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An Analysis of the Choice to Cash Out Pension Rights at Job Change or Retirement

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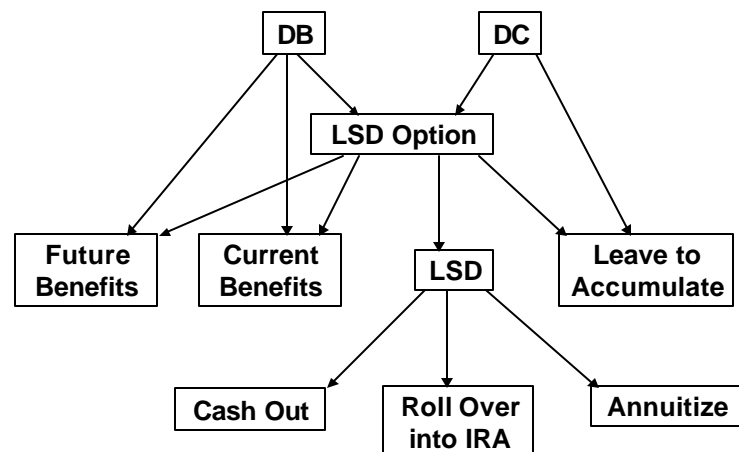
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Executive Summary

Over the past few decades, public policy in the United States has been very effective in reducing poverty among the elderly. In 1959, 35.2 percent of people aged 65 or older lived below the poverty line, more than double the rate of those under age 65. By 1995, poverty among the elderly had dropped to 10.5 percent, slightly lower than among the non-elderly. Financial security in old age is, in part and to a growing extent, provided through private pension plans. Plan contributions receive favorable tax treatment, thus encouraging workers to save for retirement. However, if plan balances are consumed before or immediately after retirement, old-age income may be eroded and public policy may miss its target. This report is concerned with workers' choices to cash out pension plans upon job change or retirement. Using new data with a unique feature, we find that the issue is far less severe than suggested in prior reports.

When workers change jobs or retire, they may have several options for the disposition of their pension rights, depending on their plan type and characteristics (see the figure). Some defined benefit (DB) plans only offer payment in the form of a current or future benefit flow, but an increasing fraction (64 percent in 1993) provides the option of a lump sum distribution (LSD) upon job separation. The LSD may be taken in cash or rolled over into a tax-sheltered IRA. Of course, the pension holder may still decide to collect (future) benefits, rather than a lump sum.

Similarly, a small fraction of defined contribution (DC) plans require that the plan balance is left to accumulate with the employer, but most (87 percent in 1993) offer the option of an LSD, which may be cashed out, rolled into an IRA, or converted into an annuity. Overall, 72 percent of plan participants were able to take a lump sum distribution in 1993, up sharply from 48 percent in 1983 (Scott and Shoven, 1996).



Limited by the availability of data, prior research on pension cash-outs has focused on the disposition of plans which were settled through a lump sum distribution. Recently released data from the Health and Retirement Study (HRS) contain information on whether workers have the option of a lump sum settlement. Our analysis utilizes that information and is unique in its explicit recognition of the full choice set that plan participants face.

We develop a theoretical framework based on the life cycle model and estimate a reduced form probit model of the propensity to cash out for individuals who leave their jobs between the first and the second or the second and the third waves of the 1992-96 HRS. We find that, *among those who took a lump sum distribution upon job separation*, 54 percent cashed out. Cash-out rates are lower for large distributions and among workers that are older, well-educated, male, non-black, or earn high incomes. These findings are very consistent with earlier work in this area, such as Yakoboski (1997), Poterba, Venti, and Wise (1995), Yakoboski et al. (1994), Fernandez (1992), Piacentini (1990), and Atkins (1986). We also find that the cash-out rate is higher for separated or divorced individuals and for those with low wealth holdings, in poor health, not covered by health insurance, or who left their job because of disability. The life cycle model predicts that the propensity to cash out increases with time rate of preference and mortality risk; indeed we find higher rates among individuals with a relatively short financial planning horizon or who themselves state that their chances of surviving another twenty years or so are well below average. Workers with short expected longevity thus remove themselves from the pool of pensioners that end up with annuity income, but this adverse selection effect is very mild.

The 54 percent overall cash-out rate may be cause for concern. However, as we stated above, this figure applies only to plans that were settled with a lump sum payment; it ignores workers who had the option of taking a LSD, but instead chose to collect (future) DB benefits or left their DC plan balances to accumulate. *Among DB plan holders with an LSD option*, 48 percent started collecting benefits, 31 percent expected to draw benefits in the future, 4 percent took an LSD and rolled it over into an IRA, and only 16 percent cashed out their pension rights. *Among DC plan holders*, 43 percent left the account with their former employer for further accumulation or periodic withdrawals; the remainder took an LSD and rolled it over into an IRA (33 percent), converted it into an annuity (4 percent), or cashed out their plan (20 percent). *Overall, just 18 percent cashed out their entitlements*, far lower than the 54 percent found when considering only plans that were settled in a lump sum payment. Since accounts with large balances overwhelmingly result in (future) benefits or are rolled over into an IRA, the 18 percent of plans that are cashed out only account for 6.3 percent of all plan dollars involved. When asked how they spent the cashed-out balances, respondents indicated that only about 33 percent was spent for current consumptive purposes or to pay off debt; the remainder went into durables or was saved or invested.

Our analysis hinges on respondents' indications of LSD availability which were collected in the wave prior to the wave in which a job separation was reported. For example, HRS wave 1 asked about an LSD option for each pension plan, and we linked that information to reports of plan dispositions for those respondents who left their job between wave 1 and wave 2. It should be noted that there is a widespread

lack of knowledge on plan characteristics. For example, 25 percent of respondents who indicated that they did not change jobs and that there had been no change in their pension plan between waves reported a different plan type (DB vs. DC) between waves; 16 percent of those who left a job with pension coverage never mentioned a pension plan before; 15 percent took an LSD but had previously reported that their plan did not offer an LSD option. Given these high rates of misreporting, we restrict parts of the analysis to DC plans, which almost all offer an LSD option.

In conclusion, we find that cash-out rates are far less severe than previously reported. *The Wall Street Journal* stated that “60 percent of departing employees’ retirement money goes toward such things as credit-card bills, home purchases and other expenditures, ...” (4 December 1997)—such reporting is inaccurate and creates far more alarm than is warranted. That said, we find the highest cash-out rates among the lower incomes, who are particularly vulnerable to poverty in old age. Future research should focus on this group and on younger cohorts, where LSDs may very well be more common than in the 1931-41 cohort of the HRS.

1. Introduction

Reduction of poverty among America's elderly has been an important public policy goal for the past several decades. The generosity of the Social Security and Medicare systems was increased steadily, and the 1974 Employee Retirement and Income Security Act (ERISA) promoted private retirement savings. The results have been nothing short of impressive. In 1959, 35.2 percent of people aged 65 or older lived below the poverty line, more than double the rate of those under age 65. By 1995, poverty among the elderly had dropped to 10.5 percent, slightly lower than among the non-elderly (Bureau of the Census 1996). The relative position of the elderly is even better if non-cash benefits and the implicit rental value of housing are taken into account (Bureau of the Census 1991).

Despite this encouraging trend, the oldest-old and women living alone remain particularly vulnerable. Poverty among the oldest-old, aged 75 and over, runs at 13.0 percent for males and females, 16.5 percent for females only, and 37.6 percent for African American females, with Hispanics not faring much better. The rate is 23.6 percent among elderly women (aged 65 and over) that live alone, and an alarming 48.1 and 49.3 percent among African American and Hispanic women, respectively (Bureau of the Census 1996).

Private pensions play an increasingly large role in the elderly's financial resources. The share of pension wealth in total household wealth among people around age 60 increased from 11 percent in 1969 to 23 percent in 1992 (Gustman and Steinmeier, 1997). The relative importance of pensions is likely to continue its upmarch in light of increases in pension assets and benefits on the one hand and Social Security belt-tightening proposals on the other. Cashing out pension plans prematurely, however, may erode the security that private pensions provide in old age and undermine the reduction of poverty among the elderly.

When workers change jobs or retire, they may have several options for the disposition of their pension rights, depending on their plan and own characteristics. See Figure 1. Defined benefit (DB) plans offer inflation protection by linking benefits to employee wage levels, but only until the worker changes jobs, and dormant DB rights may rapidly lose their value. An increasing fraction (64 percent in 1993) therefore provide the option of a lump sum distribution upon job separation. Similarly, a small fraction of defined contribution (DC) plans require that the plan balance is left to accumulate with the employer, but most (87 percent in 1993) offer the option of an LSD. Overall, 72 percent of plan participants were able to take a lump sum distribution in 1993, up sharply from 48 percent in 1983 (Scott and Shoven, 1996).

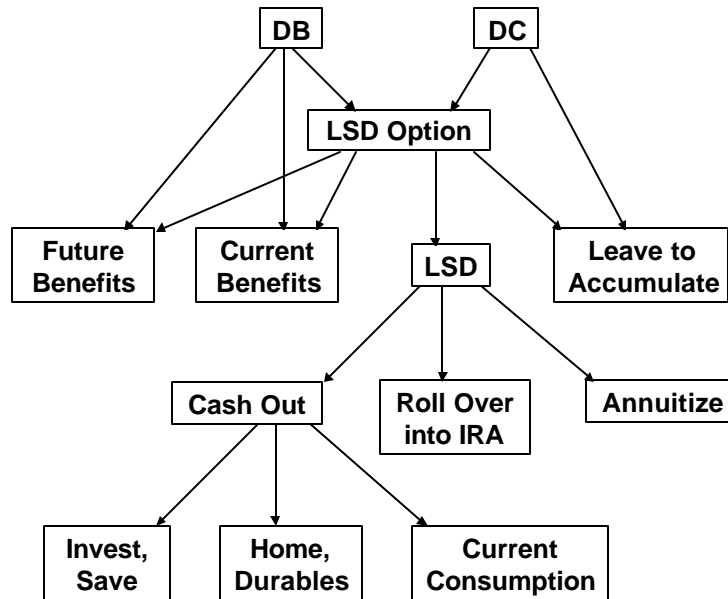


Figure 1. Potential options for the disposition of pension entitlements

If the plan holder elects a lump sum settlement, it may be rolled over into an Individual Retirement Account (IRA), converted into an annuity, or taken in cash payment. In 1990, lump sum distributions amounted to \$126 billion of which \$54 billion was cashed out (Yakoboski 1994), enough to hit a serious dent in future retirement benefit annuity flows (\$234 billion in 1990). Depending on how the cashed-out money is spent, it may still be available for financial security in old-age. However, if the money is spent on current consumption or credit-card debt, retirement income may be eroded and pension policies may miss their target.

