Defaulting In and Cashing Out?

The Impact of Retirement Plan Design on the Savings Accumulation of Separating Employees

Angela A. Hung, Jill Luoto, and Jeremy Burke

RAND Labor & Population

WR-1115

September 2015

This paper series made possible by the NIA funded RAND Center for the Study of Aging (P30AG012815) and the NICHD funded RAND Population Research Center (R24HD050906).

Abstract

The shift to defined contribution (DC) retirement savings plans among employers has given both more freedom and more responsibility to employees who must decide whether and how much to save for retirement. Importantly, DC plans allow employees to decide what to do with their accumulated savings at points of job separation. While the advent of automatic enrollment (AE) policies has helped increase overall participation rates in DC plans, little consideration has been given to the interplay between the rise of AE policies and what happens to accumulated retirement savings at points of job separation.

We use administrative data from Vanguard covering the accounts of over a half million participants from 385 plans to explore the participation and distribution decisions of those who separate from their employers. We find that job separation is a significant source of leakages from retirement accounts among our sample. Over 50 percent of separating employees take a cash distribution. Notably, even after controlling for income and account balance size, those separating from AE plans are significantly more likely to take a cash distribution than are those separating from plans in which they enrolled voluntarily. Though AE policies may help encourage retirement savings among those who otherwise would not save, such policies may fail to realize their full potential if savings accumulated during periods of employment effectively dissipate at points of job separation, and with taxes and penalties paid out in some cases.

Table of Contents

Figures

Tables

Acknowledgments

We gratefully acknowledge the financial support of the Department of Labor, Employee Benefits Security Administration (EBSA). We also appreciate the invaluable feedback of EBSA staff on earlier drafts. We are also grateful to Jeffrey Clark, Steve Utkus, and Jean Young at Vanguard, for their helpful assistance in accessing, using, and interpreting the data used in this study. All views, opinions, errors, and conclusions are our own.

1. Introduction

Over the past 30 years, employers have increasingly shifted from offering defined benefit (DB) pension plans to offering defined contribution (DC) plans, placing the onus for retirement savings onto individuals. Employees must choose whether to participate, how much to contribute, and how to invest their contributions. Importantly, DC plans also typically allow increased portability. That is, employees can access their retirement savings at points of job separation.

At job separation, DC plan participants can choose what to do with their account balance. They can rollover their account balance into another retirement account, such as an Individual Retirement Arrangement (IRA) or a new employer's DC plan. Alternatively, separated employees can receive a cash distribution, but the employer may withhold 20 percent of the balance for taxes and those who are less than 59 ½ years of age may also owe a 10 percent penalty[1]. Lastly, depending on plan rules and account balance, separated employees may be allowed to keep their account in the plan.

While this increased liquidity and portability may encourage saving for retirement under DC plans and also allows individuals means to withdraw funds to cover financial hardships related to job separation, the ability to withdraw retirement savings can also undermine long-run retirement security.

Leakages, defined as any type of permanent withdrawal from retirement savings accounts prior to retirement, can significantly reduce retirement assets. Munnell and Webb (2015) estimate that 1.5 percent of assets leak out of DC and IRA plans each year, and aggregate retirement wealth is 20 percent lower than it would be if there were tighter rules on leakages. The GAO (2009) estimates that in 2006, out of $2.7 trillion in 401(k) plan assets, $108 billion leaked out of retirement accounts, the bulk of which ($74 billion) was due to cash distributions at job separation.

[1] The default withholding rate is 20%, but separated employees who take a cash distribution may request an alternative withholding rate. Funds withdrawn prior to age 59 ½ are subject to a 10 percent penalty if not used for a qualified purpose such as a first home purchase or higher education expenses.

Even though separated employees have a choice of what to do with their retirement savings, plan rules determine what will happen to the retirement savings if the employee does not actively choose a distribution option; that is, plan rules determine what the default action will be in the absence of an active choice by the participant. According to GAO, the default action for the vast majority of plans is to distribute small balances (balances less than $1,000) in cash if the separated employee does not provide distribution instructions (GAO, 2014). For about 50 percent of plans, the default action is to roll over mid-size balances (balances between $1,000 and $5,000) into an IRA that is opened by the plan sponsor on behalf of the separated employee. For employees with sufficient account balances (balances over $5,000), the default action is for the balance to remain in the plan.[2]

These plan rules are particularly important for American workers who tend to change jobs frequently. According to the Bureau of Labor Statistics, the median tenure in 2014 for all workers over age 25 was about five and half years.[3] Younger workers tend to change jobs more frequently. The median tenure for workers age 25 to 34 was found to be less than three years in 2014. All else equal, those who change jobs often are more likely to have small retirement account balances within each employer-sponsored plan since they have not had time to accumulate significant savings.

The rise of automatic enrollment (AE), whereby employees are automatically enrolled into an employer's retirement savings plan at a default deferral percentage and asset allocation unless they explicitly choose to opt out, has increased the number of retirement accounts with small balances (GAO, 2014). These smaller accounts are more likely than not to be subject to an automatic cash distribution or automatic rollover into an IRA if the account holders do not actively decide what to do with their funds upon separation. Both actions can reduce retirement assets – cash distributions remove funds from dedicated retirement accounts entirely, and IRAs opened by employers often have conservative default investment allocations and high fees that often outpace investment returns (GAO, 2014).

---

[2] The Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) requires that active plans may not distribute funds without written consent from the participant for accounts that have a balance greater than $5,000 that is attributable to the plan, and they may not distribute funds in cash for accounts that have a balance greater than $1,000 that is attributable to the plan without written consent, see 26 U.S.C. § 411(a)(11)

[3] http://www.bls.gov/news.release/tenure.t01.htm

This is important insofar as AE policies have become increasingly common since the passage of the Pension Protection Act of 2006 (see, for example, Butrica and Karamcheva, 2012; Hewitt Associates, 2010; Vanguard, 2015). While the increased adoption of AE features among employers has had positive implications for the retirement savings behavior for many employees,[4] an important and unanswered policy question is what happens to the money in these retirement accounts at job separation for those employees who were automatically enrolled. Though AE policies may help encourage retirement savings among those who otherwise would not save, such policies may fail to realize their full potential if savings accumulated during periods of employment effectively dissipate at points of job separation, and with large tax penalties paid out in some cases.

In particular, it is unclear whether these savers under AE plans who tend to default into participation at the point of hire are then more likely to default out of their plan at separation, and whether this is welfare-improving for such borrowers. Since many AE savers did not actively choose to save for retirement, they may not be as motivated to save or they may be more liquidity-constrained than savers under voluntary enrollment (VE) policies, which require employees to actively enroll into their savings plan if they wish to participate. If so, having access to their retirement savings at points of job separation may be particularly hard for these passive savers to resist. On the other hand, AE savers may be particularly susceptible to the forces of inertia, and go along with the automatic course of action for their retirement savings accounts following job separation, whatever that may be.

The interplay between the rise of automatic enrollment policies and frequent job changes is a relatively unexplored topic but of clear policy importance given the frequency of both in today's economy. AE policies generally broaden the pool of savers in retirement plans. More people are induced to save under AE policies than otherwise would, such as younger and lower-income

[4] A number of studies have shown that AE has significantly increased employee participation in DC savings plans (Beshears et al., 2009; Choi et al., 2002, 2004; Madrian and Shea, 2001). For example, Choi et al. (2004) find that rates of 401(k) participation after six months' tenure among new employees increased on the order of 50–60 percentage points at three different employers that introduced AE in the 1990s. Moreover, AE appears to increase participation among the employees who are least likely to participate in DC retirement savings plans: younger, lower-paid, and minority employees (Madrian and Shea, 2001).

participants (Madrian and Shea, 2001;Vanguard 2015). However, it is unclear how frequent job changes may affect retirement savings accumulation under AE plans.

For the current project, we investigate how separated employees save for retirement before job separation, and what happens to their retirement savings after job separation. Our key research questions are:

- How do separated employees compare to other employees in terms of retirement savings behavior? Are there important differences that vary with whether their retirement plan is an AE plan or a VE plan?
- What do separated employees do with their retirement account balances at job separation? Are there important differences in behavior that vary with the plan rules and the default for what happens with the account balance in the absence of distribution instructions? Are there important differences that vary with whether separated employees were in an AE plan or a VE plan?

To address our research questions, we use administrative data from Vanguard, a large financial services firm that has a long history of serving individuals, financial intermediaries, and institutions around the world and that offers IRA and 401(k) savings products. These data cover roughly 563,000 newly hired employees who were eligible to participate in 385 employer-sponsored private sector plans. These new employees were hired between 2010 and 2013.

With these administrative data, we observe not only individual level data such as the date an employee became eligible for participation, his or her participation status, contribution rate, account balance, job tenure, income, and age over time, but we also have important details on plan design such as whether a given plan features AE, the default contribution rate under AE, any automatic escalation rates, whether the plan features any kind of employer match or other contributions, and, importantly for our analysis, plan rules on account balances for separated employees.

We find that 40 percent of those hired between 2010 and 2013 in our sample will separate from their jobs before the end of 2013, after an average tenure of just one year. Compared to current employees, separating employees tend to be younger, have lower incomes, and are significantly less likely to participate in their employer-sponsored DC plan, for both AE and VE

plans. Furthermore, separated employees who did participate in their plans while employed contribute at lower rates and save less than current employees.

Our results suggest that job separation is a significant source of leakages from retirement accounts among our sample. Many separating employees take a cash distribution, particularly those with small balances. Even a significant portion of separated employees with balances over $5000 take cash distributions at job separation. Notably, even after controlling for income and account balance size, those separating from AE plans are significantly more likely to take a cash distribution than are those separating from VE plans.

The remainder of this report proceeds as follows. In Chapter 2 we describe the existing literature on job separation and retirement savings accumulation. Chapter 3 describes the Vanguard administrative data used for our analysis and Chapter 4 presents results. In Chapter 5 we discuss and interpret our results in the context of their policy implications. Chapter 6 concludes.

2. Previous work on job separation and retirement savings

The literature on what employees choose to do with their retirement savings at job separation finds that a large number of separated employees choose to take a cash distribution, especially younger workers and those with small balances.

Aon Hewitt (2011) analyze data through 2010 from more than 1.8 million employees across over 110 large defined contribution plans. They find that 42 percent of employees who left their job in 2010 took a cash distribution, 29 percent left assets in the current plan, and 29 percent rolled assets over to a qualified plan Their data also show that younger participants and men were more likely to take a cash distribution at job separation. Importantly for our research interests, they find that there was no difference in the rates of choosing cash distributions at job separation between employees under AE plans and VE plans, but it is important to note that they do not look at distribution behavior by the plan's distribution rules.

Using data from the 2008 Survey of Income and Program Participation (SIPP), Copeland (2013) analyzes the responses of the 1.8 million respondents who reported in 2012 that they had

ever received a distribution from a former retirement plan when changing jobs.[5] He finds that 48 percent of those who received a distribution at job separation in 2012 reported rolling over at least some portion of their most recent distribution to a tax-qualified savings account, and older respondents and those with higher balances are more likely to rollover a distribution. Even though 52 percent of respondents who received a distribution did not rollover any of these funds into another retirement account, only 16 percent report that they used any of their distribution for consumption. The remainder reported using their distribution for other savings, to pay down debts, or to finance a home or education.

