Measuring the Effectiveness of Automatic Enrollment

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Executive summary. An analysis of about 50 plans adopting automatic enrollment confirms that the feature does improve participation rates, particularly among low-income and younger employees. Yet in 4 of 10 plans, total employer and employee contribution rates remain at less than 9%, a level too low to generate adequate retirement savings on its own.

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Design features. More than 90% of plans adopting automatic enrollment implemented it for new hires only. Half of plans automatically enroll employees at 3%, with 22% using a higher initial rate. Half of plans have implemented automatic annual contribution rate increases of 1%. Nine in 10 plans used a life-cycle or balanced fund as the default investment under automatic enrollment.

New-hire savings impact. New employees hired under automatic enrollment designs have participation rates dramatically higher than new employees hired under voluntary enrollment designs (86% versus 45%). Automatic enrollment raises participation rates across most demographic groups, with its largest effect among low-wage and younger employees. However, overall plan contribution rates under automatic enrollment fall because many new participants who would have voluntarily chosen a higher contribution rate remain at the low-default levels.

New-hire investment impact. New hires in automatic enrollment plans are three times more likely to allocate 100% of their contributions to the default investment fund than new hires in voluntary enrollment plans (67% versus 21%).

Changes over time. Over time, automatically enrolled employees move away from plan defaults. Employees are more likely to change plan contribution rates than plan default investments. For example, after approximately 24 months, 30% of eligible employees remain at the plan default contribution rate versus 51% at the plan default investment.

Plan design and quit rates. The initial participant contribution rate under automatic enrollment does not appear to affect whether employees quit the plan or not.

Savings adequacy. Four of 10 plans have implemented automatic enrollment designs where total employer and employee contributions are less than 9% of income after five years, a level we estimate to be too low to generate adequate retirement savings on its own. Plans with automatic increase features achieve much higher rates of savings adequacy.

Implications. Automatic enrollment has its strongest impact on those employee populations, such as low-wage and younger employees, with historically low plan participation rates. Yet without an automatic savings rate increase feature, plan contribution rates fall, as more participants remain at low initial default contribution rates under automatic enrollment. Sponsors can improve the savings adequacy of automatic enrollment designs by aiming for a total plan contribution rate, including employer and employee contributions, of 9% to 12%. Also, while automatic enrollment demonstrates the powerful impact of default design on employee behavior, it is striking how many automatically enrolled participants alter savings and investment behavior over time. Finally, it remains to be seen whether the dynamics observed for new-hire automatic enrollment will apply as more sponsors consider applying the feature to eligible nonparticipants.

Background

As defined contribution (DC) plans have emerged as the dominant private-sector retirement plan, policymakers, plan sponsors, and providers have increasingly focused attention on those employees unwilling to make active savings and investment choices. In 1997, the Internal Revenue Service (IRS) issued regulations encouraging automatic enrollment features in plans allowing employee-elective deferrals. In the Pension Protection Act of 2006 (PPA), Congress introduced a series of fiduciary and tax incentives to encourage broader adoption of automatic savings and investment features.

These policy changes were motivated by three broad research findings.[1] First, planning skills appear to vary widely among workers, with some having adequate skills to make important retirement planning decisions and others lacking in such ability. Second, participants often use inertia and procrastination as common decision heuristics or shortcuts when it comes to making saving and investment choices. Many individuals who fail to save for retirement know that they should—they simply never get around to it. Finally, there is evidence, from industry and academic surveys, of varying levels of financial illiteracy among certain employee groups. Automatic enrollment attempts to address these problems by reframing savings and portfolio choices from positive to negative or opt-out decisions.

1 See Madrian and Shea (2001), Vanguard (2002), Choi et al. (2006), Mitchell and Lusardi (2007), and Benartzi and Thaler (2007).

Despite the policy attention given to automatic enrollment, plan adoption rates have been modest to date. For example, as of June 2007, only 12% of Vanguard® DC plans had adopted the feature.[2] Changes under the PPA are expected to spur wider adoption of automatic plan design features in the future.

To better understand how the feature alters participant behavior, this paper examines the introduction of automatic enrollment in a sample of plans drawn from Vanguard's recordkeeping system. This data set, covering about 50 plan sponsors and 100,000 eligible employees, includes details on plan design, employee demographics, and plan sponsor characteristics. This report considers, among other topics, the impact automatic enrollment has on plan participation rates, individual plan contribution rates, and participant equity holdings. A more detailed description of the data is provided in the Appendix.

As prior research on automatic enrollment suggests, and as our findings confirm, automatic enrollment does not necessarily lead to increased retirement savings. Increased plan participation may be offset, in whole or part, by lower default savings rates adopted by automatically enrolled participants. Recent regulations from the U.S. Department of Labor (DOL) under the PPA are expected to ensure that automatically enrolled participants are invested in balanced, multi-asset-class portfolios. Our results highlight the importance of also raising total plan contribution rates under automatic enrollment, principally by incorporating an automatic annual saving rate increase feature as part of plan design.

Plan characteristics

In terms of employee characteristics, plans with automatic enrollment appear quite similar to plans with voluntary enrollment. In both types of plans, the median employee is age 45, has nearly seven years of plan tenure, and has an income of about $50,000 (**Figure 1**).

One difference is that plans with automatic enrollment are somewhat more likely to have female employees than voluntary plans (41% versus 35%). Participants in plans with automatic enrollment also have account balances that are one-third lower than participants in voluntary enrollment plans—reflecting in part the impact of adding more new small-balance participants under automatic enrollment. Allocations to equities are similar in both types of plans.

Figure 1. Plan Characteristics

As of December 2006

	Voluntary enrollment plans	Automatic enrollment plans
Number of plans	527	55
Number of eligible employees	1,115,021	118,681
Median employee age	45.1	44.6
Median employee income	$51,119	$51,710
Percentage male	65%	59%
Median employee tenure	6.8	6.5
Median participant account balance	$39,167	$29,541
Median participant equity contribution allocation	81%	80%

Source: Vanguard 2007.

2 Vanguard (2007).

Automatic enrollment designs

The 55 plans in our sample introduced automatic enrollment between September 2000 and June 2006. To introduce an automatic or autopilot 401(k) design, sponsors selected an initial contribution rate, an annual contribution rate increase (if any), and a default investment option.[3]

The specific design features adopted by sponsors vary from plan to plan (Figure 2 on page 5). About half of plans use a 3% default contribution rate under automatic enrollment. The choice of 3% may likely reflect sponsors' reliance on the actual wording of the IRS's original automatic enrollment regulations, which presented examples with a 3% contribution rate, rather than any independent decision about the appropriateness of that level of contributions. Encouragingly, 22% of plans automatically enroll new participants at rates above 3%. However, 31% of plans enroll new participants at a 1% or 2% rate.

