THREE ESSAYS ON THE DISPOSITION OF EMPLOYER-SPONSORED
RETIREMENT PLAN BALANCES

BY

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DISSERTATION

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Abstract

This thesis investigates why, in spite of the high tax and opportunity costs, a substantial fraction of workers withdraw money from their employer-sponsored retirement accounts upon leaving a job. I employ three national surveys–the National Longitudinal Survey of Youth 1979 (NLSY79), the Survey of Consumer Finances (SCF) and the Survey of Income and Program Participation (SIPP)–to evaluate explanations for this behavior.

Often attributed to poor decision-making, withdrawals from employer-sponsored plans may in fact serve as an important mechanism for liquidity-constrained workers to smooth consumption in response to income shocks. Results from the NLSY79 suggest that withdrawals do appear to be driven largely by need, as workers who faced jobless spells upon separation as well as those with low holdings of liquid assets, and poor access to consumer credit markets, were significantly more likely to take some money from their retirement plans when leaving an employer. Yet there was little evidence to support the hypothesis that workers who suffered an adverse job separation were more likely to withdraw money from their plans if they were also liquidity constrained.

The second chapter estimates the tax sensitivity of withdrawal decisions using estimates of effective federal and state marginal tax rates generated with the NBER Taxsim program. Estimates reveal that, depending on the tax price measure used, a one percent increase in the marginal tax rate increased the probability that workers preserved the tax-deferred status of the money in their retirement plans between 10 and 30 percentage points. State-level penalties for early withdrawals were also found to be an effective policy instrument for deterring cash outs among workers under age 55.

In the third chapter, I take advantage of measures of savings goals and habits, as well as more specific information on the use of cash settlements, found in the SCF to further investigate behavioral explanations for disposition of employer-sponsored plans. Workers who reported credit constraints, a short planning horizon, not saving primarily for retirement and a major future expense for which they had not yet begun saving were significantly more likely to take money from their plans.

Meinen Eltern in Dankbarkeit gewidmet.

In Memory of McLaren.

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Chapter 1

Introduction

This dissertation investigates why, in spite of high tax and opportunity costs, a substantial fraction of workers withdraw money from their employer-sponsored retirement accounts when leaving a job. For many workers, this cost can run as high as 30 to 40 percent of their distribution. Because of these costs, cash outs are often regarded as irrational or poor decisions by workers.

I use three national data sets to gain three different perspectives on this issue. In the first chapter, I use the National Longitudinal Survey of Youth (NLSY) to investigate the influence of income risk and liquidity constraints on the withdrawal decision. In the second chapter, I use the Survey of Consumer Finances to look at how households' financial attitudes, preferences and other expectations are related to the cash out decision. Lastly, with data from the Survey of Income and Program Participation, I analyze the effect of tax prices on the likelihood that workers take money from their plan.

The aim of my first chapter is to explore whether some combination of income risk and liquidity constraints can account for the high cash out rate. Cash outs might be justified, for instance, if workers have both a need for liquidity, due for instance to an income shock associated with the job separation itself, and lack the liquid assets necessary to meet that need.

I find that workers who have not secured another job at separation are significantly more likely to take money from their plans, as are those with meager liquid assets holdings, poor access to credit and gaps in their health insurance coverage. These findings suggest that cash outs may be driven more by legitimate need, and less by frivolous spending, than

commonly thought. The strong association of cash outs with uncertain job status at separation is particularly troubling, given the high proportion of workers who do not immediately transition to another job upon separation.

However, to test my main hypothesis, namely that cash outs are driven largely by liquidity-constrained workers attempting to smooth consumption in response to an income shock, I estimate the interaction effect between job status at separation and liquidity constraints. I do not find conclusive evidence that this interaction effect is strongly positive, as one would expect to find if the above hypothesis held true. While the absence of a positive interaction effect may be due to some data limitations, it may also suggest that precautionary motives play a role in the cash out decision; in other words, workers may be using the opportunity to convert their retirement savings into more liquid asset holdings.

In addition, I test how responsive workers are to the tax price by taking advantage of the fact that workers who are left jobless earlier in the calendar year are more likely to record lower earnings for that tax year compared to those who were left jobless late in the year, whose incomes have been largely determined for that tax year. Here I find a significant positive interaction between early separations and not having another job lined up–evidence that even workers who are initially unemployed at separation are responding to tax price incentives.

In my second chapter, I use the Survey of Income and Program Participation (SIPP) and TAXSIM program, provided by the National Bureau of Economic Research (NBER), to more rigorously analyze the tax price sensitivity of the cash out decision. Using methods to that address the endogeneity of the tax price, I find that the tax price significantly increases the likelihood that workers preserve the tax-deferred status of their pension savings. In the first case I use the first-dollar tax rate–that is, the rate net of any distribution taken–as a proxy for the actual tax price. I also use an instrumental variables approach, using the first-dollar rate as an instrument for the actual rate. Another instrument that I employ is the quarter of separation, the rationale being that, again,

workers who leave a job should be more likely to record lower earnings for that tax year. The quarter of separation is a valid instrument in that it is unlikely to be correlated with the error term in the withdrawal equation; however, it is a rather weak instrument. The first-dollar rate, on the other hand, is a strong instrument but its validity in terms of being uncorrelated with the error term is more questionable.

I also cull information on state-level early withdrawal penalties to separately estimate their effect on the probability that workers preserve the tax-deferred status of their retirement savings. Even controlling for the tax price, the existence of a state level penalty has a significant deterrent effect, which suggests some scope for states to influence the disposition of retirement plan balances if they see this as a desirably policy aim.

The third chapter uses the Survey of Consumer Finances (SCF) to explore how retirement plan participants' heterogeneous financial attitudes and behaviors are reflected in the disposition of their employer-sponsored plans at job separation. The dramatic shift from defined benefit (DB) to defined contribution (DC) plans offered by employers has also entailed an shift in the responsibility for plan management from employer to employee. In a sense, participants in DC plans have had to become their own financial planners. There is some concern, however, that some participants are not in a position to cope well with the increased decision-making burden. Because DC plans have generally allowed participants to take money from their plans at job separation, whereas DB plans generally have not, these participants are at risk of depleting their retirement savings before they ever reach retirement. This risk has been particularly high in the absence, until recently, of default options that encourage participants to either keep the money in their former employer's plan to accumulate or to transfer the money to another tax-deferred account.

Cluster analysis is used to generate four distinct segments, or financial personality types, of retirement plan participants. These segments range from "successful planners," who exhibit desirable financial attitudes and behaviors, to "acute strugglers," whose attitudes and behaviors do not comport well with the model of sound plan management. Some of

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the key dimension along which these types differ include their financial planning horizon, financial risk tolerance, savings goals and habits, credit card behaviors and effort put into researching financial decisions.

The results point to segments of the participant population at considerably higher risk for depleting at least some portion of their retirement savings at job separation. Further, analysis of the specific uses to which these withdrawals are put reveal that current consumption and the need to pay off debt are driving these cash outs. An encouraging finding is a majority of participants exhibit fairly desirable financial attitudes and behaviors and cash out at a much lower rate.