Few data sources offer the richness needed to analyze the full choice set that departing workers face. An exception is the Health and Retirement Study (HRS) upon which this report is based. It has two main limitations. First, the HRS only covers the 1931-41 birth cohort, i.e., individuals in their fifties and early sixties. Second, a sizable fraction of its respondents appear unsure of their plan characteristics and options. We will return to this data quality issue in Section 6.

Cashing-out pensions and/or IRAs may be optimal from the individual recipient's perspective, but such behavior may be counter to the intent of existing legislation governing pensions and retirement accounts. Laws designed to give tax preference to individuals who set aside funds for retirement (delayed taxation of those funds) are costly in terms of current public revenue and are intended to help individuals provide for their financial security in retirement. Individuals who cash out their retirement accounts and spend the money may be vulnerable to the financial insecurity and thus offset the intent of the legislation.

Addressing this issue requires knowledge about the determinants of individual choices. As outlined below, economic theory predicts that persons (or couples) who believe that annuities based on aggregate survival statistics are less than actuarially fair for them, or who are financially constrained at the time of retirement, or who have a high rate of time discount (preference for consuming now) will cash out pensions and retirement accounts rather than hold the account or convert it to an annuity. This creates a number of potential problems. For example, if persons with high risk of mortality systematically cash out pensions, then the funds remaining in the pension accounts will not be adequate to cover the annuitized costs for the remaining longer-lived members of the fund. This result interacts with proposed changes in Social Security toward reduced (progressively taxed) benefits and social safety net. Even if cash-out is not the result of high expected mortality, but is the result of time preference or current need for funds (say, for medical expenses), the individuals who cash out and spend the funds in a short time period are at risk of insufficient financial resources in retirement and of becoming potentially dependent on the social safety net.

The purpose of this report is to gain a better understanding of how workers make choices concerning the use of their pensions and retirement accounts and to provide guidance for legislators and regulators. Section 2 reviews prior research on the cash-out issue. Section 3 discusses the legal environment. Section 4 develops a theoretical perspective based on a life cycle model of consumption choice and discusses the reduced form probit model that we use to analyze the choice to cash out a pension account. The HRS data are described in Section 5, and Section 6 presents and discusses the results. We conclude in Section 7 with an evaluation of available public policy options and the potential problems posed by adverse selection behavior.

2. Prior research

Hampered by a lack of sufficiently rich data, prior research has focused almost exclusively on the disposition of the subset of pension plans that were settled in the form of a lump sum distribution, thus ignoring DB pension plans that resulted in (future) benefit flows and DC plans that were left to accumulate with the former employer. Several recent studies have documented cash-out patterns from various data sources,¹ with very consistent results: the majority of workers cash out lump sum pension

¹ The most widely used data sources for studies of cash-out behavior are the 1983, 1988 and 1993 Current Population Surveys (with Employee Benefit Supplements), the 1992 Health and Retirement Study (with matched employer survey), and the 1993 and 1996 Hewitt Associates data. The CPS and Hewitt data cover all ages; HRS respondents were born in 1931-41. Yakoboski (1994) was based on IRS Forms 1099-R and 5498 filings on which

settlements upon leaving their job. Cash-out rates are lower for large distributions and among workers that are older, well-educated, male, or earn high incomes (Atkins 1986; Piacentini 1990; Fernandez 1992; Yakoboski et al., 1994; Gelbach 1995; Poterba, Venti, and Wise, 1995). Most recently, Yakoboski (1997) found that 60 percent of distributions to job changers were cashed out in 1996. The rate was 80 percent for distributions under \$3,500 and only five percent for distributions over \$100,000, so that the 60 percent overall cash-out rate accounted for only 21 percent of distributed dollars. The rates decrease with worker age, from 74 percent of distributions among workers aged 20-29 to 48 percent among workers aged 50-59 (49 and 13 percent of distribution dollars, respectively).

There is good news and bad news in these cash-out patterns. Large distributions are more likely to be preserved, which is good for overall future retirement benefit flows. The very high cash-out rate among lower-income workers, however, is worrisome as it is precisely that population which is most vulnerable to poverty later in life. In addition, current young workers are expected to hold more than eight jobs on average before retirement, some necessarily of short duration and with a low pension accumulation, so that even higher-income workers may end up with little retirement income.

Some studies have analyzed the ways in which separating workers spent their cash-outs. All surveys only ask for categories on which at least some money was spent, so none permits a quantification of the fraction of dollars spent on specific categories. Piacentini (1990) reported that 40 percent of 1988 CPS respondents consumed at least a portion of their lump sum distributions. High-income families and older individuals saved more and consumed less than low-income families and younger recipients. Yakoboski et al. (1994), Poterba, Venti, and Wise (1995) and Korczyk (1996) documented that the most common items on which 1993 CPS respondents spent their cash-outs were (in decreasing order) savings accounts or other financial instruments, everyday expenses, debt repayments, and home loans. Small distributions were overwhelmingly spent on everyday expenses. Poterba, Venti, and Wise (1995) found that 1992 HRS respondents (aged 51-61) saved or invested about one-fourth of their cash-outs and consumed the balance. Yakoboski (1997) found that 50 percent of cash-out recipients had spent at least a portion of their distributions.

lump sum distributions and rollovers are reported. Yakoboski and Schiffenbauer (1997) used the 1996 Retirement Confidence Survey, collected by the Employee Benefits Research Institute. For general pension studies, the Surveys of Consumer Finances and IRS Form 5500 data have been used.

3. Legal environment

In enacting the 1974 Employee Retirement and Income Security Act (ERISA), Congress declared “that owing to the lack of employee information and adequate safeguards concerning [employee pension benefit plans’] operation, it is desirable in the interests of employees and their beneficiaries, and to provide for the general welfare and the free flow of commerce, that disclosure be made and safeguards be provided with respect to the establishment, operation, and administration of such plans” (U.S.C. §1001). Employers are not required to offer employees pension coverage, but if they do, their plans must meet ERISA’s minimum standards. ERISA laid out minimum terms for plan funding, disclosure, management, and administration. It established the Pension Benefit Guaranty Corporation, which in case of plan default takes over timely and uninterrupted payment of pension benefits. It introduced Individual Retirement Accounts as a tax-sheltered vehicle aimed at providing employees that are not covered by an employer-sponsored pension plan with the opportunity to save for retirement. It stipulated that employees must be fully vested in their pension rights after at most five years of service.²

Lump sum distributions and cash-outs

Employers do not need to offer departing employees the option to terminate the plan through a lump sum distribution, and employees do not need to accept such option. However, if the accrued amount is less than \$1,750, employers are allowed to distribute a departing employee’s plan in a lump sum payment without employee consent. The 1984 Retirement Equity Act increased the threshold amount to \$3,500 and the 1997 Taxpayer Relief Act raised it to \$5,000. The 1992 Unemployment Compensation Amendments (effective in 1993) established incentives to reduce lump sum distribution cash-outs. Employers that offer departing employees a lump sum distribution must also provide the option of rolling such lump sum distributions over into an IRA or to a new employer’s plan. If the employee elects to cash out his plan rights anyway, a 20 percent withholding tax applies. Perhaps as a result of these incentives, cash-out rates declined after 1993 (Yakoboski et al., 1994, Yakoboski 1997).

Taxation of cash-outs

Any distribution from a pension plan other than a roll-over into another tax-qualified retirement plan is considered income and therefore subject to income taxation. To smooth out the tax burden, the 1986 Tax

² The maximum vesting period is seven years if certain partial vesting rights are acquired earlier or ten years for employees covered under a collective bargaining agreement in a multiemployer plan.

Reform Act permits participants a five-year forward averaging for a lump sum distribution received after age 59½ that is not rolled over. Participants may only elect such forward averaging once in a lifetime. Before 1986, lump sum distributions were sometimes treated as capital gains and a ten-year forward-averaging period applied.

Tax penalty on premature distributions

The 1986 Tax Reform Act imposed a ten percent tax penalty on cash-outs upon job separation before age 59½, except in the case of death or disability or if the distribution is converted into a lifelong annuity. (The same penalty regime applies to early withdrawals from IRAs.) Under certain circumstances, the age limit is reduced to 55. The tax penalty appears to have an effect on cash-outs. Chang (1996) compared lump sum distributions before and after the tax penalty introduction and found that the penalty decreased the probability of a cash-out by four and two percentage points among higher-income and lower-income recipients, respectively.

Widowhood benefits

ERISA does not require spousal benefits such as offered by Social Security. There is, however, a minimum requirement pertaining to surviving widows. The 1984 Retirement Equity Act protects spouses of deceased workers that are either retired or vested in their private plan. DB plans must offer a qualified preretirement survivor annuity if a married participant with a vested interest dies before receiving benefits; the benefit payment after retirement must be a qualified joint and survivor annuity in which survivor benefits are between 50 and 100 percent of worker benefits. The rights to survivor annuities may be waived within limits, including written spousal consent witnessed by a notary or plan representative. DC plans presume that the spouse is the beneficiary should the worker die before retirement. Upon retirement, several payment options are available; if a lifelong annuity is chosen, the same survivor benefit rules apply as under DB plans. However, if a DC plan is cashed out, the ERISA amendment misses its target.

