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Impact of automatic enrollment on participation in the SRP for public employees in South Dakota

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Introduction

Over the past two decades, a series of papers have shown the power of defaults to alter saving decisions in employer-provided retirement saving plans. Studies have shown that automatic enrollment policies have two primary effects. First, the adoption of automatic enrollment results in a substantial increase in the proportion of employees participating in retirement saving plans. While the magnitude of the increase in the participation ranges from study to study, research generally indicates participation rises from about 60% of the workforce in traditional plans without automatic enrollment to over 90% once automatic enrollment is adopted. Second, firms adopting automatic enrollment policies must also select a default contribution rate, often 3% of salary, and this default contribution rate usually becomes the modal contribution to the plan.

In general, these studies have been conducted using administrative data for a single firm or a small set of private sector firms in which the retirement saving plan is the only employer-provided pension plan. The analysis typically focuses on the introduction of automatic enrollment to an existing 401(k) and compares participation and contribution rates shortly before and a few months after the adoption of the policy.

The present study adds to this literature by examining the impact of the adoption of automatic enrollment provisions by a state government, specifically the adoption of automatic enrollment by the state of South Dakota for its supplemental retirement saving plan (SRP), which is a 457(b) plan. In South Dakota, state and local government employees, including teachers, are also covered by a defined benefit pension plan and

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by Social Security. Thus, career public employees in South Dakota can expect a lifetime annuity from these two programs of around 75% of their final salary. Prior to the introduction of automatic enrollment, the proportion of newly hired employees who were contributing to the SRP was less than 3% in their first year of employment. After the introduction of automatic enrollment, over 90% of newly hired workers who were auto enrolled were participating in the plan.

I. Review of the default literature

In large measure, the focus on defaults in retirement saving plans stems from the emergence of behavior economics and the framing of choices (Benartzi and Thaler, 2004, 2013). Traditional economic theory would suggest that with freedom of choice among various options, defaults should not affect ultimate outcomes. However, limited information about the value of different distribution options and procrastination or inertia may result in defaults leading to permanent decisions.

The recent literature examining the importance of defaults in supplemental retirement saving plans begins with Madrian and Shea (2001). They analyze the 401(k) savings behavior of employees in one large corporation before and after the introduction of automatic enrollment. The company in this analysis is a publicly traded Fortune 500 company in the health care and insurance industry; it was national in scope with locations in 38 states. The employer match in the plan was 50% on the first 6% of an employee's salary before and after the change in enrollment. The 401(k) plan was the only retirement plan offered by the firm. Prior to the adoption of automatic enrollment, the participation rate in the 401(k) plan was 57%.

Auto enrollment was adopted by the firm in 1998 with a default contribution of 3% of salary. The result of automatic enrollment was that participation increased to over 80%, and the default contribution rate was a strong determinant of actual contributions.[1] Among those hired after the introduction of automatic enrollment, 86% remained in the plan after one year. Madrian and Shea (2001, p. 1161) also found that automatic enrollment "equalizes participation rates across various demographic groups," i.e., the participation rates among those employees least likely to participate in retirement saving plans before automatic enrollment (younger and lower-paid employees, along with black and Hispanic workers) increased in magnitude relative to those groups who were already participating at high rates.

Choi, et al. (2004) examined the impact of automatic enrollment using data from three large corporations in different industries (office equipment, health services, and food products). Once again, the retirement saving plan is the only pension plan offered by each of the companies. This paper utilizes data over a three-year period. They report that adoption of automatic enrollment has a "dramatic impact" of increasing participation rates to over 85% in all three companies. After being automatically enrolled, between 65 and 87% of individuals in all three companies contributed exactly at the default contribution rate.[2]

Choi, Laibson, and Madrian (2004) examine employee responses to the introduction of automatic enrollment in nine companies. In each case, they find that in the absence of automatic enrollment, participation rates are rather low but increase with tenure. Following the introduction of automatic enrollment, participation rates jump to between 86 and 96%.

Most of the studies to date have examined data from private sector firms that do not provide a defined benefit plan in addition to the retirement saving plan. An exception to the focus on private sector firms is Goda, et al. (2018), which examines federal employees and participation in the Thrift Saving Plan (TSP). In addition to being able to contribute to the optional TSP, federal

[1] In a related paper, Carroll, et al. (2009) examine a strong positive effect on participation when a firm used what the authors called an "active decision" requirement. This study examined data for a single large financial services firm.