About 90% of plans utilize a life-cycle or balanced fund as the default investment fund. Six in 10 plans chose an age-based targeted-maturity fund. About half of the plan sponsors have implemented automatic annual contribution rate increases of 1% per year. Among plans with contribution rate increases, 20% cap the employee contribution rate at the level the employer match is maximized.[4]

Sixty percent of plan designs have immediate eligibility for both employee-elective contributions and the employer match. About half of plans give employees one month to "opt out" of automatic enrollment. Automatic enrollment in these plans has been in place an average of just 2.2 years. More than 90% of plan sponsors implemented automatic enrollment for new hires only. In plans implementing automatic enrollment for new hires only, approximately one-quarter of the employees were hired after automatic enrollment was adopted.

Organization of this report

The remainder of this paper is organized into four main sections. The first compares employee saving and investment behavior for voluntary enrollment with those of automatic enrollment plans. The second part considers the impact of automatic enrollment on savings and investment decisions over time. The third considers how plan design influences opt-out or quit rates in automatic enrollment plans and how it affects overall retirement savings adequacy. And the last section concludes with implications for plan sponsors.

3 Vanguard typically recommended a contribution rate of 3% or higher, a contribution escalation feature, and a diversified default investment, although not all sponsors implemented these recommendations.

4 Another quarter stop the automatic annual contribution rate increases when the employee-elective savings rate is between 10% and 20%. Four in 10 plan designs with automatic annual contribution rate increases have no cap.

Figure 2. Automatic Enrollment Plan Features

As of December 2006

	Plans	Eligible employees
Number	55	118,681
Automatic enrollment employee base		
New hires only	87%	87%
Initially new hires, and subsequently all others swept	4%	8%
All employees	9%	5%
Total	100%	100%
Default percentage for automatic enrollment		
1 percent	4%	4%
2 percent	27%	21%
3 percent	47%	58%
4 percent	13%	11%
5 percent	5%	2%
6 percent	4%	4%
Total	100%	100%
Default for automatic increases		
1 percent	55%	57%
Voluntary election	29%	28%
Feature not available	16%	15%
Total	100%	100%
Default fund		
Age-based targeted-maturity fund	62%	50%
Balanced fund	25%	40%
Subtotal	87%	90%
Money market or stable value fund	13%	10%
Total	100%	100%

	Plans	Eligible employees
Eligibility for employee-elective contributions		
Immediate	63%	72%
1 month	4%	1%
2–3 months	18%	22%
4–6 months	13%	4%
1 year	2%	1%
Total	100%	100%
Eligibility for employer match*		
Immediate	60%	52%
1 month	4%	1%
2–3 months	15%	23%
4–6 months	15%	5%
1 year	6%	19%
Total	100%	100%
Opt-out window		
15 days or first paycheck	7%	4%
1 month	55%	49%
45 days	11%	10%
2 months	18%	27%
3 months	9%	10%
Total	100%	100%

*48 plans (93,904 eligible employees) have employer matching contributions.

Source: Vanguard, 2007.

Part I. Voluntary versus automatic enrollment plans

In this section we compare the saving and investment behavior of employees hired in 527 voluntary enrollment plans with employees in 48 plans that implemented automatic enrollment for new hires only. Both groups of plans are drawn from the broader universe of DC plans recordkept by Vanguard, and are plans for which we provide certain recordkeeping and compliance testing activities. A more detailed description of the data is provided in the Appendix.

New-hire participation rates

How does automatic enrollment affect employee saving and investment behavior? Because most of the plans with automatic enrollment in our sample adopted the feature in recent years, and introduced automatic enrollment for new hires only, we compared voluntary and automatic enrollment designs effects among new hires over a recent three-year period, from January 1, 2004, to September 30, 2006. We focused on our overall sample of 527 voluntary plans and our 48-plan sample that introduced automatic enrollment for new hires only.[5]

The impact of automatic enrollment is quite striking. Under automatic enrollment, the plan participation rate for new hires was 86%, with only 14% of automatically enrolled employees quitting the savings plan (Figure 3 on page 7). By comparison, only 45% of employees hired under voluntary enrollment join their 401(k) plan, with 55% failing to join.

While plan participation increases under automatic enrollment, median participant contribution rates decrease. The median contribution rate in automatic enrollment designs is 2.9%, which is 40% lower than the 5.0% median contribution rate under voluntary enrollment.

Meanwhile, contribution rates for all eligible employees—i.e., contribution rates for both participants and eligible nonparticipants—are higher. The median new-hire contribution rate under voluntary enrollment is 0%. In other words, the typical new hire in a voluntary enrollment plan does not participate. The median employee contribution rate is 2.6% for automatic enrollment designs, meaning there are fewer eligible employees not contributing to the plan.

Employees hired under automatic enrollment are three times more likely to allocate all of their contributions to the default investment than participants hired under voluntary enrollment (67% versus 21%). These findings underscore the notion that many individuals under automatic enrollment remain at the defaults set by the employer, rather than making independent investment or savings choices.[6]

There are two other notable differences when comparing voluntary and automatic enrollment plans (Figure 4 on page 7). First, the portfolios of participants hired under automatic enrollment are less equity-oriented than those hired under voluntary enrollment (65% versus 80%). This likely reflects the reliance by most sponsors on life-cycle or balanced investment strategies for default investment funds under automatic enrollment. Second, median account balances under automatic enrollment are only a third of account balances under voluntary enrollment, even though the participants are of similar ages and incomes. Again, this seems to stem from the creation of more new accounts with lower contribution rates under automatic enrollment.[7]