Extended roles for IRAs

The 1997 Taxpayer Relief Act widened the scope of IRAs beyond their traditional role in securing retirement income. Withdrawals from IRAs are no longer subject to the ten percent penalty if they are used for a first-time home purchase or postsecondary education of the IRA owner, his/her spouse, children, or grandchildren. Since this involves the transfer of funds from the tax-sheltered into the after-

tax environment, normal income taxation still applies. The Act also introduces so-called Roth IRAs. Contributions to a Roth IRA cannot be deducted from income, but earnings accumulate tax-free. Withdrawals are exempt from tax if they are made after age 59½, after death or disability, or for a first-time home purchase or first-time home improvement of the IRA owner, his/her spouse, child, or grandchild. The Act also introduces so-called Education IRAs, which are similar to Roth IRAs, except that they aim to fund postsecondary educational expenses.

The 1987 Portable Pension Plan Act and the 1988 Pension Portability Act proposed to outlaw cash-outs and force lump sum distributions to be rolled over into qualified plans. The 1987 Pension Portability Improvement Act proposed the same and also stipulated that all distributions be in the form of lifelong annuities. None of these bills were enacted, but they are indicative of Congress' willingness to consider curbing cash-outs.

4. Theoretical framework

A broad characterization of the situation at retirement is the following. People reach retirement with an array of economic resources: a claim on Social Security; a claim on Medicare; pension rights; and bequeathable wealth. Here we include as part of pension rights both DB and DC rights, including any that are automatically annuitized such as traditional DB plans, and we also include other tax-advantaged savings such as IRAs that might be annuitized in the private annuity market. Pension rights may automatically be converted into a pension according to company rules. But in many cases the retiring worker can cash-out the pension rights or annuitize the rights or simply continue to hold the rights in a tax-advantaged form.

An appropriate theoretical framework to analyze this situation is the life cycle model of consumption that goes back to Modigliani and Brumberg (1954), with extensions to account for a bequest motive (Hurd 1989a, 1990b), uncertain health and medical expenditures for both members of a couple (Lillard and Weiss 1997), and a couple-level utility function (Hurd 1997). In life cycle models of consumption under uncertainty, individuals or couples make choices in the current period based on current information and beliefs so as to maximize the expected discounted present value of utility. The expected discounted present value of utility is the sum of utility in the current period based on current choices and the current state of the world (e.g., consumption, health, financial resources, and budget constraints) and the expected discounted present value of future utility, which depend on the probability of own and spousal survival to each future period, the timing of future health transitions, the return to saving, budget constraints, and

optimal consumption choices at each period in the future, and the value of financial bequests on the death of the final survivor or the couple. In the next period, individuals and couples realize a new state of the world (transitions in health status, widowhood, and the like) and re-optimize consumption for that period. They do this until both spouses are deceased. An unmarried individual is “like” a widowed person from a couple, except for differences in the probabilities of survival and transitions to poor health. Within this decision environment, individuals or couples may vary in many respects, including their current marital status, health status, mortality risk, transition probabilities, annuity income (Social Security), financial savings, and rate of time preference.

We base the analysis on a somewhat restricted version of the life-cycle model. Life-time utility is based on time-separable utility from consumption and from bequests (Yaari 1965); the only uncertainty is date of death; resources are initial bequeathable wealth, rights to pensions, and a stream of annuities such as Social Security; bequeathable wealth cannot become negative, and, therefore, borrowing against future annuities is not allowed. Because it does not have a provision for the choice to work, it is applicable only to respondents after they enter retirement or disability.

Model of consumption by singles

These assumptions lead to the following behavioral model for a single person: maximize expected lifetime utility Ω over the consumption path $\{c_t\}$

$$\Omega = \int_0^N u(c_t) e^{-\rho t} a_t dt + \int_0^N V(w_t) e^{-\rho t} m_t dt. \quad [1]$$

The first term is expected discounted utility from consumption, where

$u(\cdot)$ = the utility flow from consumption;

ρ = the subjective time rate of discount;

a_t = the probability of being alive at t ; and

N = the maximum remaining years of life ($a_N = 0$)

The second term is the expected discounted utility of bequests, where

$V(\cdot)$ = utility from bequests which depends on the personal characteristics of potential inheritors such as the economic status of any children in an altruistic or strategic bequest model;

w_t = bequeathable wealth at t ;

m_t = probability density of dying at t .

The constraints on the maximization are: initial bequeathable wealth w_0 is given; the nonnegativity constraint, $w_t \geq 0 \quad \forall t$; and the rate at which bequeathable wealth changes is given by:

$$\frac{dw_t}{dt} = r w_t - c_t + A_t, \quad [2]$$

in which r = real interest rate (constant and known), and A_t = flow of annuities at time t .

The nonnegativity constraint on bequeathable wealth can be justified by a legal ban on borrowing against Social Security benefits. In addition, in the data very few are observed with negative wealth, and those few tend to have negative wealth as the result of negative business wealth. This is likely to be the result of unanticipated losses rather than borrowing for consumption purposes. The importance of taking account of the corner solution ($w_t = 0$) is seen from the fraction of single elderly with approximately zero nonhousing wealth. In 1993, about 19 percent of those aged 70-79 and about 40 percent of those aged 90-100 had wealth of less than \$1,000 (authors' calculations).

The model places considerable emphasis on annuity income, which is based on the empirical observation of its importance: in 1994, 94 percent of the elderly (65 or over) had some annuity or pension income (including Social Security); 79 percent had more than half of their income from annuities or pensions.

The solution to the single's problem is (Hurd 1989a):

$$\begin{cases} \frac{du_t}{dt} = u_t(h_t + \rho - r) - h_t V_t & \text{for } w_t > 0; \\ c_t = A_t & \text{for } w_t = 0, \end{cases} \quad [3]$$

where w_0 is given and

$u_t = du/dc_t$ = marginal utility of consumption at time t ;

$h_t = m_t/a_t$ = mortality risk (mortality hazard) at time t ; and

$V_t = dV/dw_t$ = marginal utility of bequests at time t .

The model does not admit an analytical solution because of the boundary condition and because of the bequest motive. The optimal consumption path must be found numerically: conditional on the specification of the utility function, the equation of motion of consumption is given implicitly by [3], and the level is found from the lifetime budget constraint.

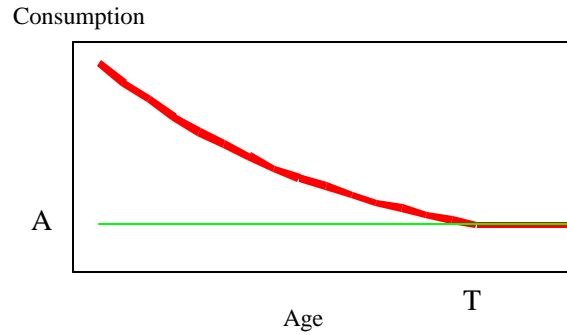


Figure 2. Consumption path

A typical solution as found in prior estimation based on the Retirement History Survey (Hurd 1989a) is shown in Figure 2. By age T all bequeathable wealth has been consumed and the consumption path will follow the path of annuities $\{A\}$.

Once the optimal consumption path has been found, predicted wealth $\{\hat{w}\}$ is calculated from the equation of motion of wealth [2]. Therefore, for each individual the model can be used to forecast consumption and wealth. Income can be forecast from observed annuity income and from capital income as rw_t .

Model of consumption by couples

The model of consumption by couples follows in a straightforward way from the model for singles (Hurd 1997). The couple maximizes expected lifetime utility which is composed of four parts: from consumption while both spouses are alive, from “bequests” to the widow should the husband die, from “bequests” to the widower should the wife die, and from true bequests to others outside the household. Under the same assumptions as in the single’s model the solution is

$$\frac{dU_t}{dt} = U_t(h_t + \mathbf{r} - r) - (M_t \mathbf{f}_t + F_t \mathbf{m}_t), \quad [4]$$

where U_t is the marginal utility of consumption by the couple, h_t is the mortality risk of the couple, M_t is the marginal utility of wealth to the widower should the wife die, ϕ_t is the mortality risk of the wife, F_t is the marginal utility of wealth to the widow should the husband die, and μ_t is the mortality risk of the husband. The equation has the same form as the solution to the single’s problem [3]. The last term (in parentheses) corresponds to $h_t V_t$ in [3], and it is the expected marginal utility of “bequests” but where either the husband or wife inherits the bequeathable wealth of the couple. Desired bequests to children or others outside the household enter the model through M_t and F_t : in the single’s model a bequest motive

increases the marginal utility of wealth, which increases both M_t and F_t . This flattens the path of consumption by the couple and reduces the level of consumption causing more wealth to be held. The model is estimable because the marginal utility of wealth for the surviving spouse can be found by solving the single's model. For example, in a fully maximized model of consumption by single males, u_t equals the marginal utility of wealth for widowers, M_t . The model makes clear that the consumption path of the couple will depend on the mortality risk of both the husband and of the wife.

The model for consumption by couples can be used to forecast the path of consumption by the couple and from it the wealth and income paths as long as both spouses are alive. Should one of the spouses die, the survivor would switch to the model of consumption by a single person, and his or her consumption path would be forecast by the model of consumption by singles (Hurd 1997). The model does not allow remarriage after widowhood.

Annuitization in a life cycle model

It is commonly thought that in the absence of a bequest motive a life cycle model would require that all wealth would be annuitized. However, that is not necessarily or even typically the case. The life cycle model can be used to find what someone would be willing to pay to annuitize bequeathable wealth, and in some cases this will be less than the cost. Because the argument is critical to our using the life cycle model to determine cash-out choice, we will give the argument in some detail. As far as we know this will be the first use of the life cycle model in this way, although the basic ideas can be found in Bernheim (1987) and Hurd (1987).