Another result of interest is the effect of participants' subjective expectations of future movements in real income. Not surprisingly, those anticipating real income growth are significantly less likely to cash out. Encouragingly, however, those expecting a decline in real income appear not to be giving in to the temptation to use their settlements for current consumption. The presence of borrowing constraints–a measure derived using a nearly identical set of questions to those found in the NLSY–failed to yield any significant effects in this study. Part of the reason for this may lie in the richer set of preference as well as other credit-related variables included in the models for this study.

The findings in this chapter highlight the independent effect of financial attitudes and behaviors on the cash out decision, even when controlling for the typical determinants of life-cycle savings, income uncertainty, asset holdings and subjective expectations. They also raise questions about how well the "struggler" types are served by DC plans if they are likely to deplete a substantial portion of their plan assets before reaching retirement. Lastly, this chapter points to the need to identify these at-risk participants and to move them, through financial and retirement planning education, from "strugglers to "successful planners." At-risk participants may also benefit considerably from appropriate default options for the disposition of their plans at job separation.

In sum, this dissertation updates and expands the current state of knowledge on what

workers do with their employer-sponsored retirement plans when leaving a job. It provides a more nuanced picture of who is cashing out and why. In particular, it illuminates a number of factors that have received scant, or no, attention in the previous literature. First, it sheds new light on the extent to which cash outs are driven by financial distress and adverse job separations. Second, it provides evidence, using both a tax price analysis and a novel source of variation based on the quarter of job separation, that workers are indeed rather sensitive to the tax price of a cash out. Lastly, it identifies attitudinal and behavioral types who are particularly vulnerable to depleting their retirement savings and, further for what purpose the are most likely to cash out. The results from this research are timely, given the recent turmoil in the financial and labor markets, and relevant to what appears to a looming crisis in retirement income security.

Chapter 2

The Effect of Credit Constraints and Income Risk on Early Withdrawals

2.1 Introduction

Previous research has consistently found that a substantial fraction of workers take money from their employer-sponsored retirement savings plans (ESPs) when changing jobs. This behavior has been difficult to reconcile, however, with the high price workers pay to take early withdrawals from these plans. In addition to the federal, and possibly state, income taxes due on any distribution from an ESP, departing workers under the age of 55 incur a ten percent excise tax on distributions not transferred to another tax-qualified plan within 60 days. Moreover, a withholding tax on distributions, introduced in 1993, means that workers will initially receive only 80 percent of the amount withdrawn, with the remaining 20 percent serving as a down payment on their future tax obligation.[1] Yet the most significant cost workers are likely to incur by taking an early withdrawal is the years of forgone tax-deferred earnings.

Why so many workers take money from their ESPs when leaving a job–in spite of the cost–is still not well understood. One view is that these workers are making poor decisions, resulting from a lack of willpower, a lack of knowledge, or both. From a behavioral perspective, for instance, the opportunity to receive a large lump-sum payout when leaving a job represents a temptation difficult for many workers to resist. It is on this view, presumably, that the punitive tax to discourage pre-retirement withdrawals is justified.

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[1]This withholding tax does not actually increase the worker's tax burden but does delay receipt of that portion of distribution until the worker's next tax return. There is a cost to workers insofar as the withheld amount represents a non-interest-bearing loan to the government.

Early withdrawals may also be due to bounded rationality. It has been shown, for instance, that individuals commonly underestimate the power of tax-deferred compounding, an error that would lead them to undervalue the opportunity cost of an early withdrawal from an ESP. Similarly, many individuals dramatically underestimate how much savings they will need to maintain their standard of living in retirement.

Cash outs need not be irrational, however. Although a costly source of liquidity, distributions from ESPs may allow otherwise asset-poor workers to smooth consumption following a job loss–behavior that is consistent with some variants of the permanent income hypothesis (Deaton, 1991). Prior research on consumption behavior shows that households suffering unanticipated income shocks do indeed engage in smoothing behavior and, further, that low-asset household have difficulty obtaining credit during unemployment spells (Dynarski and Gruber, 1997; Sullivan, 2008). Hence, ESPs may serve as an important, albeit costly, safety net for these households.

This paper investigates the extent to which workers tap their ESPs in response to unemployment-induced income shocks. By using data on job transitions, I am able to identify workers for whom a job separation triggered a plausibly exogenous shock. The results show that workers who did not have another job at separation, and therefore faced an unemployment spell, were significantly more likely to take money from their ESPs than workers who had secured another job. Similar to Engelhardt (2003), I also analyze the relationship between the type of the separation–i.e., whether it was voluntary, involuntary or due to some hardship–and disposition of ESPs. I find little evidence that the type of job separation affects disposition outcomes and conclude that uncertainty over future employment is more relevant to the disposition decision than whether workers left of their own accord. Another key result from this analysis is the strong influence of workers' financial situation on disposition outcomes. Specifically, low holdings of liquid assets, gaps in health insurance, and poor access to credit markets are found to be strongly associated with workers taking cash settlements from their ESPs at separation.

Even if workers suffer an income shock, however, ESPs should not be tapped until lower-cost sources of liquidity have been exhausted. Therefore, as an additional test of the optimality of workers' cash-out decisions, I estimate whether the effect of an income shock is amplified in the presence of liquidity-constraints, defined here as either low liquid asset holdings or a recent unsatisfied demand for credit. I find little evidence of such a positive interaction effect. This finding, together with the strong main effects for the liquidity-constraint measures, suggests that workers with low buffer-stock savings are tapping their ESPs largely independent of the degree of income risk associated with the job separation. One explanation for this behavior is that these workers are using the opportunity to take a distribution from their ESPs to reallocate their portfolios to achieve greater liquidity. Similarly, the effect of an adverse job separation does not appear to be confined to liquidity-constrained workers. Both of these results are consistent with cash settlements taken to augment precautionary savings. However, cash settlements taken solely for precautionary reasons are not necessarily optimal.

Finally, I use information on both the timing of the job separation and job status at separation to test whether workers are sensitive to the tax consequences of taking a cash settlement. The test exploits the fact that workers who separate without another job early in the year are more likely to anticipate lower than normal income for that year and hence a relatively lower tax price on a cash settlement. The results yield some evidence that these workers exhibit a greater propensity to cash out than workers who were left jobless toward the end of the calendar year.

This study makes two primary contributions. First, it extends the limited prior research on the disposition of ESPs at job change by explicitly considering the role of both income risk and liquidity constraints–effects that have been difficult to pin down empirically. In doing so, this study highlights the potential for leakages from ESPs in an economic climate marked by both high unemployment and tight consumer credit markets.

Second, this paper contributes to the literature on households' savings and borrowing

behavior in response to idiosyncratic income shocks. While there is a substantial literature examining how households adjust consumption, saving and borrowing behavior in anticipation of predictable variation in income, far less is known about how households use their financial assets to self-insure against unanticipated variation (Sullivan, 2008). This study contributes to this latter strand of literature by highlighting a largely overlooked potential smoothing mechanism for low-asset and borrowing constrained households.