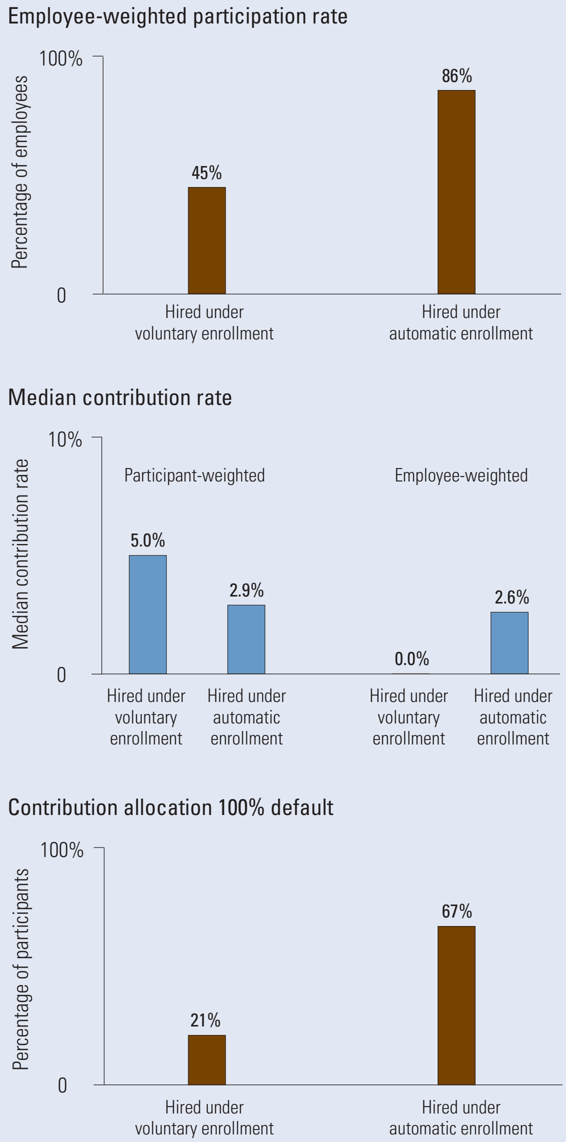
5 Many of the 48 plans in our sample with new-hire automatic enrollment introduced the feature at some point during 2004–2006. Thus, employees in those plans hired before automatic enrollment was introduced are classified as hired under voluntary enrollment; those employees hired after automatic enrollment was introduced are treated as automatically enrolled employees. The September 2006 cutoff date is used to account for the time it takes to offer and implement automatic enrollment for employees. See the Appendix for details.

6 Throughout this report we use contribution allocations as a measure of participants' forward-looking portfolio intentions. Account balances tend to be skewed by participant inertia (most notably by a failure to rebalance current holdings), by prior default investments, and by directed employer contributions.

7 Part of this difference may reflect small differences in job tenure. The new hires under automatic enrollment in our sample have a shorter tenure than the new hires under voluntary enrollment, as many of the plans in our sample introduced automatic enrollment in the second half of the three-year period.

Figure 3. Voluntary Versus Automatic Enrollment for New Hires

For employees hired between January 1, 2004, and September 30, 2006, as of December 31, 2006



Note: This analysis is based on 527 plans with voluntary enrollment and 48 plans that implemented automatic enrollment for new hires only. Some of the 48 plans implemented automatic enrollment for new hires only between January 1, 2004, and June 30, 2006—these plans have employees hired under both voluntary and automatic enrollment.

Source: Vanguard, 2007.

Figure 4. Detailed Analysis: Voluntary Versus Automatic Enrollment for New Hires

For employees hired between January 1, 2004, and September 30, 2006, as of December 31, 2006

	Hired under voluntary enrollment	Hired under automatic enrollment
Number of eligible employees	319,002	18,544
Participation rate	45%	86%
Contribution rates		
Employee average	2.8%	3.6%
Employee median	0.0%	2.6%
Participant average	6.1%	4.2%
Participant median	5.0%	2.9%
Investment behavior		
100% of contribution allocation to default fund	21%	67%
Median participant equity contribution allocation	80%	70%
Median participant equity account balance allocation	80%	65%
Demographics		
Median participant account balance	$4,950	$1,722
Median employee income	$40,285	$38,935
Median employee age	34.9	36.5
Median employee tenure	1.5	0.9

Note: This analysis is based on 527 plans with voluntary enrollment and 48 plans that implemented automatic enrollment for new hires only. Some of the 48 plans implemented automatic enrollment for new hires only between January 1, 2004, and June 30, 2006—these plans have employees hired under both voluntary and automatic enrollment.

Source: Vanguard, 2007.

Participation and employee demographics

Automatic enrollment appears to raise plan participation rates most dramatically among certain demographic groups, particularly young and low-income workers, for whom plan participation rates are traditionally very low (**Figure 5**). For example, employees earning less than $30,000 and hired under automatic enrollment have a participation rate of 77% versus a participation rate of 25% for employees at the same income level hired under voluntary enrollment. Similarly, 81% of employees younger than 25 are plan participants under automatic enrollment, versus 30% under voluntary enrollment.

Although the effects are strongest for these demographic groups, even the affluent benefit from automatic enrollment. Among those earning more than $100,000 a year, new-hire participation rates are 20% higher under automatic enrollment than voluntary enrollment.

Figure 5. Participation and Quit Rates by Employee Demographics

For employees hired between January 1, 2004, and September 30, 2006, as of December 31, 2006

	Participation rates		Nonparticipation or quit rates	
	Hired under voluntary enrollment	Hired under automatic enrollment	Hired under voluntary enrollment	Hired under automatic enrollment
Number of eligible employees	143,629	15,929	175,373	2,615
Overall	45%	86%	55%	14%
Income				
<$30,000	25%	77%	75%	23%
$30,000–$40,999	42%	86%	58%	14%
$50,000–$74,999	57%	93%	43%	7%
$75,000–$99,999	71%	95%	29%	5%
$100,000+	80%	96%	20%	4%
Age				
<25	30%	81%	70%	19%
25–34	45%	86%	55%	14%
35–44	49%	87%	51%	13%
45–54	50%	88%	50%	12%
55–64	52%	87%	48%	13%
65+	38%	65%	62%	35%
Gender				
Male	45%	85%	55%	15%
Female	46%	86%	54%	14%

Note: This analysis is based on 527 plans with voluntary enrollment and 48 plans that implemented automatic enrollment for new hires only. Some of the 48 plans implemented automatic enrollment for new hires only between January 1, 2004, and June 30, 2006—these plans have employees hired under both voluntary and automatic enrollment.

Source: Vanguard 2007.

As these results show, automatic enrollment does not eliminate demographic differences. In both automatic and voluntary enrollment designs, plan participation rates are higher (and nonparticipation or quit rates are lower) among older or higher-paid employees. However, what automatic enrollment does accomplish is a substantial reduction in the wide differences by age or income. In voluntary enrollment designs, new employees earning $100,000 or more participate at a rate that is more than 50 percentage points higher than the rate for new employees earning less than $30,000. In an automatic enrollment plan, that gap is narrowed to 19 percentage points.