Suppose that the annuity path is flat as would be the case with Social Security or any indexed annuity. If someone is sufficiently old, the desired consumption path will decline with age. However, should that person completely annuitize, the consumption path will be constrained to be flat. This causes the increase in utility to be less than would be expected solely from the increase in resources that result from the annuitization. To get an idea of the magnitudes involved consider the simplified case of an infinite horizon in which mortality risk is a constant I , implying that the survival curve $a_t = e^{-It}$. Bequeathable wealth w will purchase an actuarially fair flat annuity A that satisfies

$$w = A \int_0^{\infty} e^{-rt} a_t dt, \quad [5]$$

given a fixed interest rate r . Then the flat consumption path would be

$$c_a = \frac{w}{\int e^{-rt} a_t dt}, \quad [6]$$

and in this example of constant mortality risk, $c_a = w(r + I)$.

If the individual had to finance a flat annuity himself the flat consumption path would be $c_s = wr$ and the ratio of consumption paths would be $(r + \lambda) / r$. At constant mortality hazard of 0.03, which is approximately the mortality hazard rate of 67 year-old men, and a real interest rate of 0.03, $c_a / c_s = 2$.

That is, the flat consumption stream could be twice as great with annuitization as it would be without.

Therefore, someone who desired a flat consumption path ($r = \rho + \lambda$) would be willing to pay up to \$2 in bequeathable wealth to purchase an annuity stream that has expected present value of \$1. In this case, we would say that the marginal rate of substitution (MSR) of bequeathable wealth for annuity wealth is two. Of course, if the annuity market is actuarially fair, the cost of the annuity would only be \$1 so a person with constant mortality risk would want to annuitize completely.

Generally, however, the optimal consumption path is not flat but in the absence of a bequest motive is given by

$$\frac{d \ln c_t}{dt} = \frac{1}{g_t} (r - \mathbf{r} - I), \quad [7]$$

where g_t is relative risk aversion at age t , and \mathbf{r} is the subjective time rate of discount.³ Thus the consumption path will decline as long as $\mathbf{r} + I > r$.⁴ Then the lifetime utility obtained from A will be less than it would be were desired consumption to be flat, which would happen if $r = \mathbf{r} + I$. Someone with a declining desired consumption path would not be willing to pay $w(r + \lambda) / r$ for A . Instead, the amount he would be willing to pay will depend on the mix of bequeathable wealth and any predetermined annuity wealth such as Social Security. At one extreme someone with no Social Security wealth would have a $MRS = (r + \lambda) / r$: by annuitizing an amount of wealth Δw , the consumption path could be increased by $\Delta w (r + \lambda) / r$, yet a declining consumption path could be maintained by consuming part of remaining bequeathable wealth. The chances of completely consuming bequeathable wealth and being forced onto a flat consumption path are small. At the other extreme is someone with a small amount of

³ Equation [7] follows from [3], where we use $\frac{du_t}{dt} = u_{tt} \frac{dc_t}{dt}$; u_{tt} is the second derivative of $u(c_t)$, and by definition

$g_t = -c_t u_{tt} / u_t$, which would generally not be constant.

⁴ Of course, λ is not constant but increases in t so that eventually the desired consumption path will decline with age.

bequeathable wealth, say Δw , and a large amount of Social Security wealth. If that person were to annuitize Δw , the loss in utility from the reduction in bequeathable wealth would be $\Delta w u_0$ where u_0 is the marginal utility of consumption at time 0. No discounting is required because with a small amount of wealth and a declining consumption path Δw would be consumed immediately. The gain in utility would come from the permanent but flat increment to consumption $\Delta w(r + I)$, which would yield an increase in lifetime utility of

$$\int \Delta w(r + I) u_0 e^{-(r+I)t} dt = \frac{r + I}{r + I} \Delta w u_0. \quad [8]$$

Therefore the person would be willing to pay $(r + \lambda) / (r + \lambda)$ in bequeathable wealth at the margin for an actuarially fair annuity. That is, $MRS = (r + \lambda) / (r + \lambda)$. We have used constant mortality risk I to simplify the exposition, but this result holds with general survival a_t .

It is often thought that $r > r$, in which case $MRS < 1$, which implies that even with actuarially fair annuities someone with very little bequeathable wealth would not want to annuitize further, and if there were a way to de-annuitize, that person would want to cash in some Social Security wealth for an increase in bequeathable wealth.

To summarize, in this simplified example $(r + \lambda) / r \geq MRS > 0$. In the general case MRS is likely to be greater than one for most people. Based on a model estimated over the Retirement History Survey and on population life tables, Hurd (1987) estimated that on average newly retired workers would be willing to pay \$1.41 in bequeathable wealth to obtain one dollar in annuity wealth; that is the average MRS was 1.41. The 95th percentile was 1.71 and the 5th percentile was 1.06. The variation was mostly due to age, which would affect mortality risk, and the mix of bequeathable wealth and Social Security wealth.

These calculations and the discussion are based on actuarially fair annuities. However, the private annuity market is not actuarially fair. Mitchell, Poterba, Warshawski and Brown (1997, table 3) estimate that a privately purchased annuity will only pay about 75 percent of the actuarially fair annuity. The difference is caused by a combination of a load factor, which is due to administrative costs and profit, and the fact that the sellers do not use a population life table in their calculations: rather, they use an annuitants' life table derived from the mortality experience of those that actually purchase annuities. Because of adverse selection, the annuitants' life table has substantially greater survival than a population life table. For a 65 year-old the cost of \$1 of annuity wealth is $1/0.75 = \$1.33$ of bequeathable wealth, so that anyone with $MRS > 1.33$ would not want to annuitize further. In the calculations of Hurd (1987),

about 25 percent of the observations had MRS less than 1.33. Even those with a MRS > 1.33 would only want to annuitize partially: with increasing annuitization MRS would decline, reaching 1.33 before complete annuitization.

The distribution of MRS in Hurd (1987) is based on the distribution of bequeathable wealth and annuity income among the RHS population aged 68-73 in 1979. Since then, there apparently has been increasing annuitization (Auerbach, Kotlikoff and Weil, 1992) due to an increase in average Social Security benefits and higher pensions. Therefore, the average MRS may have declined since 1979, making it less likely that the average retiring worker would want to annuitize.

Empirical implementation

The three main choices are to (1) cash-out a retirement account, (2) maintain it (either leave dormant or roll-over into an IRA), or (3) annuitize it. The utility of each option (c) is related to the set of explanatory factors including the characteristics of the account, the characteristics of the option, and the characteristics of the person/couple, denoted X_{ci} .

$$\Omega_{ci} = \alpha_{0c} + X_{ci}\alpha_{1c} + \delta_i\alpha_{2c} + u_{ic}. \quad [9]$$

Option c is chosen if its utility is greater than the utility of the other available options ($\Omega_{ci} > \Omega_{qi}$, $\forall q \neq c$). The utility of each option is well defined, and the set of options available for each account may adjust to include the options actually reported by the respondent as available for that account; so the number of comparisons may adjust as appropriate. However, as we show below, only 16 respondents with DC plans opt to annuitize, which is too few to support a rich trinomial choice model. We therefore simplify the analysis and only distinguish cash-out from all other options.

As is apparent from the theoretical framework, the key concepts driving workers' pension choices are (1) mortality risk; (2) time rate of preference; (3) risk aversion; (4) liquidity constraints and expectations on future liquidity constraints; and (5) bequest motive. Table 1 lists measures in the HRS that capture these concepts and it shows the direction of their expected effects. The direction of most effects is obvious in light of the life cycle model. A strong bequest motive reduces both desired current consumption and the desire to annuitize; its effect on cash-out propensity is ambiguous.

Table 1. Determinants of pension choice

Concept	Measure	Hypothesized effect
Mortality risk	age sex subjective survival probabilities health/disability status	higher risks increase the propensity to cash out
Time rate of preference	planning horizon	higher rates increase the propensity to cash out
Risk aversion	hypothetical income gamble	stronger risk aversion reduces the propensity to cash out
Liquidity constraints	bequeathable wealth pension wealth (incl. IRA) current income chance of Social Security changing drastically chance of double-digit inflation chance of receiving major assistance chance of giving major assistance health/disability status health insurance coverage out-of-pocket medical expenditures	greater constraints increase the propensity to cash out
Bequest motive	number of children contact frequencies with children expected earnings of children	effect ambiguous

5. Data

Our analysis is based on the 1992, 1994, and 1996 waves of the Health and Retirement Study (HRS). The HRS is a nationally representative sample of persons born in the years 1931-41 and their spouses. At baseline in 1992, there were 7,702 households with 9,824 respondents approximately aged 51-61 and another 2,828 respondents outside the age-eligible range. The HRS oversamples Mexican-Americans, Blacks, and Florida residents, but sampling weights are provided for obtaining population statistics. Relevant topics include health and functional limitations, disability status, retirement plans and status, employment status and job history, income and net worth, health insurance and pension plans, subjective probabilities of survival to older ages, and demographic characteristics.

Table 2 shows the number of age-eligible respondents in the three waves of HRS. Although HRS is said to be a survey of persons aged 51-61 at baseline, it is in fact a survey of persons from the birth cohorts of 1931-41. At initial interview which could have been between April of 1992 and February of 1993, the ages at interview would have ranged from 50 through 62. The average respondent age in HRS waves 1, 2, and 3 was 56, 58, and 60 years, respectively. We use data from all three waves of HRS.