2.2   Related Literature

While a fairly extensive literature has analyzed employee participation and contribution decisions with regard to ESPs, considerably less attention has been given to pre-retirement withdrawal decisions. Much of the prior research on withdrawals has analyzed the influence of basic household and plan characteristics (Andrews, 1991; Bassett et al., 1998; Purcell, 2002; Poterba et al., 1998; Sabelhaus and Weiner, 1999). From this literature a number of stylized facts about early withdrawals has emerged. One common finding was that while the majority of plans were cashed out at separation, the majority of distribution dollars were in fact rolled over–evidence that it was predominantly small balances that were being cashed out. Moreover, these studies established that the probability of cashing out was inversely related to income, age, education, and accumulated plan balance, as well as proxies for "tastes for savings," such as IRA and other asset ownership.

An underlying problem of many of these studies was that the data employed were generally limited to workers who actually reported receipt of a distribution. Consequently, workers who left the money to accumulate in their former employer's plan were omitted, leading these studies to underestimate the proportion of workers who preserved the tax-deferred status of the assets in their ESP.

More recent work has attempted to incorporate a richer set of background variables in the analysis of pre-retirement withdrawals. Some of these studies have focused on

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estimating the responsiveness of the withdrawal decision to the tax price (Chang, 1996; Burman et al., 1999; Gale and Dworsky, 2006). However, only two studies have explicitly considered the the relationship between the disposition of ESPs and the circumstances surrounding the job separation (Engelhardt, 2003; Amromin and Smith, 2003).

Using the Health and Retirement Survey (HRS), Engelhardt (2003) finds that workers who left their job to care for a family member and who quit their jobs were significantly less likely to roll over their ESPs than workers who left because of a better employment opportunity. Separations due to poor health, relocation, retirement or a layoff were, as expected, also associated with lower rollover rates, but most of these effects were only marginally significant.

One limitation of Engelhardt's study is that half of the reported dispositions in his sample occurred prior to 1984, more than eight years removed from the interview date. This not only dates his results but also raises concerns about recall error. As with many previous studies, Engelhardt's sample is also restricted to workers who actually took a distribution from their plan.

Amromin and Smith (2003)–the other study to examine the role of shocks–use a ten-year panel of individual tax returns to estimate the probability of taking a penalized distribution from an ESP or an IRA. They infer an involuntary job loss from the receipt of unemployment compensation and find that this variable has a significant positive effect on the the probability that workers take a penalized withdrawal from a retirement plan. However, in probit models that include income and other demographic shocks, the marginal effect of an involuntary separation is quite small, raising the probability of a penalized withdrawal by approximately one percentage point. The use of administrative tax records allows Amromin and Smith to construct accurate income measures, including workers' marginal tax rate. Yet these records lack many of the background variables found in survey data. As a result, a number of variables, including the dependent variables, used in their analysis must be imputed or inferred from the limited information on the tax

returns. Similar to Engelhardt (2003), their sample does not include workers who left their ESP with their former employer.

2.3   Data and Descriptive Results

This study takes advantage of the relatively new, and previously untapped, information on pension withdrawals contained in the National Longitudinal Survey of Youth 1979 (NLSY79). The NLSY79 has tracked a nationally representative sample of 12,686 young men and women from 1979, when the respondents were between 14 and 22 years old, to the most recent interview in 2006. Interviews were conducted annually until 1994, and biennally from 1996 to the present. Although the panel data cannot be fully exploited due to the paucity of repeated observations on the dependent variable for any one individual, it is still useful for deriving measures of key variables just prior to the separation date.

A pension module was introduced in the 1994 interview, but information on the disposition of retirement plans from former employers was not included until the 2002 interview. The sample is taken from the 2002, 2004 and 2006 interviews, when respondents were between the ages of 37 and 51. Although the age range is somewhat narrow, it does capture the population of interest for this study, namely, individuals in their prime working years.

The pension module begins by asking respondents who left a job since their last interview about their access to any plans on that job: whether they were entitled to take money from the plan when they left their employer, some time in the future, or both when they left *and* in the future. In addition, respondents could indicate that they were not entitled to the money at all, presumably because they had not yet become vested in the plan.

Respondents who were entitled to take any money from their plan at separation were then asked what they did with the money. The outcomes included: 1) transferred the money to another retirement plan or investment account; 2) took a cash settlement; 3) left

the money in this plan; 4) currently receiving repeated payments; 5) haven't received the money yet (just left the job); and 6) some other use. Respondents who had not received any money yet because they just left the job, as well as those who indicated some other use, were taken through a series of follow-up questions in which they were again asked to verify that whether any of the three primary disposition outcomes (rollover to another plan, cash settlement, or left money with employer) applied. Because it does not trigger the ten percent penalty, distributions converted into repeated payments (i.e., an annuity) are coded as a rollover. A key advantage of the NLSY79 is that it identifies workers who left money in their former employer's plan, permitting more accurate estimation of the proportion of workers who preserved the tax-deferred status of the assets in their ESPs.

One drawback, however, is that the NLSY79 does not provide very specific information on the uses of cash settlements. Respondents could report only three uses for their cash settlements: pay off debt, transfer to another tax-qualified account (i.e., an indirect rollover), or spend or save for some other purpose.[2] This last category unfortunately does not distinguish between settlements that were consumed and those that were saved in non-tax-qualified investment vehicles. The NLSY79 also does not probe further into the specific ways in which distributions were spent, such as whether they were used to pay bills and basic living expenses or to finance spending on less essential items.

Along with this detailed information on pension withdrawals, the NLSY79 contains a rich set of background variables on income, demographics and assets. Of particular interest for this study is the information on the circumstances surrounding the job separation that gave rise to the disposition decision. The NLSY79 asks respondents both the reason for the separation and whether they had another job lined up prior to separation. I collapsed the 17 reasons for separation provided in the NLSY79 into three types: voluntary, involuntary

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[2]Cash settlements that were subsequently transferred to another tax-qualified account were coded as rollovers. Although workers who choose an indirect rollover must pay income taxes on the amount withdrawn (and are subject to employer withholding), they avoid the ten percent penalty if the transfer occurred within 60 days of receipt of the distribution.

and hardship separations. Voluntary separations included workers who quit to take another job, to look for another job, to retire, to attend school, or because of a pregnancy, dissatisfaction with some aspect of the job or some other (unspecified) reason. Involuntary separations are defined as those due to business closings, the end of a temporary job or government program, layoffs, or discharges. Hardship separations included leaving because of some family obligation, because of a move to another geographic area or because of their own health, legal or transportation problems.[3]

Certain reasons for leaving triggered a follow-up question to determine whether the worker had secured another job prior to separation. For those not covered by this question, it was in most instances straightforward to infer from the reason for separation whether it was likely that they had another job at separation or whether they would even be looking for another job. To this latter category, for instance, I assigned respondents who left to attend school or due to health reasons or family obligations (i.e., to spend time with or care for a family member). Three reasons were somewhat ambiguous: separations due to a relocation, transportation problems and some dissatisfaction with some aspect of the job. Since respondents could specifically indicate leaving to take another job, these ambiguous cases were resolved as not having another job at separation.

