis of data from four different firms, they find that more than 70 percent of terminated employees with small account balances receive a cash distribution, the default for employees with balances below \$5,000, compared to less than one-third of terminated employees with larger account balances. This can have important implications for whether these balances continue to be saved or are consumed. Previous research suggests that the probability of receiving a cash distribution and subsequently rolling it over into an IRA or another savings plan is very low when the size of the distribution is small. Instead, these small distributions tend to be consumed.⁶ When employers compel a cash distribution and employees receive an unexpected check in the mail, the path of least resistance is to simply consume the proceeds.

Postretirement Distributions

The final part of the retirement savings process is that of decumulation. There is ample reason to believe that the type of retirement income distributions received by older individuals from their retirement plans impacts economic outcomes. For example, Holden and Zick (2000) find that incomes for older widows fall by 47 percent following the death of their husbands, moving 17 percent of these women into poverty. Presumably, it would be possible to devise a retirement income stream that does not propel one spouse into poverty when the other one dies.

The actual decumulation options available to older individuals vary widely across different types of retirement income vehicles. For example, in the US social security system, payments do not begin until individuals actively sign up, but there are no options when it comes to the structure of the benefits. Recipients essentially receive an inflation-protected life

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annuity based on an individual's own earnings history and potentially that of his or her spouse. For married couples, social security payments fall subsequent to the death of one partner, but the surviving spouse continues to receive some benefits.

In a typical employer-sponsored DB savings plan in the USA, retired individuals have more options. Married individuals can take their retirement income as a single annuity or as a joint-and-survivor annuity with a lower monthly benefit amount. In addition to these different annuity options, some employers also offer the choice of a lump-sum payout.

The options in an employer-sponsored DC savings plan are different still. In some companies, the only choice is a lump-sum distribution. In others, the employer may retain the account balances, giving individuals the option to take periodic and variable distributions. In still others, the employer may facilitate the purchase of annuities through a private provider.

Just as in the retirement income accumulation phase, defaults also matter for the retirement income decumulation phase. The most telling evidence comes from a government-mandated change in the annuitization options that traditional DB pension plans must offer their beneficiaries. The US regulatory framework established for pensions in 1974 required that the default annuity option offered to married pension plan participants be a joint-and-one-half-survivor annuity. Married beneficiaries could, however, opt out of this default, choosing a single-life annuity with higher monthly benefits during the retired worker's lifetime. In 1984, these regulations were amended to require the notarized signature of the spouse if a retired worker decided to opt for a single life rather than the joint-and-survivor annuity.

Holden and Nicholson (1998) document the effect of this change in the default annuity option on the annuitization outcomes among married men with traditional employer-sponsored pensions. Before the institution of the joint-and-survivor default in 1974, they calculate that less than half of married men elected the joint-and-survivor option. After the move to the joint-and-survivor default, they estimate an increase in joint-and-survivor annuitization among married men of over 25 percentage points. It is not clear how much of this shift is due to the change in the default among retirees at firms that offered both the single-life option and the joint-and-survivor option before the regulatory mandate, and how much is due to the increased availability of joint-and-survivor annuities at firms that were not previously offering them. Saku (2001), however, examines only the impact of the 1984 amendment that requires explicit spousal consent to opt out of a joint-and-survivor annuity. By this time, all firms would have been offering joint-and-survivor options to their pension beneficiaries. He finds an increase in joint-and-survivor annuitization of 5–10 percentage points following this strengthening of the default. One might expect much

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larger effects from its initial implementation, so that the 25 percentage-point effect estimated by Holden and Nicholson is likely mostly attributable to the change in the default annuity option rather than an increase in the provision by employers of joint-and-survivor annuities.

Elective Defaults

The evidence presented so far all pertains to defaults that specify the savings outcome that will occur if individuals take no action. There are, however, some interesting examples of employer attempts to improve savings outcomes through the use of affirmative savings elections that exploit features of some of the defaults discussed in the previous sections. For lack of a better term, we refer to these as elective defaults, although this does stretch the typical usage of the word 'default'.

