EFFECTS OF PUBLIC POLICIES ON THE DISPOSITION OF LUMP-SUM DISTRIBUTIONS: RATIONAL AND BEHAVIORAL INFLUENCES

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Abstract

This paper provides new evidence on how public policies affect individuals' disposition of pre-retirement lump-sum distributions (LSDs) from pensions. The policies, enacted in the 1980s and 1990s, include changes in tax rates, penalties, withholding rules, and default options. Using data from the Health and Retirement Study, we find that each set of policies influence LSD choices independently and through interactions with the other set. The impact of defaults and withholding rules implies that behavioral considerations influence household choices. This in turn creates the possibility that a wide range of policies could be used to change saving behavior.

I. Introduction

The extent to which American households save adequately for retirement and the appropriate role for government policy toward retirement saving are sources of continuing controversy. This paper examines one piece of both issues: the effects on individuals' behavior of government policies toward pre-retirement lump-sum distributions from pension plans.

Upon changing jobs, many workers can choose between leaving their existing, vested pension balances in the pension plan they had been enrolled in or taking the funds as a lump sum distribution (LSD). If taken as an LSD, the funds may be "rolled over" to another qualified plan (typically, either the defined contribution plan at the worker's new employer or an Individual Retirement Account), or may be cashed out and used for some other purpose.

Currently, federal policy uses a variety of taxes, penalties, defaults, and requirements to discourage workers from cashing out their pension balances before retirement age. Funds that are cashed out are subject to taxation as ordinary income, as are all pension benefits. They are also subject to a 10 percent penalty tax for workers up to age 59.5 if the distribution is taken prior to job termination, and for workers up to age 55 if the distribution is taken as part of a job termination. Employers are required to offer departing employees the option of directly transferring lump sum distributions into another qualified retirement plan or IRA. Finally, if a cash distribution is not transferred directly into a qualified account, employers are required to assess a withholding tax of 20 percent.

Previous research on the disposition of LSDs has shown that a small percentage of LSD recipients roll the funds into qualified accounts, but that a larger share of dollars received in LSDs are rolled over. The cumulative loss in retirement income (or "leakage") from pre-retirement LSDs is relatively small compared to aggregate or average retirement wealth.[1] Pre-retirement cash-outs may still raise concerns, though. Households that cash out their LSDs potentially sacrifice future retirement income in

[1] See Andrews (1991), Burman, Coe, and Gale (1999), Chang (1996), Engelhardt (1999), Fernandez (1992), Gustman and Steinmeier (1998), Hurd, Lillard and Panis (1998), Korczyk (1996), Poterba, Venti, and Wise (1998, 1999), Sabelhaus and Weiner (1999), Scott and Shoven (1996), and Yakoboski (1997).

exchange for current expenditures, and these households share characteristics with households who appear to save too little for retirement and with those for whom participation in pensions is most likely to generate net increases in wealth. In particular, controlling for other factors, cash outs are more likely to occur among workers who are younger, have lower income, have smaller accumulated balances, and have lower "tastes for saving" or financial sophistication, as proxied by less education, less interest income, or lack of IRA ownership (Engen, Gale, Uccello 1999, Gale 2005).

With the continued growth of defined contribution plans, where pre-retirement cash-outs are more widely available, a better understanding of how public policies affect LSD choices is essential to developing a retirement income system that can adequately address the needs and constraints of the modern work force. There has been little formal modeling of pre-retirement LSD disposition choices, which deters the ability to determine whether and when cash-outs might represent responsible versus irresponsible behavior.[2]

Previous analysis of how public policies affect rollover choices is limited. Chang (1996) finds limited effects of the Tax Reform Act of 1986 on disposition choices. Burman, Coe, and Gale (1999) model the effective tax treatment of LSDs from 1981-93 and focus on the impact of the changes enacted in 1986. Their results show that tax considerations affect LSD choices, which suggests a strong role for standard rational influences. On the other hand, their results also suggest that it is the early withdrawal penalty per se that has the marked effect on LSD choices, even controlling for the taxation of LSDs under the income tax. This latter finding suggests the possibility that the penalty is more salient for taxpayers than the regular income tax treatment is, which suggests the possible importance of framing in determining such choices. Nevertheless, there has been no analysis of how the changes enacted in 1993 and the rules allowing firms to cash out balances below certain thresholds have affected disposition choices.

Against this backdrop, our paper expands the analysis both in the number of policies that can affect LSD choices and the years examined. In particular, we distinguish between "hard" incentives that affect budget constraints, and "soft" incentives or program features that need not affect the household's budget constraint but nevertheless may be

[2] Hurd, Lillard and Panis (1998) model the annuitization of LSDs at the time of retirement, whereas this paper, and the rest of the literature, focus on pre-retirement LSDs.

powerful mechanisms for directing households to make particular choices. We also address the potential interactions between these policies.