Purcell (2009) also analyzes SIPP data from earlier survey rounds. Of the 1.3 million respondents under age 60 who reported in 2006 that they had received a distribution between 1980 and 2006 from a retirement savings account at job change, 45 percent report rolling over all of the distribution into another retirement account. Like Copeland (2013), he finds that younger respondents were less likely to rollover a distribution. He also finds that respondents who report their race as non-white, were unmarried, do not have a college degree, have lower income, and are women were less likely to have rolled over their most recent lump-sum distribution than those who report their race as white, were married, have a college degree, have higher income, and are men.

Engelhardt (2002) investigates how distributions from retirement plans at job change are used, using data from the Health and Retirement Survey (HRS). He finds that 28 percent of HRS respondents who changed jobs rolled their retirement account (either defined benefit (DB) or defined contribution (DC)) into a tax-qualified saving account or kept their account, accounting for about 55% of aggregated dollars from retirement accounts. Narrowing to distributions from DC plans, he finds that 42 percent of HRS respondents rolled over DC plan accounts into a tax qualified saving account or kept their account, accounting for 68 percent of aggregated DC plan dollars. Focusing on the 48 percent of HRS respondents who reported spending their cash distribution from their retirement account at job change, rather than saving or paying down debt, he finds that if the median household that spent their distribution had instead rolled that money

[5] The 2008 Panel of the SIPP follows households over a five-year period. The module used in this study was fielded in December 2011–March 2012.

over into a tax–qualified plan, that money would have accounted for only 5–11 percent of pension and Social Security wealth. However, it is important to note that the sample that Engelhardt (2002) uses is restricted to households whose head is between 51 and 61 years old. As compared to younger workers, the impact to older workers of spending a cash distribution from a retirement account at job change will have less severe and persistent consequences because older workers are closer to retirement.

Finally, Armour, Hurd and Rohwedder (2015) take advantage of the panel nature of the HRS to look at trends over time in cash-outs. Comparing HRS-entering cohorts in 1992, 1998, and 2004, they find that cashing out of a retirement account became more frequent over time. Using the 1992 cohort, they can examine the long-term effects of taking a cash distribution at job separation. Those who cashed out a retirement account at job separation are worse off in 2012 compared to those who never separated from a job or separated but did not cash out, in terms of overall wealth, retirement income, and health. However, these individuals were also worse off in 1992, before they ever took a cash distribution at job separation, and this analysis cannot control for unobservable factors that may contribute to both lower welfare and cashing out behaviors.

3. Vanguard administrative data

To investigate our research questions, we used data that were provided by Vanguard on an anonymous and secure, restricted-access basis. One of the key advantages of using administrative data is that we can directly observe an individual's retirement savings behavior such as participation and contributions as well as outcomes like account balances, as opposed to relying on self-reported survey data that relies on a respondent's accurate recall. Another key advantage is that we have detailed information on plan design. The drawback is that we have relatively limited information on the individuals themselves. In particular, we do not have data on household composition and finances, including retirement accounts outside of Vanguard.

The data that we use cover roughly 563,000 eligible newly hired employees hired into 385 employer-sponsored plans. For our analyses, we drop 26,874 employees from the 55 plans that

changed their enrollment policy from VE to AE after their hire date.[6] At the plan level, these data include details on plan design such as whether the plan features AE, the default fund allocation, the default contribution rate under AE, any automatic escalation rules, whether the plan features any kind of employer match and contributions, and the plan's rules on account balances for separated employees.

At the individual level, the sample covers newly eligible employees who were hired into one of these 385 employer-sponsored plans between January 1, 2010, and December 31, 2013. We observe their participation statuses, contribution rates, contribution amounts, account balances, and portfolio allocations on a monthly basis from January 1, 2010, through June 30, 2014. Other employee-level information contained in these data include age, yearly income level, tenure with the employer, and termination date for those who leave employment. Finally, we observe whether account balances of separated employees are distributed or kept in the plan after separation.

Table 1 describes our sample. While the sample has more plans that offer AE than plans that offer VE, more employees were hired under VE during our time period than were hired under AE. Therefore, firms with VE plans hired more employees, on average, than did firms with AE plans. The attrition rate over the four-year period for employees hired under AE is lower than the attrition rate for employees hired under VE (35 versus 42 percent).

Table 1: Sample Size

	Voluntary Enrollment Plans	Automatic Enrollment Plans	All Plans
Number of plans	155	230	385
Number eligible employees hired 2010-2013	346,085	190,551	536,636
Number eligible employees hired 2010-2013 AND still employed by Dec 31, 2013	201,031	122,913	323,944
Number eligible employees hired 2010-2013 BUT no longer employed by Dec 31, 2013	145,054	67,638	212,692
Attrition rate over 2010-2013	0.42	0.35	0.40

Table 2 describes the plans in our sample. As seen in Table 1, plans that feature VE tend to be larger than AE plans in the sense that there are more eligible employees per VE plan than per

[6] We exclude these individuals from the main analysis because it is unclear in our data whether their participation and contribution outcomes after this policy change were the result of a "sweep," whereby some AE plans automatically incorporate non-participants who must actively opt-out if they wish not to participate.

AE plan. In line with past research, we find that participation rates under AE plans are much greater than participation rates under VE plans. Thirty-five percent of eligible newly hired employees in VE plans participate in their plan, whereas 92 percent of eligible newly hired employees participate in AE plans, where we define newly hired as those hired since 2010 and participation in a plan as having ever made a contribution to the plan during a period of employment.

As for other features of the plans in our sample, 78 percent of AE plans also automatically enroll participants into an automatic increase feature. The average default contribution rate for AE plans is 3.56 percent. The modal default contribution rate is three percent, with 56% of AE plans using three percent as the default contribution rate. Thirty-seven percent of VE plans and 33 percent of AE plans offer immediate vesting to employees in their plans (p-value = .51 in a two-sided t-test at level of plans). The vast majority of plans have an employer match, allow loans, and use a target date fund as the default investment allocation.

Table 2 also shows the rules for what happens to account balances when employees separate. The plans in our sample use one of three different distribution rules. Very few plans use Distribution Rule 1, in which separated employees are allowed to keep any size account balance in the plan indefinitely, and in the absence of instructions from the separated employee, account balances will automatically remain in the plan. Twenty-eight percent of VE plans and 14 percent of AE plans use Distribution Rule 2 in which accounts with balances over $1000 are allowed to stay in the plan, and this is the default. Balances below $1000 are not allowed to stay in the plan and the default in these cases is a cash distribution in the absence of instructions from the separated employee. Distribution Rule 3 is by far the most prevalent. Sixty-nine percent of VE plans and 84% of AE plans follow Distribution Rule 3: Balances over $5000 are allowed to stay in the plan, and this is the default for these larger balances. Balances below $5000 are not allowed to stay in the plan. For balances under $1000 the default is a cash distribution, and for balances between $1000 and $5000 the default is to rollover the funds into a tax qualified account. A chi-squared test rejects equality of distribution rules across AE and VE plans at the 1% level.

Table 2: Plan Characteristics

	Voluntary Enrollment	Automatic Enrollment
Mean number of total employees	5,485	2,945
Mean number of new hires 2010-2013	2,254	956
Participation rate among new hires	0.35	0.92
Has automatic increase	N/A	0.78
Mean default contribution rate	N/A	3.56
Has an employer match	0.87	0.91
Plan offers immediate vesting of employer contributions	0.37	0.33
Default fund is Target Date Fund	0.88	0.98
Allows loans	0.96	0.95
Rules on account balances for separated employees		
Distribution rule 1 (defer indefinitely; no cash outs)	4 (3%)	4 (2%)
Distribution rule 2 (cash out <$1000; defer above $1000)	44 (28%)	32 (14%)
Distribution rule 3 (cash out <$1000, Auto-Rollover $1000-$5000, defer above $5000)	107 (69%)	194 (84%)

Table 3 presents demographic characteristics of employees in our data set. Overall, average income of all participating employees in either an AE or VE plan is almost $65,000, average tenure is 1.87 years, average age is 38, and of participating employees for whom we have data on gender, 63 percent are male (data on gender is missing for 14 percent of our sample). Non-participants earn significantly less, have less tenure, and are younger on average, under either AE or VE plans (all cited results statistically significant at 1% level in two-sided t-tests comparing across participation status within AE or VE plan categories). When comparing across participants in VE versus AE plans, where the former had to actively enroll into their plans, VE participants tend to have slightly longer tenure at their employer and higher incomes than participants in AE plans (p-value 0.000 on both t-tests). We see that the difference in income between participants and non-participants is larger in VE plans than in AE plans, which is consistent with findings from the research literature that AE has a greater impact on the participation of lower-income employees (e.g., Madrian and Shea, 2001; Vanguard, 2015).

It is worth noting that because our sample of employees consists of new hires, the maximum possible tenure that we could observe is 4.5 years. Furthermore, note that our sample is not representative of the general US population – it has higher incomes and is distinctly more male - but is drawn from real-world administrative data of over a half million eligible employees across hundreds of employer-sponsored private plans.

Table 3: Employee Demographic Characteristics, Non-participating vs. Participating Employees

	Voluntary Enrollment Plans		Automatic Enrollment Plans		All Plans	
	Non-Participating Employees	Participating Employees	Non-Participating Employees	Participating Employees	Non-Participating Employees	Participating Employees
Annual Income	$35,181 ($25,022)	$70,019 ($58,274)	$39,003 ($30,507)	$61,067 ($49,472)	$35,449 ($25,381)	$64,754 ($52,885)
Tenure in years	1.46 (1.17)	2.01 (1.90)	1.10 (0.75)	1.78 (1.54)	1.44 (1.14)	1.87 (1.71)
Age	35 (31)	38 (35)	36 (33)	38 (35)	35 (31)	38 (35)
Percentage Male	63%	64%	61%	62%	63%	63%
N	224,624	121,461	16,922	173,629	241,546	295,090

NOTE: Data are presented as means, with corresponding medians in parentheses. Data for current employees are as of June 30, 2014 except for income, which is 2013 income for current employees. For separated employees, income averages are from one year prior to separation since incomes are truncated in the final year of employment. Other data for separated employees are also as of the last year of employment. Percentage male ignores the roughly 14% of individuals whose gender is not known. All differences across participants and non-participants within VE or AE plans statistically significant at 1% level in two-sided t-tests with exception of gender under AE plans (p-value =0.19).

Table 4 compares demographic characteristics of current employees and separated employees. We define separated employees as those employees in our sample who are no longer active employees as of December 31, 2013. We define current employees as employees who are still an active employee as of December 31, 2013. Similar to findings on participation in table 3, current employees tend to be older, have longer tenure at the employer, and higher incomes than employees who have separated (all differences statistically significant at 1% level).

Table 4: Demographic Characteristics of Current Employees and Separated Employees

	Voluntary Enrollment Plans		Automatic Enrollment Plans		All Plans	
	Current Employees	Separated Employees	Current Employees	Separated Employees	Current Employees	Separated Employees
Income	$55,259 ($42,301)	$37,657 ($24,477)	$63,844 ($52,587)	$50,732 ($38,159)	$58,587 ($46,731)	$41,814 ($28,489)
Tenure in years	2.17 (2.05)	0.93 (0.70)	2.09 (1.94)	1.01 (0.81)	2.14 (2.01)	.96 (0.73)
Age	36 (33)	35 (32)	38 (36)	37 (34)	37 (34)	36 (33)
Percentage Male	.64	.62	.61	.63	.63	.63
N	201,031	145,054	122,913	67,638	323,944	212,692

NOTE: Data are presented as means, with corresponding medians in parentheses. Data for current employees are as of June 30, 2014 except for income, which is 2013 income for current employees. For separated employees, income averages are from one year prior to separation since incomes are truncated in the final year of employment. Other data for separated employees are also as of the last year of employment. Percentage male ignores the roughly 14% of individuals whose gender is not known.

