MATCHING CONTRIBUTIONS AND SAVINGS OUTCOMES:
A BEHAVIORAL ECONOMICS PERSPECTIVE

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ABSTRACT

Including a matching contribution increases savings plan participation and contributions, although the impact is less significant than the impact of nonfinancial approaches. Conditional on participation, a higher match rate has only a small effect on savings plan contributions. In contrast, the match threshold has a substantial impact, probably because it serves as a natural reference point when individuals are deciding how much to save and may be viewed as advice from the savings program sponsor on how much to save. Other behavioral approaches to changing savings plan outcomes—including automatic enrollment, simplification, planning aids, reminders, and commitment features—potentially have a much greater impact on savings outcomes than do financial incentives, often at a much lower cost.

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A common feature of schemes designed to increase individual savings is providing a matching contribution, to create an incentive for participation in the program and induce higher levels of savings. The vast majority of employer-sponsored savings plans include an employer match, as do many employer-sponsored health savings accounts. The saver's credit, a feature of the U.S. tax code designed to encourage savings by lower-income households, also provides a government match to individual savings. Many field experiments aimed at encouraging savings have also included a match in their experimental design. This rich set of experience informs the understanding of behavioral responses to various matching contribution arrangements.

Traditional economic models point to financial incentives, such as a matching contribution, as the logical mechanism to increase savings plan participation. This first part of the chapter summarizes the literature on the impact of providing a match on savings plan outcomes, including participation, contributions, and net worth. The evidence comes from a variety of sources, including observational data from surveys, natural experiments, and large-scale field experiments. Although the empirical evidence largely supports the predictions of traditional economic models, these models fail to incorporate the many psychological frictions that impede savings, including present bias, complexity, inattention, and temptation, which in many cases exert a much stronger impact on savings outcomes than do financial incentives. Traditional economic models also fail to characterize some significant behavioral aspects of savings outcomes, including inertia and the important role of focal points. The second part of the chapter evaluates the literature on other, nonfinancial approaches to increasing individual savings.

The evidence suggests that matching contributions increase savings plan participation and contributions, although the impact is less significant than the impact of nonfinancial approaches. Conditional on participation, a higher match rate has only a small effect on savings plan contributions. In contrast, the match threshold has a substantial impact, probably because it serves as a natural reference point when individuals are deciding how much to save and may be viewed as advice from the savings program sponsor on how much to save. Automatic enrollment, simplification, planning aids, reminders, and various commitment devices potentially have a much greater impact on savings plan participation and contributions, often at a much lower cost.

The Impact of Matching Contributions on Savings Outcomes: Theory

In traditional models, the impact of a match on savings outcomes depends in part on the structure of the match. The simplest form is a flat match rate on all incremental savings (for example, all new contributions are matched 100 percent). In practice, offering an unlimited match is expensive for the party providing the match; as a consequence, savings schemes typically limit the contributions that are matched (for example, all contributions up to $1,000 are matched 100 percent, and contributions above that level are not matched).

Savings schemes with more complicated match structures are common. For example, the match might be tiered, with contributions up to $500 matched 100 percent, contributions of $501–$1,000 matched 50 percent, and contributions above $1,000 not matched. Alternatively, contributions might be matched only after a certain level of contributions is reached (for example, contributions below $500 are not matched, contributions of $501–$1,000 are matched 100 percent, and contributions above $1,000 are not matched).

In standard economic models of intertemporal decision making, adding a matching contribution, or increasing the generosity of a match, whatever its form, should increase participation in a savings scheme through a substitution effect. The match makes consuming income more expensive than saving it, motivating individuals to substitute savings for consumption in response to the match.

The theoretical impact on individuals already contributing to the savings plan, however, is ambiguous. Consider, for example, introducing a scheme in which contributions are matched only up to a certain threshold. Such a scheme would increase contributions for individuals who were not previously participating, as some of these nonparticipants may be induced to start saving by the match. In contrast, individuals who were already contributing in excess of the match threshold are predicted to respond to the new match by reducing their contributions, through an income effect. The match on their existing contributions acts like an additional source of income, some of which individuals use to increase their consumption and correspondingly reduce their saving. Their combined own plus matching contributions, however, should still be higher than before the match.

The impact on individuals previously contributing at or below the match threshold is ambiguous; they are affected by both the income and substitution effects described above. Because they are saving below the match threshold, the match creates an incentive to substitute

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additional savings, up to the match threshold, for consumption. But the match on contributions already made acts like additional income, some of which will be used to increase consumption and reduce contributions.

The effects would be similar for increasing the match rate while maintaining the same match threshold. The effects of increasing the match threshold while keeping the match rate constant are more complicated. Such a change should have no effect on people contributing below the old threshold. It should increase contributions by people at the old threshold (a substitution effect), have an ambiguous effect on people above the old threshold but at or below the new threshold (opposing income and substitution effects), and decrease contribution rates by people above the new threshold (an income effect).

The Impact of Matching Contributions on Savings Outcomes: Evidence

What is the evidence on how people actually respond? Estimating the impact of a matching contribution on saving outcomes requires introducing some variation in the extent or structure of the match. The research has used three sources of match variation: naturally occurring cross-sectional variation (for example, differences in the match rate or match threshold in employer-sponsored savings plans); natural experiments, or changes in the structure of the match, within a savings scheme; and experimental variation generated by researchers, in which some individuals are offered a match, or a more generous match, and others are not.

The advantage of naturally occurring cross-sectional variation is that there can be considerable heterogeneity in the types of matching incentives different individuals face. For example, the match rates in employer-sponsored 401(k) savings plans in the United States range from no match to match rates as high as 200 percent, and the match thresholds range 1 percent of salary to $17,000 a year.[1] This type of variation can be useful if, for example, one wants to simulate what would happen under a match structure that is very different from what is currently used. A severe limitation of using this type of variation, however, is that it may be difficult to disentangle the impact of differences in the match structure on individual behavior from other factors that might also affect outcomes. For example, individuals who have a strong saving motive may seek employment in firms that offer a saving plan with a generous match, whereas individuals with a weak saving motive may select into firms with a less generous or no match (or

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[1] Individuals 50 and older may also be allowed to make additional "catch-up" contributions of up to $5,000 a year.

no savings plan at all). If this type of sorting occurs, the estimated relationship between the match and savings outcomes will be biased.

The advantage of natural and field experiments is that there are generally fewer concerns about the endogeneity between the generosity of the match and individual savings preferences. In field experiments, individuals are usually randomly assigned to receive different match structures. With natural experiments, concerns about endogeneity can be minimized by focusing on the same group of individuals before and after a policy change, essentially holding savings motives fixed. The limitation of field and natural experiments is that they typically examine a much smaller range of variation in matching schemes, with only two, or perhaps three, different types of match. The generalizability of the results from these studies is limited by the extent of the variation that is actually analyzed. These studies also typically focus on a specific group of individuals (for example, employees at a single firm, customers of a particular financial services provider, or low-income workers), limiting the extent to which the results can be generalized.

Most of the empirical studies on matching and saving outcomes have exploited the naturally occurring variation in the match rates of employer-sponsored savings plans in the United States to examine the impact of matching on savings outcomes. Most of these studies find, consistent with theoretical predictions, that matching increases savings plan participation rates (Andrews 1992; GAO 1997; Papke and Poterba 1995; Even and Macpherson 1997 and 2005; Clark and Schieber 1998; Bassett, Fleming and Rogrigues 1998; Clark, Goodfellow, Schieber and Warwick 2000; Huberman, Iyengar and Jiang 2007; Mitchell, Utkus and Yang 2007; Dworak-Fisher 2008). Some studies, however, find no relationship between matching and savings plan participation (Papke 1995; Kusko, Poterba, and Wilcox 1998).