Our results show that both "hard" tax incentives and "soft" constraints, like requiring firms to offer a rollover option and creating a withholding tax on non-rollover choices can affect behavior. Moreover, they can interact in interesting ways. After the increase in effective tax rates on LSDs enacted in 1986 on households younger than 59, the overall likelihood of cash outs fell significantly. However, among workers who had small balances in their accounts, the probability of a cash out rose, because just before 1984 firms had been given the right to cash out small pensions even without worker approval.

Section II presents and discusses a simple rational model of LSD choices. Section III describes changes in taxes and other policies toward LSDs. Section IV describes the data set we employ. Section V presents descriptive patterns of LSD choices. Section VI presents regression results. Section VII is a short conclusion.

II. Modeling the Disposition of Lump-Sum Distributions

A simple, rational model of LSD behavior generates clean and straightforward results.[3] A worker seeking to finance a given consumption expenditure could finance the expenditure by taking a \$1 distribution from her pension, which yields $\$(1-\tau_0-\pi)$, where τ_0 is her current marginal income tax rate and π is the penalty rate on early withdrawals. Alternatively, she could withdraw $\$(1-\tau_0-\pi)$ from a taxable saving account or borrow the same amount. Suppose her pension pays a return of r_p and the after-tax opportunity cost of funds (i.e., the interest rate on saving and borrowing) is r. The cost, in terms of retirement consumption assumed to be N periods hence, of tapping the pension is $(1+r_p)^N(1-\tau_N)$, where τ_N is the income tax rate in retirement. The cost of using another source of funds (cash reserves or borrowing) is $(1+r)^N(1-\tau_0-\pi)$. The net gain from taking the cash as an LSD from the pension versus tapping taxable saving or borrowing is

[3] This model is based on Burman, Coe, and Gale (1999).

(1) $$G \equiv (1+r)^N (1-\tau_0-\pi) - (1+r_p)^N (1-\tau_N).$$

The break-even after-tax opportunity cost, r^*, found by setting G=0, is

(2) $$r^* \equiv (1+r_p)\left(\frac{1-\tau_N}{1-\tau_0-\pi}\right)^{1/N} - 1.$$

The resulting decision rule is simple: if the taxpayer's cheapest source of funds has an after-tax rate of interest (r) less than r^*, she is better off using that alternative source than tapping into retirement funds. Formally, this is given by:

(3) Roll over none (withdraw all) if $r > r^*$
Roll over all (withdraw none) if $r < r^*$.

Equations (2) and (3) generate comparative static results that are consistent with the key empirical findings in the literature. Increases in the penalty rate (π) raise the likelihood of rolling over LSDs. Younger households should be more likely to cash out LSDs, since r* falls as N grows (higher N representing a younger person). Households that are older (but still below the age at which the penalty no longer applies) should cash out less frequently. This effect accelerates as the household gets closer to the age at which the penalty no longer applies, because the household has to wait a shorter time to avoid the penalty. Higher-income households should be less likely to cash out funds, because r* rises with the current tax rate (even if the retirement tax rate rises by the same amount). Taxpayers with stronger tastes for saving are likely to have more assets and thus have access to sources of financing with low net opportunity costs, such as home equity loans. In addition, they are likely to be better credit risks, which lowers the interest rate they must pay to borrow. For both reasons, such households would face a low r and would be less likely to cash out the pension.[4]

[4] An empirical finding that (2) and (3) cannot explain is that the likelihood of a partial rollover rises with the size of the LSD. With r fixed, partial rollovers can occur only in the knife-edge case where r = r*, and are indeterminate even in that case. A simple and plausible adjustment can explain the empirical pattern. Specifically, let the marginal opportunity cost, r, rise with the size of the required consumption expenditure. This is consistent with the idea that an optimizing consumer would finance expenditures from

The model described above is based on a fully rational model. It does not allow for items like default rules or withholding taxes (which do not affect overall tax burdens) to influence behavior. Evidence that such factors influence LSD choices would suggest that other factors besides those in the simple optimization problem above could be important policy levers.

III. Public Policies Toward the Disposition of LSDs

Rules governing the disposition and taxation of LSDs have changed substantially a number of times in recent decades. Given our data (described below), we focus on the period between 1981 and 1997.

Before 1974, LSDs were taxed as long-term capital gains. The Employee Retirement Income Security Act, enacted in 1974, differentiated the tax treatment of LSDs depending on whether the funds were deemed to have accrued pre- or post-1974 and whether the employee had had at least 5 years of job tenure when the LSD occurred. The pre-1974 amount could be treated as capital gains, or it could be treated as ordinary income. The post-73 portion was treated as ordinary income. If the employee had been in the plan for 5 years prior to disposition, all of the ordinary income (from the pre-1974 or the post-1973 portions) could be subjected to 10-year income averaging.