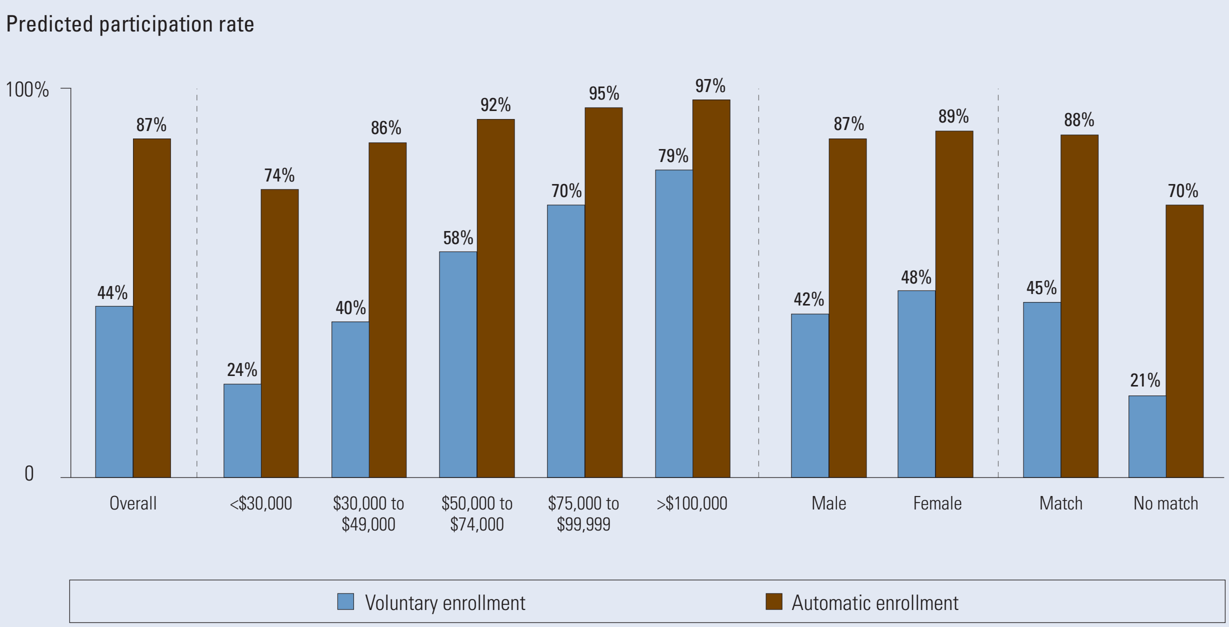
Participation model

We developed a regression model to better understand the effect of voluntary versus automatic enrollment on new-hire participation rates.[8] Our model allows us to understand how specific factors—such as the presence of automatic enrollment, employer matching contributions, income, age, or gender—independently influence plan participation rates.

Our model compares participation rates for employees hired under voluntary enrollment with employees hired under automatic enrollment, using the same 2004–2006 data set as referenced earlier. The variable of interest is whether or not the employee made elective contributions to the 401(k) plan during 2006. The model's results are summarized as the predicted probability of participating in the 401(k) plan.

Figure 6. Predicted Probability of Participating

For employees hired between January 1, 2004, and September 30, 2006, as of December 31, 2006



Note: This analysis is based on predicted effects from a logistic regression modeling comparing 527 plans with voluntary enrollment and 48 plans that implemented automatic enrollment for new hires only. Plans introducing automatic enrollment during the analysis period have employees hired under both voluntary and automatic enrollment.

Source: Vanguard, 2007.

8 Detailed results from our logistic models, including coefficients and marginal effects, are available from the authors upon request.

As expected, automatic enrollment significantly increases the probability of participating by an additional 43 percentage points (**Figure 6 on page 9**). In other words, after controlling for many of the differences that exist between plans and employees, the effect of automatic enrollment is to double new-hire participation rates from 44% to 87%.

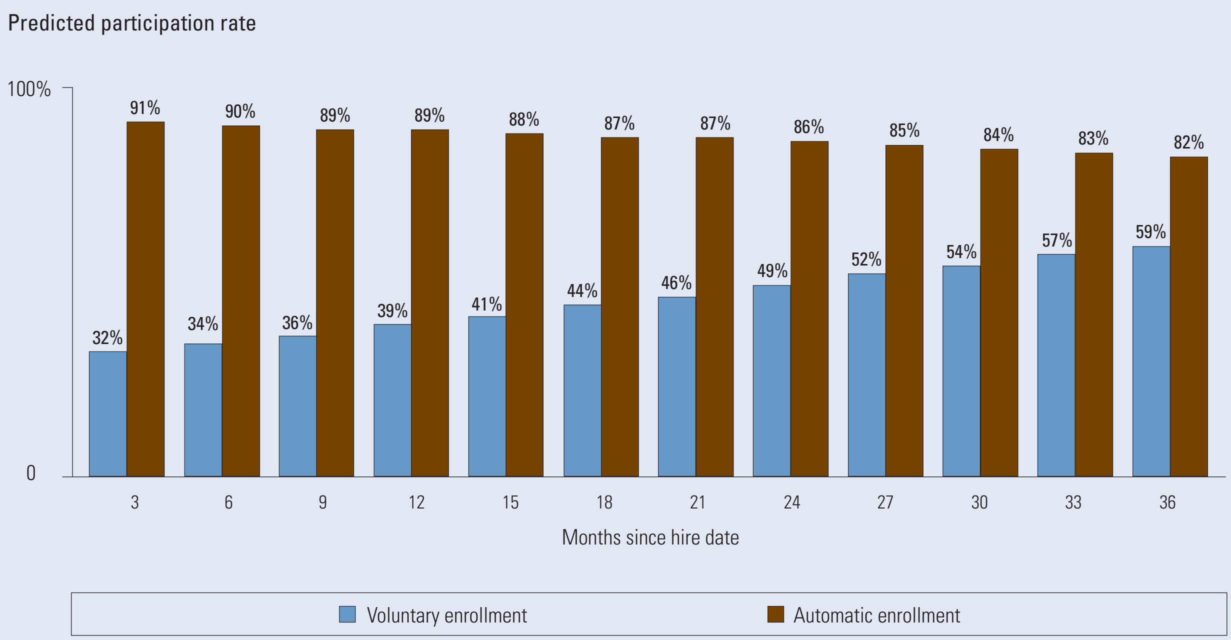
In terms of demographic effects, employees with income of less than $30,000 had predicted participation rates that were 50 percentage points higher under automatic enrollment than under voluntary enrollment (74% versus 24%). The predicted probability of participating in a 401(k) plan rises at all income levels, but is consistent with our other analysis, namely that automatic enrollment has a greater impact on lower-income employees, and reduces the variation between the highest- and lowest-paid. In terms of plan design, offering an employer match increased the probability of plan participation under both types of plans.

One substantial difference between the two plans relates to job tenure. In voluntary plans, the likelihood of participating in the plan rises with tenure (**Figure 7**). This has been described as a "stayers are savers" phenomenon. In contrast, over time the predicted probability of participating in an automatic enrollment plan decreases slowly. An important future research question is whether it stabilizes around the 80% mark or continues to drift lower.