One particularly successful elective default is the contribution rate escalator popularized by the Save More Tomorrow (SMarT) plan of Benartzi and Thaler (2004). With a contribution escalator, participants elect to have their savings plan contribution rate increase in the future if they take no further action; in other words, they opt into a default of increasing contributions. The striking results of the first experiment with such a contribution escalator, in which employees signed up for future contribution rate increases of 3 percentage points per year, are reported in Benartzi and Thaler (2004) and Utkus and Young (2004). At the company studied, employees who elected the contribution escalator feature saw their savings plan contributions increase by 10.1 percentage points over 4 years, from 3.5 to 13.6 percent of pay. In contrast, employees who did not sign up for the contribution escalator but who instead elected to adopt immediately a savings rate recommended to them had higher initial contribution rates but increased their savings plan contributions by only 4.4 percentage points over 4 years, from 4.4 to 8.8 percent of pay. Other companies that have subsequently incorporated a contribution escalation feature into their savings plans have also seen increases in employee contribution rates (Utkus 2002). Such contribution escalators are an interesting way to capitalize on the widespread savings plan inertia documented thus far. They are also something that could be easily incorporated as a proper savings plan default.

Hewitt Associates (2003), Choi, Laibson, and Madrian (2005*c*), and Beshears et al. (2006) study another elective default dubbed Quick Enrollment. Quick Enrollment operates by giving employees an easy way to elect a preselected contribution rate and asset allocation from among the many other options that are available within an employer's savings plan. Figure 3-5 shows the impact of Quick Enrollment on savings plan participation

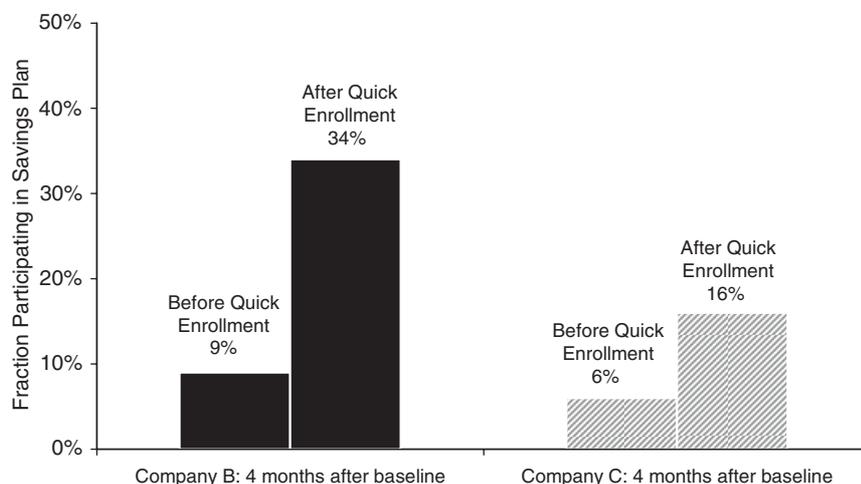
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Figure 3-5. Quick enrollment and savings plan participation (Companies B and C). (Source: Choi, Laibson, and Madrian 2005c.)

at two different firms (see Choi, Laibson, and Madrian, 2005c). At Company B, new hires were given Quick Enrollment forms at orientation allowing them to check a box to be enrolled in their firm's savings plan at a 2 percent contribution rate with a preselected asset allocation (50% in a money market fund and 50% in a stable value fund). Participation rates for employees with 4 months of tenure tripled under Quick Enrollment, from 9 percent of new hires to 34 percent. At Company C, nonparticipating employees at all levels of tenure were mailed postage-paid Quick Enrollment response cards allowing them to check a box to be enrolled in their firm's savings plan at a 3 percent contribution rate allocated entirely to a money market fund. Relative to the enrollment trends of nonparticipants a year prior to the mailing, savings plan participation four months later more than doubled, from 6 percent of nonparticipants enrolling to 16 percent. A different implementation of Quick Enrollment at Company B directed toward existing nonparticipants allowed them to choose any contribution rate allowed by the plan with the same preselected asset allocation previously described. Fully 25 percent of nonparticipants signed up for the savings plan over a 4-month period following this version of Quick Enrollment (Beshears et al. 2006).