The Tax Reform Act of 1986 made several significant changes in the taxation of LSDs. LSDs that were cashed out were subject to a 10 percent penalty tax unless the account holder was older than 59.5 or the LSD was part of a job termination and the account holder was at least 55. In addition, the income tax treatment of LSDs changed in dramatically different ways for people younger than age 50 and older than age 50 as of January 1, 1986. Workers younger than 50 or who had participated in their pensions for less than five years had their LSDs taxed as ordinary income. Those over 50 who had been in the plan for 5 or more years could elect to designate the entire taxable LSD as ordinary income or could divide it between a pre-74 portion, which would be taxed at a

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the least expensive sources first (home equity, passbook saving), and tap into more expensive sources (credit card debt, cash out from a pension) only when the cheaper sources are exhausted. With this assumption, it is easy to show that partial cash-outs are more likely for larger LSD balances, consistent with the empirical evidence. An alternative reason why someone with a larger LSD might be more likely to rollover funds is that those with larger LSDs may have higher propensities to save. Partial rollovers, however, are relatively rare, and we ignore the issue in the empirical work below.

flat 20 percent rate, and ordinary income. In either case, the amount designated as ordinary income could be taxed under either 5-year averaging (using the current-year tax schedule for singles) or 10-year income averaging (using the 1986 tax schedule for singles).

Burman, Coe and Gale (1999) construct estimates of the effective tax rates on LSD dispositions as a function of recipient's age and year of receipt between 1975 and 1993. They show that between 1975 and 1986, it was optimal under most circumstances to use the 10-year averaging option.[5] After 1986, the effective tax rate rose substantially for households below age 50 and fell substantially for households above age 50.

The next significant set of policy changes took effect in 1993, and represented change in default rules as much as change in tax rules. As of 1993, any qualified plan with a cash-out option had to offer recipients the option of rolling over their balances directly to another qualified plan or an IRA, and a 20 percent withholding tax was imposed on any balances that were not directly rolled over to such accounts.[6] These changes have remained law since 1993.

Although employers must *offer* a rollover option, they also have some choices of their own to make regarding LSDs. Starting in 1984, firms were allowed to cash out accounts on a unilateral basis (i.e., even without the employee's approval) if the balance was below $3,500.[7] This provision relieves plan sponsors of the responsibility of managing small accounts for former workers. But it does not make it more difficult for

[5]This claim is based on calculations in Burman, Coe and Gale (2006), which examined hypothetical taxpayers in different years (1980 and 1986), income levels (half-median, median and twice median income), LSD sizes (from $500 to $100,000), filing status (singles and married filing jointly) and ages (25, 35, 45, 55 and 65). For virtually every situation modeled, 10-year averaging was preferable to taxing some of the funds as ordinary income and the rest as capital gains.

[6] Those who elect to receive the distribution and then transfer it into a qualified account themselves may still make supplementary contributions up to the amount withheld, which are then excluded from gross taxable income. If, however, this self-directed rollover does not take place within 60 days of the distribution, the amount withheld is added back into gross income. Individuals who intend to roll over their balances but do not choose direct rollover thus have to finance the last 20 percent of the rollover out-of-pocket in order to preserve the tax-preferred status of their balances. Source: *U.S. Master Tax Guide 1994*] Para 2188.

[7] Beginning in 1998, this threshold was raised to $5,000. The $5,000 cash-out limit was effective starting in the first plan year beginning on or after August 5, 1997, which for most but not all pensions coincided with the calendar year 1998. Source: *Taxpayer Relief Act of 1997*, Public Law, Title X, Subtitle H, Sec 1071; "Summary of Revenue Provisions Contained in Legislation Enacted During the 105th Congress", *JCX-75-98*; *CCH 2001* Para. 775.

workers to choose a rollover. If the firm tells the worker that it is cashing out the pension (i.e., choosing not to manage the account anymore), the worker can still elect to roll the funds into a tax-preferred account either directly or after receiving a cash distribution.

IV. Data

We use data from the 1992-2004 waves of the Health and Retirement Study (HRS) a panel study that focuses on retirees and individuals approaching retirement. The initial 1992 sample was drawn from households with heads born between 1931 and 1941, with oversamples of Blacks, Latinos, and Florida residents. Subsequent waves have expanded the sample to include households with heads born between 1890 and 1953.

The unit of analysis in this paper is the job separation. For each job separation, we seek information on the type of pension, the year, the amount of money involved – account balance for defined contribution (DC) plans, cash settlement for defined benefit (DB) plans – and the disposition of the funds. Respondents who are employed at the time of the survey are asked about their current plan. More importantly, workers who leave a job between two waves of the survey are asked about the disposition of the plan balances. All respondents are also asked for retrospective information about LSDs in up to four previous jobs upon entering the panel.