Our overall findings suggest that low-income new employees are less likely to participate in either an automatic or voluntary enrollment 401(k) plan. However, an automatic enrollment feature results in much higher participation rates for these employees.

Figure 7. Predicted Probability of Participating Over Time

For employees hired between January 1, 2004, and September 30, 2006, as of December 31, 2006



Note: This analysis is based on predicted effects from a logistic regression modeling comparing 527 plans with voluntary enrollment and 48 plans that implemented automatic enrollment for new hires only. Plans introducing automatic enrollment during the analysis period have employees hired under both voluntary and automatic enrollment.

Source: Vanguard, 2007.

Part II. Automatic enrollment over time

In this section we consider how time affects participant behavior under automatic enrollment. Specifically, we examine the extent to which individuals override the plan sponsor default design decisions over time.

For this analysis, we looked at groups of participants who were automatically enrolled at different times in the past and compared their behavior based on the time that had elapsed since they were automatically enrolled. This analysis is comparing different groups of participants at different points in time, not the same group over time. This cross-sectional approach provides some indication as to how the effects of automatic enrollment may evolve over time.[9]

Our analysis is based on behavior using data from June 2007 for the 48 plans that implemented automatic enrollment for new hires only. Our first time period begins after six months have elapsed from the employee hire date. A more detailed description of the data is provided in the Appendix.

Default changes over time

Perhaps the most notable finding from our analysis of automatic enrollment over time is that many participants do alter their behavior, and do move away from plan defaults, even if gradually. Six to eight months after automatic enrollment, 54% of automatically enrolled employees are at the default contribution rate, while one-third have increased their savings rate above the initial default **(Figure 8, top panel on page 12)**. Reliance on the default falls substantially over time. After 30 months, only 20% of employees are at the default contribution rate, while 57% have increased their savings rate above that amount.

Over the period shown, the nonparticipation or quit rate under automatic enrollment widens from 11% to 15%. This rate is still lower than the 21% nonparticipation rate under voluntary enrollment.[10] Yet the quit rate may be increasing over time. An important question for future research is whether the participation advantage of automatic enrollment will stabilize or deteriorate over time.

At a preliminary level, our results do suggest that over time the savings behavior of employees hired under automatic enrollment does begin to resemble the savings behavior of employees hired under voluntary enrollment. For example, 67% of the employees hired under voluntary enrollment (before automatic enrollment was introduced in these plans) have a plan contribution rate higher than the automatic enrollment default. Meanwhile, after 30 months, 57% of the employees hired under automatic enrollment also have a rate higher than the default.[11]

In addition, employees are more likely to change contribution rates than investment allocations. Six to eight months after automatic enrollment, two-thirds of employees are still directing 100% of their contributions to the default investment fund **(Figure 8, lower panel on page 12)**. After 30 months, 42% remain at the default allocation.[12] Other participants are still partially contributing to the default fund. At the same time, it remains the case that a substantial group alters their investment allocation over time, either by adding other investments to the default option, or by adopting an entirely different investment strategy.

9 By comparison, a longitudinal or panel study would follow specific individual participants over time and would yield more precise estimates of the time-related effects.

10 The totals shown for voluntary and automatic enrollment differ slightly from those in Part I because they are drawn from somewhat different samples. See the Appendix for details.

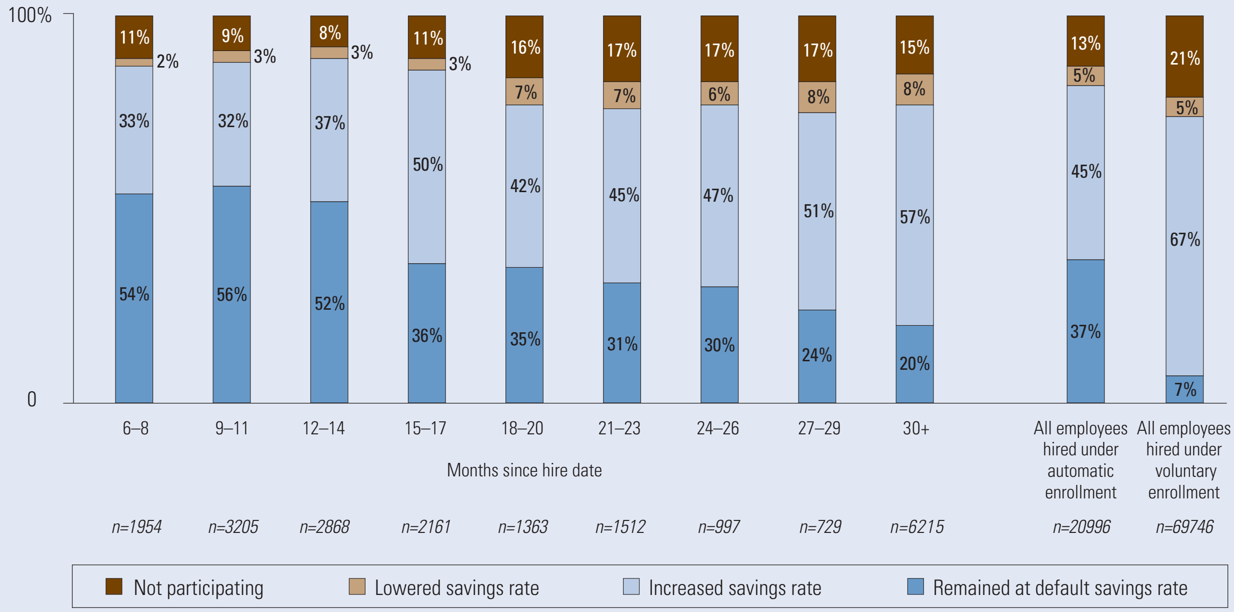
11 That this convergence occurs is more striking, given that the voluntarily enrolled participants in our sample have higher income, age, and job tenure.

12 This figure is based on all eligible employees, including those that are no longer contributing to the plan. After 30 months the percentage of participants still directing 100% of their contributions to the default is 61%.