In evaluating how matching affects savings plan contributions, the empirical evidence is less decisive (as noted above, the theoretical predictions are also not unambiguous). A few studies find a positive relationship between matching and savings plan contributions (Andrews 1992; Papke and Poterba 1995; Even and Macpherson 1997; Kusko, Poterba and Wilcox 1998). One, Basset, Fleming and Rodrigues (1998), finds no relationship between matching and savings plan contributions. Several studies estimate that a higher match is associated with lower contributions (Clark and others 2000; Munnell, Sundén, and Taylor 2001; Vanderhei and Holden 2001; Mitchell, Utkus, and Yang 2007). Some studies find heterogeneous effects. Huberman, Iyengar, and Jiang (2007) find that a higher match increases contributions for low-income

individuals but decreases contributions for middle- and high-income individuals. Papke (1995) and GAO (1997) find a positive effect of the match rate on contributions when the match rate is low but a negative effect on contributions when the match rate is high.

The most careful and convincing study using naturally occurring variation in match rates is Engelhardt and Kumar (2007). This study has several attractive features:

- It is the only study that appropriately accounts for the nonlinear savings incentives generated by the employer match.
- It uses administrative data on savings plan contributions and earnings (from tax authority records on earnings and savings plan contributions) and on the structure of the employer match (from employer plan documents) to accurately model the incentives that individuals face and to get more accurate measures of their choices than is the case in self-reported survey data.
- It accounts for factors other than the employer match that might also influence savings outcomes, including taxes and alternative savings opportunities that may be equally or more attractive (specifically, individual retirement accounts [IRAs]).

The biggest limitation of this study is that the data comes from the Health and Retirement Study and thus focuses on older individuals (average age is 55), whose behavior may differ from that of younger groups.

Engelhardt and Kumar estimate that increasing the match rate by 25 percentage points (for example, from $0.25 per $1 to $0.50 per $1 contributed) raises savings plan participation by 5 percentage points and increases contributions by plan participants by $365 (in 1991 dollars). They estimate that responsiveness to the employer match increases with the reported education level of respondents. Their overall conclusion is that neither participation nor contributions are very responsive to changes in the employer match and that "matching is a rather poor policy instrument with which to raise retirement saving" (p. 1921).

Duflo and others (2006) report the results of a field experiment on matching and savings outcomes. This study offered clients of the U.S. tax preparation firm H&R Block the opportunity to use their federal tax refund to open an IRA. Some individuals were offered the opportunity to open such an account with no match; others were offered a match of either 20 percent or 50 percent on contributions up to $1,000. Figure 1 shows the fraction contributing to an IRA and the amount contributed by those who chose to open an account. Only 3 percent of the study

participants in the no-match group elected to open an IRA. With a 20 percent match, 8 percent opened and IRA, and with a 50 percent match, 14 percent opened an IRA.

The magnitude of the effects estimated by Duflo and others (2006) is strikingly similar to that estimated by Engelhardt and Kumar (2007), even though the two studies examined different mechanisms (saving out of a tax refund versus enrolling in an employer-sponsored savings plan) and different types of individuals (middle-income H&R Block clients versus older Health and Retirement Study survey respondents). Engelhardt and Kumar estimate that increasing the match rate by 25 percent of contributions increases savings plan participation by about 5 percentage points; Duflo and others estimate that increasing the match rate from 0 to 20 percent of contributions increases savings plan participation by 5 percentage points and increasing the match rate from 20 percent to 50 percent of contributions increases participation by 6 percentage points.

Figure 1. Evidence on the Effect of Matching and Savings from the H&R Block Experiment
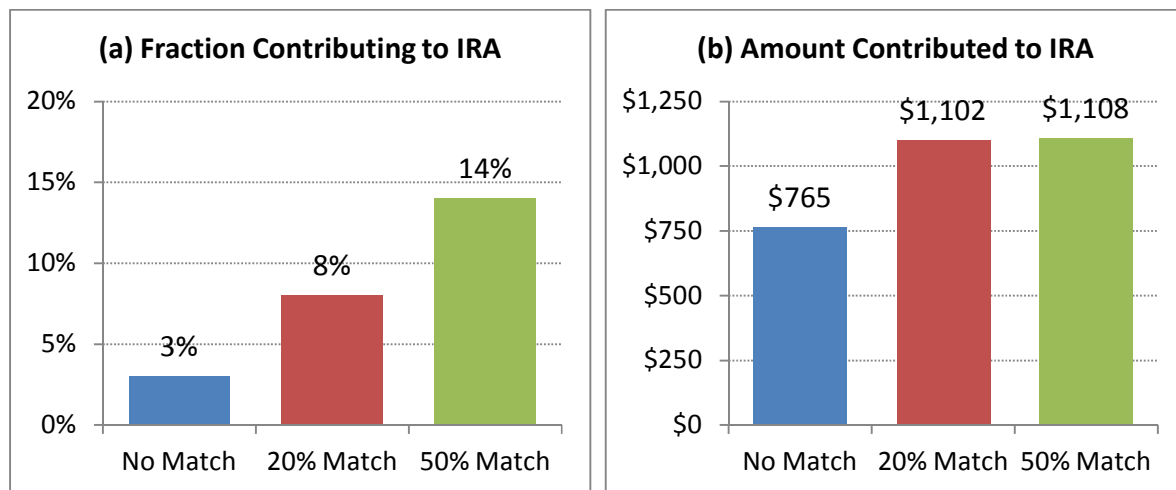
Source: Duflo and others 2006.

Mills and others (2008) report the results from a different multiyear field experiment on saving in individual development accounts (IDAs) in the United States. Lower-income families (income of less than 150 percent of the poverty level) were randomly assigned to either a treatment or a control group. Members of the treatment group were allowed to open an IDA to which contributions of up to $750 per year were potentially matched. Members of the control group were not allowed to open an IDA. One difference between this program and other savings

schemes is that contributions were matched upon withdrawal, with the rate of the match dependent on the purpose of the withdrawal. Contributions withdrawn to purchase a home were matched 200 percent, whereas contributions withdrawn for other qualified purposes, such as education, starting a business, home improvement, or retirement saving, were matched 100 percent. Contributions withdrawn for nonqualified purposes were not matched.

Overall, the results indicate that there is no significant relationship between IDA participation and net worth (figure 2). For most of the distribution, the effect is small but negative; in the upper and lower quantiles, the point estimates are positive, and sometimes large, but never statistically significant. These results challenge the effectiveness of match-based savings schemes for increasing the net worth of very low-income families.