Beyond its effects on savings plan participation, the impact of Quick Enrollment on other savings outcomes is interesting because, like automatic enrollment, it induces a heavy clustering of enrollees at the employer-selected default contribution rate and asset allocation. At Company B,

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no savings plan participants affirmatively elected the Quick Enrollment default asset allocation prior to its implementation. Among those participants offered Quick Enrollment at the new hire orientations, 60 percent have the default asset allocation. Among those who enrolled in the savings plan when Quick Enrollment was offered to existing nonparticipants, 91 percent have the default asset allocation. The picture is similar at Company C, where only 6 percent of participants prior to Quick Enrollment affirmatively elected the default asset allocation. In contrast, 75–91 percent of existing nonparticipants who were offered Quick Enrollment and became participants have the Quick Enrollment default asset allocation.

The impact of Quick Enrollment on contribution rates is equally striking. At Company B, the fraction of new hires at the Quick Enrollment default contribution rate of 2 percent of pay increased from 1 percent of employees before Quick Enrollment to 14 percent of employees afterwards. At Company C, the fraction of newly participating employees at the Quick Enrollment default contribution rate of 3 percent increased from less than 1 percent of employees before Quick Enrollment to 12 percent of employees afterwards. In both companies, the fraction of savings plan participants at the Quick Enrollment defaults (as opposed to the fraction of employees overall) is much higher because the participation rates among the impacted groups are relatively low.

Explaining the Impact of Defaults on Retirement Savings Outcomes

The substantial evidence presented in the preceding section on the impact of defaults on savings outcomes is interesting for (at least) three reasons: first, in most of the examples cited, switching from one default to another resulted in very different savings outcomes even though the change in the default did not affect the menu of savings options available to individuals; second, none of the defaults proscribed employees from effecting a different savings outcome; and third, the direct transaction costs (filling out a form or calling a benefits hotline) for making savings plan changes were generally small.⁷

If direct transaction costs are not a plausible explanation for the persistence of savings plan defaults, then what factors are? In this section of the chapter, we consider three alternative explanations: (a) procrastination generated by the complexity of the decision-making task, (b) procrastination generated by present-biased preferences, and (c) a perception of the default as an endorsement for certain savings outcomes. Madrian and Shea

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(2001) discuss some alternative explanations, but these three strike us as the most plausible given the existing empirical evidence.

The Complexity of Making a Nondefault Savings Plan Election

There are several sources of complexity involved in making an optimal savings plan decision. Consider, for example, the array of participation options in a typical DC savings plan. Individuals must first choose what fraction of compensation to contribute to their savings plan, which in a typical plan would be anything from 1 to 15 percent of compensation (in some plans even higher contribution rates are allowed). They must then choose how to allocate that contribution among the available fund options. In a plan with 10 funds and a maximum contribution rate of 15 percent, the number of different savings plan options is immense.

For some employees, a second source of complexity is learning how to evaluate this myriad of savings plan options. Surveys of financial literacy consistently find that many individuals are not well equipped to make complicated financial decisions. For example, in a survey of DC savings plan participants, John Hancock Financial Services (2002) reports:

- 38 percent of respondents say they have little or no financial knowledge;
- 40 percent of respondents believe that a money market fund contains stocks;
- two-thirds of respondents do not know that it is possible to lose money in government bonds; and
- respondents on average believe that employer stock is less risky than a stock mutual fund.

Given these results, it should not be surprising that two-thirds of these respondents also report that they would be better off working with an investment adviser than managing retirement investments solo.

The psychology literature has documented a tendency of individuals to put off making decisions as the complexity of the task increases (Shafir, Simonson, and Tversky 1993; Tversky and Shafir 1993; Dhar and Nowlis 1999; Iyengar and Lepper 2000). Evidence supporting the notion that the complexity of the asset allocation task leads employees to delay savings plan enrollment comes from a recent study by Iyengar, Huberman, and Jiang (2004). They document a strong negative relationship between the number of funds offered in a 401(k) plan and the 401(k) participation rate: having an additional 10 funds in the fund menu leads to a 1.5–2 percentage point decline in participation, a result that holds even among firms with a relatively low number of funds. One suspects that this would also act as a

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deterrent to making asset allocation changes after the initial participation decision has been made.