4. Results

To address our research questions on the impact of job separation on retirement savings accumulation, we begin by comparing the savings behaviors of separated employees with the behaviors of current employees, both within and across plan enrollment types to assess the interplay of AE policies with job separation outcomes. We then present multivariate regressions that estimate the impact of individual- and plan-level characteristics on participation or contribution rates to understand the primary determinants of such retirement savings decisions. We then examine the subgroup of those who separate from their jobs and examine what, if anything, they do with their retirement accounts following separation and how that compares to their plans' designed defaults.

Again, there are clear reasons to suspect that those who separate from jobs that offered AE plans will have differential outcomes than those who separate from employers offering VE plans. Those who separate from employers with VE plans and were participants in those plans prior to separation may be more active and motivated to save, as evidenced by their active choice to opt into their VE savings plan. These employees may be particularly likely upon separation to keep their accumulated savings in a tax-qualified retirement account such as their current plan, an IRA, or a new employer's plan. On the other hand, those who saved under AE plans may be more subject to the forces of inertia and thus more likely to follow whatever path is predetermined by the plan's design, whether that be to automatically roll over into an IRA, distribute the account as cash, or continue in the plan indefinitely.

Retirement savings behavior of separated employees and current employees

Separated employees were less likely to participate in their employer-sponsored plan while they were employed than are current employees (44 versus 62 percent). This difference is even larger in VE plans (25 versus 43 percent) than AE plans (84 versus 95 percent; all cited differences are statistically significant at 1% in a two-sided paired t-test). Conditional on participation, we also find that separated employees contributed to their retirement accounts at

lower rates than current employees contribute on average. Moreover, conditional on participation, contribution rates (the share of an employee's salary saved into the account) and account balances in VE plans tend to be higher than contribution rates and balances in AE plans for both current and separated employees. However, it is worth noting that because AE plans broaden the base of participants to those who might not save for retirement otherwise, average contribution rates and account balances over all eligible employees are higher in plans that offer AE than plans that offer VE (see Table 5). These findings are consistent with other research in the area (see, for example, Choi et al., 2004).

Average account balances for current employee participants are more than twice as large as average account balances for separated employees at time of separation ($19,878 versus $9,844). This is not surprising given that current employees have larger incomes, contribute at a higher rate, and have longer tenure in which to accumulate savings. Because account balances are endogenous to job separation – that is, employees who leave an employer necessarily have less time to save in that employer's plan, we focus on participation and contribution decisions in the remainder of this section.

Table 5: Retirement Plan Savings Behavior of Current Employees and Separated Employees

	Voluntary Enrollment Plans		Automatic Enrollment Plans		All Plans	
	Current Employees	**Separated Employees**	**Current Employees**	**Separated Employees**	**Current Employees**	**Separated Employees**
Participation rate	0.43	0.25	0.95	0.84	0.62	0.44
Contribution rate	3.12 (0.00)	1.61 (0.00)	5.66 (5.00)	3.87 (3.00)	4.08 (3.00)	2.33 (0.00)
Account balance	$9,518 ($0)	$3,550 ($0)	$18,011 ($7,372)	$6,663 ($1,396)	$12,728 ($2,541)	$9,494 ($719)
Conditional on Participation:						
Contribution rate	7.30 (5.83)	6.57 (5.00)	5.97 (5.00)	4.58 (3.50)	6.53 (5.00)	5.34 (4.00)
Account balance	$21,442 ($8,009)	$13,679 ($3,725)	$18,724 ($7,948)	$7,457 ($1,868)	$19,878 ($7,972)	$9,844 ($2,381)
N	201,031	145,054	122,913	67,638	212,692	323,944

NOTE: Data are presented as means, with corresponding medians in parentheses. Data for current employees are as of June 30, 2014. Data for separated employees are as of last year of employment. Account balance is the maximum monthly account balance recorded during a participant's active tenure.

In Table 3, we saw that those who are younger and have lower incomes are less likely to participate. In Table 4, we observed that separated employees tend to be younger and have lower

incomes than current employees. It could be that the observed differences in savings behaviors of separated and current employees are simply attributable to differences in ages and incomes. We assess participation rates by age and income to explore this possibility.

Figure 1 shows that across all age levels, employees who separate from their jobs have lower participation rates than employees who are still currently employed as of December 31, 2013. The lower participation rates of separated employees appear independent of whether a plan features a voluntary or automatic enrollment policy. The largest participation gap in AE plans between current and separated employees occurs for the youngest workers. For those who are 25 and younger, 30 percent of separated employees opted out of their AE plan, whereas only eight percent of current employees opted out. Under VE plans, we also see larger participation gaps for younger workers. Current employees who are under age 25 are twice as likely to participate in VE plans than separated workers were. And current employees between ages 25 and 34 are 21 percentage points more likely to participate in a VE plan than separated employees in the same age group. Figure 1 also shows that participation rates tend to rise slightly with age, but participation in AE plans is higher than participation in VE plans regardless of age.

Figure 1: Participation Rates for Current and Separated Employees, by Age

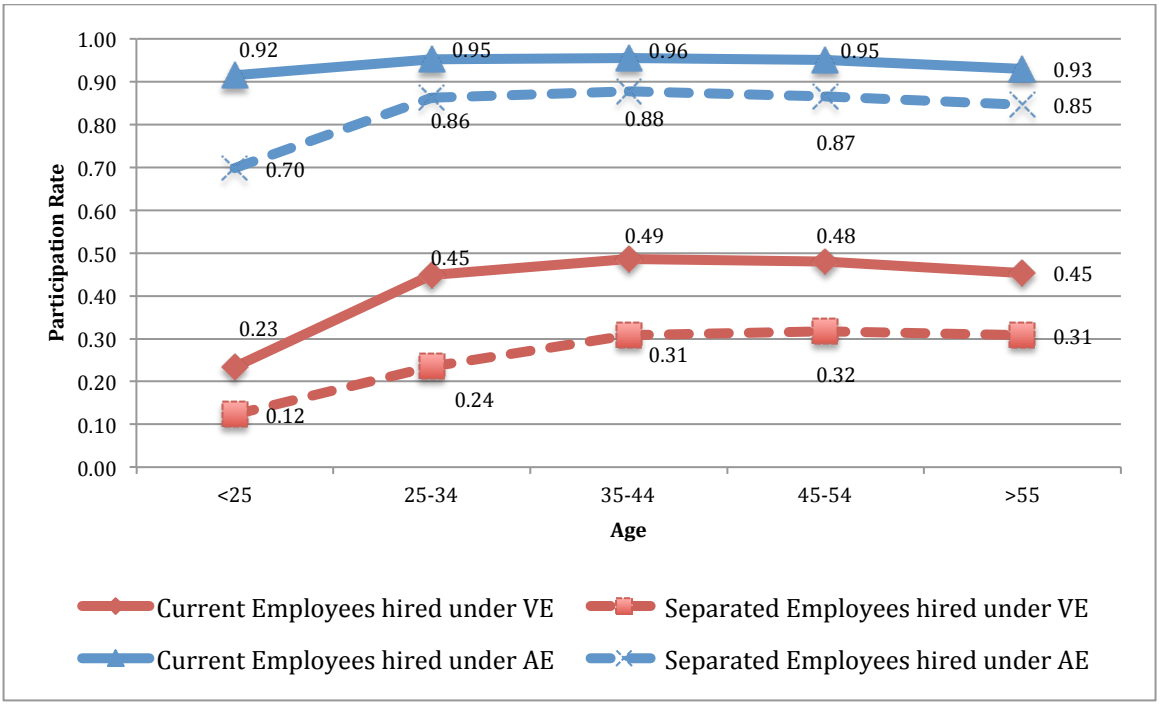
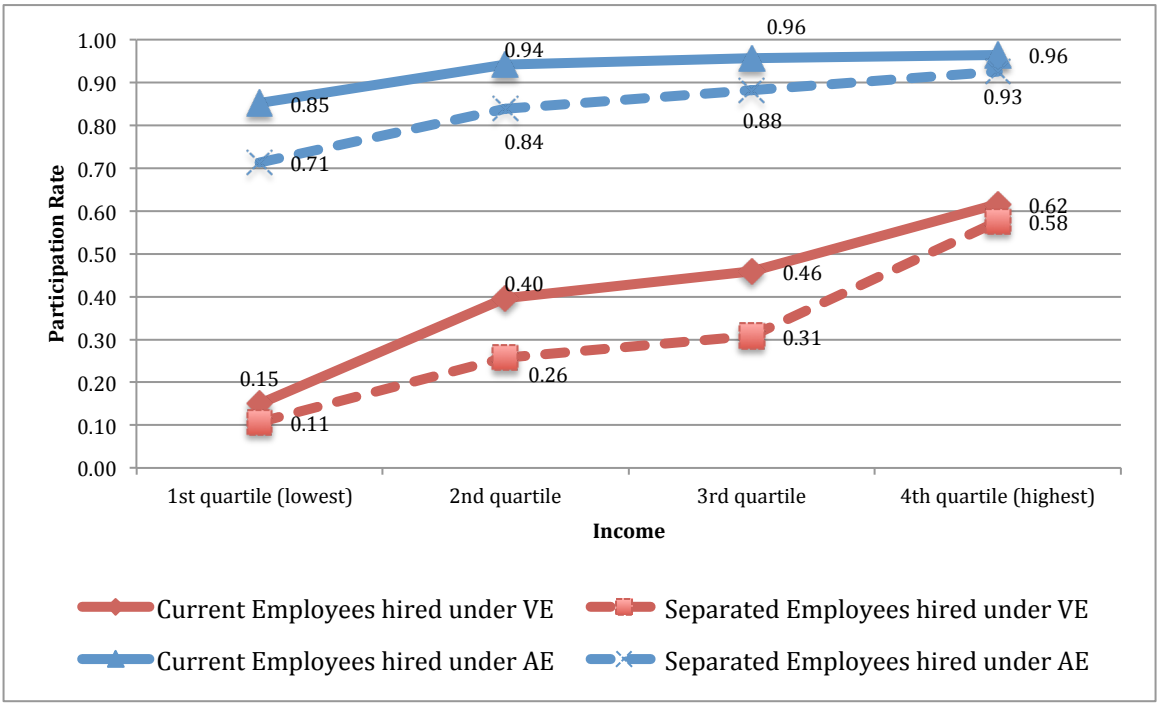


Figure 2 presents a similar breakdown of participation rates by income quartiles and shows that regardless of income level, separated employees were less likely to participate in their plan while employed than current employees. For AE plans, we observe the largest participation gap between separated and current employees in the lowest income quartile, and the gap decreases monotonically as the income quartile increases. On the other hand, the largest participation gap is in the middle two quartiles for VE plans. Lastly, we also observe that AE policies increase participation rates overall across all income levels, which again aligns with previous research (Madrian and Shea, 2001; Choi et al., 2014; Vanguard, 2015).