Figure 2. The Impact of Opening and Contributing to an Individual Development Account on Net Worth after Three Years
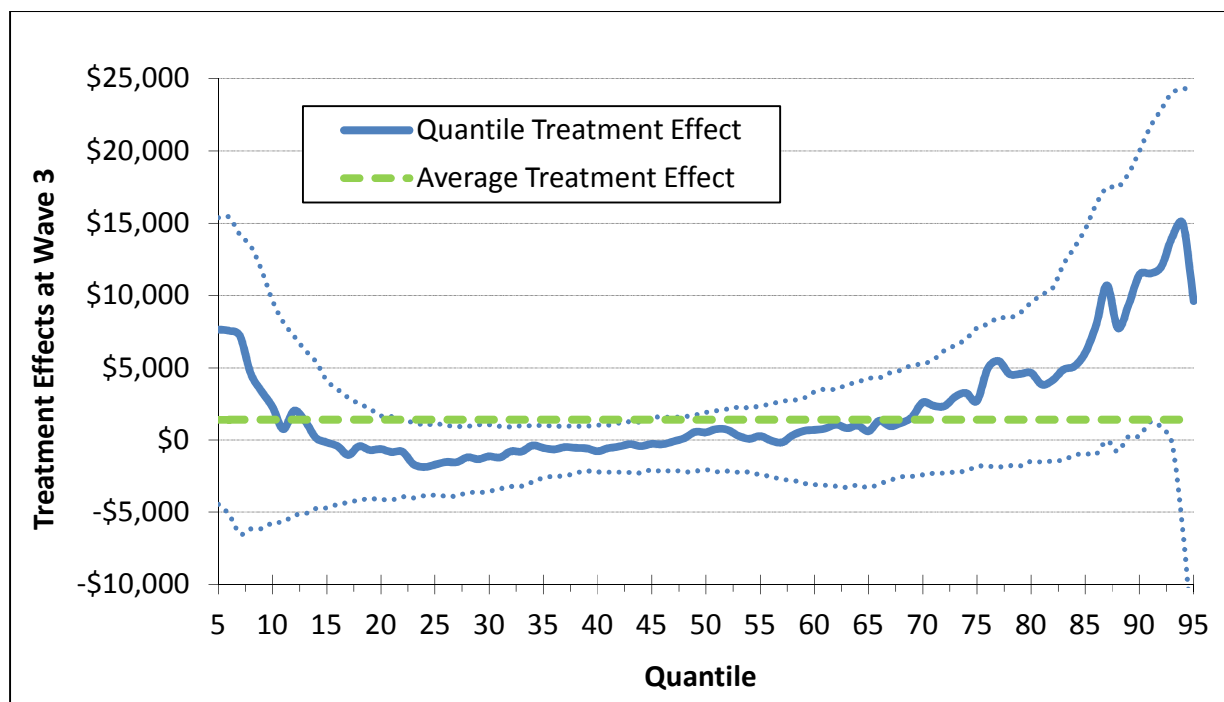
Source: Mills and others 2008.

Choi and others (2002, 2004b, 2006) adopt the natural experiment approach to analyze the impact of matching on savings outcomes. They examine two companies with employer-sponsored savings plans that changed their employer match: one added a match to a plan that did not previously have one, and one increased its match threshold while keeping its match rate

constant. This approach uses individual behavior before the changes as a control for employee behavior after the changes in the matching formulas as a way address concerns about the endogeneity of individual savings preferences with respect to the generosity of the employer match.

The first company (Firm A) introduced a 25 percent match on employee contributions up to 4 percent of income in October 2000; before that date, the plan offered no match. Using data on employees hired up to 26 months before the plan change and up to 14 months after the plan change, Choi and others estimate a hazard model of the time from hire to the date of initial savings plan participation. They find that the introduction of the employer match increased the rate at which employees enrolled in the savings plan by about 25 percent. However, because participation rates at this company were low before the introduction of the match, the absolute magnitude of the estimated participation increases was not large. For example, their model predicts that the 25 percent match adopted by this firm leads to a 4.7 percentage point increase in savings plan participation for 40-year-old men with 3 years of tenure. This effect is roughly in line with the effect estimated by Engelhardt and Kumar (2007) and Duflo and others (2006).

The second company (Firm B) increased the match threshold in its savings plan in January 1997 while keeping its match rate constant. Before January 1997, unionized employees received a 50 percent match on the first 5 percent of income contributed to the savings plan, and non-union employees received a 50 percent match on the first 6 percent of income contributed. In January 1997, the match threshold for both groups of employees was increased by 2 percent, from 5 percent to 7 percent of pay for union employees and from 6 percent to 8 percent of pay for non-union employees. Contributions up to the new threshold were still matched at 50 percent.

Using data on employees hired up to one year before and one year after the plan change, Choi and others estimate a hazard model of the time from hire to the date of initial savings plan participation. They find no significant impact of the increase in the match threshold on savings plan participation. This result is consistent with the theoretical arguments outlined earlier, which posit that an increase in the match threshold does not affect the marginal incentives to participate in the savings plan. As expected, Choi and others find no effect on participation of such a plan change.

The more interesting results in Choi and others (2002, 2004b, 2006) address the impact of the match threshold on savings plan contributions. Figure 3 shows the distribution of

contribution rates in the savings plan at Firm A for participants who joined the plan when it had no match and for participants who joined the plan after it introduced a 25 percent match on employee contributions up to 4 percent of income. With no match, the most frequently chosen contribution rates were 5 percent, 10 percent, and 15 percent of income—numbers that are multiples of 5. After the employer match, many participants also chose contribution rates that were multiples of 5. In addition, there was a large increase in the fraction of participants who made a 4 percent contribution, the new match threshold. In the absence of an employer match, very few employees chose to participate in the savings plan at a 4 percent contribution rate; with the employer match, the 4 percent match threshold became the modal contribution rate.

Figure 3. The Distribution of Contribution Rates at a Firm that Added an Employer Match: Firm A
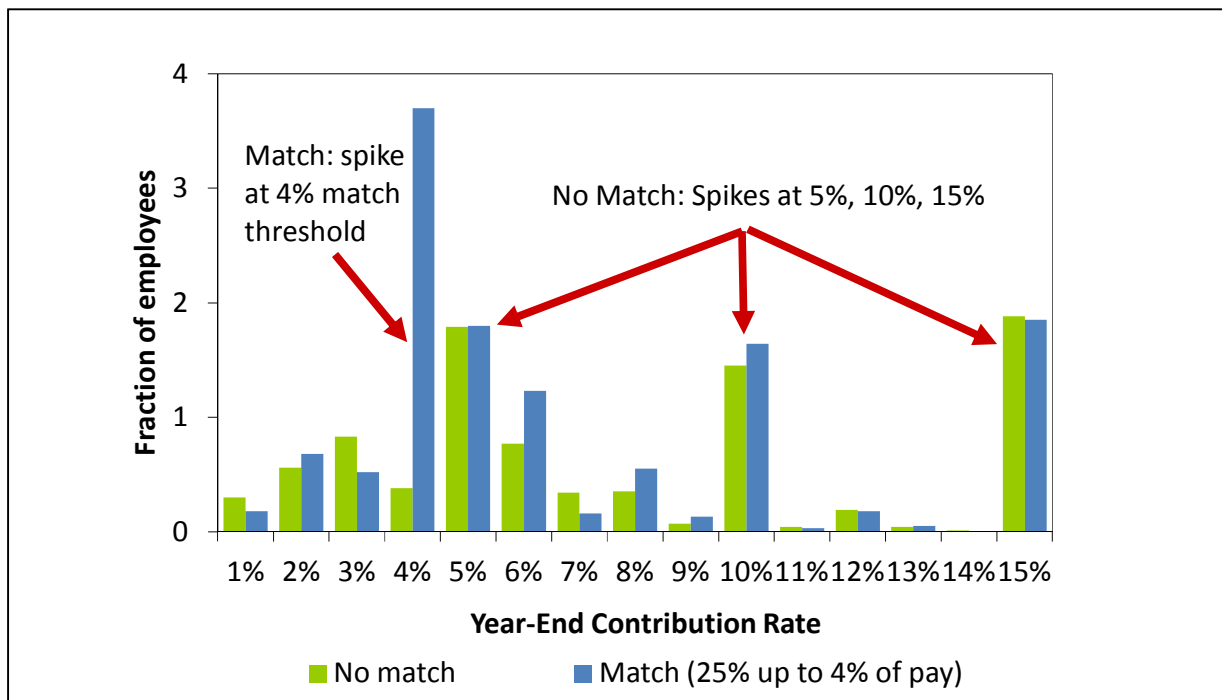
Source: Choi and others 2006.