Some shortcomings of the HRS pensions data should be noted. First, respondents are not asked whether their previous plans *offered* lump-sum distributions, only whether they took one. Thus, our results may overstate the extent to which workers choose cash-outs. This is, in general, a much bigger concern for DB plans than DC plans. A second issue is that although the HRS administers a uniform series of questions for each job separation regarding the plan type, year, and amount, the questions about disposition differ across plan type. Respondents who report receipt (instead of a rollover) of a cash settlement from a DB plan are asked "What did you do with the money?" as a follow-up question. The respondent can then answer "bought durables", "spent it", "saved/invested [it]", "paid off debt", or "rolled [it] into IRA". DC participants are not asked the follow-up question "What did you do with the money?" after wave 2. Third, while the HRS reports pension balances at job separation for all DC plans, DB plans do not typically have account balances as such. DB respondents who take a LSD generally do report the

dollar amount cashed out. However, we cannot compute meaningful dollar-weighted statistics for DB plans because the amount of wealth associated with other dispositions is not measured directly.

In light of these issues, we focus on LSDs from defined contribution plans and collapse the range of responses to: (1) took a LSD as a cash settlement; (2) rolled over the funds (directly or after an LSD) or left them in the employer's plan; or (3) purchased an annuity or is receiving pension benefits. In the regression analysis, we collapse the last two outcomes into a single "did not cash out" category. This distinguishes between tax-preferred and non-tax preferred dispositions.

We also simplify the data in a number of additional ways. Although the HRS repeats its complete cycle of pension questions for up to four plans at each job reported by the respondent, we note that multiple plan holders are a very small minority of current workers with pension coverage and we focus only on the self-reported "most important" pension. Also, although respondents in waves 5-7 can report up to eight dispositions for each pension plan reported, in practice very few respondents split their balances at job separation. We do not include split dispositions in our analysis, instead assigning each pension to the first disposition a respondent mentions.

We use current household income, and the gender, race, occupation, industry, and educational attainment of the head.[8] Occupation and industry are reported for each job a respondent discusses, so we take these variables from the same modules that contain our retrospective pension variables. For the other variables, we use current data.[9]

Because the unit of analysis for this study is a job separation, we collect HRS data on the 5,808 job separations for which year, recipient's age, plan type, and disposition are reported between 1981 and 1997. In our main descriptive tabulations (Table 1), we restrict the sample to job separations from DC plans by workers of age 35-69 who

[8] We approximate household income by calculating each respondent's age-adjusted quartile of total household income in the year closest to the job separation in question. For example, if a respondent who first appears in the 1998 HRS at age 55 (in 1997, the 1998 reference year) reports a job separation in 1987, we place his 1997 household income in the sample distribution of 1997 household income for 55-59 year-olds. We then apply this measure to control for income in 1987.

[9] For most of our control variables, we use data from the RAND HRS, a cleaned and merged version of waves 1-6. We apply the variable definitions from the RAND file to the HRS data to create a comparable version of wave 7.

participated in a DC plan, leaving 1,928 job separations attributable to 1,755 individuals. Not all of these respondents report their account balances, so our dollar-weighted tabulations (Table 2) and those cut by account size (Tables 3) draw from a total of 1,461 job separations by 1,336 individuals.[10] The regression analysis in Tables 4-6 uses a modified sample in response to extremely small sample sizes in some age and year groups.[11] Our econometric sample, then, contains 1,885 job separations by 1,716 distinct workers. Regression specifications that control for account size use a sample of 1,429 job separations by 1,307 workers.

V. Descriptive Patterns

Table 1 shows how recipients disposed of pension distributions in DC plans by year of receipt and age at the time of receipt. For households aged 59 and younger, the changes enacted in 1987 – which increased the effective tax rates by closing off income averaging and by imposing a penalty on early withdrawals – raised the likelihood that recipients would leave the funds in the tax-preferred pension system by between 3 and 14 percentage points. The withholding changes enacted in 1993 increased the likelihood of keeping the funds in the tax-preferred system by 11 percentage points for households aged 45-59 who would otherwise have faced penalties. For households aged 60 and older, the 1993 changes had no effect on the likelihood of keeping the funds in the pension system, since penalties did not apply to this group. Thus, the results are consistent with important interaction effects between default specifications and withholding rules, which do not in themselves affect the ultimate tax liability, and the previously-existing effective tax rates and penalties. Interestingly, the 1993 change had no effect on households aged 35-44 – an initially puzzling finding that we will discuss further below and that may be related to another set of policy interactions.

Table 2 shows the same age and year groupings as Table 1 but weights the

[10] Some people appear multiple times in our cross-section because they report the disposition of two or more pension plans. For our descriptive tabulations, 83 percent of our person-weighted sample and 84 percent of our dollar-weighted sample represent job separations by individuals with no repeat observations. The corresponding figure for both our main regression samples is 91 percent.

[11] Specifically, we add job separations by workers of age 25-34 if they fell in the years 1987-1997 while dropping job separations before 1987 if the worker's age is over 59 and those in 1987 or later if the worker is older than 64.

responses by the number of (real) dollars involved. The results are broadly similar. For households aged 59 or younger, the 1987 changes increased the extent to which funds were left in the system. The 1993 changes increased rollovers for households aged between 45 and 59 and induced no change in behavior for households aged 60 or older. As in Table 1, the results for the youngest age group are somewhat anomalous.