[2] Bernheim, Fradkin, and Popov (2015) develop various methods of evaluating the welfare gains and costs of imposing defaults in 401(k) plans.

employees are also covered by a defined benefit plan. This study reports a participation rate over 90% before the adoption of automatic enrollment and a subsequent small increase in participation after its adoption.

Most of the papers examine the response to automatic enrollment in 401(k) plans offered by private sector firms where the plan sponsor has an employer match and does not offer any other retirement plan. In general, the research findings indicate that the adoption of automatic enrollment for 401(k) plans in these situations results in substantial increases in participation in saving plans, and that employee contributions are centered on the default contribution rates. These findings imply that workers do not subsequently opt-out of the plans, and that once in the plan, they seldom change their contribution rate. The present study examines whether automatic enrollment will have similar powerful effects for public employees who are also covered by a defined benefit plan and when the employer does not provide an employer matching contribution.

II. Adoption of automatic enrollment in South Dakota

Virtually all state and local government employees, including teachers, in South Dakota are covered by the South Dakota Retirement System (SDRS), and they are also covered by Social Security. SDRS is a defined benefit pension plan with a benefit formula:

Benefit = 1.55% times (final average salary) times (years for service after 2008)

Plus

Benefit = 1.7% times (final average salary) times (years for service before 2008)

Individuals can retire with unreduced benefits at age 65 or if they meet the Rule of 85 requirements, if the sum of the retiree's age plus years of service equals 85.[3] Employees contribute 6% of their salary to this plan.

Prior to the introduction of automatic enrollment, very few newly hired employees enrolled in the SRP in their first years of employment. For example, between 2005 and 2009, fewer than 3% of newly hired workers enrolled in the SRP during their first year of employment. This level of participation is much lower than that found in earlier studies of private sector firms who do not offer a defined benefit.[4] Another potential reason for limited participation in the plan is that the South Dakota SRP does not have an employer matching contribution. In 2009, the state legislature enacted legislation that allowed, but did not require, each government agency that participated in the South Dakota Retirement System and the SRP to institute automatic enrollment for all newly hired employees.[5]

While virtually all primary defined benefit and defined contribution public sector plans automatically cover all full-time employees, the SDRS was one of the first major public sector retirement systems, along with the Employees Retirement System of Texas, to implement automatic enrollment for their supplemental savings plan. The adoption of the automatic enrollment policy by an agency requires that this policy be applied to all of the agency's newly hired employees. Once the automatic enrollment policy is adopted, all permanent full-time employees hired on or after a determined date are automatically enrolled in the SRP at a default contribution of $25 per month (about 1% of the mean salary of South Dakota public employees). This default contribution rate is much lower than is typically associated with automatic enrollment policies in the private sector.

[3] Details of the SDRS pension are described in the member handbook of the system, which can be accessed at http://www.sdrs.sd.gov/docs/ClassAFoundationMemberHandbook.pdf.

[4] The proportion of South Dakota public employees who participate in the retirement saving plan is also considerably lower than participation rates for North Carolina teachers who are also covered by a state managed defined benefit plan and Social Security (Clark, et al., 2016 and Clark, Pathak, and Pelletier, 2018).

[5] Clark, Franzel, and Pelletier (2018) provide a detailed description of the automatic enrollment provisions and the process by which this policy was adopted and introduced.

The initial contributions to the SRP are placed in a money market account for first 90 days, after which time funds are transferred to an age-appropriate target-date fund. The participant can allocate these contributions to other investment options anytime during this 90-day window, as well. Once automatically enrolled in the SRP, the participant has the option to increase contributions up to IRS maximum limits, move current and future contributions to other investment options, and within the first 90 days of being automatically enrolled, opt-out of the SRP and receive a refund of all contributions. Once this 90-day window has passed, future contributions can be stopped, i.e., the employee can opt-out of the SRP; however, the participant cannot receive a refund of initial contributions unless they are eligible for a one-time in-service distribution under IRS rules, are separated from service, or retire.