The distribution of contribution rates at Firm B, which increased its match threshold, exhibits a similar pattern. Figure 4 shows the distribution of contribution rates to the savings plan for two groups of participants: those who joined the plan in the nine months before the increase in the match threshold, and those who joined the plan over a similar period of time after the increase in the match threshold. As in figure 3, there are clear spikes in the distribution of

contribution rates both before and after the change in the match threshold at multiples of 5 (5 percent, 10 percent, 15 percent, 20 percent and 25 percent of pay). And, as in figure 3, the modal contribution rate under both distributions is at the match threshold: 5 percent or 6 percent of pay before the change in the match threshold and 7 percent or 8 percent of pay after the match threshold.

Figure 4. The Distribution of Initial Contribution Rates at a Firm that Changed Its Match Threshold: Company B
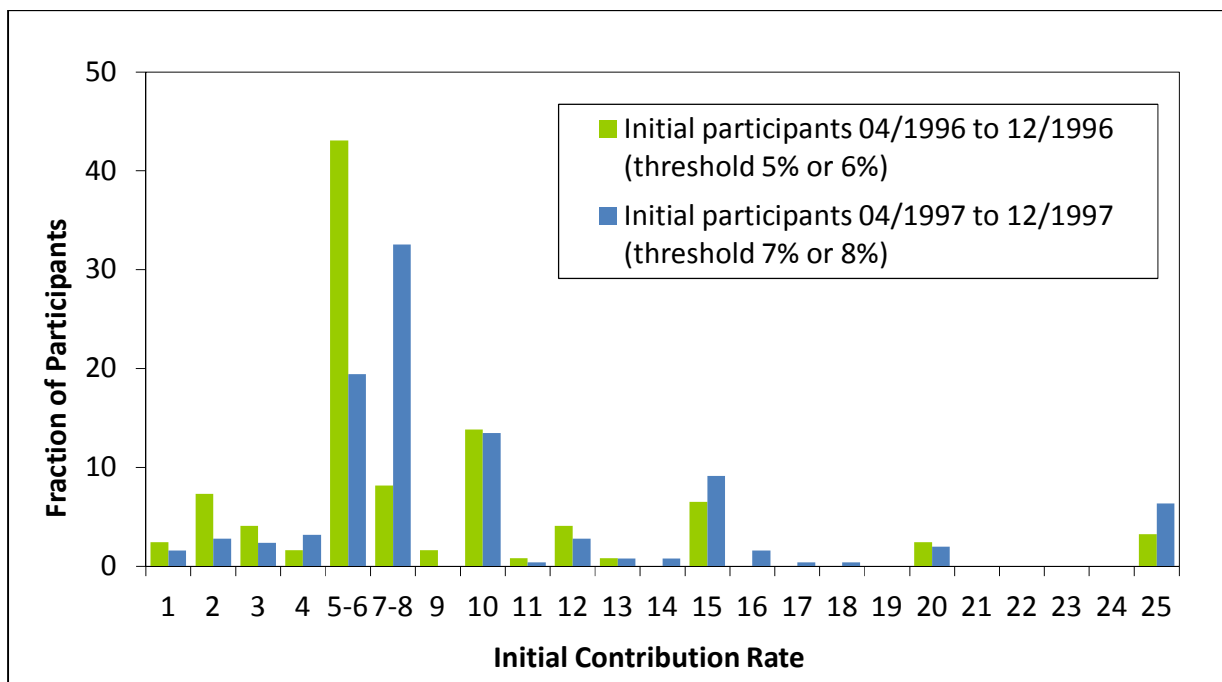
Source: Choi and others 2004b.

Figure 5 examines the impact of the increase in the match threshold of the Firm B savings plan for individuals participating in the plan before the match threshold changed. It shows how the contribution rates of these participants evolved over time after the plan change. The sample in figure 5 is restricted to employees contributing to the Firm B savings plan nine months before the increase in the match threshold. As in figure 4, a large proportion of participants (more than 45 percent) start with a contribution rate of 5 percent or 6 percent of pay. The switch from the old threshold to the new threshold is clearly apparent: there is an immediate shift from the old threshold (5 percent or 6 percent of pay) to the new threshold (7 percent or 8 percent of pay) when the match threshold change occurred, in January 1997, and a slower adjustment over the

next three years, as more and more participants shifted from the old to the new threshold. In contrast, the fraction of participants at the other contribution rates remained fairly stable over the entire time period.

Figure 5. The Evolution of Contribution Rates Over Time: Firm C
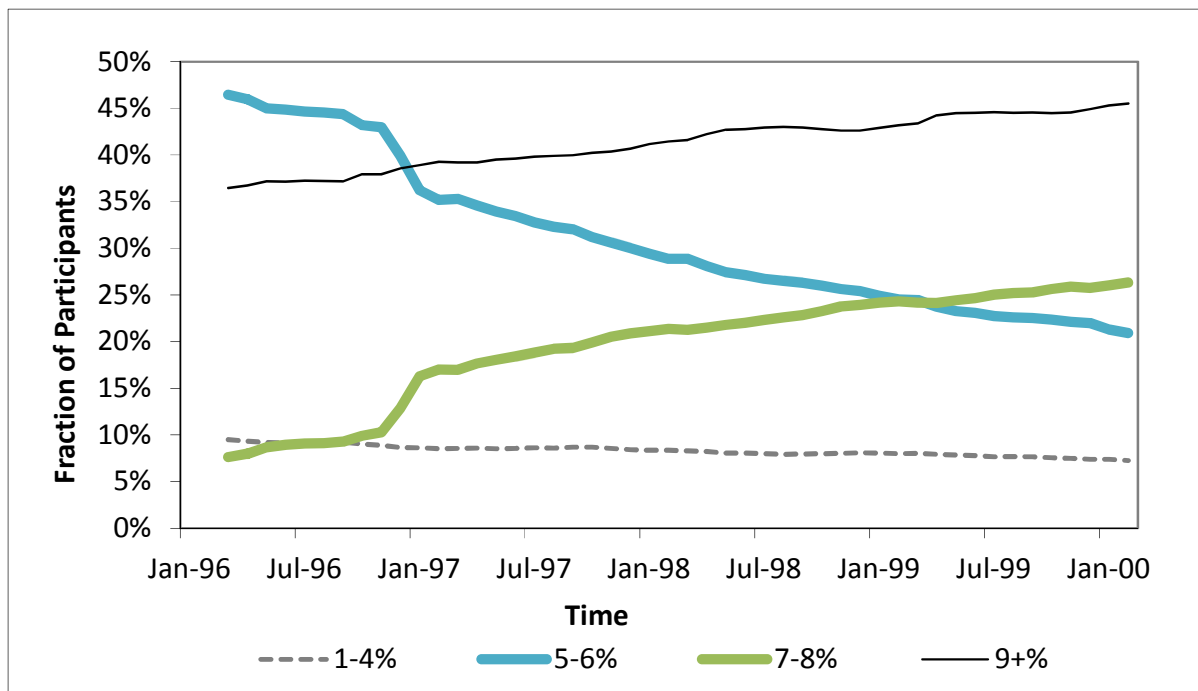
Source: Choi and others 2002, 2006.

The patterns in figures 3, 4, and 5 reveal the behavioral nature of savings plan participation. The fact that the contribution rates spike at multiples of 5 suggest an important role for focal points in savings choices. When individuals face complicated decisions, such as deciding how much to save, they adopt heuristics to simplify the decision-making process. This pattern of contribution rate outcomes suggests that one such heuristic is to winnow the set of potential contribution rates to a subset of the possible options—in this case, those that are multiples of 5. The predominance of the match threshold in the distribution of contribution rates suggests that it also serves as a focal point in participants' considerations about how much to save. The kink in the budget set generated by the match threshold would be expected to result in bunching at the match threshold, absent any behavioral considerations. But it is likely that the match threshold gets additional consideration as participants evaluate how much to save because it serves as a natural focal point (precisely because it is where the financial incentives to save

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change); individuals may also view the match threshold as carrying an implicit recommendation about how much they should save; this endorsement effect would further reinforce the focal nature of the match threshold. Finally, the slow movement of existing participants away from the old match threshold and toward the new match threshold in figure 5 suggests inertia on the part of savings plan participants. Such inertia in savings plan outcomes has been well documented (see Beshears and others 2008 for a review of this literature). It is also consistent with participants' anchoring on the original match threshold.