Figure 2: Participation Rates for Current and Separated Employees, by Income



Figures 3 and 4 show that even after restricting to those employees who participate in their retirement savings plans, those who will separate from their employers are generally contributing at lower rates, and this is true across all ages and income levels. Therefore, not only are those who will separate from their employers less likely to participate overall (Figures 1 and 2), even those who do participate contribute at lower rates on average than the employees who remain active. We observe a much larger contribution gap between separated employees and current employees who participate in AE plans when compared to VE plans. Figure 3 shows that the

contribution gap decreases with age, and Figure 4 shows that the contribution gap decreases with income. Though Figures 3 and 4 show that contribution rates are higher under VE plans than AE plans when conditioned on participation across the age and income distributions, these relative findings reverse when we look at the unconditional results across all eligible employees. In particular, mean contribution rates are higher across age and income distributions under AE plans, though for both AE and VE plans we continue to see large differences between employees who separate and those who remain employed (see Figures A1 and A2 in Appendix).

Figure 3: Contribution Rates (Conditional on Participation) for Current and Separated Employees, by Age

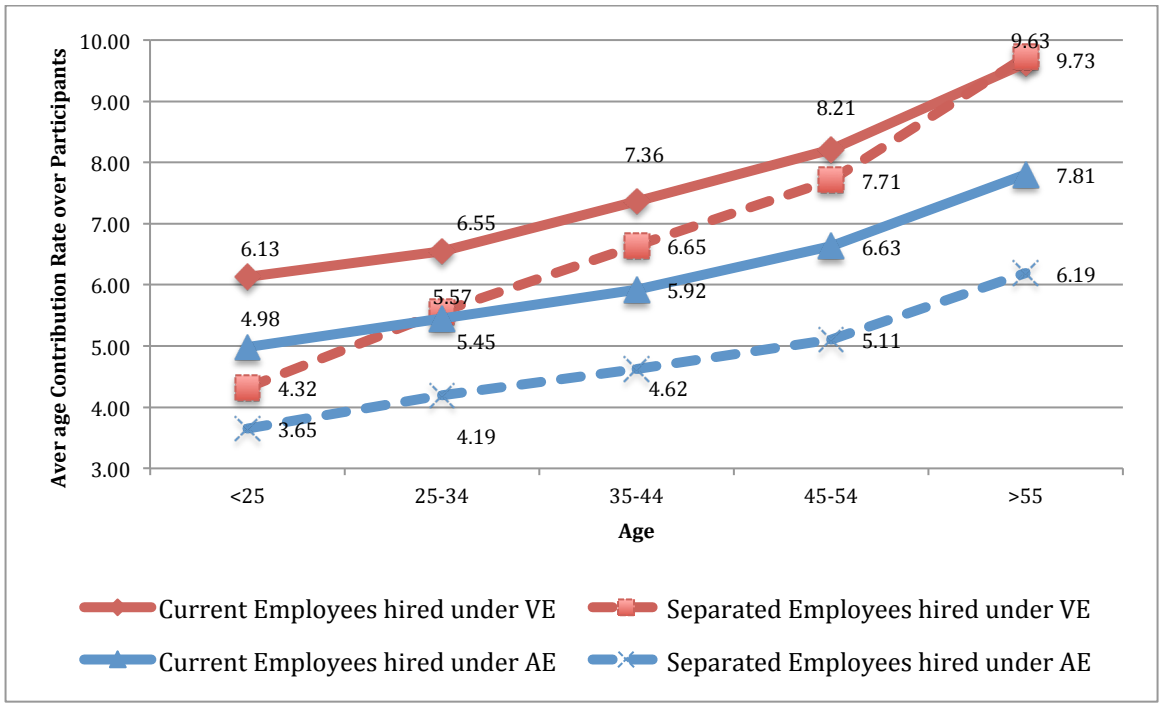
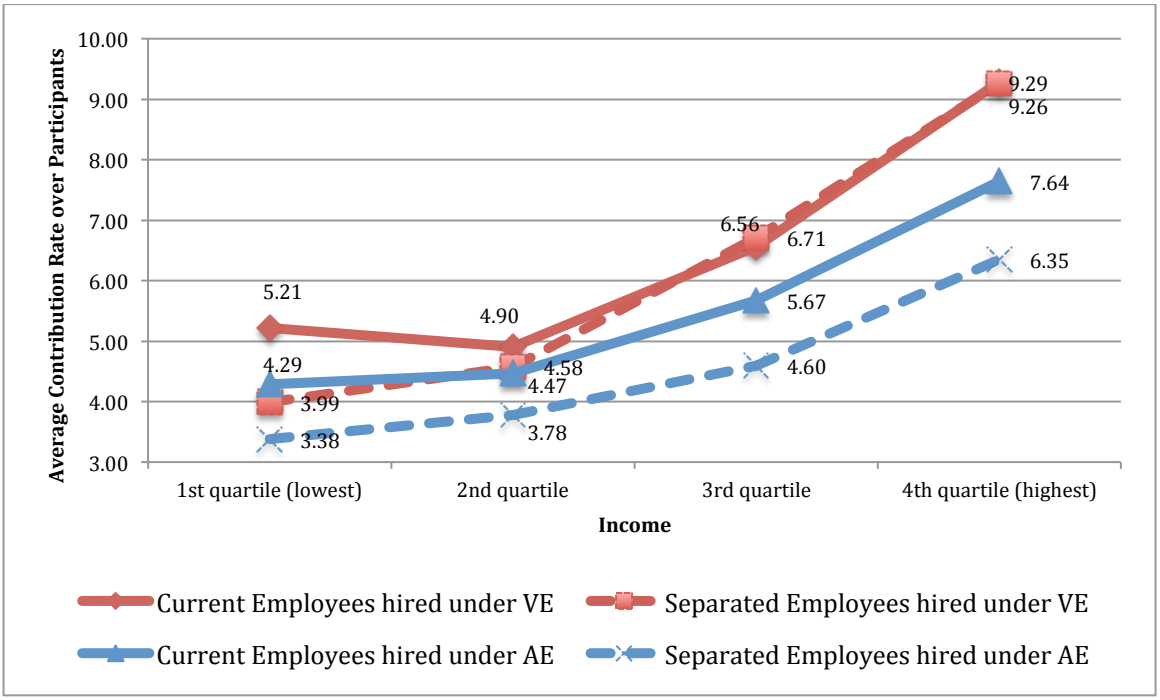


Figure 4: Contribution Rates (Conditional on Participation) for Current and Separated Employees, by Income



Multivariate results for retirement savings behavior

These figures suggest strong selection effects determining who will separate from employment and who will participate and contribute to their savings plan. That is, there are unobserved characteristics of separated employees that are also related to retirement savings behavior.

We now turn to present multivariate models to further investigate the impact of job separation on retirement plan participation and retirement saving while controlling for the many parameters that influence these decisions. Because job separation necessarily follows participation and contribution decisions, we do not estimate participation (or contribution rates) today as a function of one's eventual separation status. Ideally, we would estimate these retirement savings decisions as function of an individual's subjective probability of attrition. However, we do not observe these probabilities, so instead we use a probit model to estimate the probability of job separation conditional on his/her plan's average attrition rate, as well as a vector of individual-level characteristics such as age, gender, and income, as well as year of hire dummies to control for the truncated nature of hiring and termination outcomes in our data (that

is, we are less likely to see the job separation outcomes of those hired in 2013 than in 2010).[7] We then use the resulting estimated probability of job separation as predictors in a multivariate model of participation and contribution decisions for all employees during the period they were actively employed. In Table 6 below we present results from estimating models of the employee's decision whether or not to participate, and at what contribution rate, as functions of a variety of individual- and plan-level characteristics including an employee's predicted probability of separating from their employer. We control for individual-level characteristics (age, gender, and income), as well as plan-level characteristics that are likely to influence one's participation and contribution decisions. We again include year of hire dummies in these estimations.

The first column in Table 6 reports estimates of marginal effects from a probit model of participation, where the dependent variable is a dummy that equals one if an employee ever participates in their plan (defined by having a positive deferral share). Those employees who are predicted to be more likely to separate from their employers are significantly less likely to participate: every additional 10 percentage point increase in the probability of separation decreases the probability of participation by roughly 7 percentage points. Being hired by an employer whose plan features an AE policy increases the probability of participation by 61 percentage points, significant at 1%. The interaction between the AE dummy with the predicted probability of separation for an employee is negative but small and not precisely estimated. Income, being female, and age are positively associated with participating, and more recent hires are less likely to participate (shown by the year of hire dummies).. In particular, every additional $10,000 in income leads to a 3 percentage point increase in the probability of participation, females are 3 percentage points more likely to participate, and each additional year of age leads to a 0.1 percentage point increase in the probability of participation.

Other plan-level characteristics are also strong predictors of an employee's participation status. Larger employers, and plans that allow loans and that feature distribution rules that include automatic cash outs or automatic distributions depending on balance size at termination (rules 2 or 3) also are positively associated with plan participation. Perhaps surprisingly, plans

[7] Results of this predictive model are in Appendix Table A1.

that feature immediate vesting reduce the probability of participation by 8 percentage points, significant at the 5% level

Column 2 restricts results to those who ever participated in their plan, and estimates an ordinary least squares (OLS) model where the dependent variable is the natural log of an employee's average contribution rate in their final year of employment.[8] An employee's predicted probability of job separation is negatively associated with contribution rates, on the order of 36 percent (column 2), significant at 1%. AE policies are estimated to further decrease average contribution rates by roughly 21 percent conditional on participation. The interaction term between the AE dummy and one's predicted probability of job separation is again small and imprecisely estimated. In accordance with the findings in figures 3 and 4 above, age and income are positively related to contribution rates: each additional year older leads to a 0.4 percent increase in contribution rates on average, and every additional $10,000 in income leads to a 4 percent increase in contribution rates. Females are estimated to contribute 1 percent less on average.

In addition to AE policies, plan-level characteristics are again strong predictors of a participant's contribution rate: Each additional 10,000 employees decreases the average contribution rate by 1 percent, allowing loans increases average contribution rates by 17 percent, and plans offering immediate vesting increase contribution rates by 8 percent.

[8] We log transform an employee's contribution rate to account for its lognormal distribution.

Table 6: Multivariate Regression Results on Participation and Contribution Rates

	Participation	Ln (contribution rate)
Predicted probability of job separation	-0.72 (0.18)***	-0.44 (0.22)***
Automatic enrollment	0.61 (0.04)***	-0.24 (0.07)**
Predicted probability of job separation x Automatic enrollment	-0.02 (0.13)	0.04 (0.19)
Other individual-level characteristics		
Female	0.03 (0.02)**	-0.01 (0.01)
Gender unknown	0.02 (0.04)	0.01 (0.02)
Age in years	0.001 (0.001)	0.004 (0.001)***
Hired in year 2011	-0.07 (0.01)***	-0.04 (0.02)**
Hired in year 2012	-0.19 (0.04)***	-0.12 (0.04)***
Hired in year 2013	-0.38 (0.09)***	-0.23 (0.07)***
Income ($10,000s)	0.03 (0.00)***	0.04 (0.00)***
Other plan-level characteristics		
Distribution rule 2	0.11 (0.06)**	-0.04 (0.09)
Distribution rule 3	0.14 (0.06)**	-0.03 (0.08)
Total number of employees (1000s)	0.002 (0.00)***	-0.001 (0.000)***
Loans allowed	0.24 (0.07)***	0.17 (0.06)***
Plan has a positive match	0.07 (0.06)	0.03 (0.06)
Automatic increase	-0.01 (0.01)	0.003 (0.007)
Plan offers immediate vesting	-0.08 (0.04)**	0.08 (0.02)***
Constant term		1.48 (0.13)***
N	527038	283487
Prob(participation)	0.61	
R-squared		0.17

Notes: * p<0.10, ** p<0.05, *** p<0.01. Standard errors in parentheses clustered at plan-level. Column 1 shows marginal effects from probit model where dependent variable is ever participating in a plan. Column 2 is restricted to those who ever participate and estimates an OLS model where dependent variable is the natural log of an employee's contribution rate.

