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Automatic Enrollment and Its Relation to the Incidence and Distribution of DC Plan Contributions: Evidence from a National Survey of Older Workers

Automatic enrollment has been widely embraced for raising employee participation in 401(k) plans. However, the empirical evidence on the effect of automatic enrollment on plan contributions and retirement saving overall is still imperfect. Using nationally representative data from the Health and Retirement Study (HRS), we find that although automatic enrollment is associated with a higher proportion of workers participating in DC plans, automatically enrolled workers are less likely to contribute to their DC plans and contribute on average less than their voluntarily enrolled counterparts. In contrast, employers of auto-enrolled workers on average contribute more to their employees' accounts than do the employers of voluntarily enrolled workers. Even so, the combined effect is that the total annual contribution rates of automatically enrolled older workers are 1.6 percentage points lower than those of voluntarily enrolled workers.

As defined contribution (DC) plans have grown in popularity, so have concerns about the retirement security they will provide. Using various data sources, including household surveys, employer-provided plan data, and administrative records of earnings and contributions, previous studies have established that participation, contributions, and accumulations in tax-deferred retirement accounts are concentrated predominantly among higher-income individuals (Bassett, Fleming, and Rodrigues 1998; Dushi, Iams, and Tamborini 2011; Dworak-Fisher 2011; Karamcheva and Sanzenbacher 2010). These findings have sounded alarms about growing

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retirement income inequality and stimulated debate about the best ways of boosting DC plan participation and contributions.

Previous research has demonstrated that automatic enrollment is associated with significant increases in 401(k) plan participation and is particularly effective for workers who otherwise would not participate (Beshears et al. 2010; Choi et al. 2002, 2004; Madrian and Shea 2001). However, the empirical evidence is based on data with limitations that have prevented researchers from extrapolating the effects of automatic enrollment to the broader population of workers.

This article reexamines the determinants of DC plan participation and contributions in the presence of automatic enrollment using data that is nationally representative of older workers and that also includes detailed information about their characteristics and economic circumstances. Consistent with other studies, the results show that automatic enrollment is associated with a higher proportion of older workers participating in DC plans—particularly short-tenure workers and the lowest earners. Something not highlighted in other studies, however, is the relationship between automatic enrollment and total DC contributions. Controlling for a number of different factors, we find that automatic enrollment is associated with a lower likelihood that older workers will contribute to their DC plans. As a result, employee contribution rates are *lower* among those who report having been automatically enrolled compared with those who were given a choice to enroll. However, we also find that automatic enrollment is associated with an increased probability that older workers' employers contribute to their plans. As a result, employer contribution rates are *higher* among auto-enrolled workers than voluntarily enrolled workers. Because the higher employer contribution rates are not high enough to offset the lower employee contribution rates, the combined effect is that total contribution rates of automatically enrolled older workers are, on average, 1.6 percentage points lower than those of voluntarily enrolled workers, which translates to about \$1,100 lower annual contributions.

BACKGROUND

The pension landscape in the United States has been gradually shifting as employers move away from offering their employees defined benefit (DB) pension plans toward offering them DC plans. Between 1989 and 2014, the proportion of private industry full-time workers participating in DB pension plans declined from 42 to 19%, while the share participating in DC plans increased from 40 to 52% (U.S. Bureau of Labor Statistics 2014; Wiatrowski 2011). The rise in DC plans has introduced problems not

typically experienced with DB pensions, such as voluntary participation. In DB pensions, employees are usually automatically enrolled and typically cannot opt out. Although slowly changing, in most DC plans employees must elect to participate. As a result, participation rates among private wage and salary workers in 2014 who were offered an employer retirement plan were 86% in DB pensions but only 70% in DC plans (U.S. Bureau of Labor Statistics 2014). Even among full-time workers—whose participation rates are typically higher—participation rates were 88% in DB pensions but only 74% in DC plans (U.S. Bureau of Labor Statistics 2014).

Those employees who are offered plans yet choose not to participate are most concerning to policymakers.¹ Not only are these workers not taking advantage of tax-deferred opportunities to save for retirement, but many are giving away money by not taking advantage of their employer's matching contributions. Recognizing the capacity for automatic enrollment to increase participation in DC plans and thereby increase retirement savings, the U.S. Treasury Department authorized employer adoption of auto-enrollment in 1998 for new hires and again in 2000 for previously hired employees not already participating in their employer's plan (Choi et al. 2004).

Automatic enrollment (also known as “negative election”) is a 401(k) plan feature in which elective employee deferrals begin without requiring the employee to submit a request to join the plan. When automatic enrollment is present, employees have a pre-determined percentage of their pay deferred as soon as they become eligible for the plan. If employees do not want to participate, they must actively request to be excluded from the plan.

Several studies and anecdotal accounts suggest that automatic enrollment has succeeded in dramatically increasing 401(k) participation (Beshears et al. 2010; Choi et al. 2002, 2004; Madrian and Shea 2001). Madrian and Shea (2001), for example, document a 48 percentage point increase in 401(k) participation among newly hired employees and an 11 percentage point increase in participation overall at one large U.S. company 15 months after the adoption of automatic enrollment. The authors also note that automatic enrollment has been particularly successful at increasing 401(k) participation among employees least likely to participate

1. Karamcheva and Sanzenbacher (2010) use the Survey of Income and Program Participation to explore some of the reasons why workers do not participate in their employers' defined contribution plans. While opt-out mechanisms, such as automatic enrollment, are unlikely to increase participation among workers whose reasons for not participating are related to eligibility or monetary constraints, such as “cannot afford to contribute” or “do not want to tie up money,” automatic enrollment might be effective when non-participation is due to inertia—for example, “not thinking about it.”

in retirement savings plans, namely those who are young, lower-paid, black, or Hispanic. Beshears et al. (2010) find that automatic enrollment raises participation even in the absence of more traditional plan features known to be effective, such as the employer match.

Although participation has been demonstrated to increase with automatic enrollment, studies have also shown that automatically enrolled employees tend to remain with the default options of their plan. Madrian and Shea (2001) show that, at least in the short term, only a small fraction of automatically enrolled 401(k) participants elect a contribution rate or asset allocation that differs from the company-specified default. Moreover, most employers set the default employee contribution rate in their 401(k) plans at a rate which does not take full advantage of the employer match (Butrica and Karamcheva 2015). A Vanguard study finds that automatic enrollment leads to lower plan contribution rates, as participants who would have voluntarily saved at a higher rate remain at the lower default contribution rates (Nessmith, Utkus, and Young 2007). Automatically enrolled workers are also more likely to take a cash distribution when separating from their employers (Hung, Luoto, and Burke 2015).

Empirical findings on the effects of automatic enrollment on participation and contributions, so far, originate from three main sources, each having its disadvantages. Individual firm case studies—one such data source—observe participants' behavior before and after automatic enrollment, but typically do not generalize to the larger population of workers (e.g., Beshears et al. 2010; Madrian and Shea 2001). Proprietary plan-level data from plan sponsors usually covers a substantial number of predominantly larger plans but are not necessarily representative of all covered workers (e.g., Nessmith, Utkus, and Young 2007; VanDerhei 2010; Vanguard 2012). Finally, firm-level data such as the Form 5500 series or the National Compensation Survey (NCS), while nationally representative, lack important demographic and socioeconomic information necessary to analyze individual participants' behavior (e.g., Butrica and Karamcheva 2015; Soto and Butrica 2009).

In this article, we reexamine the determinants of DC plan participation and contributions in the presence of automatic enrollment using data that is nationally representative of older workers and also includes detailed information on their characteristics and economic circumstances. We are also able to examine both employer and employee contributions and assess the overall difference in retirement saving between workers who were automatically enrolled and those who enrolled voluntarily. A recent article by Burke, Hung, and Luoto (2015) used the same dataset to examine the characteristics of workers who opt out after being automatically enrolled.