Perhaps the most surprising finding in the literature on matching and savings plan outcomes is that even with a match, participation rates are often surprisingly low (Choi, Laibson, and Madrian 2011). Collectively, the research on matching and savings outcomes suggests that at best, increasing the match rate on savings leads to small increases in participation and contributions conditional on participation. The more important match-related tool is the match threshold, which serves as a strong focal point as individuals decide how much to save. A lower match rate with a higher match threshold may be a more effective way to increase individual contributions than a higher match rate with a lower match threshold—that is, providing a match of 25 percent on contributions up to 10 percent of pay will induce individuals to save more than a match of 50 percent up to 5 percent of pay at a similar (or lower) cost to the organization providing the match.

Complementary and Alternative Approaches to Increasing Savings

The literature on behavioral economics and savings plan outcomes suggests several alternative, and potentially more cost-effective, strategies to increase individual savings. This section reviews some of these approaches.

Automatic Enrollment

By far the most effective method to increase participation in defined contribution savings schemes is automatic enrollment. The research on participation in employer-sponsored savings plans in the United States shows that participation rates are substantially higher when the default is enrollment in the savings plan (that is, individuals must opt out if they prefer not to save) than it is when individuals must take action to participate in the savings plan. The impact of automatic enrollment on participation rates can be sizable. In the first study of the impact of automatic enrollment on savings outcomes, Madrian and Shea (2001) document a 50 percentage point

increase in savings plan participation for newly hired employees (less than 15 months of tenure) at a large employer that switched from an opt-in to an opt-out automatic enrollment regime. Other studies also document significant increases in participation as a result of automatic enrollment (see Vanguard 2001; Choi and others 2002, 2004a, 2004b; Beshears and others 2008). The impact of automatic enrollment is greatest for groups with the lowest savings rates initially: younger, lower-income workers.

Matching is not completely irrelevant in plans that have automatic enrollment. A more generous match is associated with higher participation rates, with effects that are roughly in line with those discussed earlier in the context of savings schemes without automatic enrollment.

Beshears and others (2010) take two different approaches to evaluating the importance of the match in employer-sponsored savings plans that have automatic enrollment. First, they examine a firm that replaced its employer match of 25 percent on the first 4 percent of pay contributed to the plan with a noncontingent employer contribution (that is, the firm made a savings plan contribution on behalf of all employees, regardless of whether employees made any contributions of their own to the savings plan). They estimate that eliminating the employer match reduced participation by at most 5–6 percentage points, an effect very similar to that estimated by Engelhardt and Kumar (2007), Duflo and others (2006), and Choi and others (2002, 2004b, 2006) for similar changes in the match rate in savings plans without automatic enrollment.

The second approach taken by Beshears and others (2010) in evaluating the impact of matching in savings plans with automatic enrollment is to exploit variation in the match structure both within (for firms that changed their matching policy) and across a sample of nine firms with employer-sponsored savings plans with automatic enrollment. This analysis is potentially confounded by endogeneity between the generosity of the match and employee savings preferences; in addition, the sample of firms included in the analysis is small. With these caveats in mind, Beshears and others find that a 1 percentage point increase in the maximum potential match as a fraction of salary is associated with a 2–4 percentage point increase in savings plan participation (figure 6). Based on these estimates, decreasing the match rate from the modal match in employer-sponsored savings plans in the United States of 50 percent on the first 6 percent of pay to a 25 percent on the first 6 percent of pay (a reduction in the match rate of 25 percentage points) is predicted to reduce savings plan participation under automatic enrollment

by 3–6 percentage points. This estimate aligns with that from the single firm case study discussed in Beshears and others (2009); it also consistent with the studies of similar match changes in savings plans without automatic enrollment discussed earlier.

These results confirm the earlier conclusion: increasing the match rate on savings leads to small increases in savings plan participation. This conclusion holds for schemes with and without automatic enrollment.

Figure 6. Matching Contributions and Savings Plan Participation in Firms with Automatic Enrollment
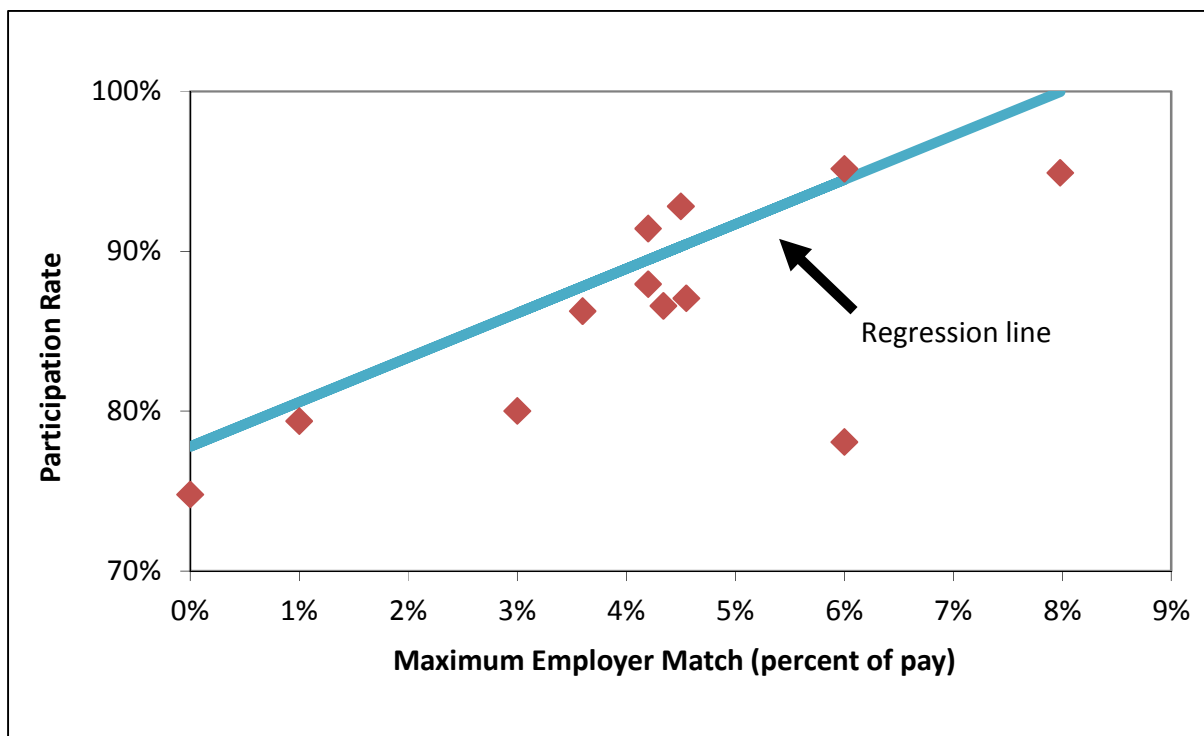
Source: Beshears and others 2010.