Table 3 addresses the puzzling findings in tables 1 and 2 for households aged 35-44 when they received their LSD. In particular, the 1993 changes reduced rollovers for groups aged 45-59 but either left rollovers constant or appear to have increased rollovers for younger groups. To examine this issue, we split the data to look at LSDs that are above and below $3,500 in value. Small-balance LSDs are particularly prevalent among the younger groups of recipients. Table 3 shows strongly divergent trends in LSD disposition depending on whether the balance is above or below $3,500. After 1986, cash outs of all plans fell, and cash outs of larger balances fell, but cash outs of small balances rose.

Presumably this occurred because, starting just before 1986, employers were allowed to choose unilaterally whether to cash out small balances, and they did so: this change seems to have swamped any response to the penalty tax. After 1993, when withholding taxes were imposed on non-rollover activities, cash-outs of small plans fell precipitously. This is consistent with the view that the withholding tax has an immediacy and saliency that taxes imposed as part of the annual income tax reconciliation process do not. The finding, by Burman, Coe, and Gale (2002), that the withholding tax affects behavior much more than other elements of an LSD's tax treatment does not diminish this interpretation. The withholding tax is immediately apparent at the time of job separation, whereas workers may be unaware of their tax liability until tax time (despite requirements that the employer provide such relevant information). Similarly, the fact that this change in disposition behavior coincided with the mandate that firms offering LSDs offer a direct rollover option suggests that the required effort and other transaction costs may previously have deterred LSD recipients from saving their distributions.

VI. Specification and Results

This section presents linear probability estimates of the effects on the disposition

of LSDs of changes in tax rules, penalties, employer defaults and withholding taxes. In each case, the dependent variable takes the value of 1 if the worker cashes out the LSD and 0 if the LSD is retained within the tax-preferred system, either as a balance at the old firm, a rollover to an IRA or to a new firm, or as annuity.

Table 4 reports six regressions that examine LSD dispositions from DC plans over the 1981-97 time period. The first column controls only for age and year and essentially replicates the results in the earlier descriptive tables. To test the robustness of the age and year trends we observe in our descriptive analysis, we add three sets of control variables to the basic specification in column (1). Columns (2) and (5) use the demographic and income controls detailed in section IV (gender, race, educational attainment, and current household income); columns (3) and (6) add current industry and occupation controls; and columns (4), (5), and (6) add indicator variables for real account balance[12] as a rough control for legal differences, tastes for saving, and the opportunity cost of funds. Starting in columns (1) and (4) with the samples of DC plans described in Section IV, each column drops observations with missing values for any of the relevant control variables.[13]

We capture the effects of changes in the legal environment with a full set of age dummies and age*year interactions. The set of six indicator variables for age ranges show that the likelihood of cashing out the LSD generally declines with age in the period 1987-1992, which is the excluded year category in our set of age*year interaction terms. Age*year interactions capture the change within age groups in the likelihood of cash-out. Households aged 35-44 had a significant decline in cash-outs following the enactment of TRA 86 and older households had significant reductions in cash-outs following the 1993 changes.

Adding controls for household demographic characteristics and income levels, occupation and industry, and real plan balance do not alter the post-1993 results, though they slightly weaken the already marginal pre-86 results. In other words, the effects of withholding taxes imposed in 1993 – which would not change the tax payments, just

[12] The categories we use are $1,000 or less, $1,001-$3,500, $3,501-$5,000, $5,001-$10,000, and over $10,000.

[13] Thus, we apply industry and occupation controls separately from the rest of our control set because these variables are masked in the HRS and so almost half our sample is unusable in these specifications.

make them more salient – are robust to the inclusion of other controls. In contrast, the change in tax rules in 1986, which have first-order effects on tax payments, do not appear to exert as strong an influence once other controls are added. While the inclusion of account balance controls may appear to raise the probability of cash-out in 1987-1992, the markedly higher coefficients on the age indicators in columns (4) through (6) merely reflect our choice of accounts smaller than $1000 (in 1998 dollars) as the excluded balance category. Patterns among the age*year interactions are basically the same in these specifications as in (1) through (3).

Tables 5 and 6, which look, respectively, at regressions using LSDs of less than and greater than $3,500 can help explain the pattern of results found in Table 4. In Tables 5 and 6, the age patterns are very similar to those found in table 4, suggesting a robust relation between the age when the LSD is received and the likelihood of cashing out the LSD. In addition, both Tables 5 and 6 show significant negative effects on cashing out for older households from the 1993 withholding tax rules. The presence of negative effects among both small and large accounts makes it clear that the presence of the withholding tax is able to capture the attention of workers and prompt them to make a decision, regardless of employers' default options. As noted in section 5, the widespread response to the 1993 changes also attests to the impact of direct rollover, and thereby the influence of non-monetary costs such as time and effort on financial decision-making.