DATA

Our data come from the Health and Retirement Study (HRS), a large nationally representative survey of Americans age 51 and older that has been tracking households since 1992. The HRS provides valuable information on personal characteristics, employment, earnings, income, financial assets, and pensions. In 2006, the HRS began asking household respondents about automatic enrollment, making it the first nationally representative household survey to collect this information.

Unfortunately, the survey questions involving auto-enrollment changed twice since they were first asked. In 2006 and later in 2012 and 2014, only respondents who reported being included in a DC plan were asked about auto-enrollment. The answer to that question allows us to determine whether the respondent was automatically or voluntarily enrolled in the plan they say they are included in. The survey question was the following:

When you became eligible to participate in this plan, were you given a choice of whether to participate, were you enrolled automatically, or what?

In 2008 and 2010, both respondents who reported being included in a DC plan and those who reported not being included but eligible were asked whether the plan is one where workers are automatically enrolled. The answer to that question allows us to determine whether the DC plan that respondents were offered (i.e., they were eligible to enroll in) had an automatic enrollment provision, regardless of whether the respondents are presently included in the plan. The survey question was the following:

In some firms, workers who want to participate in their pension plan have to sign up for the plan. In other firms, workers are automatically enrolled and if they don't want to participate they have to withdraw from the plan. Which is it with your employer?

Because of the skip patterns in these survey questions, we perform our analysis on two separate samples. Our analyses of respondents offered DC plans are based only on pooled data from the 2008 and 2010 waves. Workers are *offered* a DC plan if they report being included in their employer's DC plan or, if not included, they report that their employer offers a DC plan for which they are eligible but choose not to participate. Our analyses of respondents who have DC plans use pooled data from the 2006, 2008, 2010, 2012, and 2014 waves. Workers *have* a DC plan if they report being included in their employer's DC plan.

Our analysis focuses on two main outcomes of interest. First, we examine participation rates among those *offered* a DC plan. Workers *participate* in a plan if they report that they or their employers contributed to their account. This measure is similar to participation measures in other

studies. For example, in the NCS the Bureau of Labor Statistics classifies participants as all those in noncontributory plans plus those in contributory plans who have made the required contributions.² Second, we examine contribution rates among those who *have* a DC plan. Contribution rates are contribution amounts divided by earnings, unless respondents report their contribution rates.^{3,4} Figure 1 is a schematic showing of how we applied the HRS questions in constructing our samples. The figure also illustrates the logical transitions between the definitions of being offered a DC plan, having a DC plan, and participating in a DC plan.

We restrict our analyses to individuals between the ages of 51 and 64 who report working and have positive earnings at the interview date, and who are not self-employed or disabled.⁵ After dropping some respondents who were missing key information, our samples include 3,353 respondents in our analysis of workers with DC plan offers based on the 2008 and 2010 waves, and 5,341 respondents in our analysis of workers with DC plans based on the 2006 through 2014 waves (Table A1).⁶ The respondents in each sample are similar in age, sex, educational attainment,

2. Turner, Muller, and Verma (2003) note that there are many different definitions of pension participation. The three definitions commonly used are based on: positive account balances (regardless of whether the employee or employer made contributions), the worker answering “yes” to the question “Are you a participant?” and the worker contributing to a plan.

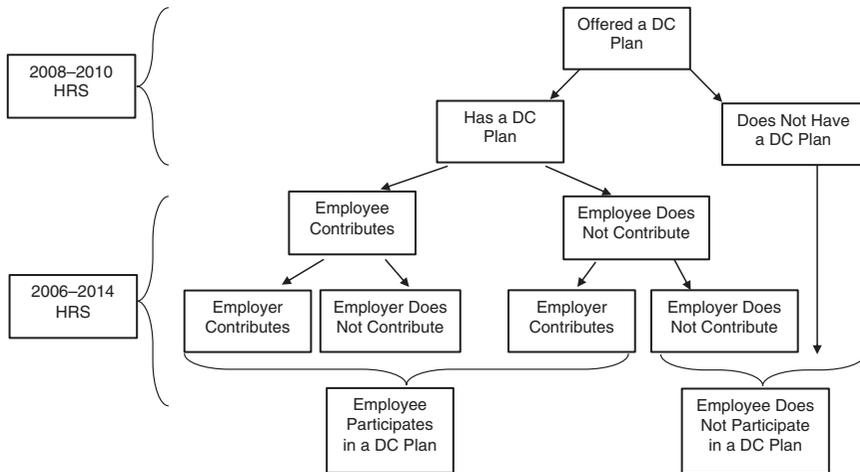
3. Individuals in the HRS can report own and employer contributions in the form of percent contributed or dollar amount. In turn, those percentages or dollar amounts can be reported as actual numbers or can be reported as falling within a bracket. In the case of bracketed responses, we assumed the midpoint of each bracket to be the worker’s intended response. In addition, a small share of individuals reports their employer contributions as a match percent. We assumed that reported match percentages below 20 indicate the maximum share of earnings that the employer matches, whereas reported match percentages above 20 indicate the share of the employee contribution that the employer matches.

4. Respondents who report being included in a plan at their job are asked to list the number and types of plans they have. Then for each plan, respondents are asked to report their own and their employer’s contributions. Between 2000 and 2010, respondents could report on up to four pension plans at their current job and were asked to list them in order of importance. In 2012 and 2014, respondents were not limited on the number of plans they could report and could list them in any order. In all survey years, we analyze contribution rates for only the first DC plan that respondents report. For 2012 and 2014, we assume that the first plan mentioned is the one considered to be most important.

5. We exclude individuals older than age 65 because of concerns that self-selection into work at these older ages might bias our results. Beyond age 65 most workers are eligible for Medicare and for full Social Security retirement benefits.

6. Key variables include indicators of whether respondents were included in a DC plan, were automatically enrolled, made or received contributions in their DC accounts, employee and employer contribution rates, and job tenure. We omitted 699 observations from the 2008–2010 sample and 1,854 observations from the 2006–2014 sample because at least one of these key variables was missing or, in the case of contribution rates, had unrealistically high values. To avoid bias due to outliers we dropped observations that fell within the top 0.5% of reported contribution rates.

FIGURE 1
Sample Structure and Definitions



Notes: Respondents are classified as being “offered a DC plan” if they report being included in a DC plan or if they report that they are not included but are eligible for a DC plan with their current employer. Respondents are classified as “having a DC plan” if they report being included in a DC plan with their current employer. Respondents are classified as “participating in a DC plan” if they or their employers contribute to their DC plan.

race and ethnicity, couple status, earnings, and net worth (Table 1). While the sample of workers with DC offers is slightly less tenured than the sample of those who have DC plans, this is to be expected given the different sample restrictions and HRS waves.⁷

Table 1 further illustrates how our two estimation samples compare. Not all workers who were offered a DC plan currently have a plan and not all workers who have a plan are currently participating in that plan.⁸ In our analyses, we consider participants to include those whose DC accounts receive contributions, regardless of the source. Among workers who were offered a DC plan, 86.7% have one and 84.8% participate in one. In contrast, 100% of workers in our second sample have a DC plan

7. Short-tenure workers are more likely to decline DC offers. If we restrict the sample of those offered DC plans to only those who have (i.e., accepted) DC plans, the share of short-tenure workers declines from 21.7 to 18.2%. Additionally, the sample of those with DC plans is based on later HRS waves, which means that respondents will have accumulated more tenure. If we restrict the sample of those who have DC plans to only the 2008 and 2010 waves, the share of short-tenure workers increases from 14.1 to 18%.

8. The reason is that not all workers who were offered a DC plan report being included in one and not all who are included in a plan report making or receiving contributions into their accounts.