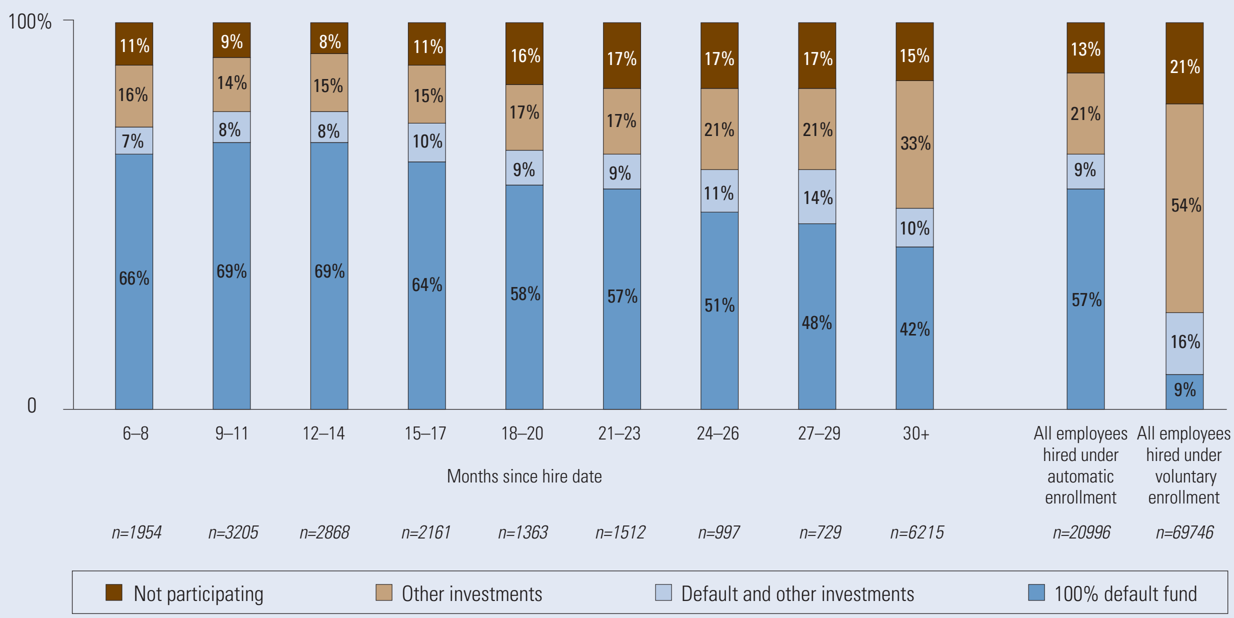
Figure 8. Automatic Enrollment Over Time

For 48 plans with new-hire-only automatic enrollment as of June 2007

Employee contribution rate



Employee contribution allocation



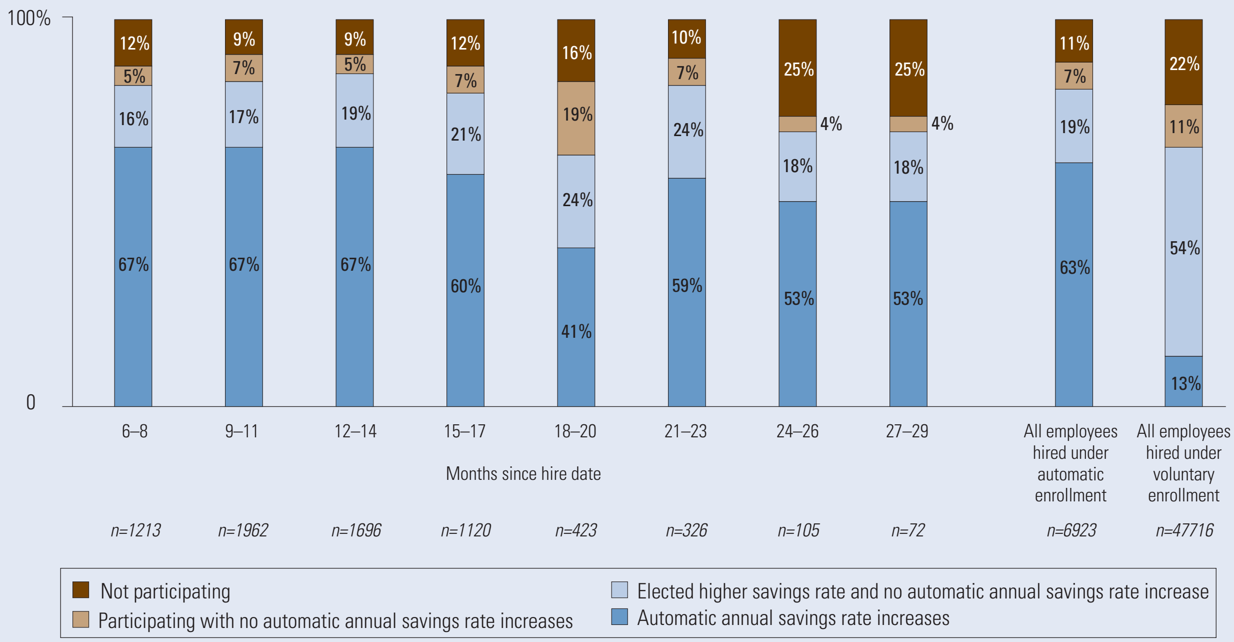
Source: Vanguard, 2007.

Similar results appear to be true for automatic annual contribution rate increases. However, only 26 plans in our sample adopted automatic increases (again, at various dates and in many cases after automatic enrollment was adopted), and so our findings are necessarily preliminary. Employees appear to change the automatic annual contribution rate increase feature less than they do their initial plan contribution rate. After the first 12 to 14 months, two-thirds of employees remain in the automatic annual increase feature **(Figure 9)**. That drops slightly over longer periods. In general, one-fifth of employees override the default design by electing a higher contribution rate and opting out of the annual savings rate increase feature.

Figure 9. Automatic Enrollment and Automatic Savings Rate Increases Over Time

For 26 plans with new-hire-only automatic enrollment and automatic annual savings rate increases as of June 2007

Automatic contribution rate increase election



Source: Vanguard, 2007.

Part III. Plan design and savings adequacy

In this section we consider how automatic enrollment plan design affects two aspects of savings adequacy: whether plan design influences how frequently employees opt out of, or quit, automatic enrollment, and how it influences overall contribution rates and retirement savings adequacy. For this analysis we focus on 48 plans that adopted automatic enrollment for new hires only between September 2000 and June 2006, as in the prior section.

Plan design and quit rates

Does plan design—specifically, the initial contribution rate—influence the likelihood an employee will quit an automatic enrollment plan? Intuitively we would expect that plans with lower initial contribution rates of 1% or 2% would mean a lower chance of employees quitting the plan, given that 1% or 2% contributions have little impact on take-home pay. Conversely, we might think that contribution rates of 5% or 6% would lead to a higher opt-out rate because of their larger impact.

Yet our results suggest that employee quit rates do not appear to vary in response to a plan sponsor's choice of the initial contribution rate (**Figure 10**). Interestingly, the participation rate among eligible employees earning less than $30,000 hovers around 80% regardless of whether the initial contribution rate is 1% or 6%.