Another advantage of the NLSY79 is that it contains questions on respondents' access to credit in the past five years. The questions distinguish between three groups: 1) those who needed credit but did not obtain any, either because their credit application was denied or because they were discouraged from applying in the first place; 2) those who did not require any credit, and 3) those who applied for and received credit. One drawback, however, is that respondents were only queried about their credit status in the 2004 interview. As a result, there may be some measurement error if the respondent's credit status changed substantially over this period.[4] However, Guiso et al. (1996) provide

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[3]Because respondents could specifically report leaving to take another job, it was assumed that the relocation were not job-related, at least not for the respondent.

[4]It is possible, for instance, that respondents who already experienced a separation may be more likely

evidence that liquidity constraints tend to be fairly persistent, particularly over such a short span of time. It should also be noted that merging the module on credit access with the 2002 and 2006 interviews entails the loss of 20 observations from the sample.

2.3.1 Descriptive Results

Table 2.1 summarizes the basic demographic characteristics of workers in the sample according to their access to plan funds and, for those entitled to take money at separation, the disposition of those funds. In order to construct mutually exclusive disposition outcomes, "cashed out" is defined as having taken *any* money from an ESP, while "rolled over" captures workers who preserved the tax-deferred status of their *entire* plan balance, including those who left the money in their former employer's plan. Females, blacks, divorcées or widow(er)s, and the less educated all evince a greater tendency to cash out at least some portion of their plan at separation. Households with no older children appear more likely to preserve the tax-deferred status of their plan balance, while those with two or more older children show a marked tendency to take a cash settlement–consistent with the supposition that households with college-aged children, or children nearing college age, will have a more acute need for liquidity.

Table 2.2 displays plan and job characteristics by entitlement and disposition. Workers with less than two years on the job at separation are much more likely to report not having access to the money in their plan. This result is in line with the vesting rules of most plans. Although the non-entitlement rate drops off fairly precipitously after two years, as one would expect, these rates still remain surprisingly high for long-tenured workers. This may reflect some degree of misreporting, with respondents possibly mistaking "no entitlement" for not being eligible to take a distribution *at separation.* However, this is only speculative.

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to have applied for credit. I estimated a separate specification (not shown here) to test whether the effect of credit status varies significantly by the interview year. While there is some evidence that credit constraints, and not having applied for credit, has a stronger effect for respondents reporting job separations in the 2002 interview relative to the 2006 interview, the effects are not statistically significant.

Table 2.1: Demographics by Entitlement and Disposition Outcome

| | Access to Money in Plan: | | | | |
| | When Left Employer | | In Future | None | All |
	Cashed Out	Rolled Over			
Gender					
Male	47.09	56.22	55.04	58.49	53.94
Female	52.91	43.78	44.96	41.51	46.06
Age					
37-41	29.07	26.61	25.39	28.93	27.00
42-46	51.45	54.94	59.30	51.57	55.29
47-51	19.48	18.45	15.31	19.50	17.71
Race					
Hispanic	20.06	19.10	20.74	22.01	20.20
Black	42.15	23.18	27.13	31.45	29.83
White/Asian	37.79	57.73	52.13	46.54	49.97
Marital Status					
Never Married	15.70	11.59	15.31	13.21	14.01
Married	48.84	64.81	58.33	63.52	58.72
Divorced or Widowed	35.47	23.61	26.36	23.27	27.27
Education Level					
Less than HS	7.85	2.79	3.10	6.92	4.51
High School	48.26	31.33	36.24	38.99	37.78
Some College	30.23	29.18	28.29	23.90	28.55
Bachelor's Degree	8.14	20.60	14.73	19.50	15.56
Advanced Degree	5.52	16.09	17.64	10.69	13.60
No. of Kids under 15					
None	51.74	46.78	47.67	42.77	47.81
One	24.13	26.39	21.51	25.79	24.11
Two or More	24.13	26.82	30.81	31.45	28.08
No. of Kids 15-23					
None	43.02	56.01	54.46	52.83	52.12
One	24.42	25.97	22.67	23.27	24.18
Two or More	32.56	18.03	22.87	23.90	23.70
N	344	466	516	159	1,485

Source: NLSY79

Table 2.2: Plan and Job Characteristics by Entitlement and Disposition Outcome

| | Access to Money in Plan: | | | | |
| | When Left Employer | | In Future | None | All |
	Cashed Out	Rolled Over			
Plan Type					
DC Plan Only	66.86	69.74	58.53	49.06	62.96
DB Plan Only	22.09	18.88	29.07	37.74	25.19
DC & DB Plan	10.17	10.30	8.72	6.92	9.36
Don't Know	0.87	1.07	3.68	6.29	2.49
Tenure on Job					
Less than 2 years	24.42	21.24	25.19	41.51	25.52
2 to 5 years	34.59	30.90	28.10	23.27	29.97
5 to 10 years	23.26	23.18	24.03	16.35	22.76
10+ years	17.73	24.68	22.67	18.87	21.75
Occupational Category					
Management	9.88	18.61	13.98	13.92	14.47
Professional	15.41	26.62	21.17	20.89	21.50
Service & Sales	35.76	30.09	35.15	32.91	33.47
Blue Collar	38.95	24.68	29.71	32.28	30.56
Industry					
Nat. Res. & Construction	4.65	5.36	9.11	8.18	6.80
Manufacturing	21.22	17.60	13.57	16.98	16.97
Trade	19.48	12.66	12.02	12.58	14.01
Transport. & Utilities	4.36	6.65	7.95	5.03	6.40
Information	6.98	4.94	5.23	4.40	5.45
Financial Activities	5.52	11.59	5.43	8.18	7.68
Prof. & Bus. Services	6.98	13.52	9.50	9.43	10.17
Education & Health	21.22	16.09	25.00	13.21	20.07
Other Services	5.52	6.22	6.59	10.69	6.67
Public Administration	4.07	5.36	5.62	11.32	5.79
N	344	466	516	159	1,485

Source: NLSY79

Table 2.3: Disposition by New Job Status

| | New Job Status | | | |
Disposition	Did Not Look for New Job	No New Job Lined Up	New Job Lined Up	Total
Cashed Out Any	55.41	50.81	27.54	42.47
Rolled Over All	18.92	32.71	50.16	38.02
Left All in Plan	25.68	16.47	22.30	19.51
N	74	431	305	810

Source: NLSY79

Table 2.3 displays differences in disposition outcomes by job status at separation. As expected, workers who do not have another job lined up, as well as those not looking for another job (mainly due to some hardship), are nearly twice as likely to take at least some money from their plan at separation. Just over half of those without another job took a cash settlement, compared to just over a quarter of workers with another job. It is also noteworthy that workers without a job and workers not looking for a job accounted for over 60 percent of all workers entitled to take a distribution from their ESP at separation. Workers who left without another job were much more likely to roll over their ESPs rather than leave them with their former employer. This result would stand to reason if many of these workers left on unfavorable terms.