Table 2. Number of respondents

Age	Wave			Total
	1	2	3	
50-51	871	0	0	871
52-53	1,924	821	0	2,745
54-55	1,877	1,735	819	4,431
56-57	1,746	1,696	1,638	5,080
58-59	1,685	1,604	1,607	4,896
60-61	1,628	1,531	1,528	4,687
62-63	95	1,497	1,442	3,034
64-65	0	81	1,417	1,498
Total	9,826	8,965	8,451	27,242

Substantial numbers of people retire or become disabled around those ages, which is confirmed by labor force participation rates (71.9, 64.7, and 56.7 percent), disability rates (8.6, 10.0, and 10.8 percent), and fractions of people that report being retired (7.3, 13.0, and 20.9 percent). The labor force participation rates are very close to CPS-based estimates (Leonesio 1996).

Table 3 shows the percent of the population working at interview data in each of the waves. In this table and in Tables 4, 5 and 6 the categorization is according to a query about labor market status. Subjects were given a list of categories and could give multiple answers. For example, someone who “retired” from a lifetime job, where retirement is defined by the employment policies of the company, but who is working part-time might think of himself both as working and as retired. Table 3 shows a decline in the fraction working with age as would be expected over this age range, and a decline with each wave because of aging on the panel. There is stability across waves holding age constant: for example about 61% of 58 and 59 year-olds were working in each wave. There is a large decline in the percentage working as the cohorts reach their early 60s. At ages 64 and 65 just 30 percent were still working.

Table 3. Percentage working

age	Wave			Total
	1	2	3	
50-51	71.9	.	.	71.9
52-53	72.2	70.5	.	71.7
54-55	68.9	67.3	67.9	68.1
56-57	66.2	64.5	64.7	65.2
58-59	61.2	60.5	61.2	61.0
60-61	54.2	53.0	54.6	54.0
62-63	.	40.4	42.9	42.1
64-65	.	.	29.7	29.7
Total	65.5	58.7	52.9	59.3

Table 4. Percentage retired

age	Wave			Total
	1	2	3	
50-51	3.1	.	.	3.1
52-53	3.7	3.0	.	3.5
54-55	5.8	5.8	5.7	5.8
56-57	8.8	9.6	11.2	9.8
58-59	12.7	13.5	12.3	12.8
60-61	18.8	18.0	21.7	19.5
62-63	.	35.5	36.8	35.6
64-65	.	.	53.6	52.5
Total	9.1	14.9	24.3	15.8

As shown in Table 4 there is an accompanying increase in retirement, and the fraction reporting the status “retired” increases very substantially at the ages for Social Security eligibility.

It should be apparent that there is a difference between retired as measured here and not-in-the-labor force as would be measured in the CPS or even in HRS itself: much higher fractions of the population are not in the labor force than the fractions that are retired according to these self-reports. The explanation is that someone who has never worked or has not worked for many years is unlikely to report his or her labor market status as “retired.”

Table 5. Percentage disabled

age	Wave			Total
	1	2	3	
50-51	7.7	.	.	7.7
52-53	8.7	10.4	.	9.2
54-55	9.5	9.7	11.6	10.0
56-57	9.7	9.7	11.4	10.2
58-59	11.6	12.1	12.8	12.1
60-61	12.1	12.7	12.6	12.5
62-63	.	11.5	12.8	12.1
64-65	.	.	10.5	10.5
Total	10.0	11.0	12.0	10.9

The HRS question about labor market status gives the option “disabled and unable to work.” Table 5 shows the fractions giving that answer. It is apparent that the fraction increases with age until about 62 and then declines. There are two explanations for the decline in the rate of disability: First, as a disabled person reaches normal retirement age he may begin to classify himself as retired, rather than disabled and unable to work, because even were he able to work he might not choose to do so. Second, the mortality rate among those classified as disabled is undoubtedly greater than average, which, by itself, would tend to reduce the fraction classifying themselves as disabled.

Table 6. Percentage unemployed and looking for work; temporarily laid off, on leave; homemaker; other

age	Wave			Total
	1	2	3	
50-51	21.2	.	.	21.2
52-53	19.8	19.5	.	19.7
54-55	20.3	20.8	19.5	20.4
56-57	20.6	19.5	17.9	19.4
58-59	20.7	19.1	19.5	19.8
60-61	22.3	21.4	19.5	21.1
62-63	.	19.8	18.3	19.0
64-65	.	.	18.6	18.6
Total	20.7	20.0	18.8	19.9

Table 6 shows the fraction who are classified in one of a number of other categories. As with the category “disabled” there is some tendency for declining rates with age. For example, among the cohorts of 1931 and 1932 the percent declines from 22.3 to 19.8 to 18.6.

6. Pension measurement in the HRS

Information about pensions is obtained regardless of current work status and includes information on pensions from current and former employers, pensions for which either partner is/was eligible, type of pension (DB, DC),⁵ whether the plan could be settled in the form of a lump sum payment, what was done with the pension when the individual left employment (receive benefits, expect future benefits, cashed out, rolled over to IRA, left to accumulate, converted to an annuity). The survey also includes questions asking whether a spouse will continue to receive payments if the owner of the pension dies. There are questions about military pensions, IRA and Keogh accounts and whether they are converted or cashed out. If the pension or IRA is partially or totally cashed out, there are questions about the amount and how the funds were used, including “bought durables, spent it, saved/invested, paid off debt, rolled into IRA.”

In each of the subsequent waves of HRS, subjects were asked similar questions about pensions from previous employment and, among those working, about pensions on their present job, particularly whether the pensions were DB or DC. Because our main research interest is about the disposition of a pension at job separation we limit our analyses to the disposition between waves of pensions from employment in the previous interview.

⁵ Of course, the questions were not phrased as “defined benefit” pension plans or “defined contribution” pension plans; rather they were asked in terms of the characteristics of the pension that, it was hoped, could be understood by the subject.

Table 7. Pension coverage rates in HRS wave 1

	Freq.	Percent
No pension coverage	2,993	36.2
IRA/Keogh only	817	9.9
Defined benefit only	1,425	17.3
Defined contribution only	970	11.6
Combination of plans	2,055	24.9
Total	8,260	100.0

Table 7 shows pension coverage rates among HRS respondents that were working for pay at the time of the first survey wave. More than two out of three workers were covered by some form of pension plan, and one-fourth of workers had multiple plans. Including multiple coverage, 2,940 (35.6 percent) workers reported that their main employer-sponsored plan was DB and 1,510 (18.3 percent) reported DC, for a total employer-sponsored coverage rate of 53.9 percent. Coverage among the general working population is around 48 percent and 56 percent among full-time workers (GAO 1996), but varies by age. Our rates are, of course, consistent with those computed by others using the HRS (e.g., GAO 1996). Note that they are individual-based and do not account for coverage through a spouse.

Table 8 shows more detail based on current employment in each of the three waves. Holding age constant we see a declining trend in the lack of pension coverage: for example, among those age 56-57, 45.2% had no plan in wave 1 (1992), 43.8% had no plan in wave 2 (1994) and 42.6% had no plan in wave 3 (1996). The other age intervals show the same general trend. Accompanying the fall in the fraction without a plan was a strong increase in the prevalence of DC plans. For example, in the same age interval, 15.3% had a DC plan (only) in wave 1, 20.0% in wave 2 and 20.5% in wave 3. Typically, when workers have both types, the DB plan is the dominant plan. Were we to classify “both” as DB plans we would not see any trend in the fraction with DB plans holding age constant: for example, among 56-57 year-olds 39.5% had DB in wave 1, 36.2% in wave 2 and 36.9% in wave 3.

If we follow the same cohort by reading down a diagonal we can implicitly see the effects of pensions on labor force participation: the fraction with no plan increases and the fraction with a DB plan decreases, especially in the early 60s. For example in the 1931 and 1932 cohorts, 50.1% had no plan in wave 1, 52.6% in wave 2 and 63% in wave 3. Correspondingly, 34.8% had a DB (or both) plan in wave 1, 31.4% in wave 2 and 21.9% in wave 3.

Table 8. Pension plan coverage on current job (percentage distribution)

Age	Pension plan	Survey wave			Total
		1	2	3	
50-51	No plan	43.3	.	.	43.3
	DB	24.6	.	.	24.6
	DC	16.1	.	.	16.1
	Both	16.0	.	.	16.0
52-53	No plan	41.4	43.1	.	41.9
	DB	25.5	29.6	.	26.7
	DC	17.9	15.9	.	17.3
	Both	15.2	11.5	.	14.1
54-55	No plan	44.7	40.9	39.5	42.3
	DB	22.2	30.2	27.8	26.4
	DC	19.2	18.2	21.1	19.2
	Both	13.8	10.7	11.5	12.2
56-57	No plan	45.2	43.8	42.6	43.9
	DB	24.8	27.8	27.4	26.6
	DC	15.3	20.0	20.5	18.5
	Both	14.7	8.4	9.5	10.9
58-59	No plan	49.4	45.1	46.4	47.0
	DB	22.8	27.7	23.3	24.6
	DC	16.6	17.9	21.2	18.5
	Both	11.2	9.3	9.1	9.9
60-61	No plan	50.1	49.8	47.1	49.0
	DB	23.1	26.6	21.6	23.7
	DC	15.2	17.3	22.0	18.1
	Both	11.7	6.3	9.2	9.2
62-63	No plan	.	52.6	54.9	53.8
	DB	.	25.7	18.7	22.2
	DC	.	16.1	19.6	17.8
	Both	.	5.7	6.7	6.2
64-65	No plan	.	.	63.0	63.0
	DB	.	.	16.8	16.8
	DC	.	.	15.0	15.0
	Both	.	.	5.1	5.1
Total	No plan	45.5	45.3	47.7	46.1
	DB	23.8	28.1	23.2	25.0
	DC	16.9	17.9	20.3	18.2
	Both	13.8	8.7	8.8	10.7

Reporting error

It is likely that there will be differences in the rates of cash-out by type of plan. For example, DB plans are defined by their pension benefit level which may lead more workers to take the annuity than the lump sum (even in the cases where a lump sum is offered). Furthermore, because of the differential change in the prevalence of DB and DC plans, to understand the future course of cash-out we want to analyze them

separately. For this reason we digress to look at evidence about the accuracy of reporting of plan type. We do this by studying the rate of discrepancy on reported plan type between the waves.