These multivariate results underscore the summary statistics and figures above that display strong evidence that those who separate from their employer in our data are qualitatively different than those who remain; they are less likely to participate in their employer-sponsored savings plan while employed, and even when they do participate, they contribute at lower rates

on average. Though a selected group, 40 percent of our sample will separate from their jobs in the four year timeframe covered by our data (see Table 1).

Distribution policies and behaviors of separated employees

To learn what happens to retirement savings after an employment spell ends, we now focus only on those employees who have separated from their employers, and – by necessity - who were participants during their employment to have positive savings. As discussed above, plans vary with regards to what actions are taken regarding a given account in the absence of an active choice by a terminated employee. We begin by comparing the numbers of separated employees who are subject to the various distribution rules and default separation actions. We then look within the set of plans that share a distribution rule to characterize how many participants have amassed savings of different sizes and are therefore subject to different default actions within that rule. We then estimate multivariate regressions of employee distribution behaviors following job separation to shed further light on the impact of plan design features including AE policies on distribution decisions, while controlling for the many parameters that influence these decisions.

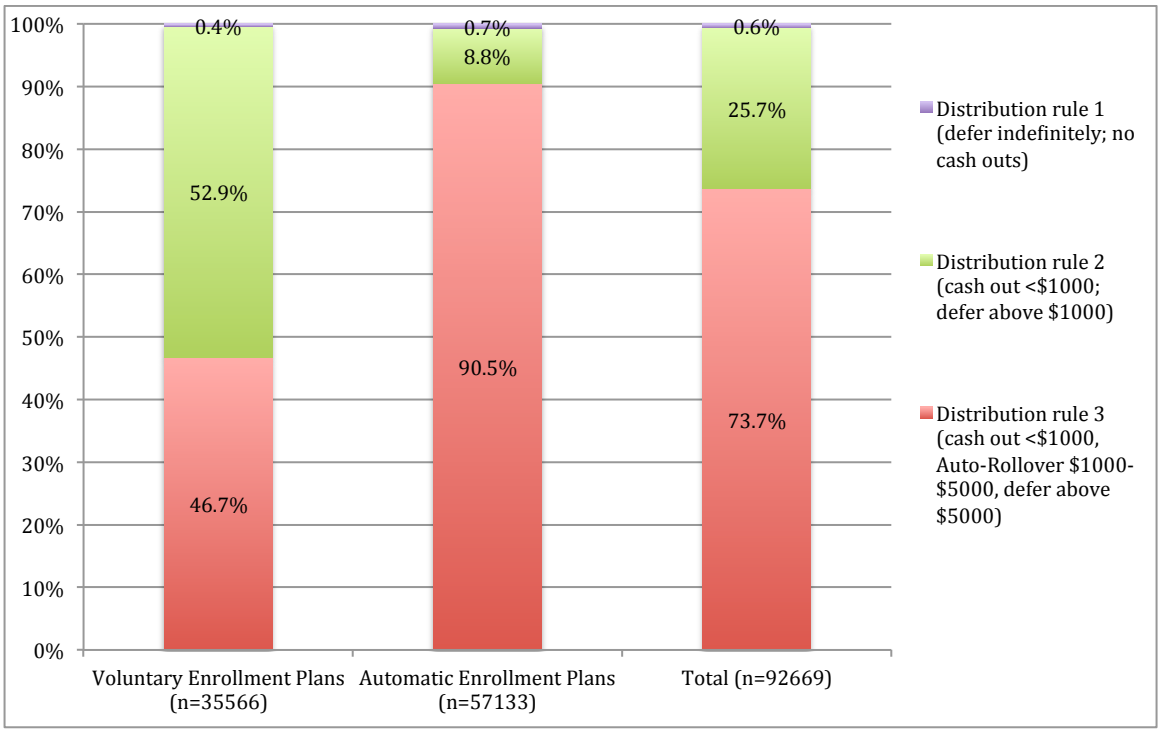
Plan distribution policies for separated employees

We begin by examining the percentage of separated plan participants who are subject to each type of distribution rule. Because the default for distribution rules differs by account balance size, we then look at account size by distribution rule.

Figure 5 shows the percentage of separated plan participants who are subject to each type of distribution rule. We saw in Table 2 that only eight plans in our sample offer Distribution Rule 1, in which separated employees are allowed to keep account balances in the plan indefinitely, and the default is for account balances to remain in the plan. Given that so few plans offer Distribution Rule 1, it is not surprising that less than one percent of all separated participants are subject to that rule. Even though 26 percent and 65 percent of VE plans offer Distribution Rule 2 and Distribution rule 3, respectively, more separated participants are subject to Distribution Rule 2. This suggests that VE plans that offer Distribution Rule 2 (automatic cash distribution for balances <$1000) are larger and/or have higher turnover those that offer Distribution Rule 3 (automatic cash distribution for balances <$1000, automatic rollovers for balances between

$1000-$5000). The vast majority of separated participants who were in AE plans are subject to Distribution Rule 3.

Figure 5: Separated Plan Participants who are Subject to Each Type of Distribution Rule



Because distribution rules are based on account balances, we further examine account balances for separated participants, by distribution rule, using the account balance at the end of an employee's employment period that is "attributable to the plan" – that is, the amount of savings in an account that were accumulated during a spell of employment. If employees rollover a retirement account from a previous employer when they begin participation in the current plan, we subtract those rolled over funds from the ending balance size. We do this in order to correctly classify the relevant default actions for an account since distribution rules are based on the part of the account balance that is attributable to the plan

Figures 6-8 describe account balances attributable to the plan at separation for separated participants under Distribution Rules 1-3, respectively. At job separation, any non-vested funds are transferred to a "forfeiture" account that is controlled by the plan sponsor. Therefore, we observe some separated participants who have $0 in their account balance at separation.

Over half of all separated participants under Distribution Rule 1 have account balances attributable to the plan that are over $5000 (Figure 6). But regardless of account size, the default for all these separated participants is for their account balances to remain in their plans.

Figure 6: Account Balances Attributable to the Plan for Separated Participants under Distribution Rule 1 (Defer Indefinitely)

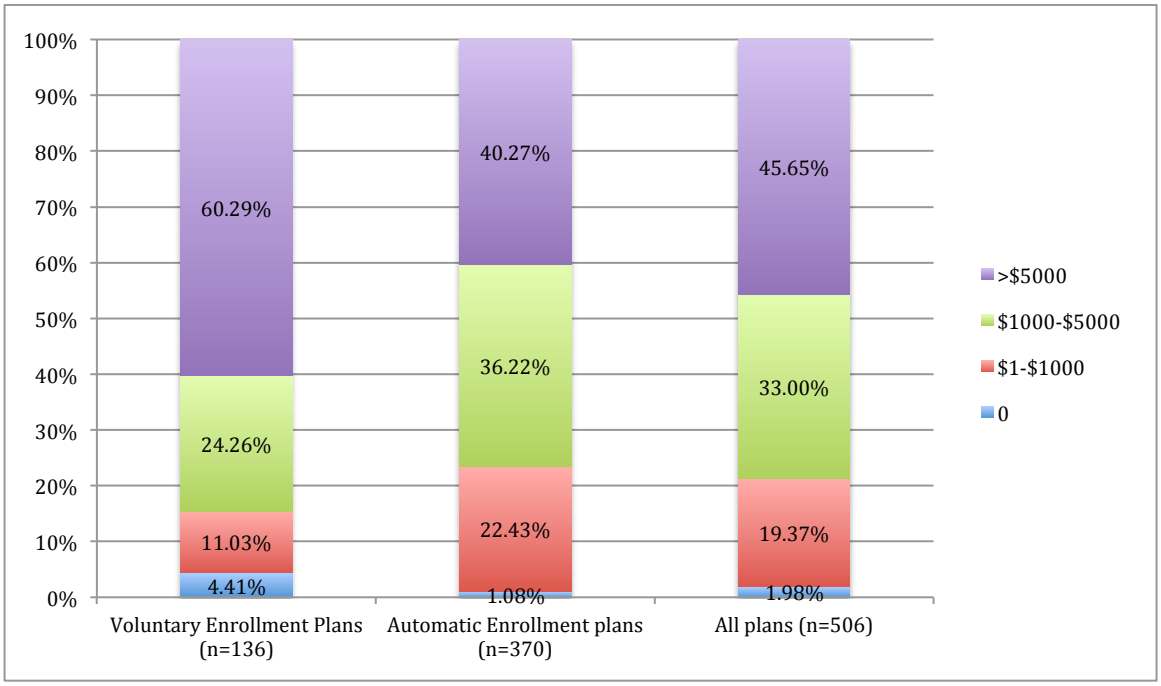


Figure 7 describes the balances for over 23,000 separated participants subject to Distribution Rule 2. We see that about 40 percent of separated participants in VE plans and about 30 percent of separated participants in AE plans have balances of less than $1000 and are therefore subject to an automatic cash distribution of their DC accounts if they do not provide alternate instructions. The default for the remainder of the separated participants (those with account balances over $1000) is for their account balances to remain in their plans.

Figure 7: Account Balances Attributable to the Plan for Separated Participants under Distribution Rule 2