Table 2.4 presents the proportion of workers who cashed out any money at separation by both job status and liquid asset holdings. For each job status, the proportion of those who cash out is declining at higher quartiles of liquid asset holdings. For workers with another job, there is very little difference in the cash out rate between the first and second quartiles; the cash out rate drops more precipitously for these workers over the next two quartiles, with only eight percent of those in the fourth quartile opting to take money from

Table 2.4: Proportion of Workers who Cashed Out Any Funds

| | Liquid Asset Holdings (Quartiles) | | | | |
Job Transition	1st	2nd	3rd	4th	Total
Did Not Look for New Job	0.67	0.68	0.35	0.36	0.55
No New Job Lined Up	0.72	0.56	0.40	0.25	0.51
New Job Lined Up	0.47	0.43	0.23	0.08	0.28
N	215	211	183	200	809

Source: NLSY79

their ESPs. The decline in the cash out rate over quartiles of liquid asset holdings is more uniform for workers without another job, yet the overall decline, from the first to the fourth quartile, for these two groups of workers is not dramatically different.

In table 2.5, credit constrained workers exhibit the highest cash out rate, followed by those who did not apply for credit and those who were approved for credit, for each job status. Once again, although workers without another job are considerably more likely to cash out than those with another job for each credit status, both groups of workers are much more likely to cash out if their access to credit is restricted than if they have received credit. The simple cross-tabulations suggest, then, that the effect of credit status, and liquid asset holdings, cuts across job status, rather than disproportionately affecting those left jobless at separation, as one might expect to observe if liquidity constraints amplified the effect of an unemployment-induced income shock.

2.4 Results

To control for other factors influencing the probability that workers cash out any money from their ESP when leaving a job, I estimate the following probit model.

Table 2.5: Proportion of Workers who Cashed Out Any Funds

Job Transition	Credit Status			Total
	Credit Request Approved	Did Not Apply for Credit	Credit Constrained	
Did Not Look for New Job	0.36	0.58	0.79	0.54
No New Job Lined Up	0.34	0.55	0.67	0.51
New Job Lined Up	0.18	0.28	0.48	0.27
N	293	340	157	790

$$Prob(CashOut = 1) = \Phi(\gamma'\mathbf{Z}_i + \delta JOBSEP_i + \beta ASSETS_i + \rho CREDITi) \qquad (2.1)$$

where Φ is the normal cumulative distribution function and $\mathbf{Z}_i$ represents a vector of controls for demographic characteristics of the worker and attributes of the ESPs held on the job. These include controls for gender, race, age, marital status, education, the logarithm of annual income on the job, the number of college-aged children and younger children (under age 15), tenure on the job, industry and occupation dummies. It also includes the natural logarithm of plan balances, dummy variables indicating whether the respondent was entitled to withdraw money from two or more plans at separation and whether she had any plans on the job that will provide future benefits.

$JOBSEP$ is a vector of variables capturing the circumstances surrounding job separation: either job status at separation or the type of separation. $ASSETS$ is a vector of variables reflecting the respondent's holdings of financial assets, including indicators for homeownership, IRA ownership, any gaps in health insurance coverage, and quartiles of

liquid asset holdings. $CREDIT$ includes measures of credit access, with an indicator variable identifying credit constrained workers–i.e., those who were denied credit or discouraged from applying–and another identifying workers who did not apply for credit during the past five years.

Table 2.6: Marginal Probit Estimates of Taking Any Cash Settlement

	Without Credit Status		With Credit Status	
	(1) Cash Out Any	(2) Cash Out Any	(3) Cash Out Any	(4) Cash Out Any
Health Insurance Gap (d)	0.15*** (0.045)	0.18*** (0.045)	0.16*** (0.046)	0.18*** (0.046)
Owns IRA (d)	−0.14*** (0.049)	−0.13*** (0.049)	−0.13*** (0.050)	−0.13** (0.050)
Liquid Assets: Q1 (d)	0.27*** (0.064)	0.28*** (0.064)	0.27*** (0.067)	0.28*** (0.066)
Liquid Assets: Q2(d)	0.20*** (0.061)	0.21*** (0.060)	0.19*** (0.064)	0.20*** (0.063)
Liquid Assets: Q3 (d)	0.12* (0.063)	0.12* (0.062)	0.11* (0.064)	0.11* (0.063)
Credit Constrained (d)			0.23*** (0.060)	0.24*** (0.059)
No Credit Sought (d)			0.15*** (0.047)	0.16*** (0.047)
No New Job (d)	0.16*** (0.044)		0.15*** (0.045)	
Not Looking for Job (d)	0.16** (0.077)		0.14* (0.078)	
Involuntary Separation (d)		−0.017 (0.045)		−0.038 (0.046)
Hardship Separation (d)		0.10 (0.069)		0.083 (0.070)
N	800	800	780	780
Log Likelihood	−401.7	−406.4	−382.8	−386.5
Pseudo-R2	0.264	0.256	0.280	0.273

Robust standard errors in parenthesis; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

Table 2.6 presents the marginal effects from probit models of taking any money from an ESP at separation. The first column considers workers' job status at separation. It reveals

that, for the average worker, not having secured another job at separation raises the probability that at least some money is withdrawn from an ESP by 16 percentage points, an effect that is significant at the 1 percent level. Not looking for another job at separation also raises the likelihood of a cash out by the same magnitude, though this effect is not measured as precisely. In interpreting this result, it is important to note that workers characterized as not looking for another job are not necessarily leaving the job market of their own choosing. Included in this category, for example, are workers who left due to personal health problems or to care for a family member. Even those who are not looking for a work because they left to obtain additional education or training may require liquidity to finance their education or possibly to supplement lost earnings.

Column 2 examines the type of job separation. The effect of a hardship separation is positive, as expected, and fairly large but not precisely measured. Workers who experienced an involuntary separation are also not more likely to cash out than workers who left voluntarily. In fact, the coefficient is slightly negative.

The results from table 2.6 suggest that whether workers have another job secured at separation better captures the income shock associated with a job separation than whether the separation is voluntary. Of course workers who leave of their own accord are far more likely to do so because they have another job lined up, so it is difficult to completely disentangle these two effects. Nevertheless, these findings highlight the importance of prospective jobless spells to the cash out decision.

The effects of key asset measures remain consistent across these specifications. Workers who owned an IRA prior to separation were markedly less likely to withdraw funds from their plan. Also a costly source of liquidity, withdrawals from IRAs are in most cases preferable to an ESP withdrawal since the former avoids the 20 percent withholding tax and offers more exemptions to the ten percent penalty for early withdrawal. IRA ownership may also signal greater financial sophistication and, in particular, a greater ability to recognize the benefits of a rollover.

The coefficients on the quartiles of liquid asset holdings show the expected pattern: low liquid asset holdings significantly raise the probability that workers cash out and the effect is strongest at lower quartiles. Liquid asset holdings in the first quartile, for instance, raise the probability of a cash out by nearly 30 percentage points. The majority of respondents in this category have effectively no liquid assets. Yet even for liquid asset holdings in the second quartile, which range from a few hundred dollars to just over $2,000, the likelihood of a cash out increases by 20 percentage points relative to the fourth quartile. Being without health insurance at any time since the previous interview is also associated with a significantly greater probability of a cash out at separation. These results are consistent with workers using distributions from ESPs to compensate for low buffer-stock savings, including gaps in health insurance coverage.