Table 9. Wave-to-wave concordance of reported plan types (number of cases)

Type reported in previous wave	Type reported in current wave					Total
	DB	DC	Both	DK	Refused	
DB	1,650	367	67	21	1	2,106
DC	298	905	48	23	1	1,275
Both	55	40	18	2	0	115
DK	46	21	1	6	1	75
Refused	1	0	0	1	0	2
Total	2,050	1,333	134	53	3	3,573

Table 9 shows the distribution of pension type as reported in the follow-up wave among those who reported *there had been no change in their plan type* by the reported type in the previous wave. In principle there should be complete concordance in the reports.⁶ The table combines data on concordance between waves 1 and 2 with data on concordance between waves 2 and 3. Thus 2,106 reported having a DB plan with their present employer in wave 1 or wave 2 and in the following wave reported no change in plan type. Yet, just 1,650 reported in wave 2 or wave 3 that the plan type was a DB pension (the same as in wave 1 or 2). This yields a concordance rate of just 78 percent. Among those who reported a DC plan in the baseline wave just 905 reported a DC plan in the following wave for a concordance rate of 71 percent. Thus neither types of reports in the baseline showed a good deal of stability.

Table 10. Concordance of reported plan types (number of cases): after disposition of plan

Reported previous wave	Type of plan that was disposed					total
	DB	DC	both	DK	refused	
DB	603	126	23	6	1	759
DC	275	279	38	3	0	595
both	23	10	2	0	0	35
DK	11	9	0	0	0	20
refused	2	1	0	0	0	3
total	914	425	63	9	1	1,412

Perhaps more pertinent for this study is the accuracy of reported plan type among those who disposed of a plan. Many workers in their early 50s who are years away from retirement may not have good information about their plan type, but it might not be important because the plan type may not enter their decision making. Among workers separated from a job with a pension plan, 16 percent never mentioned being covered by a pension plan. For the others, Table 10 reports concordance of plan type among those

⁶ Even with complete concordance, we cannot be certain that subjects accurately know the plan type: a worker could persistently make the same classification error in each wave.

who disposed of a plan between waves. The classification in the baseline wave is the same as before, but now the classification in the following wave is according to the type of plan the subject reported disposing of. If it is simply lack of interest that caused the rather low rates of concordance in Table 9, we would expect the rate to increase because those actually disposing of pensions should have known more about them in the prior wave.

While in Table 10 the concordance rate is about the same for DB plans (79 percent) as in Table 9, it is considerably lower for DC plans (47 percent). Apparently a number of workers believed they had DC plans, but on disposing of them found them to be DB plans. We will assume the information becomes more accurate following disposition, so our classification method will be based on the report following disposition (when that information is available), rather than the report in the previous wave.

We conclude that there is considerable reporting error about plan type (also see Mitchell, 1988). Even our rather low concordance is an upper limit because concordance does not necessarily imply accurate reporting: subjects may persistently misreport the type. If we take the reports following disposition to be accurate, many who believe they have DC plans are mistaken.

There is little we can do about the misreporting. In the remainder of this report we will speak of the classification without the qualification that it may be in error, but the interpretation of the results should be done keeping in mind the possible extent of misclassification of pension type.

Table 11. Availability of lump sum distribution option, wave 1
(excluding DK/refused and missing)
(counts and column percents)

	Type of current plan						Total	
	DB		DC		Both			
Yes	1063	40.57	2116	84.57	92	65.71	3271	62.16
Partial	85	3.24	128	5.12	4	2.86	217	4.12
No	1472	56.18	258	10.31	44	31.43	1774	33.71
Total	2620	100.00	2502	100.00	140	100.00	5262	100.00

The HRS respondents were asked whether their pension allowed a lump sum distribution. Table 11 shows the distribution of responses among workers in wave 1. The majority of DB plans do not allow lump sum distributions (56 percent). About 90 percent of DC plans allow full or partial lump sum distributions. If we want to study the determinants of choices workers would make were they free to choose, we need to know the choice set that is available. Provided the reports are accurate, we would need to link the pension that was disposed of with the reported characteristics in the previous wave, in particular whether the pension allowed a lump sum distribution. However, the question sequence that

asks about pension disposition only inquires about one plan and does not link that pension to a particular pension from the preceding wave, so that if someone has rights to more than one pension, we are not sure about the characteristics of the pension that was disposed of. Much of our analysis is restricted to the dispositions of plans for which the bearer had the option of a lump sum distribution. We base this classification on whether *any* plan reported by the respondent in the previous wave featured an LSD option. While not perfect, we believe it is the best that can be done with the HRS data.

Table 12. Disposition of pensions for which a lump sum distribution was reportedly not available

	frequency	percent
cash out	40	8.46
roll into ira	24	5.07
accumulate	47	9.94
annuitize	8	1.69
future benefits	115	24.31
draw benefits	239	50.53
total	473	100.00

Note: shaded cells show lump-sum distributions

We performed an informal validity check on the accuracy of the reports about whether a pension allowed a lump sum distribution by studying the rate of cash-out among those who said in a baseline interview that their pension did not allow a lump sum distribution. Table 12 shows that about 15 percent of such workers said that in the following wave they did, in fact, have a lump sum distribution (cash-out, roll-over into an IRA, or annuitization). This rate raises a compelling question about the accuracy of this reported pension characteristic.

Cash-out between waves

Figure 1 above shows the potential choice-set and the decision tree for pension dispositions. For example, someone with a DB plan may not have a lump sum distribution option, and could then only choose between drawing benefits immediately or postponing benefits to the future. Someone with a lump sum distribution option could draw benefits, postpone benefits, take a lump sum distribution or in a DC plan allow the principal to accumulate. If someone takes a lump sum distribution he could cash out, roll the distribution into an IRA, or annuitize.

Two points can be made about a lump sum distribution. First, a lump sum distribution does not necessarily harm retirement income security: putting the distribution into an IRA postpones a decision about the eventual use of the money, while annuitizing the distribution meets the goal of providing retirement income security. Second, even a cash-out need not harm the goal: a cash-out takes the money

out of the tax-advantaged sector, but it may be put into other assets or it could be put into consumer durables in which case it is partially saved. Finally it may be consumed, and it is only in this case that at the ages observed in the HRS, it would not contribute to the goal of retirement income security.

Table 13. Summary of reported pension plan dispositions
(counts and column percents)

Disposition	DB		DC		Total	
cashed out	129	11.72	91	17.70	220	13.62
roll into IRA	29	2.63	145	28.21	174	10.77
leave to accumulate			192	37.35	192	11.89
annuitize			16	3.11	16	0.99
expect future benefits	326	29.61			326	20.19
draw current benefits	562	51.04			562	34.80
lost	36	3.27	3	0.58	39	2.41
other	19	1.73	67	13.04	86	5.33
Total	1,101	100.00	514	100.00	1,615	100.00

Table 13 shows reported dispositions of pensions between waves 1 and 2 and waves 2 and 3.

“Dispositions” are responses to a direct question about whether a subject did something with a pension right since the previous wave. Our analysis only considers pension dispositions associated with job separations. In other words, workers who remained on the same job as in the prior wave could have disposed of a pension right from a previous job, but those dispositions are excluded from the analysis. The table shows that there were a total of 1,615 pension plan dispositions. Of them, most (about 35 percent) were disposed of by workers with DB plans beginning to draw benefits. The second largest category is postponement of benefits from DB plans (20 percent). This could happen when a worker changes jobs and is not yet age-eligible for the pension from the previous job, or where there is a reduction in pension benefits related to continued earnings. About 25 percent took a lump sum distribution, which is the sum of cash-out, roll over into an IRA, and annuitize.

Among the $220+174+16=410$ workers who took a lump sum distribution, 220 (54 percent) cashed out. This rate is very similar to those reported by Yakoboski (1997), who found rates of 54 and 48 percent among 50-59 years olds in the 1993 and 1996 Hewitt data, respectively. The HRS would be most comparable with the 1993 data.

Because many workers are constrained in their choices by provisions of the plan, we cannot infer that the observed rate of cash-out is what workers would choose were they unconstrained. We can get a better idea of the unconstrained choice by restricting the analysis to workers that had the option of a lump sum distribution. Table 14 shows the disposition of pension rights of those DB plan holders who indicated in the previous survey wave that (at least one of) their pension plans offered an LSD option, plus the

dispositions of entitlements of all DC plan holders. As indicated above, we question the accuracy of respondent reports of LSD options, and Table 14 takes what we believe is the best assessment of workers with an LSD option. It excludes workers whose rights were lost (presumably due to non-vesting) or disposed of in “other” ways.

Table 14. Dispositions of pensions with LSD option
(counts and column percents)

DB plans			DC plans		
cashed out	100	16.42	cashed out	91	20.50
roll into IRA	24	3.94	maintain	337	75.90
future benefits	190	31.20	annuitize	16	3.60
draw benefits	295	48.44	total	444	100.00
total	609	100.00			

For preservation of retirement income security, there is no substantive difference between DC plans were “left to accumulate” with the previous employer and “rolled over into an IRA.” Table 14 therefore combines them in the “maintain” category. *The cash-out rate among DB plan holders with an LSD option is thus just over 16 percent, among DC plan holders just over 20 percent, for an overall rate of 18 percent.* Previous research on this topic and resulting media coverage was restricted overwhelmingly to plans that were settled with a lump sum payment. We believe that the 18 percent cash-out rate is a more meaningful measure of the extent to which pension entitlements are cashed out than the 54 percent that follows from plans that were settled in a lump sum payment.