The introduction of automatic enrollment by South Dakota provides the opportunity to estimate the impact of automatic enrollment provisions in an environment that is much different from previous studies. There are three major differences between the South Dakota case and that of earlier studies. First, public employees in South Dakota are also covered by a defined benefit plan that provides employees with 20 to 30 years of service with a life annuity of 30 to 50% of final earnings. Since the workers are also covered by Social Security, most career public employees in South Dakota will have retirement income of about 75% of their final salary in the form of life annuities from SDRS and Social Security without contributing to the SRP. Second, the SRP does not provide any employer matching contributions, so there is a smaller enticement to contribute to this tax-deferred saving plan compared to private sector 401(k) plans that have been the focus of previous studies. Third, the default contribution is considerably lower than that used by most employers in other studies so that the monetary need to opt-out is much less for the South Dakota employees. The main research question we examine is whether automatic enrollment will have the same powerful impact on participation rates for public sector workers covered by a defined benefit pension plan and a retirement saving plan that provides no employer matching contributions.

III. Changes in participation rates in response to the adoption of automatic enrollment

To determine how public employees who are also covered by a defined benefit plan respond to automatic enrollment in a supplemental retirement plan, we obtained administrative records from SDRS on all public employees in South Dakota who were hired between 2005 and 2016. Using these data, we are able to determine enrollment and contribution rates for all new hires in the first year of employment and the subsequent participation rates between the hire date and 2016. A unique aspect of this analysis is that we are able to observe contributions for a number of years after employment for both those hired before and after the introduction of automatic enrollment. Since not all public agencies adopted automatic enrollment, we also observe participation and contributions for individuals hired in the same year for those automatically enrolled and those employed in agencies that did not adopt auto enrollment. The data on annual contributions, account balances, and annual salary is reported over fiscal years. Our analysis covers new hires in SDRS and who have access to the SRP. Between 2005 and 2016, 50,333 such new employees were hired by government agencies in South Dakota.

Participation rate soars with adoption of automatic enrollment

From the administrative data, we observe the year each employee was hired and whether they contributed to the SRP in that first year as measured by contributions at the end of the fiscal year; these trends are shown in Table 1. The number of new hires ranges between 3,000 and 6,000 every year. Columns 2 and 3, Table 1, sort new hires into individuals whose employer had adopted auto enrollment and those employed by agencies where auto enrollment was not adopted. Of course, prior to 2010, no agency auto enrolled any new employees. Column 4 reports the percent of all new employees enrolled in the SRP by year of employment. The participation rate in the SRP for individuals hired between 2005 and 2009 was less than 3% in each year. It is important to note that this low participation rate is much lower than

what was found in other studies prior to the adoption of automatic enrollment. Thus, it would appear that given the expectation of lifetime annuities from both the SDRS and Social Security, most public employees decided that it was not in their self-interest to make contributions to a retirement saving plan.

Table 1. Proportion of employees contributing to SRP in first year of employment

Fiscal year of hire	Number of new hires by year (1)	Number of hires who were automatically enrolled (2)	Number of hires who were not automatically enrolled (3)	Percent of hires enrolled in SRP (4)	Percent of hires who were automatically enrolled who are in the SRP (5)	Percent of hires not automatically enrolled who are in the SRP (6)
2005	3,150	N/A	3,150	1.33	N/A	1.33
2006	3,483	N/A	3,483	2.24	N/A	2.24
2007	3,770	N/A	3,770	1.99	N/A	1.99
2008	4,020	N/A	4,020	2.51	N/A	2.51
2009	3,950	N/A	3,950	2.86	N/A	2.86
2010	3,335	1,206	2,129	37.96	92.29	7.19
2011	3,349	1,500	1,849	43.95	94.40	3.03
2012	4,183	2,128	2,055	44.47	82.75	4.82
2013	4,692	2,177	2,515	45.23	92.93	3.94
2014	4,959	2,181	2,778	42.83	91.79	4.39
2015	5,493	2,332	3,161	42.93	93.35	5.73
2016	5,949	2,547	3,402	43.99	93.95	6.58

This table reports the participation rate in the SRP in the first year of employment for different year of hire cohorts. The participation rate is computed as the number of individuals hired in a given fiscal year, with positive earnings in the designated year, and who made positive contributions divided by the number of individuals who were hired in this fiscal year and who had positive annual earnings in their first year.