A likely reason that savings plan participation is so much higher under automatic enrollment than with an opt-in enrollment mechanism is that automatic enrollment decouples the savings plan participation decision from the contribution rate and asset allocation decision. The initial participation decision is simplified from one that involves evaluating a myriad of options to a simple comparison of two alternatives: nonparticipation (consumption or saving outside of the savings plan) versus participating at a prespecified contribution rate with a prespecified asset allocation. Furthermore, Madrian and Shea (2001) and Choi et al. (2004*b*) find that automatic enrollment has its largest impact on participation for those workers who generally have the least amount of financial sophistication—the young and those with low levels of tenure (who would have less knowledge about their own particular savings plan). These are workers for whom the complexity of the participation decision would be a greater deterrent to enrolling in the savings plan under an opt-in regime.

Quick Enrollment works in much the same way as automatic enrollment, simplifying the participation decision by giving individuals a predetermined contribution rate and asset allocation bundle(s) that need only be compared to nonparticipation. The effect of Quick Enrollment on participation, however, is not as great as that of automatic enrollment, suggesting that the participation increases under automatic enrollment are due to more than just the simplification of the decision-making task.

Present-Biased Preferences and Procrastination

Recent research in behavioral economics has fingered another reason for the observed persistence in savings plan outcomes—individual problems with self-control (Laibson, Repetto, and Tobacman 1998; O'Donoghue and Rabin 1999; Diamond and Koszegi 2003). As the adage goes, why do today what you can put off until tomorrow? O'Donoghue and Rabin (1999) propose a model in which, under certain conditions (specifically, *naïveté* about time-inconsistent preferences), individuals may never reallocate their portfolios away from poor-performing investments even when the direct transactions costs of doing so are relatively small. A similar type of argument can be made for delays in savings plan enrollment. The possibility of the latter is suggested by the fact that savings plan participation rates prior to automatic enrollment in Company A and other firms that have been studied (Madrian and Shea 2001; Choi et al. 2002, 2004*a*, 2004*b*) never exceed those under automatic enrollment, even at very high levels of tenure. It is also suggested by the substantial fraction

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of automatic enrollees at Company A who remained at the relatively low 3 percent default contribution rate 2 years after hire despite a 100 percent employer match on contributions up to 6 percent of pay. Additional corroborating evidence comes from Choi, Laibson, and Madrian (2005a), who document that even among older workers with very high average levels of tenure, roughly half fail to exploit the full match in their employer-sponsored savings plan, leaving matching contributions equal to roughly 1.3 percent of pay unclaimed (in companies without automatic enrollment).

The Default as an Endorsement

Default options may also influence outcomes if individuals perceive the default as an endorsement of a particular course of action (an endorsement effect). The lack of financial sophistication on the part of many individuals discussed above may lead them to search for advice without necessarily knowing the best place to find it. Because employer-sponsored savings plans are supposed to be run for the benefit of employees (that, after all, is why they are referred to as ‘employee benefits’), some individuals may incorrectly perceive that an employer-specified default must be in the best interest of the firm’s employees.⁸

Several pieces of evidence are consistent with the notion that employees perceive defaults in part as some sort of recommendation from their employer. The first comes from companies who have implemented automatic enrollment for only new hires going forward. In these companies, none of the employees hired before automatic enrollment are directly affected (i.e. none are automatically enrolled), but some of them will have affirmatively elected to participate in the savings plan before automatic enrollment was instituted for anyone, whereas others will have affirmatively elected to participate only after automatic enrollment was implemented for new hires going forward. Madrian and Shea (2001) show that the fraction of assets allocated to the automatic enrollment default investment fund is more than three times as high for the latter group as it is for the former (see Table 3-2).⁹ Interestingly, Madrian and Shea do not find similar evidence for the contribution rates elected by these two groups of employees: those employees hired before automatic enrollment but who enroll in their savings plan only after automatic enrollment are not substantially more likely to choose the automatic enrollment default contribution rate than are their counterparts who enrolled in the savings plan before automatic enrollment. That the endorsement implicit in the automatic enrollment defaults is more important for asset allocation outcomes than for contribution rate outcomes is consistent with the notion that employees are much more uncertain about choosing an appropriate asset allocation than about

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TABLE 3-2 Automatic Enrollment and Asset Allocation Outcomes of Employees Not Subject to Automatic Enrollment (Company D)

	<i>Hired Before Automatic Enrollment and Initiated Participation Before Automatic Enrollment (%)</i>	<i>Hired Before Automatic Enrollment but Initiated Participation after Automatic Enrollment Applied to Newly Hired Employees (%)</i>
Any balances in default fund	13.3	28.9
All balances in default fund	2.3	16.1