TABLE 1
Sample Characteristics of Workers Ages 51 to 64

| | Sample 2008–2010 Workers Offered a DC Plan | Sample 2006–2014 Workers who Have a DC Plan |
|--|--|---|
| Age | 56.6 | 57.0 |
| Male | 45.7 | 46.2 |
| Less than high school | 5.5 | 4.6 |
| High school graduate | 29.5 | 28.0 |
| Some college | 30.4 | 31.6 |
| College or more | 34.6 | 35.8 |
| White | 69.5 | 72.3 |
| Black | 17.9 | 16.0 |
| Hispanic | 8.9 | 7.9 |
| Other | 3.5 | 3.6 |
| In a couple | 73.9 | 75.5 |
| Tenure | 14.1 | 15.9 |
| Short-tenure worker | 21.7 | 14.1 |
| Annual earnings | \$64,727 | \$69,001 |
| Per person net worth | \$214,523 | \$238,214 |
| Has a DC plan | 86.7 | 100.0 |
| Participates in DC plan | 84.8 | 96.0 |
| Has a DC plan with automatic enrollment | 27.4 | 29.0 |
| Employee contributes only | 17.3 | 18.7 |
| Employer contributes only | 8.4 | 7.9 |
| Employee and employer contribute | 59.1 | 69.4 |
| Neither employee nor employer contribute | 15.2 | 4.0 |
| <i>N</i> | 3,353 | 5,341 |

Notes: Both samples include workers ages 51 to 64 who are not self-employed or disabled. The 2008–2010 sample is further restricted to respondents who report being included in a DC plan or not included but eligible for a DC plan (i.e., offered a DC plan) with their current employer, while the 2006–2014 sample is further restricted to respondents who report being included in a DC plan (i.e., have a DC plan) with their current employer. Dollar amounts are reported in 2014 real dollars adjusted for inflation using the Consumer Price Index. *N* = number of observations. Source: Authors' calculations using data from the 2006–2014 waves of the Health and Retirement Study.

and 96% of them participate. When we restrict our sample of workers offered a DC plan to those who have a DC plan, the share of participants increases from 84.8 to 97.8% (not shown). In both samples, between 17 and 19% of workers report that only they contribute to their DC plans and around 8% report that only their employers contribute. Among workers offered a DC plan, another 59.1% report that both they and their employers contribute to their plans and 15.2% report that no one contributes to their plans. Among workers who have a DC plan, 69.4% report that both they and their employers contribute and only 4% report that no one contributes to their plans. Just over a quarter of workers who

have a DC plan reported having been automatically enrolled. A similar share of workers offered a DC plan report that the plan has automatic enrollment.

METHODOLOGY

We begin our analyses by showing the relationship between automatic enrollment and participation and contribution rates. We also examine the extent to which we observe the same differences by job tenure and earnings level. We define short-tenure workers as those with 4 years or less of tenure on the main job.⁹

Then in our empirical specifications, we use linear probability models to analyze the likelihood of participating in a DC plan if offered a DC plan and the determinants of making positive contributions to a DC plan among workers who have one.¹⁰ Next, we analyze the determinants of contribution rates for those who have a DC plan. Employee and employer contribution rates are left censored because they are bounded at 0. Because OLS estimation could lead to biased and inconsistent estimates, we use maximum likelihood to fit a censored (tobit) regression model. For all specifications, we report panel-robust standard errors clustered on the individual level.

We separately analyze employee, employer, and total contributions as functions of personal demographic and socioeconomic characteristics and the automatic enrollment provision—our main variable of interest.¹¹ Other predictors in the models include age, sex, education, race and ethnicity,

9. In the last section of the article, we perform a range of sensitivity analyses varying the definition of short-tenure. Because the HRS is a biennial survey, tenure defined in two-year brackets is more consistent with the structure of the survey. Recent studies on automatic enrollment have shown that automatic enrollment has a stronger effect on new hires (or individuals with short tenure) than it does on workers who were with their employers for a while before they were automatically enrolled. Moreover, recent literature has shown that the effect of inertia following automatic enrollment weakens over time and somewhat stabilizes by the 4th year following the implementation (Choi et al. 2004). Because we do not know when respondents were automatically enrolled, we use the short-tenure definition as a proxy of automatic enrollment instituted for new hires.

10. We prefer linear probability models to probit or logit models because the linear framework makes the interpretation of the marginal effects on the interaction terms easier (interaction terms include automatic enrollment interacted with short-tenure worker status and/or earnings quintiles). The results from corresponding probit models are similar and are available upon request.

11. We treat the automatic enrollment variable as plausibly exogenous in all specifications. The underlying assumption is that individuals do not self-select into jobs based on the auto-pilot features of those jobs. For example, previous literature has highlighted the importance of controlling for possible bias from self-selection of workers with a higher propensity to save into jobs that offer 401(k) plans (e.g., Karamcheva and Sanzenbacher 2014). However, our analysis focuses only on individuals who have already self-selected into jobs that offer 401(k) plans (and are eligible to participate), and thus

marital status, log of other income,¹² log of per person household net worth,¹³ whether the spouse contributes to his or her own DC plan, and year dummies to capture changes in worker behavior over time. We also include an indicator of whether the worker is a short-tenure worker on the current job and indicators of earnings quintiles.

We express all dollar amounts in constant 2014 dollars (indexed to changes in the Consumer Price Index).

RESULTS

First, we describe how DC participation rates differ between automatically and voluntarily enrolled workers. Then we show how contribution rates differ by automatic enrollment. We focus on the degree to which any overall differences we observe are similar by job tenure and earnings level. Finally, we discuss our results from multivariate analyses that control for various demographic and economic characteristics and highlight the extent to which these results support our descriptive findings.

Does DC Participation Differ by Automatic Enrollment among Workers Offered DC Plans?

Among older workers, we find that those offered DC plans with auto-enrollment are more likely to report positive plan contributions than those offered plans with voluntary enrollment. For the purposes of this analysis, workers' self-reported DC contributions indicate their participation in DC plans, regardless of whether contributions come from the workers themselves or from their employers. Table 2 shows that 91.3% of older workers who were offered plans with automatic enrollment participated, compared with only 82.3% of those who were given the

are arguably more comparable to one another than to workers who are in jobs that do not offer 401(k) plans. Any additional bias resulting from self-selection on automatic enrollment is unlikely or expected to be small.

12. Other income is household income minus own earnings, where household income includes own and spouse earnings, pension income, Social Security Disability Insurance, Supplemental Security Income, Social Security retirement income, unemployment insurance, worker's compensation, other government transfers, plus household business or farm income, business income, gross rent, dividend and interest income, trust funds or royalties, other asset income, and all other household income.

13. Household net worth is the value of primary residence, net value of real estate, net value of vehicles, net value of businesses, IRAs and Keogh accounts, net value of stocks and bonds, the value of checking accounts, savings accounts, money markets, certificates of deposit, government savings bonds, and T-bills, and the net value of all other savings minus the value of mortgages, home loans, and other debt. We divide by 2 if married to create a per person measure.

TABLE 2
Share of Workers Ages 51 to 64 Who Participate in a DC Plan among Those Offered a Plan, by Automatic Enrollment (%)

| | With Automatic Enrollment | Without Automatic Enrollment |
|--------------------------|---------------------------|------------------------------|
| Overall | 91.3 | 82.3*** |
| <i>Job Tenure</i> | | |
| Long-tenure worker | 92.5 | 87.0*** |
| Short-tenure worker | 86.3 | 66.1*** |
| <i>Earnings Quintile</i> | | |
| Bottom | 86.7 | 63.6*** |
| Second | 86.7 | 78.8** |
| Third | 92.9 | 85.9** |
| Fourth | 92.3 | 90.6 |
| Top | 97.4 | 93.5** |
| <i>N</i> | 920 | 2,433 |

Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who are offered a DC plan with their current employer. Respondents participate in a plan if they or their employers contribute to their DC plan. Earnings quintiles are defined on a full-time equivalent basis. For each subcategory of workers, t-tests describe differences in means between workers in plans with and without automatic enrollment. *N* = number of observations. Source: Authors' calculations from the 2008 and 2010 waves of the Health and Retirement Study.

Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

option to enroll. Differences in participation rates by auto-enrollment are largest for short-tenure workers and the lowest earners. For example, among short-tenure workers, 86.3% of those offered DC plans with auto-enrollment report participating, compared with only 66.1% of those offered plans without automatic enrollment. Also, for the lowest earners, participation rates are 86.7% among those offered plans with an auto-enrollment feature, but only 63.6% among those offered plans with voluntary enrollment. So, similar to other studies, we find evidence suggesting that automatic enrollment increases participation among workers offered DC plans—particularly those workers least likely to voluntarily opt in.

Does the Propensity to Contribute Differ by Automatic Enrollment among Workers Who Have DC Plans?

Different from other studies, however, we find that among those who have a DC plan, workers who were automatically enrolled when they became eligible are less likely to contribute to their DC plan than those who voluntarily enrolled (Table 3). This finding could reflect differences in the composition of workers if auto-enrolled workers are less inclined to save

TABLE 3

Share of Workers Ages 51 to 64 Who Participate in a DC Plan among Those Who Have a DC Plan, by Source of Contribution and Automatic Enrollment (%)

| | Employee Contributes | | Employer Contributes | |
|--------------------------|----------------------|----------------------|----------------------|----------------------|
| | Auto Enrolled | Voluntarily Enrolled | Auto Enrolled | Voluntarily Enrolled |
| Overall | 67.2 | 91.1*** | 77.1 | 71.3*** |
| <i>Job Tenure</i> | | | | |
| Long-tenure worker | 66.9 | 91.3*** | 77.4 | 69.9*** |
| Short-tenure worker | 69.2 | 90.2*** | 75.1 | 79.8 |
| <i>Earnings Quintile</i> | | | | |
| Bottom | 64.0 | 86.1*** | 76.7 | 73.1 |
| Second | 65.1 | 88.6*** | 76.7 | 74.4 |
| Third | 66.3 | 92.1*** | 73.3 | 71.0 |
| Fourth | 68.9 | 92.8*** | 77.5 | 68.5** |
| Top | 71.9 | 95.9*** | 81.5 | 69.5*** |
| <i>N</i> | 1,400 | 3,941 | 1,400 | 3,941 |

Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Respondents participate in a plan if they or their employers contribute to their DC plan. Earnings quintiles are defined on a full-time equivalent basis. For each subcategory of workers, t-tests describe differences in means between workers who are automatically and voluntarily enrolled in their DC plans. *N* = number of observations. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study.

Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

than voluntarily enrolled workers. It could also reflect differences in the composition of plans if auto-enrolled workers are more likely than opt-in workers to be in noncontributory plans.¹⁴ Finally, it could reflect confusion among auto-enrolled workers who are unsure whether contributions come from themselves or their employers because they were defaulted into their plans. The HRS does not allow us to separately identify these potential causes; however, it does provide some evidence that the higher presence of noncontributory plans among workers with automatic enrollment plan features might be a significant driver.¹⁵

14. For our analysis, noncontributory plans are those plans which *permit* but *do not require* employees to contribute. This definition would include money-purchase or profit-sharing plans that typically do not require employee contributions, as well as 401(k) plans with noncontingent employer contributions.

15. Starting with the 2008 wave, respondents were asked to report the name of the plan that they are included in (“how the employer calls it”). We grouped the plans in two categories: general DC plans (including 401(k) plans, supplemental retirement accounts, defined contribution plans, 401a plans, 403b plans, 457 plans, and thrift and savings plans) and profit-sharing or similar plans (including profit sharing plans, employee stock ownership, money purchase plans, portable cash option plans, employee stock purchase, and SEP or simple plans). Based on pooled data from the 2008, 2010, 2012, and

Among older workers who have a DC plan, only 67.2% of those automatically enrolled report contributing to the plan compared with 91.1% of those who voluntarily enrolled (Table 3). Although differences by auto-enrollment in participation rates among those offered a DC plan are considerably higher for short-tenure workers and lower earners (see Table 2), this is not the case for workers who have a DC plan. Instead we find that differences by automatic enrollment in the share of workers making contributions are similar for long-tenure and short-tenure workers, similar across the earnings distribution, and reflect the overall difference.

A different pattern emerges when we consider employer contributions. First, we find that auto-enrolled workers are more likely to receive employer contributions to their DC plans than voluntarily enrolled workers (Table 3). Overall, 77.1% of workers with automatic enrollment report employer contributions compared with only 71.3% of workers without auto-enrollment. Second, we find differences by automatic enrollment for workers with different tenures and earnings. The largest differences are for long-tenure workers (7.5 percentage points) and the highest earners (12 percentage points).

Do Average Contribution Rates Differ by Automatic Enrollment among Workers Who Have DC Plans?

Among older workers who have a DC plan, mean employee contribution rates are significantly lower for workers who are automatically enrolled than for those who are not, regardless of job tenure or earnings (Table 4). The average worker contributes only 4.9% if auto-enrolled and 7.7% if voluntarily enrolled. The distribution of contribution rates tells the same story. Figure 2 depicts histograms of employee contribution rates. They show that about 41% of auto-enrolled workers contribute less than 2% (including nothing) to their retirement plans compared with only 16% of workers without auto-enrollment. At least some of this difference is driven

2014 waves, automatic enrollment is significantly more prevalent among profit-sharing plans (49%) compared with 401(k)-type plans (20%). Additionally, for auto-enrolled workers, the likelihood of receiving employer contributions only weakly depends on employees contributing themselves. The share of those receiving employer contributions is around 79% for employees who contribute and 74% for those who do not (the difference not being statistically significant at 95% confidence level). For voluntarily enrolled workers, in contrast, the probability of receiving employer contributions does appear to depend strongly on whether employees contribute. The share of those receiving employer contributions is 74% for employees who contribute, but only 42% for employees who do not contribute.

TABLE 4

Mean Contribution Rates among Workers Ages 51 to 64 Who Have a DC Plan, by Source of Contribution and Autoenrollment (%)

| | Employee Contributions | | Employer Contributions | | Total Contributions | |
|--------------------------|------------------------|----------------------|------------------------|----------------------|---------------------|----------------------|
| | Auto Enrolled | Voluntarily Enrolled | Auto Enrolled | Voluntarily Enrolled | Auto Enrolled | Voluntarily Enrolled |
| Overall | 4.9 | 7.7*** | 5.0 | 3.9*** | 9.9 | 11.6*** |
| <i>Job Tenure</i> | | | | | | |
| Long-tenure worker | 4.9 | 7.8*** | 5.0 | 3.8*** | 9.9 | 11.6*** |
| Short-tenure worker | 5.0 | 7.1*** | 5.0 | 4.1 | 10.0 | 11.2 |
| <i>Earnings Quintile</i> | | | | | | |
| Bottom | 3.1 | 5.9*** | 3.6 | 4.2 | 6.7 | 10.1*** |
| Second | 4.3 | 6.6*** | 4.7 | 3.9* | 9.0 | 10.5** |
| Third | 4.7 | 8.0*** | 5.0 | 4.2 | 9.7 | 12.3*** |
| Fourth | 6.5 | 8.7*** | 5.9 | 3.5*** | 12.4 | 12.3 |
| Top | 6.2 | 9.2*** | 5.7 | 3.6*** | 11.9 | 12.8* |
| <i>N</i> | 1,400 | 3,941 | 1,400 | 3,941 | 1,400 | 3,941 |

Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Earnings quintiles are defined on a full-time equivalent basis. For each subcategory of workers, t-tests describe differences in means between workers who are automatically and voluntarily enrolled in their DC plans. *N* = number of observations. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study.

Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

by the lower incidence of positive contributions among those automatically enrolled (see Table 3).¹⁶

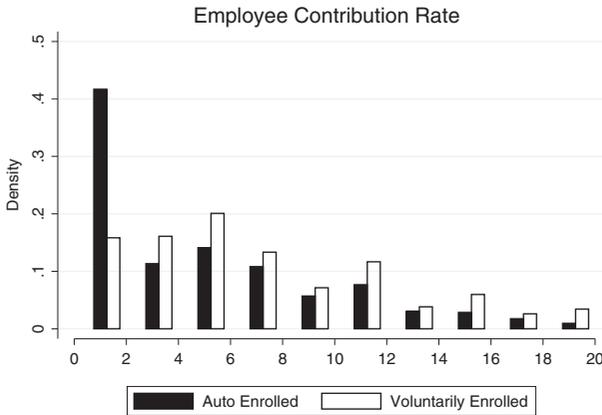
In contrast, employer contribution rates are higher for workers who are auto-enrolled than for those who voluntarily enrolled. Overall, employers contribute 5% to workers who are automatically enrolled and only 3.9% to those who are not (Table 4). The largest differences are for long-tenure workers and the highest earners. Among the highest earners, employers contribute 5.7% if automatically enrolled and only 3.6% if not. Figure 3 depicts histograms of employer contribution rates. They show that employer contribution rates are 4% or higher for about 46% of auto-enrolled workers, but only 37% of voluntarily enrolled workers. Furthermore, employer contribution rates are higher than 8% for about 19% of workers who are auto-enrolled, but only 9% of those who voluntarily enrolled.

Taking account of both employee and employer contributions, average total contribution rates are 1.7 percentage points lower for workers who

16. We find that the difference persists, even if diminished, when we restrict the analysis to only those with positive contributions. The results are not reported but are available upon request.

FIGURE 2

Distribution of Employee Contribution Rates Among Workers Ages 51 to 64 Who Have a DC Plan, by Auto-enrollment



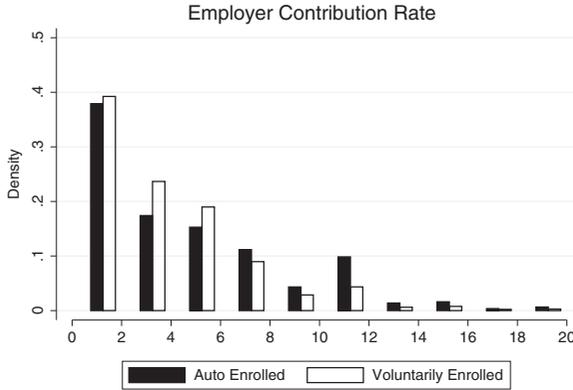
Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Each bin is 2 percentage points wide and each bar represents the share of contribution rates that are higher or equal to the lower bound and lower than the upper bound of the bin. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study.

are auto-enrolled than for those who are not (9.9 vs. 11.6% in Table 4). Further Figure 4 shows that the distribution of total contribution rates is skewed toward lower contribution rates for automatically enrolled workers and skewed toward higher contribution rates for voluntarily enrolled workers. There is a higher density of workers whose contribution rates are 4% or less among those who were automatically enrolled than those who opted in. Although this finding is based in part on the higher propensity of automatically enrolled workers to not contribute to their DC plans, the difference continues when we restrict the analysis to only those with positive contributions. This is not necessarily surprising since other studies have found that automatically enrolled workers tend to default into lower than average contribution rates and to remain there (Madrian and Shea 2001; Nessmith, Utkus, and Young 2007).

Multivariate Analyses of the Likelihood of Participating in DC Plans

The descriptive analyses revealed important differences by automatic enrollment with respect to DC participation and the source of plan contributions (i.e., employee or employer). In this section, we examine whether these relationships still exist after controlling for other factors.

FIGURE 3
Distribution of Employer Contribution Rates among Workers Ages 51 to 64 Who Have a DC Plan, by Auto-enrollment



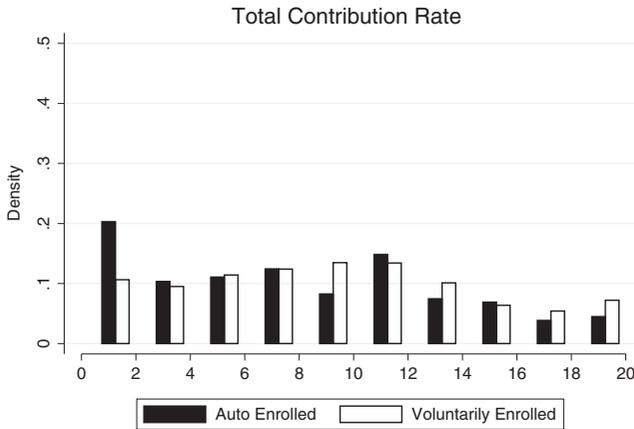
Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Each bin is 2 percentage points wide and each bar represents the share of contribution rates that are higher or equal to the lower bound and lower than the upper bound of the bin. Source: Authors’ calculations from the 2006–2014 waves of the Health and Retirement Study.

Table 5 presents estimated marginal effects of automatic enrollment on the probability of participating in an offered DC plan. As previously mentioned, this analysis is limited to only the 2008 and 2010 HRS waves because these are the only survey years between 2006 and 2014 in which we can infer DC offers for those respondents who report not having a DC plan.

Automatic enrollment is associated with an 8 percentage point higher probability of participating in a DC plan and is statistically significant with a 99% confidence level (column 1). Columns 2, 3, and 4 of Table 5 test for differences in automatic enrollment by job tenure and earnings. As in the descriptive analyses, we find that automatic enrollment has the biggest effect on short-tenure workers and the lowest earners. Automatic enrollment is associated with only a 5.1 percentage point higher likelihood of participating in a DC plan for long-tenure workers, but a 19.8 percentage point higher likelihood of participating for short-tenure workers (column 2).¹⁷ Additionally, automatic enrollment’s positive effect on participating

17. This finding is based on a t-test on the sum of the coefficient on automatic enrollment and the coefficient on the interaction of automatic enrollment and short-tenure. We test whether the linear combination is significantly different from zero. We use the same procedure to test for the effect of automatic enrollment on individuals in different earnings quintiles.

FIGURE 4
Distribution of Total Contribution Rates among Workers Ages 51 to 64 Who Have a DC Plan, by Auto-enrollment



Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Each bin is 2 percentage points wide and each bar represents the share of contribution rates that are higher or equal to the lower bound and lower than the upper bound of the bin. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study.

in a DC plan is largest for the lowest earners. For example, auto-enrollment is associated with a 21.7 percentage point increase in the likelihood of participating in a plan for the lowest earners, but only a 6.6 percentage point increase in the likelihood for middle earners. For other earnings groups, the impact of auto-enrollment on participation is statistically different from zero, but not statistically different from its effect on middle earners (column 3). The results are similar controlling for both job tenure and earnings (column 4). Other independent variables have the expected relationship with the probability of participating given an offer. The full set of coefficients from these models is available from the authors upon request.