The last two columns in table 2.6 introduce variables that measure workers' access to credit in the past five years. Because adding these variables entails a loss of 20 observations compared to the base model, I present these models separately. The effect of being credit constrained–i.e., being denied credit or discouraged from applying–raises the probability of a cash out by about 23 percentage points. Not having requested any credit also has a large positive effect, increasing the likelihood of a cash out by about 15 percentage points. Considering that workers' liquid, and other, asset holdings are being held constant, these effects are quite large. It is also notable the introduction of the credit variables leaves the coefficient, and standard error, on the liquid asset measures virtually unchanged, allaying *a priori* concerns of severe collinearity between these measures. The effects of the variables characterizing the job separation are also consistent across specifications with, and without, the credit variables.

Interaction Effects   The findings that a prospective unemployment spell and that meager asset holdings both have large positive effects on the cash-out probability suggest that a significant number of cash outs are motivated by need rather than merely a desire to

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finance frivolous spending. Although taking an early withdrawal in response to an income shock, or to supplement meager liquid asset holdings, is more reasonable than taking a withdrawal for a vacation, that is still not to say that workers are making the correct decision by cashing out in those circumstances. Given the high cost of accessing these funds, workers who take a cash out should exhibit both a need for liquidity *and* a lack of suitably liquid assets with which to meet that need. In other words, in addition to the positive main effects for measures of liquidity and adverse job separations, liquidity constraints should amplify the effect of a job shock. To this end, I also estimate models that control for the type job separation-induced shocks (i.e., job status at separation and the type of job separation) interacted with the measures of liquidity constraints (both low liquid asset holdings and credit access).

In non-linear models, the coefficient on the interaction term does not necessarily measure the true interaction effect; i.e., the full cross-partial derivate or, in the case of two dummy variables, the discrete double difference with respect to the two interacted variables (Ai and Norton, 2003). I therefore also report OLS estimates, which permit a more straightforward interpretation of the interaction effect. Due to small cell sizes, however, I do not consider interactions for workers who were not looking for another job and those who left due to hardship.

The first two columns of table 2.7 display results from the models in which job status at separation is interacted with liquid asset holdings. Although the coefficient on the interaction between the first quartile of liquid asset holdings and not having another job is positive in both the probit and OLS models, neither estimate is precisely measured. The probit and OLS models both produce similar positive estimates for the interaction of not having requested credit and not having secured another job, but again neither coefficient is significant.

In table 2.8, I also present probit estimates of the full interaction effect, following Ai and Norton (2003), and compare these with traditional probit marginal estimates as well as

Table 2.7: Probability of Taking a Cash Out: Interaction Effects with Job Status

	Liquid Assets		Credit Status	
	Probit M.E.	OLS	Probit M.E.	OLS
Liquid Assets Q1 × No Job (d)	0.029 (0.12)	0.082 (0.084)		
Liquid Assets Q2 × No Job (d)	−0.14 (0.10)	−0.056 (0.088)		
Liquid Assets Q3 × No Job (d)	−0.023 (0.12)	0.032 (0.087)		
Credit Contrained × No Job (d)			−0.036 (0.11)	0.0077 (0.088)
No Credit Request × No Job (d)			0.050 (0.097)	0.071 (0.071)
N	800	800	780	780
Log Likelihood	−400.1	−424.5	−382.4	−405.2

Robust standard errors in parantheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

OLS estimates. Letting x_1 and x_2 denote the two (dummy) variables to be interacted, the formula for the full interaction effect is the following double difference with respect to x_1 and x_2: [5]

$$\frac{\Delta^2 \Phi(z)}{\Delta x_1 \Delta x_2} = \Phi\left(\beta_1 + \beta_2 + \beta_{12} + X\beta\right) - \Phi\left(\beta_1 + X\beta\right) - \Phi\left(\beta_2 + X\beta\right) + \Phi\left(X\beta\right) \qquad (2.2)$$

Since the calculation for models with more than one interaction term becomes unwieldy, I restrict these models to only one interaction term. I have thus collapsed the quartiles of liquid asset holdings into a single binary variable, denoted as "low liquid assets," that equals one if the worker's holding of liquid assets falls below the median value for the given survey year. The first three columns of table 2.8 present the results for the interaction of this variable with not having another job at separation. The next three columns present the models in which being credit constrained is interacted with not having another job. In each case, the full interaction effects fall roughly between the marginal probit and OLS estimates and do not alter the conclusions drawn from table 2.7.

Table 2.9 presents models in which the liquidity measures are interacted with the type of job separation. In the first two columns, the probit and OLS produce broadly similar results for the interaction of liquid asset holdings with the type of job separation. While the effects have the expected positive sign, none are significant. Similarly, the interaction between credit access and the type of job separation does not produce any significant effects.

Table 2.10 again checks whether the full interaction effects from probit models are

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[5]Standard errors for these interaction effects are derived using the delta method. With two dummy variables the formula for the asymptotic variance of the interaction effect is:

$$\frac{\partial}{\partial \beta'}\left[\frac{\Delta^2 \Phi(z)}{\Delta x_1 \Delta x_2}\right] \hat{\Omega}_\beta \frac{\partial}{\partial \beta}\left[\frac{\Delta^2 \Phi(z)}{\Delta x_1 \Delta x_2}\right]$$

where $\hat{\Omega}_\beta$ is a consistent estimator of the covariance of $\hat{\beta}$ (Ai and Norton, 2003).

Table 2.8: Probability of Taking a Cash Out: Interaction Effects with Job Status

	Liquid Assets			Credit Status		
	Probit M.E.	OLS	Full Cross-Partial Effect	Probit M.E.	OLS	Full Cross-Partial Effect
Low Liquid Assets × No Job (d)	−0.034 (0.079)	0.0069 (0.063)	−0.016 (0.066)			
Credit Contrained × No Job (d)				−0.061 (0.098)	−0.029 (0.083)	−0.043 (0.083)
N	800	800	800	780	780	780
Log Likelihood	−408.7	−433.1	−408.7	−388.5	−412.4	−388.5

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Low Liquid Assets is an indicator variable equal to one if worker's liquid asset holding fall below the median value for that survey year. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

Table 2.9: Probability of Taking a Cash Out: Interaction Effects with Type of Job Separation

	Liquid Assets		Credit Status	
	Probit M.E.	OLS	Probit M.E.	OLS
Liquid Assets Q1 × Involuntary (d)	0.13 (0.13)	0.093 (0.086)		
Liquid Assets Q2 × Involuntary (d)	0.13 (0.12)	0.098 (0.089)		
Liquid Assets Q3 × Involuntary (d)	0.14 (0.13)	0.11 (0.090)		
Credit Constrained × Involuntary (d)			−0.072 (0.11)	−0.044 (0.092)
No Credit × Involuntary (d)			0.020 (0.098)	0.027 (0.074)
N	800	800	780	780
Log Likelihood	−405.7	−429.5	−386.2	−409.2

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

Table 2.10: Probability of Taking a Cash Out: Interactions Effects with Type of Job Separation

	Liquid Assets			Credit Status		
	Probit M.E.	OLS	Full Cross-Partial Effect	Probit M.E.	OLS	Full Cross-Partial Effect
Low Liquid Assets × Involuntary (d)	0.066 (0.087)	0.050 (0.067)	0.051 (0.068)			
Credit Constrained × Involuntary (d)				−0.095 (0.095)	−0.075 (0.083)	−0.076 (0.082)
N	800	800	800	780	780	780
Log Likelihood	−413.4	−437.6	−413.4	−392.4	−416.0	−392.4

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

consistent with the marginal probit and OLS coefficients. These estimates prove to be remarkably similar to the OLS coefficients (and standard errors). Together, then, the standard marginal probit and OLS estimates appear to provide a reasonably accurate representation of the full interaction effect of the probit models.