As in the descriptive statistics, the 1986 tax changes reduced cash outs for bigger plans among 35-44 year olds even as cash-outs of smaller accounts increased. The contrast between the responses to the 1986 and the 1993 changes again underscores the relative salience of the 1993 changes. After 1986 , workers who received cash-outs could have rolled the funds into an IRA but largely chose not to; far more of their counterparts after 1993 made the opposite choice.

VII. Conclusion

A growing body of evidence suggests that – even holding pure economic incentives constant – default rules, framing and the provision of information can have important effects on economic choices, especially with regard to saving (see, for example, Duflo et al 2005, Madrian and Shea 2001, Thaler and Benartzi 2004). Our

findings are consistent with these results. Although this set of findings may contradict pure economic theory, it suggests a whole range of ways that government could use to help people learn to save more, even without altering their budget constraints (or requiring additional government expenditures or tax cuts).

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Table 1: Plan disposition at job separation by age x year: percent share of recipients

	Year			
Disposition	1981-1986	1987-1992	1993-1997	All Years
35-44 y.o.				
LSD	53.8	40.3	39.5	44.2
Left in	43.4	55.8	56.9	52.3
Annuitized	2.8	3.9	3.7	3.5
45-49 y.o.				
LSD	49.1	41.1	29.8	39.8
Left in	50.0	56.3	65.8	57.5
Annuitized	0.9	2.7	4.4	2.7
50-54 y.o.				
LSD	44.6	41.4	21.8	34.5
Left in	50.6	58.6	76.4	63.9
Annuitized	4.8	0.0	1.8	1.6
55-59 y.o.				
LSD	35.0	36.7	17.7	25.0
Left in	40.0	54.7	78.3	68.4
Annuitized	25.0	8.6	4.0	6.6
60-64 y.o.				
LSD	-	25.3	22.6	23.5
Left in	-	57.3	69.7	66.1
Annuitized	-	17.3	7.8	10.4
65-69 y.o.				
LSD	-	50.0	21.5	26.6
Left in	-	33.3	69.2	63.3
Annuitized	-	16.7	9.2	10.1
All Ages				Full Sample
LSD	48.6	38.4	23.9	32.9
Left in	46.7	56.2	71.1	62.0
Annuitized	4.7	5.4	5.0	5.1

Sample drawn from the employment, last job, and job history modules of HRS, waves 1-7. Limited to DC employer pension participants with non-missing values for year of job separation, birth year, and plan disposition (sample 6 in table 4). Only DC plans are included. Age x year groups with fewer than 10 observations are not reported.

Table 2: Plan disposition at job separation by age x year: share of dollars

	Year			
Disposition	1981-1986	1987-1992	1993-1997	All Years
35-44 y.o.				
LSD	43.6%	22.9%	29.6%	31.0%
Left in	50.4%	73.3%	70.1%	65.7%
Annuitized	5.9%	3.8%	0.3%	3.3%
45-49 y.o.				
LSD	25.7%	26.4%	9.9%	19.2%
Left in	72.5%	73.6%	88.3%	79.6%
Annuitized	1.8%		1.7%	1.3%
50-54 y.o.				
LSD	46.5%	18.8%	7.8%	17.6%
Left in	51.9%	81.2%	91.5%	81.9%
Annuitized	1.6%	0.0%	0.8%	0.5%
55-59 y.o.				
LSD	46.5%	18.8%	7.8%	16.6%
Left in	51.9%	81.2%	91.5%	70.1%
Annuitized	1.6%	0.0%	0.8%	13.3%
60-64 y.o.				
LSD	16.2%	9.8%	10.6%	10.4%
Left in	0.0%	81.1%	81.9%	81.5%
Annuitized	83.8%	9.0%	7.5%	8.1%
65-69 y.o.				
LSD	-	17.7%	16.7%	16.8%
Left in	-	21.5%	68.2%	62.2%
Annuitized	-	60.9%	15.1%	21.0%
All Ages				Full Sample
LSD	40.0%	18.7%	11.8%	17.0%
Left in	54.9%	68.7%	82.8%	75.4%
Annuitized	5.0%	12.5%	5.4%	7.6%

Shares are calculated using real account balances. Sample drawn from the employment, last job, and job history modules of HRS, waves 1-7. Limited to employer pension participants with non-missing values for plan type, year of job separation, birth year, account balance, and plan disposition (sample 7 in Table 4). Only DC plans are included. Age x year groups with fewer than 10 observations are not reported.