Source: Taken from Madrian and Shea (2001, Figures IVb and IVc).

choosing an appropriate contribution rate (or, at least, about choosing a contribution rate that garners the full employer match).¹⁰

Further evidence on the endorsement effect under automatic enrollment comes from the savings outcomes of employees hired under automatic enrollment who choose to move away from the automatic enrollment default. These individuals have overcome the forces of inertia and taken action. Even so, their asset allocation continues to be much more heavily invested in the automatic enrollment default fund than that of employees hired prior to automatic enrollment (Madrian and Shea 2001; Choi et al. 2004b). Table 3-3 illustrates this tendency for employees at Company A and Company D. The first column in Table 3-3 shows the importance of the automatic enrollment default asset allocation for employees hired before automatic enrollment (and, for Company A, employees who elected to

TABLE 3-3 Automatic Enrollment and Asset Allocation Outcomes of Employees Not at the Automatic Enrollment Default Asset Allocation and Contribution Rate (Companies A and D)

	<i>Hired Before Automatic Enrollment (%)</i>	<i>Hired after Automatic Enrollment but not at the Default Asset Allocation and Contribution Rate (%)</i>
<i>Company A</i>		
Any balances in default fund	9.9	19.4
All balances in default fund	1.4	9.3
<i>Company D</i>		
Any balances in default fund	18.2	71.3
All balances in default fund	5.2	30.8

Sources: Authors' own calculations (Company A) and Madrian and Shea (2001, Table VII) (Company D).

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participate before automatic enrollment). The fraction of these employees with anything in the default fund is 10 percent in Company A and 18 percent in Company D. The fraction with everything invested in the default fund is lower still: 1 percent at Company A and 5 percent at Company D. In contrast, those employees hired under automatic enrollment who have made an active election to move away from the automatic enrollment default, changing either their asset allocation or their contribution rate or both, are much more heavily invested in the automatic enrollment default despite having incurred the transactions costs of changing the parameters of their savings plan participation. Among automatic enrollees who have made a change from the automatic enrollment default, the fraction with any balances in the default fund is 19 percent at Company A and 71 percent at Company D, much higher than for the employees hired before automatic enrollment. The proportional differences for those with everything in the automatic enrollment default fund are greater still. Clearly, the default fund exerts an impact on the asset allocation of employees hired under automatic enrollment even after these employees have elected to make a change. A final piece of evidence on the endorsement effect of savings plan defaults comes from the fraction of employee contributions invested in employer stock in companies where employer stock is included in the fund menu. Benartzi (2001), Holden and VanDerhei (2001), and Brown, Liang, and Weisbenner (2006) all find that when the employer directs matching contributions into employer stock, the fraction of the employee's own contributions allocated to employer stock is higher than when the match is allocated according to the employee's direction.

Designing Public Policy when Defaults Matter

There are many goals associated with public policy. When it comes to retirement saving, politicians, economists, and other social planners would largely agree that if governments are to sponsor costly social welfare programs for individuals who are impoverished, they should also promote institutions that provide sufficient income to individuals when retired to reduce the reliance on costly social welfare programs. Because of the risks that DB retirement income schemes impose on employers (through DB pensions) and governments/taxpayers (through social security), there has been a broader trend toward DC savings schemes through both private and government-sponsored institutions (e.g. 401(k) savings plans in the USA and the social security systems in Sweden and Chile). But if defaults have the potential to impact savings outcomes significantly in these types of schemes, what types of defaults should public policy encourage, especially if individuals have heterogeneous savings needs? In this section, we

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discuss first some of the conceptual issues associated with thinking about an 'optimal' default. We then give some examples of public policy and defaults in practice, both those that seem sensible from the standpoint of promoting better savings outcomes and those that do not.

Is There an 'Optimal' Default?