Although automatic enrollment leads to unambiguous increases in savings plan participation, its effects on savings plan contributions conditional on participation depend very much on the default contribution rate at which individuals are automatically enrolled. Just as the match threshold for savings plan contributions attracts the largest share of savings plan participants when there is a match, so too does the automatic enrollment default contribution rate when there is automatic enrollment. Contributions are higher with a higher default contribution rate under automatic enrollment than with a lower default contribution rate. The distribution of

contribution rates for employees at a U.S. company that increased the default contribution rate in its savings plan from 3 percent of pay to 6 percent of pay is shown in figure 7. With a default contribution rate of 3 percent, 28 percent of plan participants contribute 3 percent of pay to the plan; another 24 percent contribute 6 percent to the plan, the match threshold; and 41 percent contribute at a rate above 6 percent, primarily either 10 percent or 15 percent of pay (although these two contribution rates are aggregated with other contribution rates in the figure). With a default contribution rate of 6 percent of pay, which coincides with the match threshold, almost half of employees contribute 6 percent of pay to the plan, twice the fraction observed with a default contribution rate of 3 percent; the fraction of employees contributing 3 percent of pay to the plan is an almost negligible 4 percent.

Figure 7. Automatic Enrollment for New Hires and the Distribution of Savings Plan Contribution Rates
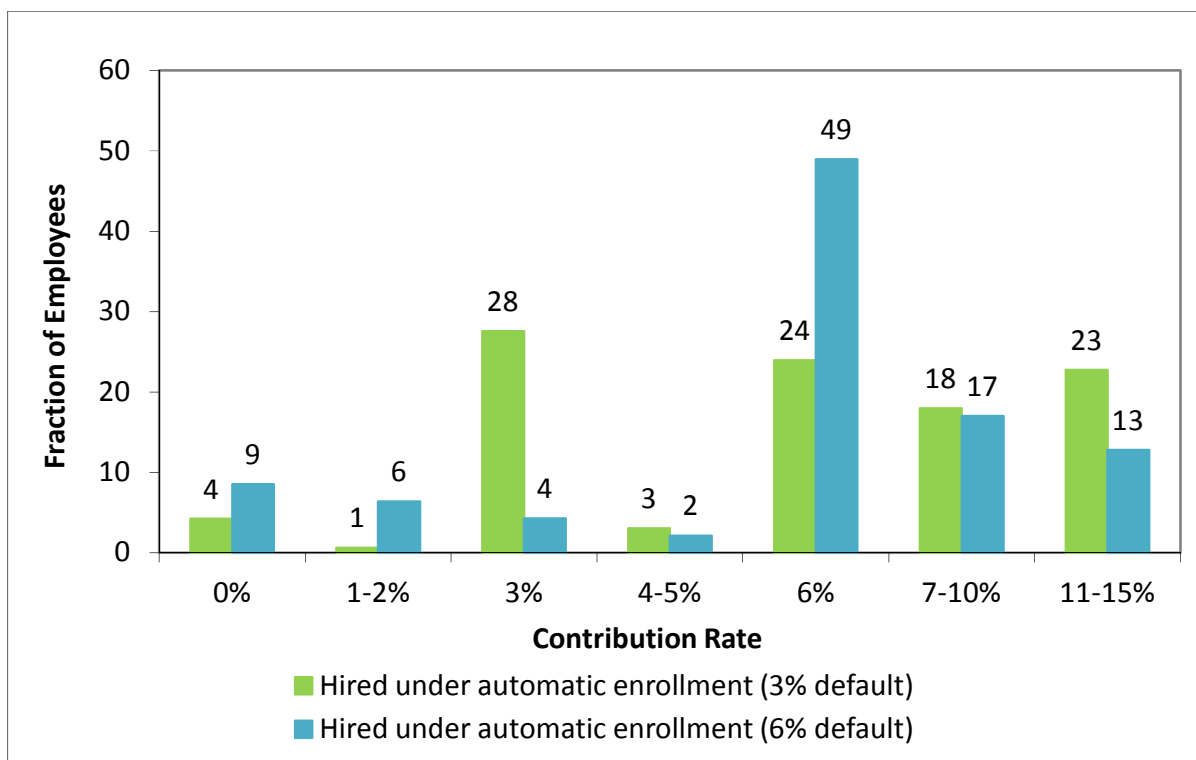
Source: Beshears and others 2008.

A more extreme form of automatic enrollment is mandatory enrollment: individuals are automatically enrolled without the option of subsequently opting out. Most of the literature on defined contribution savings plans has focused on employer-sponsored 401(k)–type plans in the United States, where voluntary participation is standard. In other contexts, participation in defined contribution savings schemes is mandatory. For example, public sector entities in the United States that have a defined contribution scheme as their primary retirement savings plan (or one of their primary plans if participants have a choice of plans) tend to have mandatory enrollment with no option to opt out (Beshears and others 2011). Countries with defined contribution social security systems typically have automatic and mandatory participation, at least for workers in the formal sector. Whether to make participation voluntary or mandatory is an important policy question for defined contribution savings plans.

Simplification

One limitation of automatic and mandatory savings plan enrollment schemes is that these approaches work only in formal sector labor markets with developed financial institutions that can facilitate payroll deduction. In informal labor markets, these approaches are more difficult to implement. Lessons from the effect of automatic enrollment on increasing participation rates in these contexts can inform the structuring of savings schemes in other contexts.

The success of automatic enrollment in employer-sponsored savings plans in the United States is predicated on two factors: (a) that most people recognize the need for retirement income above and beyond what they will get from Social Security and therefore want to save and (b) that automatic enrollment simplifies what individuals already want to do. Several pieces of evidence support the notion that people generally want to save. First, when asked, individuals typically state a desire to save.[2]

Second, when asked to actively make a choice about whether and how much to save, most people choose to save. Carroll and others (2009) compare the savings outcomes in an employer-sponsored savings plan before and after employees were compelled to make an active choice about whether or not to participate in the savings plan. They find that when not required to make a choice, only 41 percent of newly hired employees enrolled in the savings plan. In

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[2] For example, Choi and others (2002 and 2006) report the results of a survey on retirement savings adequacy conducted by a large U.S. employer. Two-thirds of the responding employees stated a desire to save more than they were currently saving; one-third reported that they were saving about the right amount; and less than 1 percent responded that they were saving too much.

contrast, when required to make an active choice about savings plan participation (which could include not participating in the savings plan), 69 percent enrolled. They conclude that most employees want to save but that an opt-in enrollment regime does not accurately reflect these preferences, because nonparticipation is consistent with both a preference not to save as well as with a preference to save accompanied by a delay in execution.

Third, very few people opt-out of savings plan participation when they are automatically enrolled. Choi and others (2002, 2006) show that savings plan participation is very persistent regardless of whether employees are automatically enrolled. In particular, only 2–3 percent of automatically enrolled employees opt out of savings plan participation in a 12-month period. That savings rates are high and persistent under automatic enrollment is further evidence that most people generally want to save.

An important caveat to these findings is that they yield evidence on savings preferences for a specific set of individuals in a very specific context: employees in U.S. firms with access to employer-sponsored savings plans. These findings say nothing about savings preferences outside the United States (although one would surmise that many individuals throughout the world also want to save; see for example, Soman and Cheema 2011) or about savings preferences in other types of savings vehicles. Most employer-sponsored savings plans in the United States offer an employer match, which may induce some otherwise reluctant individuals to save. The evidence suggests that the effect of a match on savings plan participation is not large; nonetheless, a financial inducement is one way to shape savings preferences.

A potentially more important contextual factor is the level of trust individuals have that their savings will be secure. Guiso, Sapienza, and Zingales (2008) show that differences in the level of trust across countries explain a sizable share of the cross-country variation in individual stock holding: in countries with higher levels of trust, citizens are more willing to invest in equities. Adopting a regulatory framework that increases trust in financial institutions and the financial system may be a prerequisite to successfully increasing saving with any savings scheme.[3]

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[3] There is no evidence on how financial incentives interact with the level of trust to affect savings. If financial incentives substitute for trust, the small impact of financial incentives on savings in the United States may reflect a high level of trust in the United States but might not rule out a larger effect of financial incentives in countries with lower levels of trust. Alternatively, trust may be a precondition for financial incentives to have any impact at all.