Table 3: Plan disposition at job separation by age x year and balance: share of recipients

	Year			
Disposition	1981-1986	1987-1992	1993-1997	All Years
35-44 y.o				
Any balance				
LSD	53.8	40.3	39.5	44.2
Left in	43.4	55.8	56.9	52.3
Annuitized	2.8	3.9	3.7	3.5
Balance $3,500 or less				
LSD	60.0	79.3	47.6	63.8
Left in	36.7	20.7	42.9	32.5
Annuitized	3.3	0.0	9.5	3.8
Balance over $3,500				
LSD	54.2	30.8	44.6	42.0
Left in	43.8	61.5	55.4	54.4
Annuitized	2.1	7.7	0.0	3.6
All Ages				
Any balance				Full Sample
LSD	48.6	38.4	23.9	32.9
Left in	46.7	56.2	71.1	62.0
Annuitized	4.7	5.4	5.0	5.1
Balance $3,500 or less				
LSD	68.4	71.4	45.1	58.9
Left in	30.3	27.8	52.6	39.6
Annuitized	1.3	0.8	2.3	1.6
Balance over $3,500				
LSD	46.6	33.8	20.9	28.8
Left in	49.3	61.3	74.7	66.7
Annuitized	4.1	4.9	4.4	4.6

Sample drawn from the employment, last job, and job history modules of HRS, waves 1-7. Limited to employer pension participants with non-missing values for plan type, year of job separation, birth year, account balance, and plan disposition. Account balance is measured in current dollars.

Table 4: Age and Year Effects on Cash-Out Behavior

Cash-out =	(1)	(2)	(3)	(4)	(5)	(6)
Age 25-34	0.742	0.968	1.021	0.996	1.224	1.29
	(9.00)**	(10.17)**	(6.85)**	(10.52)**	(11.49)**	(7.55)**
Age 35-44	0.403	0.656	0.725	0.72	0.978	1.008
	(9.97)**	(11.52)**	(6.86)**	(11.61)**	(12.71)**	(7.55)**
Age 45-49	0.411	0.609	0.667	0.719	0.918	0.942
	(9.47)**	(10.69)**	(6.31)**	(11.44)**	(12.17)**	(7.02)**
Age 50-54	0.414	0.614	0.694	0.712	0.905	0.972
	(12.15)**	(12.29)**	(6.88)**	(12.95)**	(13.17)**	(7.59)**
Age 55-59	0.367	0.553	0.689	0.719	0.893	0.968
	(9.42)**	(10.48)**	(6.33)**	(11.96)**	(12.41)**	(7.18)**
Age 60-64	0.253	0.464	0.661	0.616	0.803	0.95
	(4.78)**	(7.32)**	(4.34)**	(8.19)**	(9.51)**	(5.51)**
Age 35-44*Year 1981-1986	0.135	0.103	0.109	0.075	0.045	0.049
	(2.24)*	(1.74)	(1.59)	(1.09)	(0.66)	(0.62)
Age 45-49*Year 1981-1986	0.08	0.084	0.142	0.081	0.08	0.126
	(1.28)	(1.40)	(1.93)	(1.14)	(1.16)	(1.49)
Age 50-54*Year 1981-1986	0.031	0.04	0.025	0.062	0.075	0.025
	(0.52)	(0.68)	(0.32)	(0.88)	(1.10)	(0.28)
Age 55-59*Year 1981-1986	-0.017	0.007		0.119	0.128	
	(0.15)	(0.07)		(0.81)	(0.90)	
Age 35-44*Year 1993-1997	-0.009	-0.023	-0.019	-0.014	-0.028	0.016
	(0.14)	(0.39)	(0.28)	(0.20)	(0.42)	(0.20)
Age 45-49*Year 1993-1997	-0.112	-0.11	-0.084	-0.147	-0.138	-0.105
	(1.84)	(1.85)	(1.15)	(2.08)*	(2.01)*	(1.29)
Age 50-54*Year 1993-1997	-0.196	-0.198	-0.159	-0.226	-0.216	-0.195
	(3.97)**	(4.15)**	(2.60)**	(4.24)**	(4.20)**	(2.95)**
Age 55-59*Year 1993-1997	-0.19	-0.186	-0.182	-0.273	-0.264	-0.227
	(3.91)**	(3.96)**	(2.61)**	(5.16)**	(5.15)**	(3.05)**
Age 60-64*Year 1993-1997	-0.028	-0.044	-0.067	-0.036	-0.054	-0.119
	(0.46)	(0.76)	(0.49)	(0.52)	(0.80)	(0.83)
Controls						
Real Plan Balance				X	X	X
Demographics & Income		X	X		X	X
Occupation/Industry			X			X
Observations	1885	1856	1059	1429	1414	818
R-squared	0.38	0.43	0.43	0.48	0.52	0.5

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Effects are estimated by OLS regression of cash-out on age fixed effects, age*year interactions, and various control sets. Coefficients are reported only for age*year cells with 10 or more observations. Sample drawn from the employment, last job, and job history modules of HRS, waves 1-7. Limited to job separations occurring in 1981-1997 by employer pension participants age 35-59 (before 1987) or 25-64 (1987-1997) with non-missing values for plan type, year of job separation, birth year, plan disposition, and the relevant control set. Only DC plans are used in specifications (2), (4), and (6). Only DC plans with balance reported are used in specifications (7) through (9).