Table 15. Plan value by disposition (1994 dollars)

DB plans			DC plans		
	mean	std. dev.		mean	std. dev.
cashed out	72,000	113,000	cashed out	14,000	66,000
roll into IRA	58,000	73,000	maintain	49,000	85,000
future benefits	184,000	251,000	annuitize	79,000	113,000
draw benefits	284,000	430,000	total	41,000	83,000
total	213,000	354,000			

As shown in Table 15, plans that are cashed out tend to have much lower value than other plans. The average value of DB plans among those who leave their job is \$213,000; those that are cashed out average just one-third of that value. DC plans tend to be much smaller at an average of \$41,000; cashed-out plans are again valued at approximately one-third of that value. The 18 percent of plans that are cashed out therefore account for only 6.3 percent of pension plan dollars.

For plans that are cashed out, the HRS asks how the money was spent. Multiple answers were accepted, but very few respondents gave more than one category. Taking only the first category that was mentioned

into account, 6 percent indicated that the money was spent on durable consumption goods; 60 percent had invested or saved the money; 15 percent had used it to pay off debt; and 18 percent had “spent it.” Strictly speaking, paying off debt is a form of saving, but for some fraction of respondents, the money may have merely served to relax liquidity constraints and was essentially consumed. Still, it appears that about two-thirds of cashed-out plan balances may in fact have remained available for consumption during retirement. *The fraction of pension plan dollars that is consumed shortly after job separation is thus only around 2 percent.*

Cash-out rates as a function of worker characteristics

We now present breakdowns of plan dispositions by various worker characteristics. We found very little variation of cash-out rates by those characteristics for DB plans, quite possibly due to measurement error in the availability of a LSD option. The analysis reported below is therefore restricted to DC plans. Table 16 shows the percentage distribution of the disposition of pensions by a number of worker characteristics.

When workers leave a job, the disposition of a pension is likely to depend on the reason for the job separation. For example, if a job change is to a better-paying job the worker may allow the pension on the previous job to accumulate as he will not have an immediate need for it. If a worker is retiring he may decide to draw benefits in the case of a DB plan or to annuitize in the case of a DC plan. We find higher cash-out rates among individuals who continued working or became disabled than among those who retired or became unemployed. The reason for this pattern is not immediately clear. Perhaps the onset of disability triggers a need for expenditures associated with the disability. Also, the 10 percent penalty for withdrawal prior to age 59½ does not apply in case of disability. Conversion of DC balances into an annuity is a relatively rare event, but, as expected, mostly found among those who retired.

Table 16. Disposition of DC plans by worker characteristics
(row percents; total count in last column)

	cash out	maintain	annuitize	N
Subsequent work status				
Working	24.73	73.66	1.61	186
Retired	15.06	77.11	7.83	166
Disabled	31.58	65.79	2.63	38
Unemployed	19.15	78.72	2.13	47
Race				
White	18.53	78.20	3.27	367
Black	34.48	60.34	5.17	58
Other	15.79	78.95	5.26	19
Sex				
Female	26.91	71.30	1.79	223
Male	14.03	80.54	5.43	221
Education				
high school drop-out	28.79	66.67	4.55	66
high school graduate	23.28	73.54	3.17	189
some college	15.38	83.33	1.28	78
college graduate	14.15	80.19	5.66	106
Age category				
age <50	31.58	68.42	0.00	19
age 50-54	30.56	68.06	1.39	72
age 55-59	16.15	82.61	1.24	161
age 60-64	18.42	75.66	5.92	152
age >60	23.08	66.67	10.26	39
Marital status				
Married	19.60	76.14	4.26	352
Separated/divorced	28.00	72.00	0.00	50
Widowed	18.52	77.78	3.70	27
never married	20.00	80.00	0.00	15
Wealth				
bottom quartile	34.59	63.16	2.26	133
second and third quartiles	13.27	82.94	3.79	211
top quartile	17.00	78.00	5.00	100
Total	20.50	75.90	3.60	444

Table 16. Disposition of DC plans by worker characteristics (continued)
(row percents; total count in last column)

	cash out	maintain	annuitize	N
Probability of surviving to age 75				
$p \leq .5$	26.85	71.81	1.34	149
$.5 < p < .9$	17.65	79.83	2.52	119
$p \geq .9$	16.13	79.84	4.03	124
Probability of surviving to age 85				
$p \leq .2$	24.47	72.34	3.19	94
$.2 < p < .75$	19.57	77.17	3.26	184
$p \geq .75$	16.51	80.73	2.75	109
Financial planning horizon				
a few months	30.00	65.71	4.29	70
1 year	29.79	68.09	2.13	47
a few years	16.43	80.00	3.57	140
5-10 years	17.83	81.40	0.78	129
>10 years	29.41	64.71	5.88	34
Probability that Social Security will become more generous				
probably more generous	22.16	74.43	3.41	176
probably less generous	26.13	70.27	3.60	111
most likely less generous	16.54	81.95	1.50	133
Probability of double-digit inflation				
$p \leq .25$	22.34	71.28	6.38	94
$.25 < p < .7$	21.58	75.26	3.16	190
$p \geq .7$	19.42	80.58	0.00	103
Self-reported health status				
poor	38.10	57.14	4.76	21
fair	23.40	68.09	8.51	47
good	27.27	69.42	3.31	121
very good	15.09	81.76	3.14	159
excellent	15.62	82.29	2.08	96
Disability status				
not disabled	18.48	78.01	3.52	341
disabled	27.18	68.93	3.88	103
Health insurance coverage				
not covered	36.21	62.07	1.72	58
covered	18.13	77.98	3.89	386
Total	20.50	75.90	3.60	444

We see that at job change, blacks are much more likely to cash out than whites or other races. Females are more likely than males, and the less educated more often choose to cash out. The pattern by age shows that before about age 55 a rather large fraction cash out. After age 55 the rate drops, and there is an increase in the rate of annuitization. Particularly after the age of 65, the rate at which a decision is postponed declines. The results suggest that if we want to learn about the ultimate disposition of pensions we need to follow the dormant pension after job separation until the worker reaches his late 60s, possibly even until age 71. There was no evidence of a threshold effect around age 59½, after which the early withdrawal penalty no longer applies. As stated above, Chang (1996) found that the introduction of the tax penalty in 1986 reduced the probability of a cash-out by 2 to 4 percentage points. Relative to a cash-out rate among plans that are settled with a lump sum distribution of over 50 percent, this is not a large reduction, and it is not surprising that it does not show up in our relatively small sample.

Those who are divorced or separated have a higher cash-out rate. This is consistent with a liquidity constraint: we know from other studies that this group has a particularly low level of assets. The cash-out rate is higher in the bottom quartile of the non-pension wealth distribution than among wealthier individuals, which is consistent with liquidity constraints that are faced.

Consider the cash-out rate as a function of the subjective probability of survival to age 75 (next panel). Theory suggests that those with a low probability of survival should have higher consumption, and that those with a high probability of survival should favor annuitization. Both effects show in the table: among those with a survival probability of 0.50 or less, the rate of cash-out was about 27% compared with a rate of just 16% among those with a subjective probability of survival of 0.90 or greater. The results are similar when the classification is according to the probability of survival to age 85.

The HRS queries subjects about their financial planning horizon, and the answer has been taken to give information about the time rate of discount. The life-cycle theory predicts that those with a high time rate of discount will consume at a higher rate than those with a low time rate of discount. The table has results that are approximately consistent with this interpretation: those with a planning horizon of a few months to a year had a cash-out rate of about 30% whereas as those with a planning horizon of a few years to 10 years had a cash-out rate of 16-17 percent. We have no explanation for the higher cash-out rate among those with a planning horizon of more than 10 years (although it could simply be due to the small sample size).

Those who think the Social Security system will become less generous had lower cash-out rates, consistent with their having a higher personal saving rate to compensate. Those who believe it unlikely

that there will be double-digit inflation over the next ten years or so were more likely to annuitize. Indeed their purchase is unwise if the rate of inflation increases substantially, because individually purchased annuities are not indexed.

Health status could be related to the rate of cashing out in at least three ways: those in worse health may require expenditures for health care; those in worse health typically have fewer non-pension savings so they may be liquidity constrained; those in worse health may believe they have higher mortality risk, and according to the life-cycle model they should consume at a higher rate. We see that the cash-out rate does vary substantially with self-assessed health status: the rate was 38% among those in poor health and just 15-16 percent among those in very good or excellent health.

Those who were disabled had a high rate of cashing out. Those not covered by health insurance on their previous job cashed out at about twice the rate of those who were covered. This difference probably reflects both differing requirements for cash to cover medical expenses and differing levels of other assets.⁷

These results, while suggestive, do not hold constant a number of covariates that may have an influence on the probability of cashing out. Table 16 shows estimates of the determinants of cashing out based on probit estimation. Columns 1 and 3 pool all DC plans with those DB plans for which the worker indicated in the previous survey wave that (at least one of) his plans offers the option of a lump sum settlement; columns 2 and 4 restrict the universe to DC plans. For each there are two specifications: one includes the log value of the pension plan and the other does not.

⁷ Those with health insurance on the job typically have better, higher paying jobs and therefore, have greater personal assets.