Choi et al. (2005) model the choice of an optimal default savings plan enrollment mechanism from the perspective of a social planner interested in maximizing individual welfare. In this model, defaults matter for three key reasons. First, individuals face a cost for opting out of the chosen default. Second, this cost varies over time, creating an option value to waiting for a low-cost period to take action. Third, individuals with present-biased preferences may procrastinate in their decision to opt out of the default, even in a low-cost period, if they mistakenly believe that they are more likely to do so in the future. Three different potential enrollment defaults emerge from the model: automatic enrollment, requiring an affirmative participation election (opt-in), and requiring employees to actively make a decision so that there is, in essence, no default (but all employees must bear the immediate transactions costs of deciding what to do). Choi et al. (2005) refer to this latter outcome as the 'active decision' approach. Which of these enrollment regimes is optimal varies according to the parameters in the model.

The conditions under which each of these approaches to savings plan enrollment is likely to be optimal, from both a theoretical and a practical standpoint, are discussed in detail in Choi et al. (2005), but we briefly describe them here. Defaults tend to be optimal when there is a large degree of homogeneity in individual preferences and when decision-makers have limited expertise. In the case of a firm with an employer match, if most employees would prefer to be saving at the match threshold, then automatic enrollment with a default contribution rate equal to the match threshold is likely to be optimal. Requiring an affirmative participation election, on the other hand, is likely to be optimal if most individuals share a preference not to be participating in the savings plan,¹¹ or if individuals have very heterogeneous preferences and little tendency to procrastinate. Requiring an active decision is more appropriate when individual heterogeneity implies that one choice is not ideal for everyone but individuals do have a tendency to procrastinate.

Although requiring the use of an active decision as an alternative to selecting a default is uncommon in the context of savings plans, Choi et al. (2005) study the effect of just such an approach on savings plan outcomes in one firm. They find that requiring employees to make an active decision

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leads to substantially higher initial participation rates than those achieved under an opt-in enrollment regime without any perverse effects on the distribution of contribution rates such as is observed with mechanisms like automatic enrollment or Quick Enrollment.

For the purposes of this study, the important point of the modeling effort in Choi et al. (2005) is that there is no single optimal savings plan enrollment mechanism—the optimal default depends on parameters in the model, which are likely to vary across both institutions and individuals. More generally, the framework for thinking about an optimal savings plan enrollment mechanism can be used to think about how sensible other types of economic defaults are likely to be. We turn now to a few specific examples related to savings.

For Better and for Worse: Public Policy and Defaults in Practice

There are many interesting examples of how public policy both encourages and discourages better savings plan outcomes, some that have already been mentioned and others that have not. The first is the legislative mandate that, in DB pension plans, the default payout option for married individuals is a joint-and-survivor annuity. As discussed above, this mandate resulted in a sizable increase in the fraction of married DB pension recipients with joint-and-survivor annuities. This mandate, which was a matter of public policy rather than a matter of choice for pension plan providers, was adopted in order to improve the financial security of widows after their husbands' deaths. Whether it was successful at this objective has not been examined. However, Johnson, Uccello, and Goldwyn (2003) show that those married individuals who have opted out of this default appear to have had economically sound reasons for doing so, such as having a spouse with either his or her own source of retirement income or a shorter life expectancy than the pension beneficiary.

In the context of thinking about an optimal default, there are three particularly interesting aspects of this joint-and-survivor annuity default. The first is that there are actually two different default annuities: one for single individuals (a single-life annuity) and the joint-and-survivor annuity for married individuals. Opt-in versus opt-out savings plan enrollment mechanisms, on the other hand, are blanket defaults that apply to everyone (unless individuals opt out). Clearly, there is a need to think more carefully about the potential role of more nuanced defaults that apply only to some individuals in certain situations. The second interesting feature of the joint-and-survivor annuity default is that the decision to accept the default or to opt out of it is irrevocable—once made it cannot be reversed. The third interesting feature, an extension of the second, is that because the

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annuitization outcome is irreversible, individuals cannot forever delay the decision about what type of annuity is most appropriate—any opt-out decision must be made before the pension beneficiary can start receiving pension income. These two features reduce the scope for procrastination due to present-biased preferences. Individuals for whom a single-life annuity is better face strong incentives to take action to express those preferences quickly. This consequence shares some similarities with the active decision approach to savings plan participation discussed above. Although there is a default (in contrast to the active decision approach discussed above), it is structured in such a way as to provide strong incentives to take action immediately for those individuals who desire to opt out.