Multivariate Analyses of the Likelihood of Receiving DC Contributions

Table 6 presents estimated marginal effects of automatic enrollment on the probability of receiving DC contributions among those who have a DC plan. In this analysis, we use the 2006 through 2014 HRS waves to estimate separate regressions for the likelihood that employees make DC contributions and the probability that employees' DC accounts receive

TABLE 5

Linear Probability Model of DC Plan Participation among Workers Ages 51 to 64 Offered a DC Plan

| | Pr(participate in DC plan = 1 offered DC plan = 1) | | | |
|-----------------------------|--|-----------------|-----------------|---------------|
| | (1) | (2) | (3) | (4) |
| Automatic enrollment | 0.080*** | 0.051*** | 0.066*** | 0.047* |
| | (0.012) | (0.013) | (0.025) | (0.025) |
| Automatic enrollment * | | 0.147*** | | 0.125*** |
| Short-tenure | | (0.035) | | (0.036) |
| Automatic enrollment * | | | 0.151*** | 0.131*** |
| Bottom quintile | | | (0.044) | (0.044) |
| Automatic enrollment * | | | 0.014 | 0.006 |
| Second quintile | | | (0.039) | (0.039) |
| Automatic enrollment * | | | -0.056 | -0.056 |
| Fourth quintile | | | (0.035) | (0.035) |
| Automatic enrollment * | | | -0.030 | -0.031 |
| Top quintile | | | (0.030) | (0.030) |
| Adjusted R^2 | 0.120 | 0.125 | 0.127 | 0.130 |
| N | 3,353 | 3,353 | 3,353 | 3,353 |

Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who are offered a DC plan with their current employer. Respondents participate in a plan if they or their employers contribute to their DC plan. Other controls include age, age squared, sex, education, race and ethnicity, marital status, log other income, log per person household net worth, whether spouse contributes to his or her own DC plan, whether respondent is a short-tenure worker, earnings quintiles (defined on a full-time equivalent basis), and year dummies. Robust standard errors clustered on individuals are reported in parentheses. N = number of observations. Source: Authors' calculations from the 2008 and 2010 waves of the Health and Retirement Study.

Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

contributions from their employers. Even controlling for other factors, we find that workers who are automatically enrolled are 23.5 percentage points less likely to contribute to their plans than those who opt-in (column 1), and that the impact of automatic enrollment on the likelihood that employees contribute to their DC plans does not statistically differ by tenure or earnings (columns 2, 3, and 4).

Although auto-enrolled workers are less likely to contribute to their DC plans, they are more likely than opt-in workers to be in plans that their employers contribute to. For example, auto-enrolled workers are 6.5 percentage points more likely than opt-in workers to have employers contribute to their DC plans (column 5). Similar to the descriptive results and even controlling for other factors, we find strong evidence that automatic enrollment impacts employer contributions of long-tenure workers and higher earners. If automatically enrolled, the probability of receiving

TABLE 6
Linear Probability Model of Making Positive Contributions to a DC Plan among Workers Ages 51 to 64 Who Have a DC Plan, by Source of Contribution

| Variable | Pr(contribute to a DC plan = 1 has DC plan = 1) | | | | | | | |
|--|---|-----------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|-------------------------|-------------------------|
| | Employee Contributes | | | | Employer Contributes | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Automatic enrollment | -0.235*** (0.015) | -0.239*** (0.017) | -0.258*** (0.032) | -0.261*** (0.033) | 0.065*** (0.015) | 0.082*** (0.016) | 0.018 (0.033) | 0.032 (0.034) |
| Automatic enrollment * Short-tenure | | 0.030 (0.039) | | 0.027 (0.040) | | -0.121*** (0.040) | | -0.119*** (0.040) |
| Automatic enrollment * Bottom quintile | | | 0.042 (0.047) | 0.040 (0.048) | | | 0.022 (0.046) | 0.034 (0.046) |
| Automatic enrollment * Second quintile | | | 0.027 (0.047) | 0.027 (0.047) | | | 0.023 (0.045) | 0.024 (0.045) |
| Automatic enrollment * Fourth quintile | | | 0.023 (0.046) | 0.023 (0.046) | | | 0.081* (0.046) | 0.082* (0.046) |
| Automatic enrollment * Top quintile | | | 0.021 (0.047) | 0.021 (0.046) | | | 0.110** (0.046) | 0.110** (0.046) |
| Adjusted R ² | 0.095 | 0.095 | 0.094 | 0.094 | 0.030 | 0.031 | 0.031 | 0.032 |
| N | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 |

Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Respondents participate in a plan if they or their employers contribute to their DC plan. Other controls include age, age squared, sex, education, race and ethnicity, marital status, log other income, log per person household net worth, whether spouse contributes to his or her own DC plan, whether respondent is a short-tenure worker, earnings quintiles (defined on a full-time equivalent basis), and year dummies. Robust standard errors clustered on individuals are reported in parentheses. N = number of observations. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study. Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

employer contributions increases 8.2 percentage points for long-tenure workers (column 6) and 12.8 percentage points for the highest earners (column 7). In contrast, the estimated effect of automatic enrollment on the employer contributions of short-tenure workers and lower earners is not statistically different from zero.

Multivariate Analyses of Contribution Rates

The descriptive analyses also revealed important differences in DC contribution rates by automatic enrollment. In this section, we examine whether these relationships still exist after controlling for other factors.

Table 7 presents findings from tobit regressions of contribution rates. Automatic enrollment is associated with lower employee contribution rates—a finding that also confirms the descriptive results. Employee contribution rates are 3.9 percentage points lower for automatically enrolled workers than for opt-in workers (column 1). Linear combination tests confirm that the association between automatic enrollment and employee contribution rates is negative for short-tenure workers, as well as for long-tenure workers (column 2), and for other earnings groups, as well as for middle earners (column 3); however, the magnitude of the impact does not statistically differ by job tenure or earnings.

Automatic enrollment is also associated with higher employer contribution rates. Overall, employer contribution rates are 1.7 percentage points higher for auto-enrolled workers than for voluntarily enrolled workers (column 5). The largest impacts are for long-tenure workers and higher earners. Among long-tenure workers, for example, those who are auto-enrolled have employer contribution rates that are 1.8 percentage points higher than those who are voluntarily enrolled (column 6). In contrast, employer contribution rates among short-tenure workers are not statistically different between those auto-enrolled and those voluntarily enrolled. Additionally, automatic enrollment is associated with employer contribution rates that are 3.1 percentage points higher for the highest earners, but only 1.4 percentage points higher for workers in the second earnings quintile (column 7). For the lowest and middle earners, employer contribution rates do not statistically differ by automatic enrollment.

The combined effect is that total contribution rates are 1.6 percentage points lower for auto-enrolled workers compared with voluntarily enrolled workers (column 9). Automatic enrollment is associated with total contribution rates that are 1.7 percentage points lower among long-tenure workers and 1.3 percentage points lower among short-tenure workers. However, for the latter group, the effect is less precisely measured and not statistically significant at a 90% confidence level (column 10). Linear combination tests reveal that automatic enrollment is also associated with lower total contribution rates for workers in the bottom three quintiles, although not statistically significant at 90% confidence for the second quintile. For the lowest earners, total contribution rates are 3.3 percentage points lower for workers who are automatically enrolled compared with those who voluntarily enrolled. In contrast, the effect of automatic enrollment on total contribution rates for workers in the top two earnings quintiles is not statistically different from zero (column 11).

TABLE 7
Tobit Regression of DC Plan Contribution Rates among Workers Ages 51 to 64 Who Have a DC Plan, by Source of Contribution

| Variable | Employee Contribution | | | | Employer Contribution | | | |
|-----------------------------|-----------------------|------------------|------------------|------------------|-----------------------|-----------------|--------------|--------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Automatic enrollment | -3.874*** | -3.985*** | -4.579*** | -4.678*** | 1.672*** | 1.810*** | 0.942 | 1.020 |
| | (0.310) | (0.331) | (0.607) | (0.616) | (0.291) | (0.309) | (0.626) | (0.636) |
| Automatic enrollment * | | 0.823 | | 0.857 | | -1.007 | | -0.691 |
| Short-tenure | | (0.750) | | (0.750) | | (0.791) | | (0.788) |
| Automatic enrollment * | | | 0.481 | 0.404 | | | -1.236 | -1.167 |
| Bottom quintile | | | (0.819) | (0.819) | | | (0.801) | (0.798) |
| Automatic enrollment * | | | 1.222 | 1.215 | | | 0.458 | 0.462 |
| Second quintile | | | (0.838) | (0.838) | | | (0.883) | (0.883) |
| Automatic enrollment * | | | 1.319 | 1.317 | | | 2.320** | 2.326** |
| Fourth quintile | | | (0.934) | (0.933) | | | (0.949) | (0.948) |
| Automatic enrollment * | | | 0.552 | 0.553 | | | 2.201*** | 2.202*** |
| Top quintile | | | (0.893) | (0.892) | | | (0.835) | (0.834) |
| Pseudo R^2 | 0.018 | 0.018 | 0.018 | 0.018 | 0.006 | 0.006 | 0.007 | 0.007 |
| <i>N</i> | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 |