Tables 2.7 and 2.9 yield little evidence to support the hypothesis that liquidity constraints raise the probability that workers will tap their ESPs following an adverse job separation. Before drawing definitive conclusions from these results, however, a couple of points should be considered. First, given the sample size, the lack of significant interaction effects may be attributable to small cell sizes for the interaction terms. A more conclusive test must await the collection of additional data. Second, the measures of income shocks employed in this study–in particular, whether a worker had another job at separation–may be missing important heterogeneity in the severity of these shocks or in workers' assessment of their future job prospects.

2.5 Tax Price Sensitivity

Although the NLSY79 does not lend itself to deriving accurate estimates of the tax price facing workers, the information on job separations, and the timing of separations, can be used to gain some insight into workers' responsiveness to the tax price of taking a cash settlement from their ESP.[6] Given that they face a jobless spell of uncertain length, workers who separate from their employer without another job lined up should anticipate a lower than normal income for that calender year. Moreover, the earlier in the year that the separation occurs, the greater the uncertainty about earnings for the remainder of that year. As a result, workers who separate early in the year, and who do not have another job lined up, are more likely to anticipate unusually low earnings for that year and thus a lower

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[6]The difficulty involved in constructing direct measures of the tax price stems both from the one-year gaps in information on income and from the incidence of missing information for various income sources that would render an already small sample size unacceptably small. There is of course also the issue of the endogeneity of the tax price.

tax price. Hence, a relatively higher incidence of cash outs associated with separations occurring early in the calender year by workers without another job may indicate that these workers are indeed taking into account the overall tax price when deciding whether to take a withdrawal. To investigate this effect I introduce controls for the time of the year in which the separation occurred and interact this variable with whether the worker had another job lined up. I estimate the follow probit model:

$$Prob(CashOut = 1) = \Phi(\gamma' \mathbf{Z}_i + \delta JOBSEP_i + \beta ASSETS_i + \alpha NOJOB_i \times \sum_{j=1}^{3} Qj_i) \quad (2.3)$$

where $NOJOB$ is an indicator variable equal to one if the worker does not have another job lined up, and zero otherwise; and Qj is an indicator variable equal to one if the separation occurred in the ith quarter of the year. Thus, the interaction term of interest, $NOJOB \times Qj$ equals one for workers who separated from a job in the ith quarter of the calender year without another job lined up.

The results from table 2.11 provide some evidence that, for workers who have not secured other employment at separation, the timing of separation matters. In particular, a separation occurring in the first three months of the year raised the probability of a cash out among workers without another job lined up by 30 percentage points, an effect that is significant at the ten percent level. The interaction effect for workers without another job is positive for each of first three quarters of the year and, as expected, the magnitude decreases at later quarters. The same pattern is confirmed by the OLS estimates, although none of these effects were significant.

Table 2.11: Probability of Taking a Cash Out: Timing of Job Separation

	Probit M.E.	OLS
1st Quarter Separation (d)	−0.18	−0.11
	(0.099)	(0.073)
2nd Quarter Separation (d)	−0.043	−0.036
	(0.10)	(0.079)
3rd Quarter Separation (d)	−0.075	−0.060
	(0.095)	(0.073)
1st Quarter × No Job (d)	0.30*	0.18
	(0.12)	(0.094)
2nd Quarter × No Job (d)	0.20	0.14
	(0.13)	(0.10)
3rd Quarter × No Job (d)	0.15	0.11
	(0.13)	(0.099)
1st Quarter × Not Looking (d)	0.26	0.18
	(0.21)	(0.17)
2nd Quarter × Not Looking (d)	0.19	0.19
	(0.24)	(0.20)
3rd Quarter × Not Looking (d)	0.047	0.080
	(0.22)	(0.19)
N	800	800
Log Likelihood	−397.5	−422.5
Pseudo-R2	0.272	

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

2.6 Conclusion

This paper has attempted to shed light on why workers tap their ESPs at job change, highlighting the effect of potential employment shocks and liquidity constraints. The results showed that low holdings of liquid assets, gaps in health insurance coverage, and credit constraints each have a significant positive effect on the probability of a cash out. Moreover, not having another job lined up at separation increased the probability of a cash out by about 15 percentage points. Given that most workers do not have another job when separating from an employer, the strength of this relationship between job status and disposition outcomes is alarming. On the other hand, whether a worker left a job voluntarily or involuntarily did not appear to influence the cash out decision.

I also evaluated whether workers' withdrawal decisions were consistent with consumption smoothing in the presence of liquidity constraints. Neither credit constraints, nor meager liquid asset holdings, were found to significantly raise the probability of a cash out for workers most likely to have experienced an income shock at separation–i.e., those who left without another job lined up or those who left because of some hardship. This raises some concern that workers may be tapping their retirement savings when they would be better served by rolling over the money. Nevertheless, the most compelling finding to emerge from this study is that cash outs were strongly associated with indicators of need, whether it be a poor financial position or short-term uncertainty about future income. It once again confirms what other studies have previously observed: that those who can least afford a loss of retirement savings are those most likely to cash out. In particular, the link between the incidence of cash outs and these indicators of need raises the question of whether the excise tax on early withdrawals is unnecessarily punitive and whether the opportunity cost of giving up future tax-deferred earnings is not itself a sufficient penalty. The results also point up the potential harm done to workers' retirement savings in a prolonged recession.

Chapter 3

A Tax Price Analysis of the Disposition of Retirement Plan Balances

3.1   Introduction

Public policy towards individual retirement savings contains both carrots and sticks. The deductibility of contributions to these plans and the tax-deferred status of earnings serve as the carrots that encourage individuals to put aside money for retirement; a ten percent excise tax and a 20 percent withholding tax are the primary sticks that discourage individuals from prematurely tapping their retirement funds. In addition, distributions are taxed as ordinary income, which may also penalize early withdrawals to the extent that individuals are likely to face a higher marginal tax rate during their working years than they will in retirement.