The introduction of automatic enrollment into the SRP produced a dramatic change in savings outcomes. After the new law went into effect, participation rates in the SRP for all new hires jumped from less than 3% to over 40%. This dramatic increase actually understates the impact of the adoption of automatic enrollment. Column 5, Table 1, indicates that the percent of individuals hired after 2009 who were automatically enrolled in the SRP and who remained in the plan during their first year of employment rose to over 90% (except for individuals hired in 2012) following the introduction of the new policy. In comparison, Column 6 shows the percent of individuals who enrolled in the SRP and were not subject to automatic enroll remained less than 8% in every year.[6] The ability to compare same-year contribution rates for South Dakota employees with and without automatic enrollment allows us to control for time variant market conditions in a manner that has not been available to other studies.

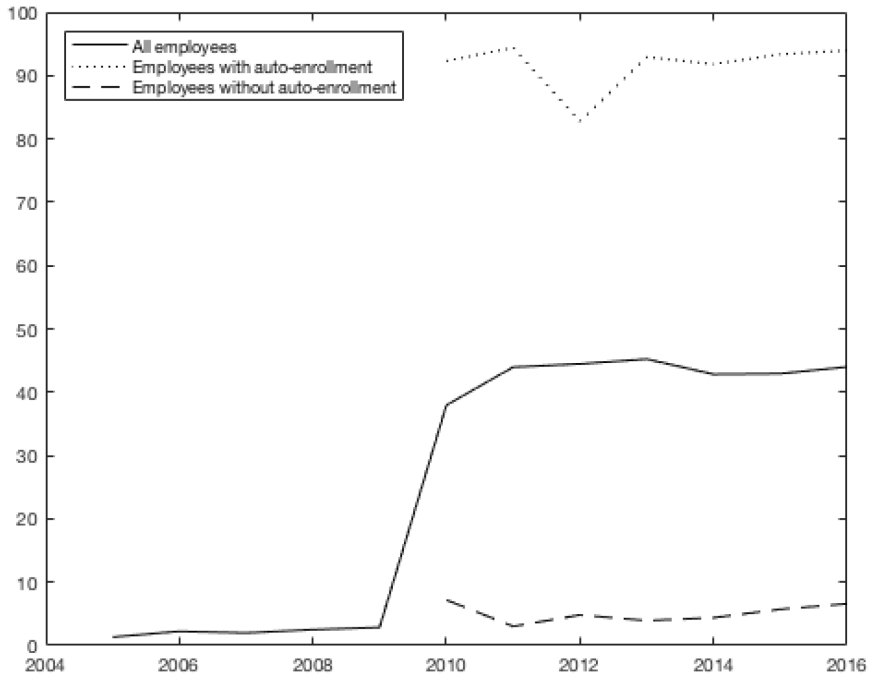
It is interesting to note that the participation rate of 90% with automatic enrollment observed in South Dakota is very similar to the participation rate found in studies of private sector firms that do not provide their employees with a defined benefit plan and whose 401(k) plans offer employer matches. The low rate of opting out of the SRP

[6] In Appendix Table 1, we report data for K-12 employees only, and Appendix Table 2 shows data for university employees.

supports the finding of earlier studies that inertia plays a substantial role in the effect of automatic enrollment. In addition, the low opt-out rate in South Dakota may also be influenced by the relatively low default contribution rate of only $25 per month, or about 1%; did the new employees even notice the modest reduction in their take-home pay due to the default contribution? The change in participation rates in South Dakota indicates that even when employees have relatively high replacement rates from a defined benefit pension plan and Social Security, automatic enrollment in a retirement saving plan produces participation rates of 90%.

Chart 1 further illustrates the impact of adopting an automatic enrollment policy. The solid line indicates the participation rate for all newly hired public employees in each year. The hashed line shows the participation rate of individuals hired after 2009 by agencies that did not adopt automatic enrollment, and the dotted line indicates the proportion of new employees contributing to the SRP in agencies who were automatically enrolled.

Chart 1. Participation rate in supplemental retirement saving plan in their first year



IV. Regression analysis

The richness of the administrative data from South Dakota allows us to examine several conclusions reported in earlier studies in more detail. In the following analysis, we estimate participation rates using probit models. Specifically, we estimate the probability of new hires making contributions to the SRP in their first year of employment whether they were automatically enrolled in the SRP or whether the new employee was not automatically enrolled. A unique aspect of this analysis is that in the automatic enrollment years, some government agencies adopted automatic enrollment and others did not. Thus, we are able to examine participation decisions for individuals hired by agencies that ultimately adopted auto enrollment before and after this policy was established–this is the type of comparison in previous studies. However, we are also able to compare participation decisions for the same year when some agencies adopted automatic enrollment and others did not, thus controlling for year effects, which is not done in other studies.