| Variable | Total Contribution | | | |
|-----------------------------|--------------------|------------------|------------------|------------------|
| | (9) | (10) | (11) | (12) |
| Automatic enrollment | -1.610*** | -1.658*** | -2.852*** | -2.923*** |
| | (0.345) | (0.368) | (0.758) | (0.769) |
| Automatic enrollment * | | 0.351 | | 0.619 |
| Short-tenure | | (0.920) | | (0.918) |
| Automatic enrollment * | | | -0.459 | -0.518 |
| Bottom quintile | | | (0.986) | (0.987) |
| Automatic enrollment * | | | 1.681 | 1.677 |
| Second quintile | | | (1.059) | (1.059) |
| Automatic enrollment * | | | 3.052*** | 3.047*** |
| Fourth quintile | | | (1.151) | (1.150) |
| Automatic enrollment * | | | 2.060** | 2.060** |
| Top quintile | | | (1.018) | (1.018) |
| Pseudo R^2 | 0.008 | 0.008 | 0.008 | 0.008 |
| <i>N</i> | 5,341 | 5,341 | 5,341 | 5,341 |

Notes: Sample includes workers ages 51 to 64 who are not self-employed or disabled, and who have a DC plan with their current employer. Other controls include age, age squared, sex, education, race and ethnicity, marital status, log other income, log per person household net worth, whether spouse contributes to his or her own DC plan, whether respondent is a short-tenure worker, earnings quintiles (defined on a full-time equivalent basis), and year dummies. Robust standard errors clustered on individuals are reported in parentheses. *N* = number of observations. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study.

Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

Sensitivity Analyses

In the next section, we test the robustness of our findings. We first consider whether our results may be driven by older workers who return to the labor force after a spell in retirement and become automatically enrolled in a DC plan as new hires. Many of those workers may have already saved enough for retirement and may be less inclined to save any more, which could explain our finding that automatic enrollment is associated with employees' lower likelihood of contributing and lower contribution rates. To test this hypothesis, we re-estimate our models excluding respondents who ever reported being retired in any wave of the HRS. We find little difference in the magnitude or significance of the estimated marginal effects (Table 8). Among workers offered a plan, the probability that employees participate is only slightly higher in the alternative regression than in our baseline regression. Among workers who have a plan, the probability that employees or employers contribute and their estimated contribution rates are only slightly smaller in the alternative regression.

Next, we analyze the sensitivity of our findings to the definition of short-tenure. To do this, we re-estimate our models with short-tenure defined as less than 2 years on the job.¹⁸ We also reestimate our models with three levels of tenure—less than 5 years, 5 to 10 years, and more than 10 years. The results are presented in Table 9.

As expected, the estimated effects of automatic enrollment change in magnitude as the definition of short-tenure is varied, but the signs of the effects are maintained. Similar to previous studies, we find that the impact of automatic enrollment on participation among those offered DC plans is highest among new hires and declines with tenure. Our results show that automatic enrollment has the largest influence on new employees within 2 years of hire (column 1). These workers are 26.3 percentage points more likely to participate when offered a plan with automatic enrollment than when offered a plan without it. The average effect of automatic enrollment on participation declines to 19.8 percentage points for workers with job tenure of 5 years or less, 7.9 percentage points for workers with more than 5 but less than 10 years of tenure, and only 2.6 percentage points for those with more than 10 years of tenure.

18. Due to sample size limitations, we could not define short-tenure as less than 1 year on the job in our models with interaction terms because only 1% of workers (that is 54 individuals) in our sample are both automatically enrolled and have less than 1 year of tenure with their employer.

TABLE 8
Sensitivity of Regression Results to Retirement

| | Among those who Have a DC Plan | | | | | |
|-------------------------------|---|--------------------------------------|--------------------------------------|--------------------------------|--------------------------------|-----------------------------|
| | Among those Offered a DC Plan, Probability of Participating (1) | Probability Employee Contributes (2) | Probability Employer Contributes (3) | Employee Contribution Rate (4) | Employer Contribution Rate (5) | Total Contribution Rate (6) |
| Baseline | | | | | | |
| Automatic enrollment | 0.080*** | -0.235*** | 0.065*** | -3.874*** | 1.672*** | -1.610*** |
| | (0.012) | (0.015) | (0.015) | (0.310) | (0.291) | (0.345) |
| Adjusted R^2 | 0.120 | 0.095 | 0.030 | | | |
| Pseudo R^2 | | | | 0.018 | 0.006 | 0.008 |
| N | 3,353 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 |
| Excluding Ever Retired | | | | | | |
| Automatic enrollment | 0.088*** | -0.211*** | 0.062*** | -3.319*** | 1.405*** | -1.481*** |
| | (0.014) | (0.017) | (0.018) | (0.332) | (0.316) | (0.392) |
| Adjusted R^2 | 0.125 | 0.086 | 0.026 | | | |
| Pseudo R^2 | | | | 0.019 | 0.005 | 0.008 |
| N | 2,307 | 3,934 | 3,934 | 3,934 | 3,934 | 3,934 |

Notes: Samples include workers ages 51 to 64 who are not self-employed or disabled. The second sample also excludes respondents who ever reported being retired. The results in column 1 are restricted to respondents who are offered a DC plan with their current employer. The results in columns 2–6 are restricted to respondents who have a DC plan with their current employer. Respondents participate in a plan if they or their employers contribute to their DC plan. Other controls include age, age squared, sex, education, race and ethnicity, marital status, log other income, log per person household net worth, whether spouse contributes to his or her own DC plan, earnings quintiles (defined on a full-time equivalent basis), and year dummies. Robust standard errors clustered on individuals are reported in parentheses. N = number of observations. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study.

Significance: * $p < .10$; ** $p < .05$; *** $p < .01$.

Regardless of the threshold we use for classifying workers as short-tenure, our findings show that automatic enrollment is associated with a lower likelihood that employees contribute to their plans and lower employee contribution rates on average. Additionally, there is no strong evidence that the effect is significantly different for short-tenure and long-tenure workers. The only exception is when short-tenure is defined as 2 or fewer years of tenure. We find that automatic enrollment reduces the likelihood of contributing and the average contribution rates of workers within their first 2 years of hire somewhat less than it does for workers with longer tenure (columns 2 and 4).