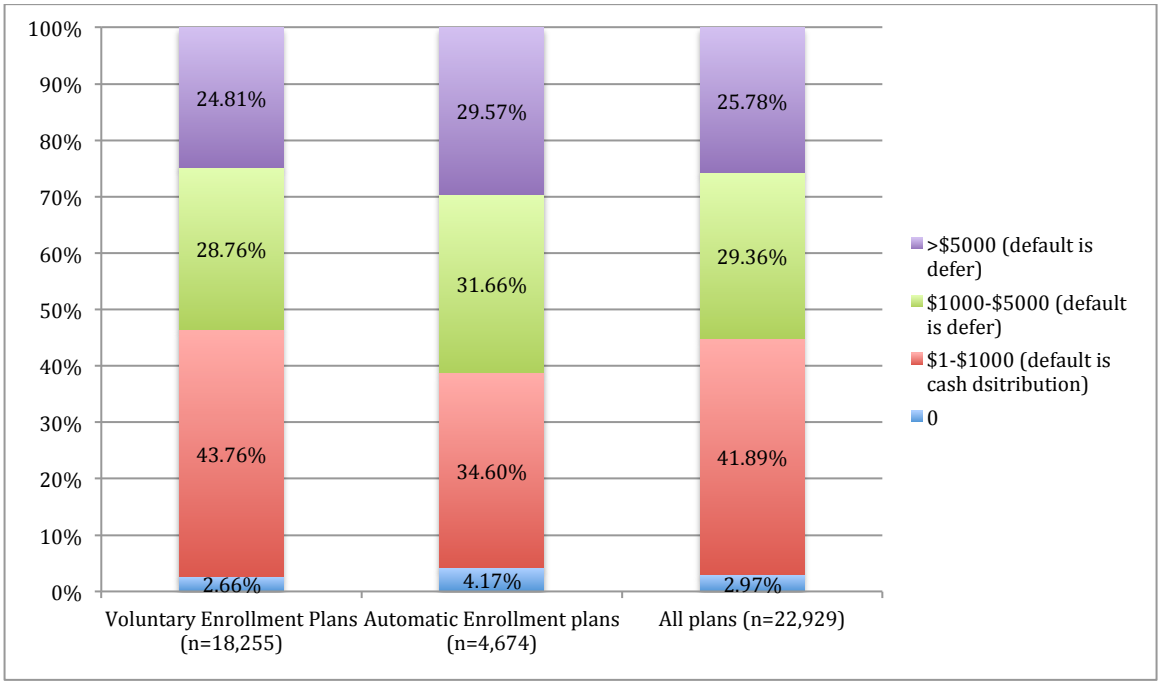
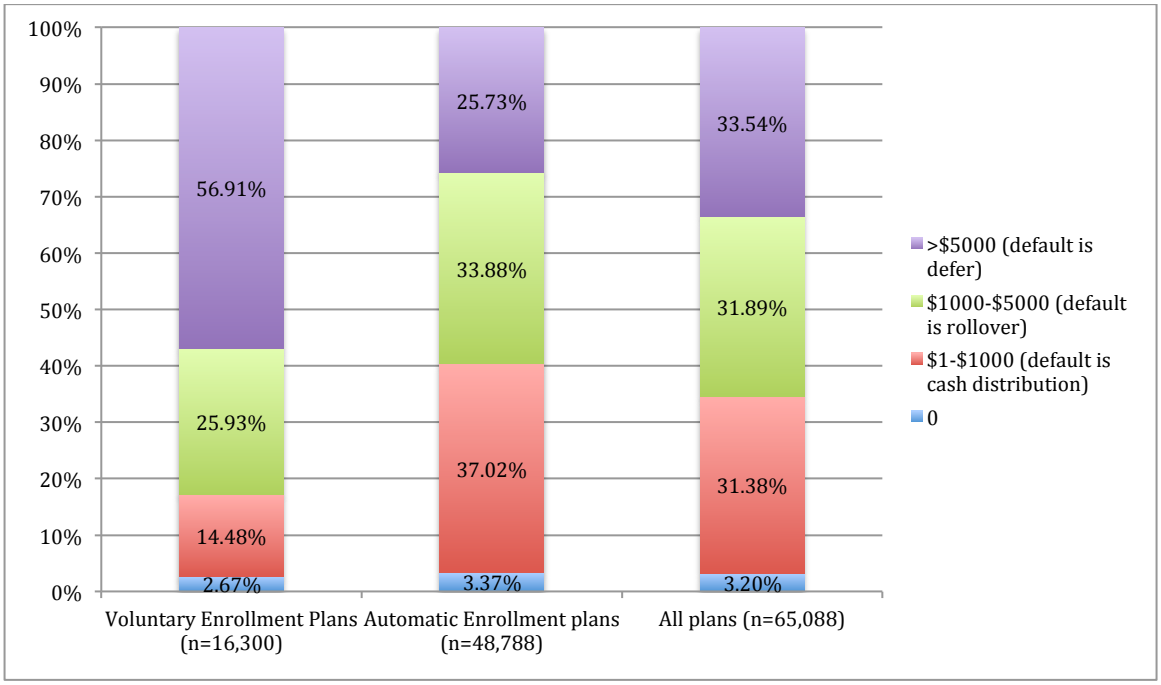


Figure 8 shows that, for separated employees under Distribution Rule 3, a larger proportion of AE participants compared to VE participants have balances less than $1000 (37 percent versus 14 percent), and are therefore subject to an automatic cash distribution if they do not provide alternate instructions. Similarly, a larger proportion of participants in AE plans compared to those in VE plans have balances between $1000 and $5000 (34 percent versus 26 percent) and are subject to an automatic rollover in the absence of providing instructions to the plan provider. Almost 57 percent of separated VE participants have balances over $5000 and so their default is plan retention. In contrast, 26 percent of separated AE plan participants have balances over $5000.

Figure 8: Account Balances Attributable to the Plan for Separated Participants under Distribution Rule 3



Participant behavior following job separation

We now turn our attention to what participants do with their savings after job separation. We begin by presenting an overview of the frequency of taking a cash distribution, getting rolled over, or retaining the entire account balance in the plan. We look at these distribution behaviors by account balance and by default rules since the relevant default action one's account will take depends on both factors. We then present multivariate estimations of separated participants' distribution behaviors to examine the relative contributions of plan design features such as AE and default policies as well as individual characteristics in determining one's distribution decisions.

Table 7 shows the percentage of separated participants who take a cash distribution, roll over funds directly into a tax-qualified retirement account, or leave their entire balance in the account. Note that taking a cash distribution and rolling over funds into another retirement account are not mutually exclusive. Some participants may take a portion of funds as a cash distribution and roll over remaining funds. Note that for each of these actions, our data do not allow us to distinguish whether the action was the result of an active choice or of a default rule taking hold. For example, we can only observe whether an account balance was rolled over into a tax-qualified retirement account. For those for whom their relevant default policy given their account size and plan rules is an automatic rollover, we cannot distinguish between those rollovers into an IRA that resulted from a default and an active rollover into a new employer's plan.

Panel A of Table 7 is broken down by accumulated balance attributable to the plan, whereas Panel B is broken down by the relevant default policy that the separated employee faces given his or her plan's rules and associated balance. Those separated participants who have accumulated small balances of less than $1000, as well as those with mid-size balances between $1000 and $5000, are more likely to take a cash distribution than directly roll over the account or leave the balance in the plan, regardless of the distribution rule associated with their plan. There is a negligible difference across VE and AE plans in the rates of cash distributions for balances less than $1000 (81.2 and 81.1 percent, respectively, with p-value = .81); those with mid-size balances from AE plans have slightly higher rates of cashing out than those from VE plans, 48 versus 44 percent, a statistically significant (p=0.000) yet small difference. As balances increase, we see the rates of cash distribution monotonically decrease, and rates of rollovers generally increase.

For participants who have amassed savings in excess of $5,000 (where the default policy is to leave their money in the accounts across all distribution rules), many more savers are found to leave their entire balances in the account. Yet for those who do opt to take action, savers with balances over $5000 under AE plans are much more likely than savers with over $5000 under VE plans to actively seek a cash distribution (27 percent versus 14 percent, significant at 1% level), and are much less likely (39 percent versus 57 percent, significant at 1% level) to leave their money in the plan.

Panel B of Table 7 explores the actions separated employees take dependent on what the relevant default action is for them given their account sizes and the distribution rule associated

with their plan. Those separated participants who are subject to an automatic cash distribution (corresponding to those with balances less than $1000 under distribution rules 2 or 3) are very likely to take cash distribution, with 81 percent of VE and AE separating participants taking a cash distribution (p-value=0.94). Another 11 and 13 percent of VE and AE separated participants are yet to take any action (significant at 1%), and presumably these accounts will be distributed in cash in the absence of action taken by the separated participant. Those separated participants subject to an automatic rollover (which corresponds to those under distribution rule 3 with balances between $1000 and $5000) who belong to a plan that features AE are much more likely to take a cash distribution than those in a VE plan: 48 percent of separated participants in an AE plan take a cash distribution versus 30 percent of separated participants from VE plans with these balance sizes (significant at 1%). In fact, unlike VE plan participants under this distribution rule, these AE separated participants are more likely to take a cash distribution than a direct rollover (48 versus 43 percent, a difference significant at 1% level), and cash out an average of 70 percent of their accounts on average, even though direct rollover is the default distribution action. Finally, of separated participants whose accounts face automatic deferral, those belonging to an AE plan are more likely than those in VE plans to actively opt out of this default (61 percent versus 50 percent, significant at 1%). Slightly larger yet statistically significant (at 1% level) proportions of separated participants in AE plans take cash distributions and direct rollovers than separated participants in VE plans.

Table 7: Distribution Actions Taken by Account Balance Sizes and by Separated Participant's Default

Panel A

	Balance <$1000		Balance between $1000 and $5000		Balance greater than $5000	
	VE	AE	VE	AE	VE	AE
Cash distribution	81.2%	81.1%	44.3%	47.9%	14.1%	27.1%
Mean proportion of account balance distributed as cash (cond'l on taking cash distribution)	0.75	0.79	0.74	0.71	0.74	0.75
Direct Rollover	8.9%	6.1%	26.5%	40.6%	31.2%	35.7%
Mean proportion of account balance rolled over (cond'l on rolling over)	0.92	0.88	0.84	0.84	0.86	0.86
% who leave entire balance in account	10.9%	13.2%	31.2%	12.8%	57.1%	39.2%
N	10,365	19,763	9,511	18,141	13,887	14,083

Panel B

	Separated participants whose default is cash distribution (those in DR 2 or 3 and balance <$1000)		**Separated participants whose default is automatic rollover** (those in DR 3 with balance between $1000 and $5000)		**Separated participants whose default is plan retention** (those in DR1 or in DR 2 with balance >$1000 or in DR 3 with balance >$5000)	
	VE	AE	VE	AE	VE	AE
Cash distribution	81.3%	81.3%	30.0%	48.2%	25.6%	28.9%
Mean proportion of account balance distributed as cash (cond'l on taking cash distribution)	0.75	0.79	0.74	0.70	0.74	0.76
Direct Rollover	8.9%	6.1%	41.0%	42.6%	26.7%	33.9%
Mean proportion of account balance rolled over (cond'l on rolling over)	0.92	0.88	0.84	0.84	0.85	0.86
% who leave entire balance in account	10.8%	13.0%	32.8%	10.5%	49.6%	39.1%
N	10,350	19,680	4,227	16,527	19,187	15,796

Table 7 shows that many separated participants leave their entire balances in their accounts, including those who do not have the option of plan retention. Throughout the report we define a separated participant as an employee whose termination date comes before December 31, 2013, six months before the end of the time period covered by our data. This allows for a lag period between an employee's date of termination and his distribution decisions and/or default actions to take place. However, it is possible that even after six months following an employee's separation, plan sponsors are yet to exercise their default policies for what to do with the accounts of the separated employees; it is also possible that employees themselves will make an

active choice at some point, but later than six months following their termination date. To allow for such instances, we look at similar statistics for employees who were terminated on or before December 31, 2012, a full 18 months prior to the end of our data's time period. Comparing those results with the ones in Table 7 shows a similar pattern of results (see Appendix table A2).

Multivariate results for distribution behaviors of job separators

We now turn to multivariate regressions to estimate the impact of plan-level and individual-level characteristics on the distribution decisions of separated former participants to gain a better understanding of how such varying forces interact to determine distributions actions (or inactions). We continue to focus on those separated employees who were participants in their plans and had accumulated some savings prior to their point of job separation. For each model we include controls for what the default distribution policy will be for each individual given his or her associated plan's distribution rule combined with his or her account balance size at the time of their termination. That is, there are three effective default rules that can apply for each separated participant: deferring indefinitely, rolling over into an IRA or other tax-qualified account automatically, and an automatic cash distribution. In Table 8 below we first estimate for the set of separated participants, an unconditional probit on the decision to take any cash distribution as a function of these defaults as well as a series of individual and plan-level characteristics (column 1). We then estimate in column 2 a linear model of the share of an account balance that is distributed as cash as a function of these same explanatory variables, but the sample is now conditional on having taken a cash distribution. Columns 3 and 4 repeat these estimations for observed rollover behaviors among job separators who were former participants.