To confirm these results, we developed a regression model that controlled the differences in employee and plan characteristics for various contribution levels. We found similar results: Namely, it did not appear that a higher initial contribution rate led to higher quit rates among employees.[13]

Figure 10. Quit Rates by Plan Design

For 48 plans with new-hire-only automatic enrollment as of June 2007

	Hired under automatic enrollment		
	All	Income <$30,000	Age 25–34
Number eligible employees	20,996	6,413	6,601
Default percentage for automatic enrollment			
1 percent	13%	18%	12%
2 percent	6%	10%	7%
3 percent	15%	22%	17%
4 percent	12%	18%	13%
5 percent	11%	23%	10%
6 percent	8%	7%	10%
Value of employer match as a percentage of wages			
0 percent	9%	11%	9%
Greater than 0 but less than 3%	8%	13%	10%
3 percent	14%	22%	16%
4 to 4.9 percent	8%	9%	9%
5 percent or higher	12%	18%	12%
Type of employer contributions			
Matching only	9%	14%	10%
Match plus other employer contribution	17%	25%	20%
Other employer contribution only	9%	13%	9%

Source: Vanguard, 2007.

13 Indeed, we found that contribution rates below 3% or above 3% led to lower quit rates. Results of this regression model are available from the authors.

Our preliminary conclusion is that enrollment rates either above or below 3% do not appear to materially influence quit rates. Because most of the plans in our sample chose the 3% rate, and we had a smaller number of plans and participants covered by rates other than 3%, it remains to be seen whether this conclusion will hold with a larger sample of plans.

Total contribution rates by plan design

Beyond those employees who quit automatic enrollment plans, a broader plan design issue is the adequacy of the total plan contributions for participants remaining in the plan. Our own rule of thumb is that a total contribution rate of between 9% and 12% of employee pay—including both employee and employer contributions—is needed to reach a reasonable level of retirement savings.[14]

Nearly 90% of plans in our sample fell short in their first year, with total contribution rates below 9% (**Figure 11**). Because many offer an automatic annual increase feature, the results improve after five years. After five years of automatic annual increases, only 4 in 10 plans have designs where the total contribution rate are less than 9%, while 6 in 10 have a total contribution rate of 9% or higher.

Plans that only offer automatic enrollment fare the worst, with 80% of plans realizing total contribution rates under 9%. Plans with automatic increases do better: after five years, 87% have total contribution rates of 9% or higher.

A related issue is that 87% of plan sponsors with autopilot or automatic 401(k) designs have implemented them prospectively, for new hires only. Only 13% have applied automatic enrollment to existing eligible nonparticipants. These calculations about the adequacy of plan designs thus apply only to new hires, and so leave existing eligible nonparticipants and low-savers untouched.

Figure 11. Total Contribution Rates Based on Plan Design

For 48 plans with new-hire-only automatic enrollment

Percentage of plans

	Total employee and employer contribution rate		
	<9%	9% to 12%	13%+
All plans with automatic enrollment			
Upon enrollment	86%	9%	5%
After the fifth automatic annual savings rate increase	44%	40%	16%
Plans with automatic enrollment only			
Upon enrollment	80%	16%	4%
Plans with automatic enrollment and automatic annual savings rate increases			
Upon enrollment	90%	3%	7%
After the fifth automatic annual savings rate increase	13%	60%	27%

Source: Vanguard, 2007.

14 Our 9%-to-12% rule is based on a variety of assumptions, including a 35-year saving period, initial wages of $30,000 a year, retirement at age 67 at full Social Security benefits, a 5% real after-expense investment return with 17% volatility, and real wage growth of 1%. We also assume that the employee's sole plan is a defined contribution plan, with no companion defined benefit program.

Total contribution rates by employee behavior

As noted earlier, employees do override some of the sponsor default decisions. We compiled each employee's total contribution rate based on the employee's current plan elective savings rate and any automatic annual increase election. We projected these results forward five years, considering any employer caps on automatic annual savings rate increases and the value of any employer contributions.

Figure 12. Total Contribution Rates Based on Employee Elections

For 48 plans with new-hire-only automatic enrollment

Percentage of employees

	Total employee and employer contribution rate			
	0	1% to 8%	9% to 12%	13%+
Hired under voluntary enrollment				
Upon enrollment	18%	26%	26%	30%
After the fifth automatic annual savings rate increase	18%	24%	26%	32%
Hired under automatic enrollment only				
Upon enrollment	4%	49%	21%	26%
After the fifth automatic annual savings rate increase	4%	47%	19%	30%
Hired under automatic enrollment and automatic annual savings rate increases				
Upon enrollment	5%	50%	29%	16%
After the fifth automatic annual savings rate increase	5%	19%	36%	40%

Source: Vanguard, 2007.

Admittedly, this projection is somewhat artificial, as it is likely that some nonparticipants will begin contributing to the plan and that some participants will change their current contribution behavior over the next five years and some will change employers. However, this projection does give us a proxy for future contribution rates. This analysis was based on our 48-plan sample using new-hire automatic enrollment. It includes employees hired under voluntary enrollment (before automatic enrollment was introduced) as well as those hired under automatic enrollment (after the feature was established).

In five years, for those employees who were hired under voluntary enrollment, 18% were projected to be nonparticipants (**Figure 12**). Nearly a quarter were projected to have total contribution rates between 1% and 8%. In total, about 4 in 10 participants were below our 9% minimum rate.

By comparison, for the participants hired under automatic enrollment, the percentage projected to be nonparticipants, with a zero plan contribution rate, was 4%.[15] Nearly half would be contributing in the 1%-to-8% range. In effect, what the automatic enrollment feature does is to sharply reduce the number of zero savers. But it also reduces the number of employees with total contribution rates higher than 9%.

Automatic annual savings rate increase features have a beneficial effect on the total contribution rate. After five years, the number of employees at a 1%-to-8% total contribution rate falls, from 50% of automatically enrolled participants to 19%. There is a corresponding jump in the number with total contributions in the 9%-to-12% range, and of those with rates higher than 12%.

15 Half of these plans have another employer contribution that employees receive even if they do not make voluntary employee-elective contributions. In some plans this other employer contribution is only made for employees hired after the adoption of automatic enrollment.

Part IV. Implications

Automatic enrollment has emerged as a critical strategy to enhance plan participation rates within 401(k) and other DC savings plans. Automatic enrollment has a particularly beneficial effect on those demographic groups with historically low participation rates in voluntary savings plans, especially young or low-wage employees. It substantially reduces (though it does not eliminate) the "participation gap" that exists among low- and high-wage employees.