As with other studies that use administrative data, we have limited information about the personal characteristics of new hires. The data provided by the SDRS include the age of employees when first employed (measured in years), whether the employee is a female or male, the annual salary (measured in thousands of dollars), the specific state agencies that employed the individual, whether the employee was auto enrolled in the SRP, and when the employer adopted auto enrollment, if it ever did. Using these data, we estimate participation decisions in various contexts.

Participation in SRP in first year of employment: 2005 to 2016

Using the complete sample of all 50,333 employees hired over the years 2005–2016, we estimate the probability that an employee participates in the SRP in the year of hire. The model includes explanatory variables: age at hire, a dichotomous variable equal to one if the employee is a male and zero if not, annual salary in first year of employment, a dichotomous variable equal to one if the employee was auto enrolled and zero if not, a dichotomous variable equal to one if the employer adopted auto enrollment and zero if not, and year of employment fixed effects. The marginal effects derived from the probit equation are shown in Table 2.

Table 2. Probit model for individual participation in the SRP in year of hire

	Partial Effects (1)	PE Std. Errors (2)
Age at hire	0.01	0.02
Male	0.83*	0.49
Salary	0.20***	0.01
Employee auto enroll	75.70***	1.22
Employer auto enroll	13.65***	0.85
Year dummy 2006	2.41	1.93
Year dummy 2007	2.26	1.93
Year dummy 2008	3.74**	1.85
Year dummy 2009	4.84***	1.84
Year dummy 2010	19.29***	1.75
Year dummy 2011	17.96***	1.88
Year dummy 2012	8.73***	1.70
Year dummy 2013	17.70***	1.75
Year dummy 2014	16.89***	1.72
Year dummy 2015	20.75***	1.70
Year dummy 2016	22.79***	1.68

Marginal effects are calculated at the mean values based on probit estimates of participation. Statistical significance: 10% (*), 5% (**) and 1% (***). The number of observations is 50,333. The fraction of individuals who participate in the SRP is 28.27%. The standard errors of the partial effects are calculated with the Delta method.

Column 1, Table 2, reports the partial effects evaluated at the mean of the sample. In this base case participation regression, age has no significant impact on the probability of newly employed workers participating in the SRP. Other variables in the model have small but statistically significant effects on the probability of contributing to the SRP. The probability that a male participates in the retirement saving plan is 0.83 percentage points higher than a newly hired female, while a $10,000 higher initial salary increases the probability of participation by 2.0 percentage points. One should remember that during the first half of the sample period, participation rates were very low, so these small percentage point increases represent substantial percentage increases in the pre-auto enroll period.

Whether the employee was auto enrolled into the SRP dramatically increases the probability of making a contribution to the SRP in the first year of employment. The probability of participation is 75.7 percentage points higher for those who were auto enrolled compared to those who were not. Whether the employer eventually adopts auto enrollment also has an important impact, increasing the probability of participation by 13.7 percentage points. Holding constant whether the individual was automatically enrolled in the SRP, the year fixed effects indicate that the overall participation rate is between 10 and 20 percentage points higher in the post-automatic years compared to the years prior to agencies being allowed to adopt auto enrollment. This finding suggests that there was a spillover effect to the investment decisions of individuals hired by agencies who did not adopt auto enrollment.

Participation in SRP during the auto enrollment era

A unique aspect of this study is that we are able to examine how participation rates in different agencies vary in the same year based on whether the agency adopted auto enrollment. Recall that in 2010, the South Dakota legislature gave each governmental agency the authority to adopt an auto enrollment policy, but agencies were not required to institute auto enrollment. If the agency adopted auto enrollment, all new employees were subject to this policy. Thus, in each year after 2010, some new hires were auto enrolled while others were not. It is important to remember that all of the agencies included in this study provided the same defined benefit plan, offered the same retirement saving plan, and most had the same health insurance.

Using data for all new employees in the auto enrollment period, we are able to estimate contemporaneous decisions on whether to contribute to the SRP based on the auto enroll status of each employee. Table 3 presents estimates of the probability that an employee participates in the SRP during the auto enrollment era, 2010 to 2016. The participation model remains the same as we include the same explanatory variables used in Table 2.