TABLE 9
Sensitivity of Regression Results to Definition of Tenure

| | Among those who Have DC Plan | | | | | |
|---|--|---|---|---|---|--------------------------------------|
| | Among those | | | | | |
| | Offered DC Plan, Probability of Participating (1) | Probability Employee Contributes (2) | Probability Employer Contributes (3) | Employee Contribution Rate (4) | Employer Contribution Rate (5) | Total Contribution Rate (6) |
| Short-tenure <= 4 Years (baseline) | | | | | | |
| Automatic enrollment | 0.051*** (0.013) | -0.239*** (0.017) | 0.082*** (0.016) | -3.985*** (0.331) | 1.810*** (0.309) | -1.658*** (0.368) |
| Automatic enrollment * Short-tenure | 0.147 *** (0.035) | 0.030 (0.039) | -0.121 *** (0.040) | 0.823 (0.750) | -1.007 (0.791) | 0.351 (0.920) |
| Adjusted R ² | 0.125 | 0.095 | 0.031 | | | |
| Pseudo R ² | | | | 0.018 | 0.006 | 0.008 |
| N | 3,353 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 |
| Short-tenure <= 2 Years | | | | | | |
| Automatic enrollment | 0.063*** (0.013) | -0.242*** (0.016) | 0.072*** (0.016) | -4.027*** (0.322) | 1.707*** (0.296) | -1.728*** (0.355) |
| Automatic enrollment * Short-tenure | 0.200*** (0.046) | 0.098* (0.050) | -0.109* (0.057) | 2.306** (0.993) | -0.577 (1.255) | 1.798 (1.347) |
| Adjusted R ² | 0.116 | 0.096 | 0.029 | | | |
| Pseudo R ² | | | | 0.018 | 0.006 | 0.008 |
| N | 3,353 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 |
| Tenure <= 5 Years (omitted category) | | | | | | |
| Automatic enrollment | 0.198*** (0.030) | -0.217*** (0.033) | -0.023 (0.035) | -3.320*** (0.647) | 0.694 (0.631) | -1.565** (0.745) |
| Automatic enrollment * Tenure >5 to 10 years | -0.119*** (0.042) | -0.013 (0.044) | 0.094** (0.045) | -0.343 (0.890) | -0.007 (0.809) | -0.898 (1.042) |
| Automatic enrollment * Tenure >10 years | -0.172*** (0.033) | -0.025 (0.038) | 0.111*** (0.039) | -0.780 (0.737) | 1.550** (0.726) | 0.197 (0.853) |
| Adjusted R ² | 0.133 | 0.095 | 0.031 | | | |
| Pseudo R ² | | | | 0.018 | 0.006 | 0.008 |
| N | 3,353 | 5,341 | 5,341 | 5,341 | 5,341 | 5,341 |

Notes: Samples include workers ages 51 to 64 who are not self-employed or disabled. The results in column 1 are restricted to respondents who are offered a DC plan with their current employer. The results in columns 2–6 are restricted to respondents who have a DC plan with their current employer. Respondents participate in a plan if they or their employers contribute to their DC plan. Other controls include age, age squared, sex, education, race and ethnicity, marital status, log other income, log per person household net worth, whether spouse contributes to his or her own DC plan, whether respondent is a short-tenure worker, earnings quintiles (defined on a full-time equivalent basis), and year dummies. The regressions vary the definition of short-tenure. Robust standard errors clustered on individuals are reported in parentheses. *N* = number of observations. Source: Authors' calculations from the 2006–2014 waves of the Health and Retirement Study. Significance: **p* < .10; ***p* < .05; ****p* < .01.

We also consistently find that the influence of automatic enrollment on the probability that employers contribute and on average employer contribution rates is positive and statistically significant for long-tenure workers (columns 3 and 5). The effect on short-tenure workers is also positive, but smaller in magnitude and not precisely estimated (not significant with a 90% confidence level).

Finally, varying the definition of short-tenure does not significantly change our finding that the effect of automatic enrollment on total contribution rates is negative for both long-tenure workers and short-tenure workers (column 6), but smaller in magnitude and not precisely estimated (not significant with a 90% confidence level) for short-tenure workers. One exception is when short-tenure is defined as no more than 5 years of tenure. For those workers, automatic enrollment is associated with total contribution rates that are 1.5 percentage points lower.

DISCUSSION

Although “auto-pilot” features in 401(k) plans have been linked to increased participation rates, relatively little is known about how such plan features may affect the distribution of tax-deferred contributions on a national scale. This article aims to fill some of that gap in the literature and to inform the policy debate on the evolution of retirement income security. We analyze the relationship between automatic enrollment and DC contributions using data from the first nationally representative survey that asks respondents about auto-enrollment. The results suggest that the relationship between automatic enrollment and DC contributions may be more ambiguous than policymakers expect.

Consistent with other studies, our results show that automatic enrollment is associated with higher participation rates among older workers offered DC plans, particularly short-tenure workers and the lowest earners. Something not highlighted in other studies, however, is the relationship between automatic enrollment and total DC contributions. Controlling for a number of different factors, we find that automatic enrollment is associated with a lower likelihood that older workers will contribute to their DC plans. As a result, employee contribution rates are on average *lower* among those who report having been automatically enrolled compared with those who were given a choice to enroll. However, we also find that automatic enrollment is associated with an increased probability that older workers’ employers will contribute to their plans. As a result, employer contribution rates are on average *higher* among auto-enrolled workers than among voluntarily enrolled workers.

There could be a number of different drivers behind these results. Workers who are automatically enrolled might be less inclined to save than those who opted-in. Alternatively, auto-enrolled workers might be more likely than voluntarily enrolled workers to be in noncontributory plans, particularly if the Pension Protection Act of 2006 (PPA) is successful in encouraging employers to institute automatic enrollment and those employers are more likely to opt for providing non-elective contributions to avoid nondiscrimination tests.¹⁹ Not only would that explain the higher incidence and higher magnitude of employer contributions for automatically enrolled workers, but it would also explain the lower incidence and lower magnitude of employee contributions. Workers in noncontributory plans do not have to contribute in order to participate in the plan, and they might be less inclined to contribute because their employers do (e.g., because of substitutability between employee and employer contributions). Finally, compared with workers who opted in and made a conscious decision to participate, automatically enrolled workers might be less aware of where contributions to their plan come from and may misclassify an employee default contribution as being made by the employer. The HRS does not allow us to fully disentangle these potential effects, but it does provide evidence that supports differences in the composition of plans between auto-enrolled and voluntarily enrolled workers.

In any case, our results show that the higher employer contributions associated with automatic enrollment are not high enough to offset the lower employee contributions. The combined effect is that total contribution rates of automatically enrolled older workers are, on average, 1.6 percentage points lower than those of voluntarily enrolled workers, which translates to about \$1,100 lower annual contributions.

Overall, our findings based on the HRS data suggest that while automatic enrollment is effective at expanding enrollment of older workers in DC plans, its effect on overall contribution rates is less certain. Nevertheless, there are two important caveats to keep in mind. First, because this analysis focuses on older workers, our results may not generalize to all workers. Second, because the HRS does not include much information on retirement plan provisions, we can only hypothesize possible explanations for our results. The PPA included several features designed to enhance DC plans, which also increased employers' choice of plan provisions. Features

19. Safe harbor rules allow employers to avoid nondiscrimination tests if they match employees' contributions (up to 4% of pay under the 401(k) safe harbor or 3.5% of pay under the PPA automatic enrollment safe harbor) *or* provide a nonelective contribution of at least 3% of compensation for all eligible employees.

such as new protections for automatic enrollment (through preempting state payroll-withholding laws and expanding employer fiduciary protections) and more advantageous nondiscrimination safe harbor rules for employers who adopt automatic enrollment might lead to significant shifts in the composition of DC plans and should be further examined as data becomes available. Consequently, employer decisions regarding retirement provisions will likely play an increasingly larger role in employee savings behavior and ultimately their retirement account balances.

APPENDIX 1

TABLE A1
Construction of Sample of Workers Ages 51 to 64

| | Sample 2008–2010 Workers Offered a DC Plan ^a | Sample 2006–2014 Workers Who Have a DC Plan ^b |
|-----------------------------------|--|---|
| Starting Years | 74,990 | 187,475 |
| Ages 51 to 64 | 15,178 | 38,345 |
| Currently working ^c | 8,724 | 21,649 |
| Not self employed | 7,466 | 18,526 |
| Not disabled | 6,932 | 17,374 |
| No missing variables ^d | 6,233 | 15,520 |
| Offered DC plan | 3,353 | |
| Has DC plan | 2,906 | 5,341 |

Notes:

^aRespondents are offered a DC plan if they report being included in a DC plan or not included but eligible for a DC plan with their current employer.

^bRespondents have a DC plan if they report being included in a DC plan with their current employer.

^cWorkers are respondents who report working and have positive annual earnings and non-missing tenure.

^dNo missing variables among those offered (sample 2008–2010) or those who have DC plan (sample 2006–2014).

Source: Authors' calculations using data from the 2006–2014 waves of the Health and Retirement Study.

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