Table 8: Multivariate Regression Results on Distribution Decisions of Job Separators

	Take a cash distribution	Share of funds distributed in cash	Roll over to a tax qualified account	Share of funds rolled over
Automatic enrollment	0.19 (0.06)***	-0.03 (0.07)	-0.001 (0.03)	0.03 (0.03)
Automatic cash distribution	0.37 (0.02)***	-0.06 (0.03)**	-0.06 (0.04)*	0.07 (0.02)**
AE * Automatic cash distribution	-0.03 (0.04)	0.001 (0.04)	-0.13 (0.05)***	-0.04 (0.03)
Automatic rollover	0.06 (0.03)**	-0.06 (0.05)	0.14 (0.03)***	-0.02 (0.03)
AE * Automatic rollover	0.02 (0.03)	-0.03 (0.04)	0.001 (0.02)	0.01 (0.03)
Ln(Account Balance)	-0.03 (0.01)***	-0.03 (0.00)***	0.02 (0.01)**	-0.001 (0.004)
Female	-0.08 (0.02)***	0.01 (0.02)	0.06 (0.01)***	0.01 (0.01)
Gender unknown	-0.08 (0.02)***	-0.00 (0.01)	-0.02 (0.03)	0.02 (0.01)*
Age in years	0.001 (0.001)	0.001 (0.001)**	0.001 (0.000)**	0.001 (0.000)*
Income ($10,000s)	-0.02 (0.00)***	0.002 (0.004)	0.01 (0.00)***	0.002 (0.001)*
Total number of employees (1000s)	0.002 (0.000)***	-0.001 (0.009)	-0.001 (0.000)***	-0.001 (0.001)
Constant term		0.98 (0.11)***		0.83 (0.06)***
Year of Separation FE	Yes	Yes	Yes	Yes
N	85731	43112	85731	21387
Number plans (clusters)	368	350	368	347
Predicted probability (cashout/rollover)	0.51		0.21	
R-squared		0.05		0.03

Notes: * p<0.10, ** p<0.05, *** p<0.01. Standard errors in parentheses clustered at plan-level. All models include year of attrition fixed effects to control for macroeconomic factors. Column 1 shows marginal effects from a probit model where dependent variable is taking any size cash distribution. Column 2 estimates an OLS model on the share of funds distributed as cash, conditional on taking a cash distribution. Columns 3-4 repeat these estimations for rolling over and the share of funds rolled over. Omitted default rule category is automatic indefinite deferral in all estimations.

Column 1 in Table 8 shows that separated participants from AE plans are 19 percentage points more likely to take a cash distribution, and this result is significant at the 1% level. Those employees whose plan rules and balance sizes dictate that in the absence of an active choice their accounts will face an automatic cash distribution are 37 percentage points more likely take a cash distribution than is the omitted group of those whose accounts will allow them to defer indefinitely; this result is again significant at the 1% level. There is no difference in the estimated impact of this automatic cash distribution policy across those participants separating from AE versus VE plans as this interaction term is small in magnitude and insignificant. Interestingly,

those separated participants who face an automatic rollover are also 6 percentage points more likely to take a cash distribution than is the omitted group, which shows some active opting out of the default rollover policy.

Other individual characteristics are highly predictive of who will take a cash distribution, with females and those with higher incomes and higher account balances significantly less likely to take a cash distribution. Cash distributions are slightly more likely among separated participants from larger firms.

Conditional on taking a cash distribution, in column 2 we see less impact of separating from an AE plan on the proportion of the account taken as a cash distribution. The impact of having a cash distribution default is negative on the share of funds cashed out relative to those whose default was indefinite deferral. Conditional on taking a cash distribution, those who are subject to an automatic cash distribution cash out 6 percent less of their funds on average relative to the omitted group of those who face indefinite deferral. Individual- and plan-level characteristics are less predictive of the share of funds taken as a cash distribution overall than they were of the decision to take a cash distribution, though balance size is negatively related to the share of funds distributed as cash and age is weakly positively related to the share of funds taken out as cash.

Column 3 presents estimates of marginal effects from a probit model of the decision to roll over some amount of funds as a function of individual- and plan-level characteristics. As in the model of the decision to take a cash distribution, we find that the relevant automatic action a separated participant faces is a strong predictor of the decision to roll over: those who face an automatic rollover are 14 percentage points more likely to roll over some funds relative to the omitted group of those who face an indefinite deferral. We see no differential response to the policy of automatic rollovers between those separating from AE versus VE plans. However, for those separating from plans that face an automatic cash distribution we do see differential responses by those participants separating from AE versus VE plans. In particular, those subject to an automatic cash distribution are 6 percentage points less likely to roll over any amount of funds relative to those who are allowed to defer indefinitely. The effect of an automatic cash distribution policy is even stronger for those separating from AE plans, who are an additional 13 percentage points less likely to roll over any amount of funds relative to separating participants under VE plans who face an automatic cash distribution.

Column 4 presents results on the share of funds rolled over conditional on taking any rollover distribution. Those who faced an automatic cash distribution policy yet rolled over some amount of their funds roll over 6 percent less on average than those who rolled over while facing an indefinite deferral. We see no difference across AE and VE plans nor between employees who faced an indefinite deferral versus an automatic rollover in the share of funds rolled over.

These results are virtually unchanged if we adopt an alternative definition of participation that includes any employees who did not themselves contribute but had positive contributions from their employer in any given year.

5. Discussion

Though automatic enrollment policies have risen in prominence over the past decade and have been found to greatly equalize participation and savings rates across income and racial groups, their long-run welfare-enhancing qualities could be weakened if their associated policies for what happens to any generated savings at points of job separation do not take into account the forces of inertia, motivations to save, and liquidity constraints for those separated employees.

We find that in just a short four year period covered by our data, fully 40% of those hired between 2010 and 2013 in our sample will separate from their employers before the end of 2013, after a mean employment period of just one year – a high degree of job turnover. Those employees who separate are likely to be younger and earn lower incomes than those who remain, and are significantly less likely to participate in their employer-sponsored plan whether under an AE or VE policy while employed. Even among those job separators who did participate in their plans while employed, they contribute at lower rates and save less. At the end of their tenure, this means more than a third (35%) of all separated participants under either AE or VE plans have account balances under $1000 and face an automatic cash distribution if they do not make an active decision on how to distribute their account.[9] Over 80% of those participants will take that cash distribution, and possibly as many as 95% will do so eventually when their plans exercise

[9] See sample sizes from Table 7's panel B for relevant calculations.

this default policy. While it remains unclear what proportion of those who face an automatic cash distribution receive cash distributions passively and what proportion actively choose the cash, this means a significant number of labor force participants are effectively losing momentum on saving for retirement every time they change jobs, and AE policies are not overcoming this barrier to savings among our sample.

Our multivariate results estimate that, all else equal, participants separating from employers that offer AE plans are 19 percentage points more likely to take a cash distribution than are those participants separating from employers whose plans offer VE. Moreover, males, those earning lower incomes, and those with smaller account balances are significantly more likely to take a cash distribution. Though a positive aspect of an AE policy is that it tends to increase the pool of savers to include younger and lower-income participants (Madrian and Shea, 2001; Vanguard, 2015), these same characteristics – as well as gender - are predictive of job separation among our sample (see Appendix table A1), and, as just stated, of taking a cash distribution. In total, if our results generalize this suggests leakages from retirement accounts may be likeliest to occur precisely among a key population of interest behind the original impetus for AE policies: encouraging savings among younger and lower-income employees. Though we cannot say with certainty that those taking a cash distribution are not subsequently using those funds in some welfare-enhancing way such as to indirectly roll them over into an IRA, given the potentially steep penalties and hassle associated with opening a separate account, such a scenario seems less likely.

Additionally, as touched upon in the introduction, VE participants may be better planners and savers on average than AE participants, since the former had to make an active choice to enroll in their savings plans. This may partly explain why participants separating from AE plans are 13 percentage points less likely to roll over any of their funds than are separating participants from VE plans, even when both face the same default policy of a cash distribution (see Table 8).

Though AE plans are more likely than VE plans to feature an automatic rollover for midsize balances between $1000 and $5000 (see Table 2 and Figure 8), our results reveal this default policy – even if it is intended to encourage keeping savings in tax-qualified retirement accounts relative to automatic cash distribution - may be unpopular: Table 7's Panel B shows that 30% of those facing an automatic rollover under VE plans and nearly half of those facing such a policy under AE plans actively decided to take a cash distribution, and still over 30% of VE separated

participants and 10% of AE separated participants are yet to have that default take hold (and may still choose to opt out by taking a cash distribution instead).

Table 7 as well as our multivariate regression results in Table 8 show that for separated employees whose balances and plan distribution rules dictate that their default policy is indefinite deferral, taking a cash distribution becomes less common, and separated participants may be more willing or able to avoid the temptation of cashing out part of their balances. However, we cannot distinguish whether this is due to larger account holders having more patience or less liquidity constraints, or whether it is due to the default policy. However, insofar as we separately control for income in our multivariate results, the default policy seems a likely explanation.

Though taking a cash distribution overall is less prevalent among those whose default policy is deferral in our sample, among those who have amassed relatively large balances (>$5000), those separating from an AE plan are significantly more likely than those separating from VE plans to opt out of the default by actively taking a cash distribution (27 versus 14 percent). This seems to suggest that lower motivation to save or liquidity constraints are more prevalent among AE plan participants than VE plan participants among those with large balances in our sample, though with our data we cannot distinguish between these two explanations. Given that our sample has higher incomes overall and this finding is among those who have saved larger sized balances, it is possible – though by no means certain – that this finding reveals that motivation to save is a dominant factor at play, and liquidity constraints play less of a role.

6. Conclusions

Our study uses real-world administrative data on the retirement savings accounts of over a half million eligible employees across hundreds of employer-sponsored private plans over a four year period. It includes rich details on the designs of those plans, enabling us to examine how plan designs and features encourage or discourage savings. We then explore what types of employees are most likely to separate from their employment, and how plan design features impact what actions separating employees take with their accumulated savings.

In our data, 40% of newly hired employees across hundreds of employers separate from their jobs after just one year on average. Those separating tend to be younger and earn less, and are significantly less likely to participate in their employer-sponsored plan, even if that plan features an AE policy. Moreover, even among those separated employees who did participate in their plans while employed, they contribute at lower rates and save less.

Although we cannot say whether our results generalize to the broader population[10], our results suggest that job separation is a significant source of leakages from retirement accounts among our sample, and both individual and plan-level factors are key determinants of the distribution decisions among the separating employees. Many separating employees take a cash distribution, some as a result of their plan's default policy given their balance size, and others as an active choice. Though we cannot say those distributed funds will not ultimately be reinvested in another savings account, it is likely that these distribution decisions interfere with the accumulation of retirement savings at points of job separation, particularly among younger and lower-income males and those with small balances. Moreover, AE policies – intended to encourage savings and generally found to broaden the pool of savers - are not enough to overcome such savings dissipations: those participants separating from employers with AE plans are significantly more likely to take out some of their savings as cash, even after controlling for a variety of other individual and plan-level characteristics, including income and account balances. Many studies have found that the advent of AE policies has increased participation rates of newly hired employees, particularly among lower-income and younger employees. But at job separation, in our data we find that plan sponsors' distribution rules on the accounts of separating employees may not always be welfare enhancing. Though the EGTRRA ended automatic cash distribution and allowed for automatic rollovers for accounts between $1000 and $5000 (Choi et al. 2002), this threshold may still not be low enough from the vantage point of an economy with high rates of job turnover for whom even $1000 can take time to accumulate. Moreover, a recent GAO report argues that the fees from these automatic IRAs often outpace any returns from their conservative investments as allowed under Department of Labor (DoL) regulations (GAO 2014).