Table 3. Probit model for individual participation in the SRP in year of hire: Auto enrollment years (2010-2016)

	Partial Effects (1)	PE Std. Errors (2)
Age at hire	-0.13***	0.04
Male	0.24	0.85
Salary	0.17***	0.02
Employee auto enroll	71.39***	2.37
Employer auto enroll	35.12***	2.34
Year dummy 2011	-0.41	2.15
Year dummy 2012	-2.07***	1.78
Year dummy 2013	-0.65	1.90
Year dummy 2014	-1.38	1.84
Year dummy 2015	3.93**	1.82
Year dummy 2016	6.47***	1.79

Marginal effects are calculated at the mean values based on probit estimates of participation. Statistical significance: 10% (*), 5% (**) and 1% (***). The number of observations is 31,960. The fraction of individuals who participate in the SRP is 43.24%. The standard errors of the partial effects are calculated with the Delta method.

Column 1, Table 3, reports the marginal effects derived from the estimates. They indicate that age at hire reduces the probability of participating in the SRP by about 1.3 percentage points for each additional 10 years of age. This effect is somewhat surprising since most studies find that older employees are more likely to contribute to retirement saving plans. In the auto enrollment era, being a male is estimated to increase the probability of participation by about 0.24 percentage points (although this effect is not statistically significant), while a $10,000 salary increase raises the probability by 1.7 percentage points. These latter two effects are similar in size to those presented for the entire sample period in Table 2.

The impact of the employee auto enroll dummy is very large and indicates that employees that were auto enrolled when hired were 71.4 percentage points

more likely to contribute to the SRP. Interestingly, the magnitude of this individual indicator variable is essentially the same as we observed in Table 2 for the auto enroll era variable. New hires by agencies that will eventually adopt auto enrollment are 35.1 percentage points more likely to contribute. Similar to the results in Table 2, there is not much variation among the year fixed effects (except for 2012).

Impact of auto enrollment for agencies that adopted this policy

Most previous studies of auto enrollment have examined the change in participation rates in a firm using participation in a retirement saving plan before and after the adoption of an automatic enrollment policy. Following this methodology, we now estimate participation probabilities using newly hired employees only for those agencies that adopted auto enrollment. Thus, we have five years of hiring data before the adoption of the auto enroll policy and six years after the policy was implemented. By contrasting these results with those in Table 2, we can see if employees hired by agencies that eventually take part in auto enrollment behave differently from all new hires.

In this sample, almost all the new employees are auto enrolled in the years 2010-2016. One hundred eighty nine of the 196 agencies who adopted auto enrollment did so at the beginning of 2010. They account for 95% of new hires during this period. Thus, we remove the employee auto enroll dummy from the model. But notice that for new employees hired before the employer adopted auto enrollment, they will of course not be auto enrolled. The marginal effects from the estimates of the model are shown in Column 1, Table 4. In this model, only the age at hire variable is significant, and it indicates that 10 years older at hire is associated with a 1.1 percentage point decrease in the probability of participating in the SRP. As expected, the year fixed effects show a large increase (about 90 percentage points) in the probability of participating in the SRP in the years 2010-2016 compared to the years before the introduction of auto enrollment.

Table 4. Probit model for individual participation in the SRP in year of hire: Only employees in agencies that adopted auto enrollment

	Partial Effects (1)	PE Std. Errors (2)
Age at hire	-0.11**	0.05
Male	-1.25	1.06
Salary	0.01	0.02
Year dummy 2006	1.12	3.79
Year dummy 2007	0.75	3.88
Year dummy 2008	1.69	3.69
Year dummy 2009	2.67	3.66
Year dummy 2010	90.44***	3.77
Year dummy 2011	92.52***	3.76
Year dummy 2012	80.90***	3.36
Year dummy 2013	91.02***	3.52
Year dummy 2014	89.90***	3.49
Year dummy 2015	91.45***	3.52
Year dummy 2016	92.05***	3.49

Marginal effects are calculated at the mean values based on probit estimates of participation. Statistical significance: 10% (*), 5% (**) and 1% (***). The number of observations is 22,626. The fraction of individuals who participate in the SRP is 58.13%. The standard errors of the partial effects are calculated with the Delta method.