Overall, many features of the joint-and-survivor annuity default seem to work well. The one drawback, perhaps, is that for most individuals, understanding annuity options is no less complicated than understanding asset allocation. Annuity providers are continuing to develop a rich set of annuity products, some of which may be more appropriate to particular individuals than the one-sized joint-and-survivor default specified for married pension beneficiaries. The complexity of evaluating the different available annuity products probably means that any default will significantly influence realized outcomes simply because of the endorsement effect.

Another interesting default to consider from a public policy perspective is the composition of the default investment fund in the DC component of various social security systems. In contrast to the default asset allocation chosen by most employers that have automatic enrollment in the USA, which tends to be a single mutual fund, some countries such as Sweden, Chile, and Mexico have selected a default that is a portfolio of different types of financial assets. For example, in Sweden the default includes exposure to domestic and international equities, bonds, and the money market.¹² Moreover, it is well diversified against geographical, industrial, and asset market shocks, and it comes with a relatively low expense ratio of approximately 0.16 percent. Although it is difficult to say whether the Swedish social security system could have chosen a better default asset allocation, Cronqvist and Thaler (2004) show that the portfolio performance of those in the default fund exceeded that of individuals who opted out of the default and selected their own asset allocation. On this metric, the default would seem to have been relatively well chosen.

The default investment portfolios in the Chilean social security system and in the DC component of the Mexican social security system are interesting for another reason—in both countries the default investment fund for older workers differs from that for younger workers (Rozinka and Tapia n.d.). In Chile, there are three different default asset allocations: one for workers younger than 35 years, a second for men aged 36–55 years and women aged 36–50 years, and a third for men aged 56 years and older and

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women aged 51 years and older. The Chilean default funds differ in their relative exposure to equities (both foreign and domestic) and fixed income securities, with the default portfolios holding fewer equities and more bonds as participants age. This pattern of equity versus bond holding is certainly consistent with what many financial planners would recommend. In Mexico, the default funds differ largely in the type of fixed income investments they hold. In contrast to the Swedish default asset allocation, the defaults in both Chile and Mexico are heavily weighted toward domestic securities. In Mexico, there are no foreign investments in the default funds; in Chile, the highest foreign investment exposure is 34 percent in the default fund for younger workers (Rozinka and Tapia n.d.). In Sweden, on the other hand, two-thirds of the default portfolio is in non-Swedish stocks, and probably represents inadequate geographic diversification in the Chilean and Mexican defaults.

Another interesting default to consider from a policy perspective is the treatment of savings plan balances following employee termination. This default shares one feature with the default annuity options just discussed. Rather than having a single blanket default option, the default outcome depends on the size of the terminated employee's account balance: balances less than \$5,000 are sent to individuals as a cash distribution unless individuals direct the employer to roll over the balances into another qualified savings plan, whereas balances more than \$5,000 are retained by the employer unless individuals direct otherwise. However, as previously noted, there is significant leakage from the retirement system for employees with account balances below the \$5,000 threshold.

Policy makers in the USA reached an interesting compromise to deal with this issue of leakage. The cash distribution default is costly for employees because it reduces their long-term retirement accumulations, but retaining small account balances is costly for employers because of the fixed costs associated with retaining individual accounts. The public policy compromise applies to the accounts of terminated employees with balances greater than \$1,000 and less than \$5,000. For these accounts, employers cannot compel a cash distribution. Rather, they can keep the accounts (as was being done all along for accounts of greater than \$5,000), or they can roll them over into qualified individual savings plans (e.g. an IRA). Employers retain the option to compel a cash distribution for accounts under \$1,000, although they could change the default for these accounts as well and roll the balances into an IRA. Because this change had not taken effect at the time of writing, we cannot assess the outcome, but it at least seems like an example of public policy promoting better savings outcomes. There is a catch, however: the regulations pertaining to the default fund associated with these automatic IRA rollovers make it highly unlikely that any employer will pick anything other than an extremely conservative default

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fund (e.g. a money market fund). Thus, it is likely that the majority of \$1,000–\$5,000 account balances will be rolled over into an IRA following employee termination, where they will languish over time earning a rate of return that barely keeps pace with inflation. Public policy on this aspect of the default could probably do better.