Furthermore, AE designs may exacerbate some potential shortcomings of the default treatment of the accounts of separating employees. Though not its primary aim, when automatic

[10] Note in particular that our sample has higher average incomes than the larger US population

enrollment encourages small balances to accrue automatically among those who will endure short spells of employment, it risks lowering the earnings of employees during periods of employment (with automatic contributions from the employee's paycheck), only to have those contributions potentially subject to withholding and tax penalties at termination if they are distributed in cash (barring those distributions being used for certain exempted expenditures such as an indirect rollover, education, medical expenses, or buying a first house). The design of policies encouraging savings at the start of employment ideally should take into account the design of policies for what happens to savings at the end of a period of employment.

References

Aon Hewitt Associates (2011). "Leakage of Participants' DC Assets: How Loans, Withdrawals, and Cashouts are Eroding Retirement Income."

Armour, P., M. D. Hurd and S. Rohwedder (2015). " Trends in Pension Cash-out at Job Change and the Effects on Long-term Outcomes."

Beshears, J., J. J. Choi, D. Laibson and B. C. Madrian (2010). the impact of employer Matching on savings plan participation under automatic enrollment. Research Findings in the Economics of Aging, University of Chicago Press**:** 311-327.

Butrica, B. A. and N. S. Karamcheva (2012). "Automatic Enrollment, Employee Compensation, and Retirement Security." Center for Retirement Research at Boston College Working Paper(2012-25).

Choi, J. J., D. Laibson, B. C. Madrian and A. Metrick (2002). Defined contribution pensions: Plan rules, participant choices, and the path of least resistance. Tax Policy and the Economy, Volume 16, MIT Press**:** 67-114.

Choi, J. J., D. Laibson, B. C. Madrian and A. Metrick (2004). For better or for worse: Default effects and 401 (k) savings behavior. Perspectives on the Economics of Aging, University of Chicago Press**:** 81-126.

Copeland, C. (2013). "Lump-Sum Distributions at Job Change, Distributions Through 2012." EBRI Notes **34**(11).

Engelhardt, G. V. (2002). "Pre-retirement lump-sum pension distributions and retirement income security: evidence from the Health and Retirement Study." National Tax Journal: 665-685.

GAO. (20092010). "401 (k) Plans: Policy Changes Could Reduce the Long-Term Effects of Leakage on Workers' Retirement Savings." Retrieved August 12, 2015, from http://www.gao.gov/assets/300/294520.pdf.

GAO. (2014). "401(k) Plans Greater Protections Needed for Forced Transfers and Inactive Accounts." Retrieved August 12, 2015, from http://www.gao.gov/assets/670/667151.pdf.

Hewitt Associates (2010). "Survey Findings: Hot Topics in Retirement 2010." Lincolnshire, IL: Hewitt Associates LLC.

Hewitt Associates (2011). "Leakage of Participants' DC Assets: How Loans, Withdrawals, and Cashouts are Eroding Retirement Income."

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

Munnell, A. H. and A. Webb (2015). The Impact of Leakages from 401 (k) s and IRAs. Chestnut Hill, MA: Center for Retirement Research at Boston College, Center for Retirement Research. Working Paper 2015-2.

Purcell, P. (2009). "Pension Issues: Lump-Sum Distributions and Retirement Income Security." Federal Publications: 586.

Vanguard. (2015). "Automatic Enrollment: The Power of the Default." Retrieved August 12, 2015, from https://pressroom.vanguard.com/content/nonindexed/Automatic_enrollment_power_of_default_1.15.2015.pdf.

Vanguard. (2015). "How America Saves 2015." Retrieved August 12, 2015, from https://institutional.vanguard.com/iam/pdf/HAS15.pdf.

Appendix: Additional Figures and Tables

Figure A1: Contribution Rates for all Eligible Current and Separated Employees, by Age

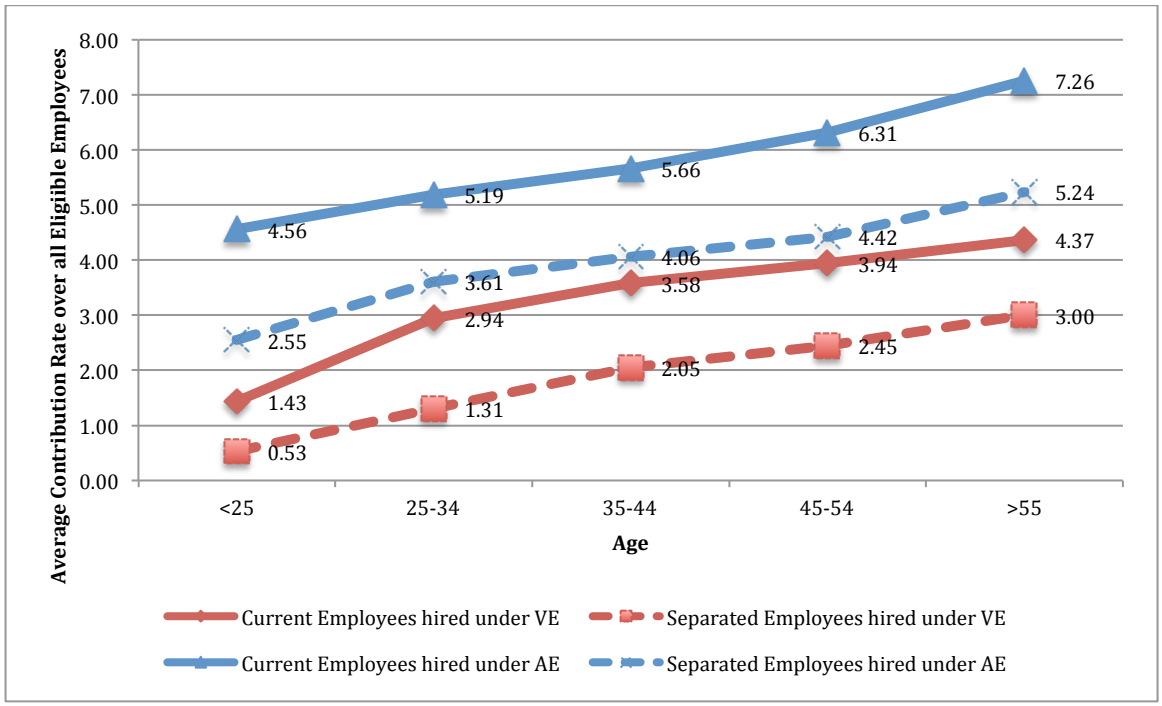


Figure A2: Contribution Rates for all Eligible Current and Separated Employees, by Income

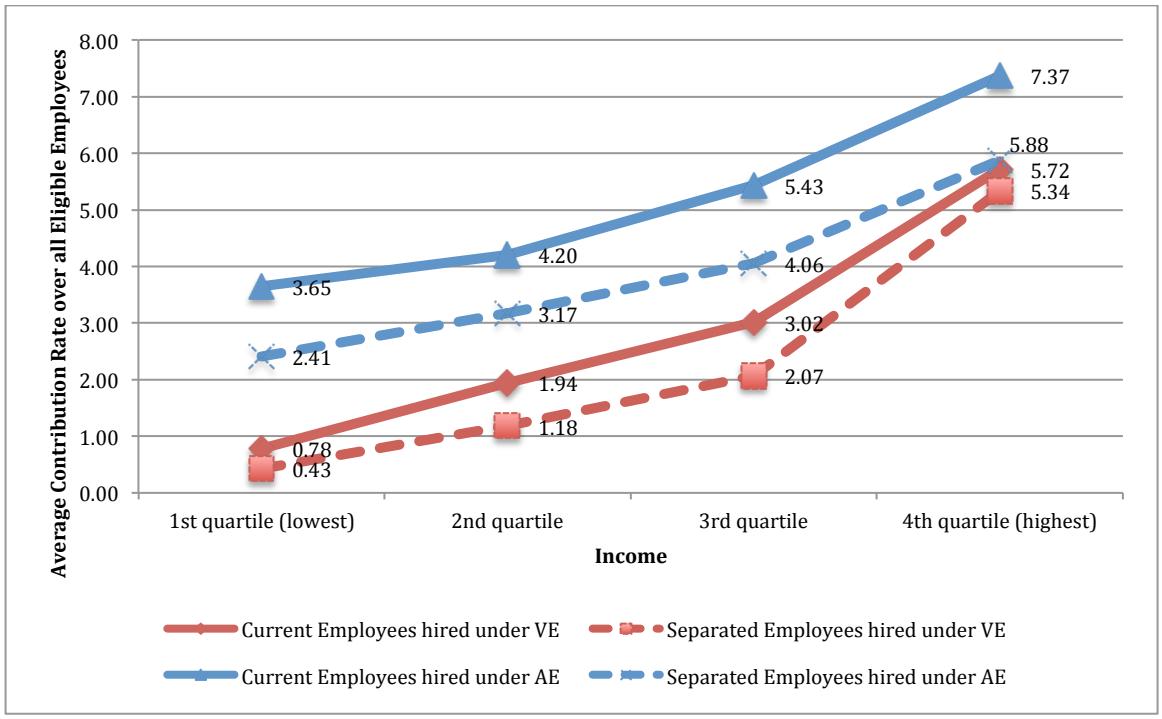


Table A1: Multivariate Regression Results to Predict Job Separation

	Separation
Plan-level mean separation rate	1.07 (0.09)***
Female	-0.02 (0.01)**
Gender unknown	0.02 (0.01)**
Age in years	-0.001 (0.00)**
Hired in year 2011	-0.09 (0.01)***
Hired in year 2012	-0.22 (0.01)***
Hired in year 2013	-0.40 (0.01)***
Income ($10,000s)	-0.02 (0.00)***
Prob(Separation)	0.38

Notes: * p<0.10, ** p<0.05, *** p<0.01. Standard errors in parentheses clustered at plan-level. Results show marginal effects from a probit model where dependent variable is separating from an employer before December 31, 2013.

Table A2: Distribution Actions Taken by Account Balance Sizes (Employees who Separate by Dec 31, 2012)

Panel A

	Balance <$1000		Balance between $1000 and $5000		Balance greater than $5000	
	VE	AE	VE	AE	VE	AE
Cash distribution	83.3%	83.2%	44.6%	48.0%	16.4%	27.2%
Mean proportion of account balance distributed as cash (cond'l on taking cash distribution)	0.74	0.79	0.74	0.70	0.75	0.73
Direct Rollover	8.5%	6.2%	31.7%	43.3%	37.1%	40.8%
Mean proportion of account balance rolled over (cond'l on rolling over)	0.93	0.88	0.84	0.84	0.85	0.85
% who leave entire balance in account	9.1%	11.0%	26.1%	10.0%	49.5%	34.2%
N	6589	13117	4,673	10,342	5,842	5,464

Panel B

	Separated participants whose default is cash distribution (those in DR 2 or 3 and balance <$1000)		**Separated participants whose default is automatic rollover** (those in DR 3 with balance between $1000 and $5000)		**Separated participants whose default is plan retention** (those in DR1 or in DR 2 with balance >$1000 or in DR 3 with balance >$5000)	
	VE	AE	VE	AE	VE	AE
Cash distribution	83.3%	83.4%	33.3%	48.3%	27.7%	29.8%
Mean proportion of account balance distributed as cash (cond'l on taking cash distribution)	0.74	0.79	0.74	0.69	0.75	0.75
Direct Rollover	8.5%	6.2%	46.2%	45.2%	31.6%	38.0%
Mean proportion of account balance rolled over (cond'l on rolling over)	0.93	0.88	0.84	0.84	0.85	0.86
% who leave entire balance in account	9.1%	10.8%	24.6%	7.9%	43.0%	34.3%
N	6,583	13,057	2,238	9,449	8,283	6,417