The second factor accounting for the success of automatic enrollment is that it simplifies the execution of what individuals already want to do—save. Indeed, automatic enrollment is an extreme form of simplification; individuals who want to save need not do anything. Psychologists have long recognized that choice complexity can affect decision-making outcomes. One result is procrastination—individuals put off decision making as choices become more complicated (Tversky and Shafir 1992; Shafir, Simonson, and Tversky 1993; Dhar and Nowlis 1999; Iyengar and Lepper 2000).

Iyengar, Huberman, and Jiang (2004) show that in the United States, enrollment in employer-sponsored savings plan is negatively correlated with the number of investment options in the savings plans: having 10 additional options in the investment menu lead to a 1.5–2.0 percentage point decline in participation.[4] They hypothesize that having more investment options increases the complexity of choosing an asset allocation. Automatic enrollment decouples the choice about whether to save from the choice about how much to save or which asset allocation to select. 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. Madrian and Shea (2001) and Choi and others (2004a) find that automatic enrollment has its largest impact on participation for workers who are least financially sophisticated—the young and people with lower levels of income. These are the individuals for whom the complexity of the participation decision under an opt-in savings regime poses the greatest deterrent to participation (Beshears and others 2008).

If complexity is a deterrent to participation in a savings plan, then simplifying the task of savings plan enrollment, even if less extreme than automatic enrollment, should increase participation. Choi, Laibson, and Madrian (2009) and Beshears and others (2012) study the impact of a simplified enrollment process on outcomes in employer-sponsored savings plans. The intervention they evaluate, Quick Enrollment, gives employees a way to enroll in their employer-sponsored savings plan at a contribution rate and with an asset allocation preselected by their employer. Like automatic enrollment, this approach allows individuals to evaluate savings plan participation (at the preselected contribution rate and asset allocation), a simple binary choice, without having to confront the multidimensional challenge of choosing a

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[4] This correlation is documented only among plans that do not have automatic enrollment.

contribution rate or an asset allocation. At the two firms studied, Quick Enrollment increased savings plan participation by 10–20 percentage points relative to a standard opt-in enrollment regime (figure 8). This finding suggests that complexity can be a significant deterrent to savings plan participation and that other measures to simplify the process of saving in this or other contexts could materially affect savings outcomes.[5] Although the participation increases from this simplified approach to savings plan enrollment are not nearly as large as the estimated effects of automatic enrollment, they are sizable and much larger than the estimated effects of matching contributions. Simplifying and streamlining the savings process can have a sizable impact on outcomes and may be a much more cost-effective approach to changing behavior than financial incentives.

Figure 8. Quick Enrollment and Savings Plan Participation: Firms C and D
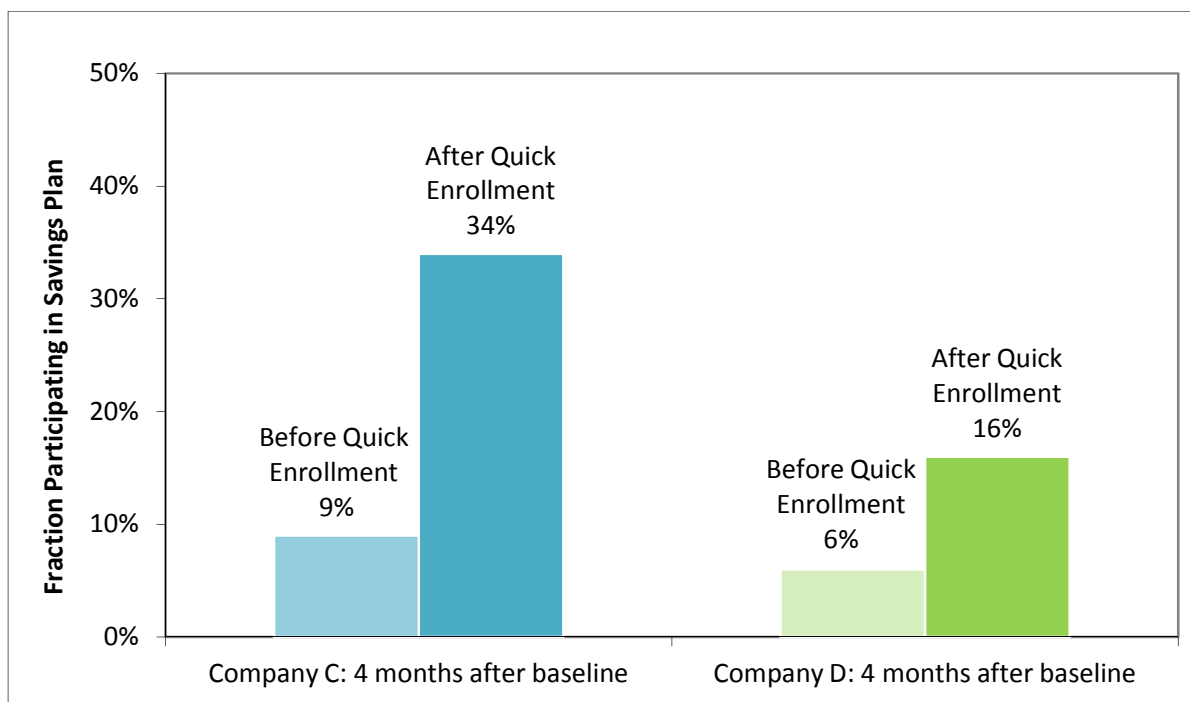
Source: Beshears and others 2012.

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[5] Research has documented sizable impacts of simplification in contexts other than saving, including school choice (Hastings and Weinstein 2008); health plan choice (Kling and others 2008); mutual fund selection (Choi, Laibson, and Madrian 2010); and both college financial aid applications and college attendance (Bettinger and others 2009).

Merely providing access to a simple and straightforward way to save may increase savings. Dupas and Robinson (2009) in rural Kenya and Aportela (1999) in rural Mexico find that increasing access to the formal savings sector leads to higher levels of savings. In the case of the field experiment evaluated in Dupas and Robinson (2009), the newly available savings account offered no interest and charged withdrawal fees, yet demand for the account was still high.