Another area in which public policy could do better is with employer matches made in the form of employer stock. As already noted, employer matching contributions made in employer stock tend to stick where they land, which imposes greater financial risk on employees—first, because their retirement savings portfolio itself is not well diversified and, second, because much of the risk to their retirement savings portfolio is correlated with the risk to their labor income. Unfortunately, many employees do not seem to understand these risks. The John Hancock Financial Services *Eighth Defined Contribution Plan Survey* (2002) finds that savings plan participants on average rate employer stock as less risky than an equity mutual fund. Similarly, Benartzi et al. (2004) find that only 33 percent of savings plan participants believe that their employer stock is riskier than a diversified stock fund, whereas 39 percent believe it is equally risky and 25 percent believe it is safer. Furthermore, 20 percent of respondents say they would prefer \$1,000 in employer stock that they could not diversify until aged 50 years to \$1,000 that they could invest at their own discretion.

One could view public policy in this area as neutral: the government leaves companies to run their savings plans as they see fit, and some establish a match in which contributions are directed into employer stock. But contrast the approach here with the regulation of DB pension plans, in which employer stock holdings are limited to no more than 10 percent of total plan assets, or to the rather proactive joint-and-survivor annuity default. Public policy could certainly greatly reduce the amount of employer stock held in DC savings plans, either by precluding employer stock as an investment option altogether or by simply mandating that matching contributions be defaulted to the asset allocation selected by the employee.

Conclusion

This chapter has demonstrated the tremendous influence that defaults exert on realized savings outcomes at every stage of the savings life cycle: savings plan participation, contributions, asset allocation, rollovers, and decumulation. That defaults can so easily sway such a significant economic outcome has important implications for understanding the psychology of economic decision-making. But it also has important implications for the role of public policy toward saving. Defaults are not neutral—they can

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either facilitate or hinder better savings outcomes. Current public policies toward saving include examples of both.

Notes

¹ See the Employee Benefit Research Institute (2005) for a more detailed discussion of the US retirement income system.

² In a survey of large US employers, Hewitt Associates (2005) reports that 19% of companies used automatic enrollment in their 401(k) plans in 2005, up from 7% in 1999. In another survey, the Profit Sharing/401(k) Council of America (2005) reports that 8% of firms overall have automatic enrollment, but that the likelihood of having automatic enrollment was much higher in large than in small firms (24% vs 1%).

³ See Choi, Laibson, and Madrian (2005*b*) for evidence that allowing employees to diversify out of a match directed into employer stock has only a small effect on asset allocation outcomes relative to not being able to diversify the match at all.

⁴ Because the companies that offer employer stock tend to be larger firms, 35% of participants in 401(k) plans have an investment menu that includes employer stock (Even and Macpherson 2004) even though only 10% of plans offer employer stock (Mitchell and Utkus 2003).

⁵ In January 2005, the threshold at which employers can compel a cash distribution for terminated employees fell from \$5,000 to \$1,000. For balances between \$1,000 and \$5,000, employers have two options absent other direction from the affected participants: retain the balances in their savings plan or roll over the balances into an IRA.

⁶ Poterba, Venti, and Wise (1998) report that the probability that a cash distribution is rolled over into an IRA or another employer's savings plan is only 5–16% for distributions of less than \$5,000. The overall probability that a cash distribution is rolled over into an IRA or another employer's savings plan or invested in some other savings vehicle is slightly higher, at 14–33%.

⁷ See Choi, Laibson, and Madrian (2005*a*) for evidence on the magnitude of some of these direct transaction costs.

⁸ While this may be true for some employer-specified defaults, in general firms weigh other issues such as cost and legal liability in their selection of defaults, not only the potential benefit to employees.

⁹ The data for Company D in Table 3-2 comes from Madrian and Shea (2001). This company implemented automatic enrollment with a 3% default contribution rate invested wholly in a money market fund. The match threshold at this firm was 6%.

¹⁰ Choi, Laibson, and Madrian (2005*c*) discuss in greater detail reasons why the asset allocation task may be more complicated for employees than the decision about how much to contribute to the savings plan.

¹¹ This could be true in a firm with a largely low-income workforce that has a high social security replacement rate, or in a firm with a generous DB pension as the primary source of retirement income.

¹² The specific asset allocation as reported in Cronqvist and Thaler (2004) is: Swedish stocks (17%), non-Swedish stocks (65%), inflation-indexed bonds (10%), hedge funds (4%), and private equity (4%).

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