Impact of auto enrollment for school districts

Our sample includes new hires by 153 school districts in South Dakota in which employees are covered by the SDRS. The Department of Education website indicates that there are approximately 10,000 certified instructional staff in the SD school system.[7] Each school district is viewed as a separate employing agency and was able to decide whether to establish an automatic enrollment policy for the supplemental retirement plan (SRP). Only 13 of the districts decided to adopt automatic enrollment for the SRP. Each district also has the ability to offer a 403(b) retirement saving plan to its employee.

Public schools in the United States have long offered 403(b) plans to their employees. Across the country, school districts tend to manage their own 403(b) plans. A characteristic of these plans is that they usually allow a large number of vendors to participate in the plan. It is likely that history of 403(b) plans in K-12 schools is one of the reasons that most of the districts did not adopt automatic enrollment into the state-managed SRP. Unfortunately, we do not have information on the 403 (b) plans offered by all of the school districts, nor do we have data on the proportion of employees contributing to the 403(b) plans.

Because new hires by school districts have access to a separate 403(b) plan, it can be interesting to study their participation in the SRP separately from the employees of other agencies. Using the same set of explanatory variables as in Table 2, we estimate a probit model for the participation decision in the SRP in year of hire for school districts employees. The partial effects evaluated at the mean and associated standard errors are reported in Table 5.

Table 5. Probit model for individual participation in the SRP in year of hire for public school employees

	Partial Effects (1)	PE Std. Errors (2)
Age at hire	0.043***	0.012
Male	-0.527	0.346
Salary	0.143***	0.007
Employee auto enroll	89.032***	1.335
Employer auto enroll	3.151***	0.747
Year dummy 2006	0.571	1.142
Year dummy 2007	-0.348	1.225
Year dummy 2008	0.306	1.139
Year dummy 2009	1.167	1.092
Year dummy 2010	2.496**	1.092
Year dummy 2011	2.784**	1.162
Year dummy 2012	2.792**	1.082
Year dummy 2013	4.210***	1.029
Year dummy 2014	3.597***	1.002
Year dummy 2015	5.098***	0.976
Year dummy 2016	6.195***	0.956

Marginal effects are calculated at the mean values based on probit estimates of participation. Statistical significance: 10% (*), 5% (**) and 1% (***). The number of observations is 22,550. The fraction of individuals who participate in the SRP is 10.73%. The standard errors of the partial effects are calculated with the Delta method.

[7] For more details on K-12 public schools in South Dakota, see https://doe.sd.gov/.

The first thing to notice is that the overall participation is lower; 10.7% for school district employees compared to 28.3% for the complete sample (Table 2). The impact of salary is qualitatively the same, but the impact of other variables is different. Age at hire is now statistically significant, with a new hire being 10 years older increasing the probability of participation by 0.4 percentage point. The impact of being male now goes in the opposite direction (lowers participation by 0.5 percentage points) but is not statistically significant. Changes in the impact of the employee and employer auto enroll variables go in opposite direction: impact of employee auto enroll is now higher (89 percentage points versus 76), but the impact of employer auto enroll is now lower (3 percentage points versus 14). We see that an employer adopting an auto enrollment policy is not as impactful when the sample consists only of K-12 school employees as when we consider all hires.

V. Conclusions

There is considerable literature indicating the effectiveness of automatic enrollment policies in increasing participation in retirement saving plans. Virtually all of these studies examine private sector firms where a 401(k) plan is the only retirement plan offered by the employer. In contrast, there are no studies of the introduction of automatic enrollment by state and local governments.

In general, all public full-time employees are covered by a mandatory pension, usually a defined benefit plan. As a result, career public employees that are also covered by Social Security are likely to have a life annuity equal to 70-80% of their final salary. While government employers offer their employees the opportunity to contribute to a retirement saving plan, employees may believe that they have less of a need for additional retirement saving. In addition, the plans offered by government employers rarely have matching employer contributions, so there is less of an incentive for employees to contribute to these plans.

As a result, participation rates in retirement saving plans in the public sector tend to be much lower than they are for private sector firms. In our example, only about 5% of newly hired workers in South Dakota enrolled in the 457 plan offered to state and local employees prior to 2010. The objective of this study is to determine whether employees in South Dakota responded to the introduction of an automatic enrollment policy at the same level as private sector employees.