Execution Aids

Even if individuals want to save, forgetfulness and procrastination may prevent execution of even the best laid plans. Many strategies have been adopted to help individuals follow through on their savings goals. Research has identified a lack of planning as a primary reason why individuals fail to achieve their goals (Gollwitzer 1999; Gollwitzer and Sheeran 2006).
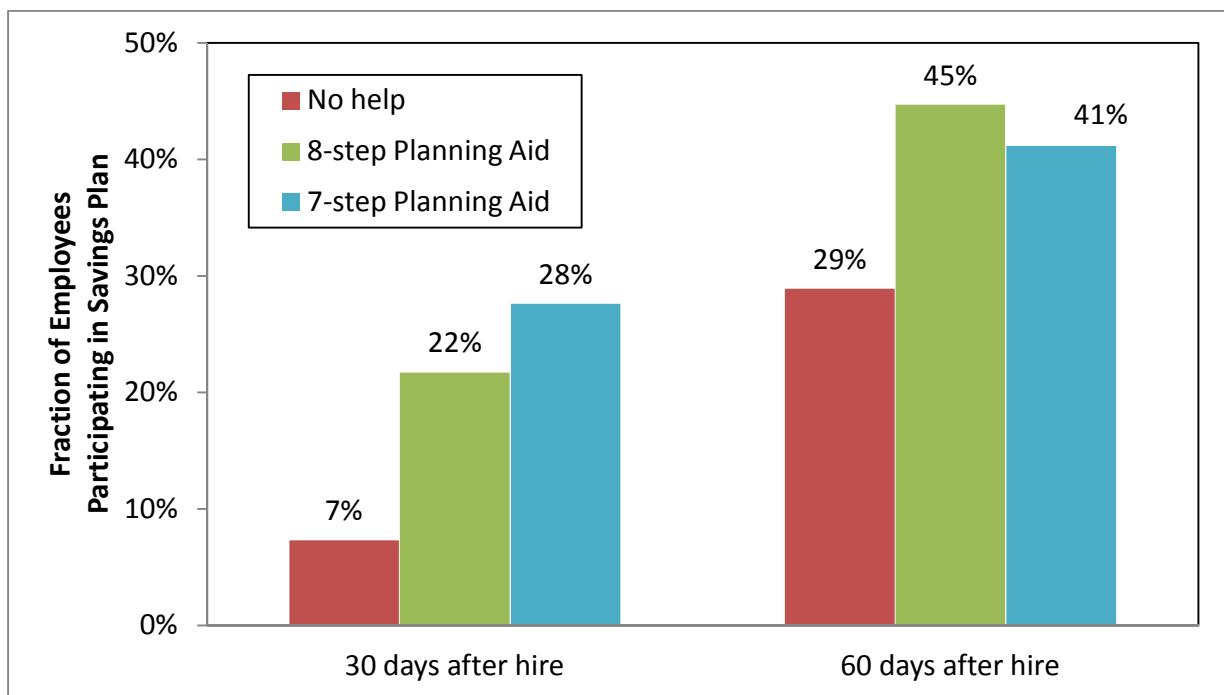
Lusardi, Keller, and Keller (2009) study the impact of helping individuals form and implement a savings plan on savings outcomes. The intervention they study—a planning aid for savings plan enrollment at a U.S. employer—encourages individuals to set aside a specific time for enrolling in their savings plan; outlines the steps involved in enrolling in a savings plan (for example, choosing a contribution rate and an asset allocation); gives an approximation of the time each step will take; and provides tips on what to do if individuals get stuck. Provision of this planning aid increased enrollment in an employer-sponsored savings plan by 12–21 percentage points for newly hired employees (figure 9). This effect is two to three times the estimated impact of matching contributions on savings plan participation. Like simplifying the savings process, providing execution aids is extremely cost-effective.

In a series of field experiments conducted in cooperation with banks in Bolivia, Peru, and the Philippines, Karlan and others (2010) evaluate the impact of providing savings reminders (text messages or letters) on savings outcomes in bank savings accounts. They find that people who received reminders were 3 percent more likely to achieve a prespecified savings goal and saved 6 percent more in the bank sending the reminders than did people who did not receive reminders. They also find that reminders that highlighted individuals' savings goals were twice as effective as generic reminders.

Kast, Meier and Pomeranz (2012) evaluate the impact of providing text message reminders on bank savings outcomes in Chile. They also find that individuals who received text message reminders saved substantially more than individuals who did not.

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For the populations in the developing countries targeted in the field experiments of these two studies, ongoing savings requires ongoing action—automatic enrollment and direct deposit are not relevant alternatives. These results suggest that limited attention can be an important impediment to savings in such contexts. Text messages are a cost-effective and scalable way to create attention shocks that motivate people to take action and follow through on prespecified savings goals.

Figure 9. The Impact of Planning Aids on Savings Plan Participation

Source: Lusardi, Keller, and Keller 2009.

The field experiments discussed in Karlan and others (2010) and Kast, Meier, and Pomeranz (2012) included treatment arms that offered individuals higher than market interest rates as an inducement to save. Neither study finds any statistically significant impact of a higher interest rate on savings outcomes. The higher interest rates were admittedly much lower than the match rates that typically characterize matched savings schemes (in Kast, Meier, and Pomeranz (2012), for example, the high interest rate treatment group was offered an interest rate of 5 percent as compared to a then-prevailing interest rate of 0.3 percent). Although these studies are not directly comparable to the studies discussed earlier on the impact of matching contributions

on savings outcomes, the results support the general qualitative conclusion that financial incentives have at best modest effects on outcomes.

A growing body of literature examines a broad class of execution aids known as commitment savings products. In the most influential paper in this literature, Ashraf, Karlan, and Yin (2006) evaluate a field experiment in the Philippines that offered one such product to current or former clients of a local bank. In this field experiment, participating bank clients who opted for the commitment savings product voluntarily restricted the right to withdraw their savings until reaching either an individualy chosen goal date or an individualy chosen goal amount. They show that there is a demand for commitment: among people who were offered the option to open a commitment savings account, 28 percent did so, even though it offered reduced flexibility and no higher interest than a standard bank account. Commitment products can have a sizable impact on savings. Relative to a control group not offered the commitment savings product, people offered a commitment account had bank balances that were 82 percent higher 12 months later. Corroborating work on commitment savings products in other countries includes Gugerty (2007), Ashraf and others (2011), Brune, and others (2011), and Dupas and Robinson (2011). The reasons why commitment savings products are so effective at increasing saving are both internal (reducing the temptation to spend) and external (credibly telling others, primarily friends and family, that one's savings are inaccesible).

Soman and Cheema (2011) evaluate one interesting variant of a commitment savings technology in a field experiment targeted at unbanked construction laborers in rural India who are paid cash wages. In this experiment, individuals earmarked a certain amount of their weekly wages as savings. A social worker visited participating households every pay day to set aside the earmarked savings amount into either one (nonpartitioned) or two (partitioned) sealed envelopes. The challenge in this field experiment was not to motivate individuals to set aside money for savings but to prevent them from raiding their savings. The authors show that partitioning earmarked savings into multiple "accounts" increased realized savings by 39–216 percent. They hypothesize that opening a savings envelope, or violating the partition, induces guilt. Having multiple accounts, or partitions, increases the psychological cost of spending money that has been set aside for a specific purpose. This simple, low-cost execution aid has obvious extensions to other contexts. For example, having multiple retirement savings accounts may be more effective than relying on one type of savings account (for example, having both a retirement

income account and a retirement health account may induce higher savings than a single generic retirement account).

Collectively, the research on execution aids suggests that many psychological impediments stand in the way of carrying out even the best-laid plans to save. Financial incentives do little in the face of such barriers. A more effective strategy is to directly address the barriers themselves.

Conclusions

A large body of literature has examined a wide variety of approaches to encouraging individuals to increase their savings. Traditional economic models point to financial incentives, such as a matching contribution, as the logical mechanism for increasing savings plan participation. The research on matching contributions and savings plan participation is largely consistent with traditional economic models: a matching contribution does increase participation. But the quantitative impact matching contributions on savings plan participations is small. The studies using the most credible empirical methods find strikingly similar results in a variety of different contexts using a variety of different data sources: a matching contribution of 25 percent increases savings plan participation by roughly 5 percentage points.

The theoretical impact of matching contributions on the level of savings in traditional models depends on how much an individual would save in the absence of a match. The empirical results on this question finds results are inconsistent, although the most credible empirical work corroborates the predictions of traditional economic models.

Traditional economic models fail to characterize the most interesting features of the savings choices that individual make. Savings rates cluster heavily around focal points, including the match threshold (as traditional economic theory would predict) and numbers that are multiples of five (something traditional economic theory would not predict). This finding suggests that the match threshold may be a much more important parameter in a matching scheme than the match rate.

Traditional economic models also fail to incorporate the many psychological frictions that impede savings, including present bias, complexity, inattention, and temptation. In many cases, countering these frictions leads to increases in saving plan participation and asset accumulation that surpass the effects of a typical matching contribution, potentially at a lower cost.

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