Table 17. Probability of cashing out based on probit estimation

	DB+DC	DC	DB+DC	DC
Constant	.7708 (.6837)	.0948 (.9730)	2.8563 *** (.7286)	1.7852 * (1.0191)
Age	-.0167 (.0111)	.0027 (.0162)	-.0099 (.0119)	.0161 (.0179)
Male	-.1614 (.1004)	-.3771 ** (.1660)	.0331 (.1118)	-.2193 (.1832)
Black	.1969 (.1424)	.3439 (.2117)	.2459 (.1660)	.3752 (.2454)
education < high school	-.0067 (.1477)	.0721 (.2261)	.0372 (.1653)	.1660 (.2755)
education > high school	-.2248 ** (.1034)	-.1823 (.1655)	-.0615 (.1124)	.0028 (.1876)
log(wealth)	-.0269 (.0208)	-.0264 (.0292)	.0001 (.0210)	.0072 (.0347)
prob(survive to 85) = 0	.2432 (.1603)	.1993 (.2521)	.3056 * (.1718)	.2617 (.2786)
plans few months ahead	.0944 (.1423)	.1985 (.1928)	-.0931 (.1627)	.0288 (.2184)
plans year ahead	.1671 (.1545)	.3867 * (.2281)	.0905 (.1735)	.3770 (.2714)
health status (1-5, 5=best)	-.0415 (.0504)	-.1468 * (.0817)	-.0346 (.0555)	-.1503 * (.0879)
covered by health insurance	-.2601 * (.1520)	-.4806 ** (.1991)	-.1000 (.1595)	-.3292 (.2075)
working	.1506 (.1144)	.4202 ** (.1829)	-.0763 (.1225)	.3289 * (.1899)
disabled	.0776 (.1837)	.2238 (.2625)	.0065 (.2022)	.2209 (.2668)
log(plan value)			-.2897 *** (.0283)	-.3280 *** (.0524)
missing plan value			-.4161 *** (.1448)	-.1606 (.2683)
ln-L	-476.19	-200.91	-416.40	-172.52

Note: standard errors in parentheses; *** means significant at 0.01; ** at 0.05; * at 0.10

We first discuss the specification of the probit for DC plans that does not include plan value in column 2, and compare the results with what we found in the simple cross-tabulations of Table 15. The sample size is small, just 444 cases, so we have attempted to limit the model's number of degrees of freedom. Several significant coefficients arise, and the pattern of effects is the same as that suggested by the cross-tabulations. For example, males have lower cash-out rates than females. Blacks have higher, but not significantly higher rates of cash-out than whites and other races. Increasing education reduces the rate although the effect is not significant. Individuals with higher wealth holdings are less likely to cash out. Those who report very low chances of surviving into old age are more likely to cash out than those whose longevity outlook is more optimistic. Someone who plans just a year ahead as opposed to more than a year is more likely to cash out. Poor health is associated with an increased probability of cashing out.

When plan value is added to the probit specification for DC plans (column 4), the overall pattern is about the same, but in many cases not significant even at the 0.10 level. Of particular note is health insurance coverage: adding plan value reduced the coefficient by 32 percent and eliminated its significance (even though the standard deviation remained essentially unchanged). This change reflects the positive correlation between all types of benefits: jobs with health insurance tend to have high pension levels.

The coefficient on the logarithm of plan value itself is large and significant, and confirms previous findings that large pensions tend not to be cashed out.

We have included the results that combine DB and DC, but we will not spend much effort discussing them because of the prevalence of restrictions on cashing out DB plans. A good example of the restriction is the effect of health status. In the combined results health has no effect on the probability of cashing out whereas it has strong effects on the DC results.

7. Conclusion

A key insight of this report is that cash-out rates are more meaningful when based on the universe of pension plan holders that have the *option* of taking a lump sum distribution rather than just those who actually exercise that option. Thus formulated, we find cash-out rates that are far lower than reported in previous research. Figure 3 summarizes pension dispositions in percentages of the number of plans with an LSD option. Figure 4 does the same, weighted by plan value.

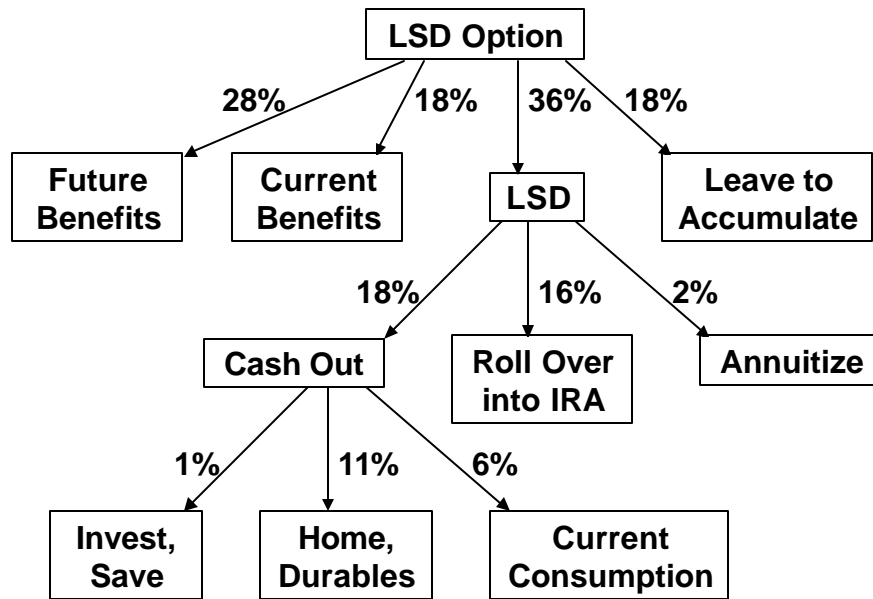


Figure 3. Pension plan dispositions
(absolute percentages of plans with an LSD option)

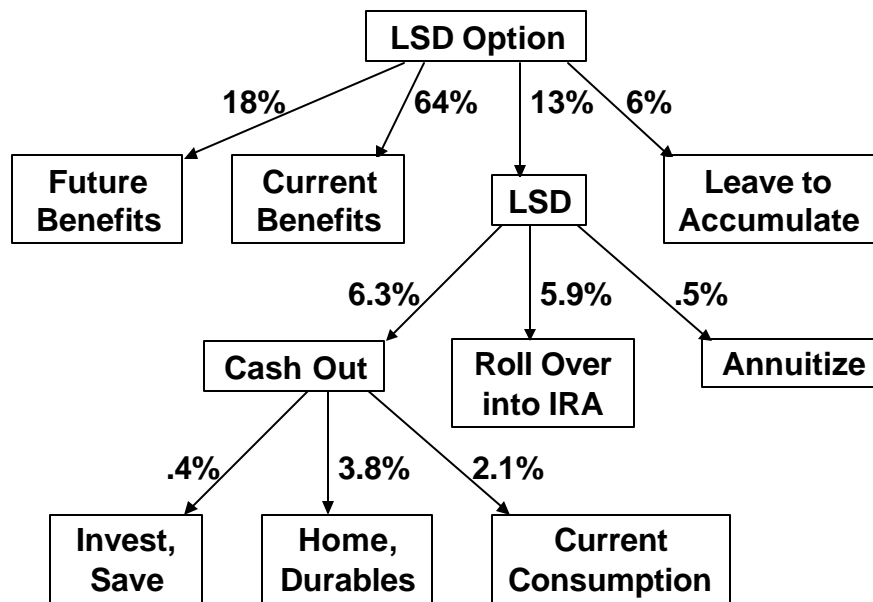


Figure 4. Pension plan dispositions, weighted by plan value
(absolute percentages of plans with an LSD option)

Most pension plans result in a current or future benefit flow or are left to accumulate with the previous employer; only 36 percent is settled with a lump sum distribution. Half of these, or 18 percent of all plans with an LSD option, are cashed out.⁸ Much of the cash went into investments, savings, home purchases, or other durable consumption goods. Only 6 percent of plans with an LSD option ended up being spent on current consumption. (Figures 3 and 4 combine the “spent it” and “paid off debt” responses into “current consumption.”)

Figure 4 shows that the overwhelming majority of pension plan dollars is preserved for retirement. This contrasts sharply with such reports as in *The Wall Street Journal* of December 4, 1997. It stated that “60 percent of departing employees’ retirement money goes toward such things as credit-card bills, home purchases and other expenditures, ...” The reporting journalist confused number of plans with dollar amounts and failed to recognize that the EBRI report upon which the article was based (Issue Brief 188 of August 1997), was restricted to plans that resulted in a lump sum distribution. We find that only 6.3 percent is cashed out, and just 2.1 percent is spent on current consumption or used to pay off debt.

Among our findings is that cash-out rates are higher among individuals who expect to live shorter than others of their age. In other words, we find evidence of adverse selection: those who remain in the pool of (future) annuitants will predominantly enjoy above-average lifespans. The magnitude of this selection, however, appears very mild.

We conclude that, among workers that are within roughly ten years of retirement, only a small fraction of pension plan dollars is consumed immediately after job separation, and that the vast majority is preserved for retirement income security. For this cohort, public policy appears to be quite effective, and our study provides little or no scientific basis for proposals to outlaw cash-outs. A concern remains for individuals with relatively low incomes. We found that cash-out rates were highest for plans with small values and for individuals with little wealth holdings, i.e., cash-outs may erode the retirement income for low-income households. This group tends to have very low wealth holdings, possibly because Social Security forces them to save more than they consider optimal. Their cash-out behavior is consistent with this argument, but it raises a moral hazard issue. If it results in greater public safety net outlays later in life, such as on Supplemental Security Income, then policy makers may want to consider curbs on the ability to cash out

⁸ Above we reported that 54 percent of plans that resulted in a lump sum distribution are cashed out. The discrepancy is due to respondent misreporting. The 54 percent follows from all dispositions that involved an LSD; Figures 3 and 4 exclude DB plans for which the respondent indicated that no LSD option existed. As shown in Table 12, many respondents misreport the availability of an LSD.

pensions. A study into the long term consequences of cash-outs for low income workers and their surviving spouses can shed light on this potential risk.

It is not clear whether the overwhelming majority of pension dollars is also preserved for younger cohorts. We found a higher cash-out rate among DC plans, which are more likely to be held by younger cohorts. More importantly, DB plans offer no protection against inflation after job separation, so that younger cohorts, who are farther from retirement, may be more likely to take a lump sum distribution. This may well result in higher cash-out rates than those that we found for the 1931-41 HRS cohort. We therefore recommend that future research focus on long-term consequences of cash-out for low-income workers and on younger cohorts.

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