The key finding of this analysis is that participant rates in the retirement saving plan go from less than 3% to 90% after the introduction of automatic enrollment. The richness of the data provided by the SDRS allows us to explore several interesting issues. A unique component of the data is that South Dakota allowed each government agency to adopt automatic enrollment in 2010, but the agencies were not required to adopt this policy. As a result, we can compare the change in participation over time for the same agencies before and after the introduction of auto enroll and also to compare employees hired in agencies with and without auto enrollment in the same year. All of the comparisons indicate that the introduction of automatic enrollment yields increases in participation rates of newly hired employees of over 80%. Similar to earlier studies, our regression analysis illustrates that the adoption of automatic enrollment tends to equalize participation rates across age, gender, and level of income.

Another difference in the automatic enrollment policy in South Dakota is the relatively low default contribution rate of $25 per month, or approximately 1% of the average salary of a new employee. This low default contribution may partially explain the large response to the auto enroll policy. The typical South Dakota employee follows the usual pattern of remaining at the default contribution.

This study shows that public employees who are covered by a defined benefit plan and Social Security tend not to contribute to a traditional opt-in retirement saving plan; however, the adoption of automatic enrollment for

new employees results in a dramatic increase in the proportion of employees who participate in the plan. Across the country, state and local governments are reducing the generosity of their retirement plans. As a result, the findings from this study have important policy implications and indicate that state and local governments should consider the adoption of defaults to encourage participation in the supplemental saving plans to enhance the retirement security of public employees.

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Appendix

Table 1. Proportion of public school employees contributing to SRP in first year of employment

Fiscal year of hire	Number of new hires by year (1)	Number of hires who were automatically enrolled (2)	Number of hires who were not automatically enrolled (3)	Percent of hires enrolled in SRP (4)	Percent of hires who were automatically enrolled who are in the SRP (5)	Percent of hires not automatically enrolled who are in the SRP (6)
2005	1,284	N/A	1,284	0.86	N/A	0.86
2006	1,398	N/A	1,398	1.36	N/A	1.36
2007	1,684	N/A	1,684	0.71	N/A	0.71
2008	1,926	N/A	1,926	1.09	N/A	1.09
2009	1,849	N/A	1,849	1.57	N/A	1.57
2010	1,520	167	1,353	12.37	95.21	2.14
2011	1,503	217	1,286	15.70	99.08	1.63
2012	1,525	171	1,354	12.59	95.32	2.14
2013	2,107	334	1,773	17.80	97.90	2.71
2014	2,300	319	1,981	15.65	95.93	2.73
2015	2,621	381	2,240	17.47	96.33	4.06
2016	2,833	419	2,414	18.29	96.18	4.76

This table reports the participation rate in the SRP in the first year of employment for different year of hire cohorts, considering only public school employees. The participation rate is computed as the number of individuals hired in a given fiscal year, with positive earnings in the designated year, and who made positive contributions divided by the number of individuals who were hired in this fiscal year and who had positive annual earnings in their first year.

Table 2. Proportion of university employees contributing to SRP in first year of employment

Fiscal year of hire	Number of new hires by year (1)	Number of hires who were automatically enrolled (2)	Number of hires who were not automatically enrolled (3)	Percent of hires enrolled in SRP (4)	Percent of hires who were automatically enrolled who are in the SRP (5)	Percent of hires not automatically enrolled who are in the SRP (6)
2005	507	N/A	507	0.79	N/A	0.79
2006	488	N/A	488	1.43	N/A	1.43
2007	536	N/A	536	1.49	N/A	1.49
2008	547	N/A	547	2.19	N/A	2.19
2009	532	N/A	532	2.07	N/A	2.07
2010	475	290	185	79.79	95.17	55.68
2011	497	497	0	97.99	97.99	N/A
2012	653	653	0	94.18	94.18	N/A
2013	647	647	0	97.68	97.68	N/A
2014	644	644	0	98.14	98.14	N/A
2015	654	654	0	94.65	94.75	N/A
2016	711	711	0	96.84	96.84	N/A

This table reports the participation rate in the SRP in the first year of employment for different year of hire cohorts, considering only university employees. The participation rate is computed as the number of individuals hired in a given fiscal year, with positive earnings in the designated year, and who made positive contributions divided by the number of individuals who were hired in this fiscal year and who had positive annual earnings in their first year.

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