Table 5: Age and Year Effects on Cash-Out Behavior
Balance $3,500 or Less

Cash-out =	(7)	(8)	(9)
Age 25-34	1	1.28	
	(6.34)**	(7.35)**	
Age 35-44	0.793	1.108	1.058
	(9.02)**	(9.46)**	(5.93)**
Age 45-49	0.621	0.866	0.889
	(7.06)**	(7.61)**	(5.34)**
Age 50-54	0.756	0.999	0.996
	(10.23)**	(10.05)**	(6.94)**
Age 55-59	0.652	0.931	1.026
	(6.61)**	(7.73)**	(5.44)**
Age 60-64	0.7	0.929	0.962
	(4.68)**	(5.86)**	(2.90)**
Age 35-44*Year 1981-1986	-0.193	-0.167	-0.288
	(1.57)	(1.38)	(1.81)
Age 45-49*Year 1981-1986	0.172	0.198	0.109
	(1.39)	(1.70)	(0.69)
Age 50-54*Year 1981-1986	-0.131	-0.103	
	(0.94)	(0.77)	
Age 35-44*Year 1993-1997	-0.317	-0.246	-0.208
	(2.34)*	(1.81)	(1.21)
Age 45-49*Year 1993-1997	-0.075	-0.082	-0.236
	(0.56)	(0.65)	(1.45)
Age 50-54*Year 1993-1997	-0.268	-0.255	-0.213
	(2.59)**	(2.61)**	(1.61)
Age 55-59*Year 1993-1997	-0.307	-0.324	-0.394
	(2.63)**	(2.94)**	(2.40)*
Age 60-64*Year 1993-1997	-0.183	-0.126	-0.087
	(1.05)	(0.77)	(0.24)
Controls			
Demographics & Income		X	X
Industry/Occupation			X
Observations	394	388	226
R-squared	0.64	0.69	0.67

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Effects are estimated by OLS regression of cash-out (LSD as defined in Table 3) on age fixed effects, age*year interactions, and various control sets. Coefficients are reported only for age*year cells with 10 or more observations. Sample drawn from the employment, last job, and job history modules of HRS, waves 1-7. Limited to job separations occurring in 1981-1997 by employer pension participants age 35-59 (before 1987) or 25-64 (1987-1997) with non-missing values for plan type, year of job separation, birth year, plan disposition, and the relevant control set. Only DC plans with nominal account balance <= $3500 are used.

Table 6: Age and Year Effects on Cash-Out Behavior
Balance Greater Than $3500

Cash-out =	(10)	(11)	(12)
Age 25-34	0.667	0.933	1.028
	(6.43)**	(7.60)**	(5.23)**
Age 35-44	0.308	0.638	0.756
	(5.64)**	(7.71)**	(5.11)**
Age 45-49	0.392	0.674	0.703
	(6.37)**	(8.00)**	(4.70)**
Age 50-54	0.33	0.595	0.728
	(7.84)**	(8.35)**	(5.10)**
Age 55-59	0.371	0.608	0.719
	(7.95)**	(8.59)**	(5.01)**
Age 60-64	0.233	0.496	0.695
	(3.47)**	(5.75)**	(3.71)**
Age 35-44*Year 1981-1986	0.234	0.171	0.204
	(2.79)**	(2.07)*	(2.23)*
Age 45-49*Year 1981-1986	0.025	0.012	0.143
	(0.28)	(0.14)	(1.43)
Age 50-54*Year 1981-1986	0.106	0.115	0.115
	(1.29)	(1.44)	(1.12)
Age 35-44*Year 1993-1997	0.139	0.097	0.117
	(1.73)	(1.23)	(1.37)
Age 45-49*Year 1993-1997	-0.172	-0.171	-0.043
	(2.04)*	(2.07)*	(0.46)
Age 50-54*Year 1993-1997	-0.208	-0.202	-0.182
	(3.32)**	(3.32)**	(2.39)*
Age 55-59*Year 1993-1997	-0.248	-0.24	-0.174
	(4.14)**	(4.13)**	(2.07)*
Age 60-64*Year 1993-1997	-0.002	-0.03	-0.078
	(0.02)	(0.41)	(0.50)
Controls			
Demographics		X	X
Income		X	X
Occupation/Industry			X
Observations	1035	1026	592
R-squared	0.35	0.4	0.41

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Effects are estimated by OLS regression of cash-out (LSD as defined in Table 3) on age fixed effects, age*year interactions, and various control sets. Coefficients are reported only for age*year cells with 10 or more observations. Sample drawn from the employment, last job, and job history modules of HRS, waves 1-7. Limited to job separations occurring in 1981-1997 by employer pension participants age 35-59 (before 1987) or 25-64 (1987-1997) with non-missing values for plan type, year of job separation, birth year, plan disposition, and the relevant control set. Only DC plans with nominal account balance > $3500 are used.

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