Yet while automatic enrollment enhances plan participation, it does lead to lower plan contribution rates, as automatically enrolled participants who would have voluntarily saved at a higher rate remain at the lower plan defaults. Policymakers have introduced a variety of tax and fiduciary incentives in the PPA to ameliorate this situation and to encourage greater use of a fully automatic or autopilot plan design. Such a design combines automatic enrollment, an automatic increase feature, and diversified default investments as an integrated program to enhance retirement security. In our sample of plans, we estimate that 4 in 10 plan sponsors could benefit from adopting such an autopilot design. In particular, such plans should seek to increase total plan contribution—including employee-elective deferrals and all employer contributions—to the 9%-to-12% range.

A related concern is that most plans apply automatic enrollment to new hires, and leave existing eligible nonparticipants and low savers untouched. Also, over time some employees quit the automatic enrollment plan. To address these nonparticipants and low savers, plan sponsors could apply an autopilot design annually to all nonparticipants and low savers. There is an analogy here with health benefits. If an employee chooses not to participate in the employer's health plan, most sponsors require the employee to proactively "opt out" each year. Similarly, individuals not saving for retirement, or saving at suboptimal rates, could be swept in and be required to "quit" saving annually.

Our current study has focused on the demographic and plan design features influencing the effectiveness of automatic enrollment. Yet there are more subjective elements that also play a role in influencing outcomes. In separate research we found that employees who fail to join their employer's plan on a voluntary basis often have low levels of financial literacy.[16] But employees who quit an automatic enrollment arrangement often have both low levels of financial literacy and a mistrust of financial institutions. Perhaps another way to optimize automatic enrollment behavior, and to minimize quit rates, is to communicate clearly about the features and benefits of the plan in order to address problems of illiteracy and mistrust.

While automatic enrollment offers many benefits, it is not clear whether it will become as universal a form of plan design as other 401(k) plan features, such as loans, catch-up contributions, or a Roth savings feature. Automatic enrollment is costly for employers because it leads to higher matching contributions. The tendency of sponsors to automatically enroll new hires may be an effort to minimize higher matching costs. Anecdotally, some sponsors also note that they are philosophically opposed to automatic enrollment and feel that employees should make active choices. In other situations, sponsors are comfortable with existing plan participation rates and see no pressing need to introduce the feature. Forty percent of Vanguard plans have participation rates of 80% or higher.[17]

16 See Agnew, Szykman, Utkus, and Young (2007).

17 Vanguard (2007).

Nonetheless, with the ongoing interest in improving retirement security, and the incentives offered under the PPA, the incidence of automatic enrollment is certain to grow among private-sector DC plans. The Department of Labor's new qualified default regulations are expected to encourage diversified, multi-asset-class portfolios for automatically enrolled participants. Our research underscores the importance of the savings side of the equation. Sponsors need to ensure an adequate level of plan contributions, particularly by including an automatic escalation feature in a savings plan, and targeting a reasonable level of total contributions. Only then can the anticipated benefits of automatic enrollment—namely, an increase in retirement security—be realized for plan participants.

References

Agnew, Julie R, Lisa Szykman, Stephen P. Utkus, and Jean A. Young. 2007. "Literacy, Trust and 401(k) Savings Behavior." Working Paper 2007. Boston College Center for Retirement Research. crr.bc.edu. See also www.vanguard.com/retirementresearch.

Benartzi, Shlomo and Richard H. Thaler. 2007. "Heuristics and Biases in Retirement Savings Behavior." *Journal of Economic Perspectives.* 21(3). pp. 81-104.

Choi, James, J., David Laibson, Brigitte Madrian, and Andrew Metrick. 2006 "Savings for Retirement on the Path of Least Resistance." *Behavioral Public Finance.* Ed. Edward J McCaffery and Joel Slemrod. Russell Sage Foundation. pp. 304-351.

Lusardi, Annamaria and Olivia S. Mitchell. 2007. "Financial Literacy and Planning: Implication for Retirement Wellbeing," Working Paper 2006-01. Wharton Pension Research Council. Philadelphia. www.pensionresearchcouncil.org.

Madrian, Brigitte C. and Dennis F. Shea. 2001. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *Quarterly Journal of Economics.* 116(4): pp. 1149-1187.

Vanguard. 2002. *Using "Money Attitudes" to Enhance Retirement Communications.* Vanguard Center for Retirement Research. www.vanguard.com/retirementresearch.

Vanguard. 2007. How America Saves 2007: *A Report on Vanguard 2006 Defined Contribution Plan Data.* Vanguard Center for Retirement Research. www.vanguard.com/retirementresearch.

Appendix. Data sources and methodology

Data for this study were derived from a subset of DC plans offering elective deferrals on Vanguard's recordkeeping system. The subset was based on those plans for which Vanguard provides compliance testing services and had finalized 2006 compliance testing by March 2007. The sample consisted of 527 plans with voluntary enrollment and 55 plans with automatic enrollment. The sample of automatic enrollment plans included those plans that had implemented automatic enrollment by July 2006. The plans in the automatic enrollment sample adopted the feature between September 2000 and July 2006. Eighty percent of the plans adopted automatic enrollment in 2005 and 2006.

Participation status was derived using two different methodologies. For the comparison of voluntary versus automatic enrollment plans in Part I, participation status was based on compliance testing records indicating that the employee had made a contribution during 2006. Half of the new employees hired under automatic enrollment were in plans with a two-three month opt-out window. In order to allow for the opt-out period, and the administrative data transmission time between the plan and Vanguard (and vice versa), we limited our analysis in Part I to employees hired before October 1, 2006. Thus, only active employees as of year-end 2006 hired between January 1, 2004, and September 30, 2006, were included in the Part I analysis. Hire date, age, income, and participation status were extracted from the 2006 compliance testing data. All other data, such as account balances and equity exposure, was extracted from Vanguard's recordkeeping systems.

For the analysis of automatic enrollment plans in Parts II and III, our analysis was based on employee-elective contribution rates, annual automatic increase rates, and contribution allocations as of June 30, 2007. For this analysis we included active employees as of June 30, 2007, hired before December 31, 2006. Hire date, age, and income were extracted from the 2006 compliance testing data. All other data, such as employee elections, account balances, and equity exposure, was extracted from Vanguard's recordkeeping systems.

In terms of automatic or autopilot 401(k) plan design features, each sponsor is responsible for selecting the default contribution rate, the automatic annual contribution rate increase (if any), and the default investment. Vanguard does attempt to influence the autopilot plan design, with varying degrees of success. The average plan with automatic enrollment in this study is sponsored by a midsized firm with about 2,000 eligible employees. Approximately 5% of the plans studied have more than 5,000 eligible employees, and these plans account for approximately 30% of the participants in our study.

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