Despite the tax-based disincentives, participants in plans offering lump-sum distributions at job separation have cashed out at a surprisingly high rate. In fact, most studies have found that a majority of participants take at least some money from their plan when leaving an employer (Andrews, 1991; Bassett et al., 1998; Purcell, 2002; Poterba et al., 1998; Sabelhaus and Weiner, 1999). This has raised the question of how responsive participants really are to the tax incentives to preserve the tax-deferred status of their plan balances when leaving a job.

While a considerable body of research has focused on the incentives to contribute to retirement savings accounts, few studies have examined how tax policy affects individuals' decisions to withdraw money from these accounts during their working years. In particular, there have been few reliable estimates of the tax-price elasticity of rollovers from

employer-sponsored retirement plans.

This study addresses this gap in the literature by deriving estimates of the sensitivity of these disposition decisions to the effective tax price of a withdrawal. The approach taken in study also differs from the scant prior research on this topic. First, this study uses national survey data to generate *effective* tax prices using the NBER's TAXSIM program. The computation of effective rates take greater account of many of the nuances in the tax code, such as the phasing in and out of credits and deductions, which can affect an individual's marginal tax rate and which is not reflected in statutory marginal tax rates. Second, this study addresses the endogeneity of the tax price using both proxy measures and instrumental variables. In sum, this study attempts to derive estimates of the tax price elasticity of a taking a cash out using arguably better measures of the tax price than have previously been employed in studies using survey data.

The findings are that while the tax price sensitivity of workers is still rather high, the estimates obtained using the effective tax rates are somewhat lower than those obtained relying solely on a straightforward calculation of the statutory marginal tax rate.

Another contribution of this study is that it provides the first estimates on the impact of state-level penalties for early withdrawals. That is, a few states assess their own excise tax on early withdrawals, on top of the federal one. However, no work has been done on whether the existence of these state penalties have an additional deterrent effect on participants' decision to take money from their employer-sponsored retirement plans. The results from this analysis indicate that, even when controlling for tax price, the existence of a state-level penalty has a significant effect on the probability that workers' preserve the tax-deferred status of the entire employer-sponsored plan at job separation.

The results from this study have a number of potential policy implications. Tax policy toward early withdrawals from retirement plans has not been without its critics, who see it as unnecessarily punitive and paternalistic. If the trend toward employers reducing, or suspending, their matching contributions continues, this criticism is likely to grow louder.

Determining whether the tax price is actually effective in deterring early cash outs may contribute to this policy debate. It is possible, for instance, that given better tax price measures, and a sufficiently rich model, the tax price may not have a significant effect on participants' behavior. Other factors, such as participants' current financial situation, may be far more predictive of their disposition choice at job separation. Should this be the case, an argument could be made that the tax penalty is not necessarily achieving its desired effect and, in fact, is having the undesirable effect of targeting the financially distressed.

On the other hand, a finding of a high tax-price elasticity might afford policymakers greater flexibility in using the excise tax to achieve specific policy aims. For instance, if the need to generate revenue were to outweigh the desire to reduce the incidence of early withdrawals, a high tax price sensitivity might signal an opportunity to raise more tax revenue by lowering the penalty on early withdrawals.

3.2 Analyzing the Tax Price Effect

3.2.1 Empirical Challenges and Previous Approaches

Workers who take a distribution from their employer-sponsored retirement plan are assessed federal and, if applicable, state income tax on the amount withdrawn. Income tax is assessed on any distribution from a retirement plan, regardless of whether it is taken pre- or post-retirement. However, since individuals tend to earn more, and hence face a higher marginal tax rate, during their working years than they do in retirement, this income tax burden is often more onerous for those taking premature (i.e., pre-retirement) withdrawals.[1] Moreover, if the distribution from an employer-sponsored retirement plan is taken as a result of a job separation, workers under the age of 55 face an additional 10 percent federal excise tax (and possibly additional state-level penalties). The tax cost

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[1] In a life-cycle framework, for instance, a rational agents should compare their current tax rate with their the rate they expect to face in retirement.

alone of taking a cash out can therefore amount to 30 to 40 percent (or more) of a distribution for most workers.

Upon leaving a job, workers can avoid any taxation on their plan balance, either income tax or the 10 percent penalty, by transferring their plan balance to another tax-deferred savings account (e.g., an IRA or another employer's plan) or by keeping the money in their old plan (if their former employer permits this).[2] If workers do take a withdrawal from their plan, they can still avoid the 10 percent penalty–but not ordinary taxation–by transferring their *entire* distribution to another tax-deferred plan, and this must include the 20 percent of the distribution that employers are mandated to withhold for tax purposes.

While there are other aspects to the total cost of a cash out, such as the 20 percent withholding tax and the opportunity cost of years of foregone tax-deferred earnings on plan assets, the immediate tax consequences incurred by cashing out are likely to be the most tangible for workers and therefore weigh heavily in their decision.[3] The outcome of interest in this study is whether workers kept their entire plan balance in a tax-deferred account when leaving an employer. The distinction is made between those who saved their entire plan balance and those who cashed out at least some portion because the former will have avoided incurring any tax cost. To assess the effect of the tax price on the probability that a worker preserves their entire plan balance, the following probit model is estimated:

$$Save\ All = \begin{cases} 0, & \text{if any money taken from plan(s)} \\ 1, & \text{if no money taken from plan(s)} \end{cases}$$

$$Pr(Save\ All = 1) \ = \ \Phi(\beta'X + \gamma MTR) \tag{3.1}$$

where Φ is the standard normal cumulative distribution function, MTR denotes the

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[2]Another, little-used, option that avoids the 10 percent penalty is to take distribution as periodic and substantially equal payments (i.e., an annuity). Income tax will still be assessed on each payment.

[3]The withholding does not actually increase workers' tax burden.

marginal tax rate and X is a vector of covariates that include demographic variables (gender, race, marital status, education, respondents' health status, number of children, and dummies for year and interview rotation), the natural logarithm of the value of the respondents' plan balance, the natural logarithm of family income, ownership of an IRA, whether the respondent had previously taken a lump-sum distribution from an employer-sponsored plan and whether they were required to take a withdrawal. All else equal, the expectation is that the coefficient, γ, on the marginal tax rate is negative; in other words, a higher marginal tax rate should encourage workers to preserve the tax-deferred status of their retirement plan balances by either rolling them over to another plan or leaving the funds to accumulate in their former employer's plan.

Two previous studies have analyzed the effect of the tax price on lump-sum distributions using the employee benefit supplements of the Current Population Survey (CPS). Estimating a tax price probit model, Chang (1996) finds that a one percent increase in the tax price raises the probability of a rollover between 2 and 4 percentage points, with higher-income workers displaying greater responsiveness to the tax price.[4] Although her sample includes distributions taken between 1984 and 1988, family income is available only for 1987. As a result, her tax price measure is based on income from this one year, regardless of when the distribution was actually taken. She justifies this approach by assuming that family income at the time of the distribution is highly correlated with family income in 1987. Given that distributions are triggered by job separations, however, this assumption may not be appropriate for the population under study. Further compromising the precision of the income measure is the fact that the 1988 CPS reports income in $10,000 brackets (including one $15,000 bracket), with a top-coding at $75,000. Finally, the marginal tax rates in her study are determined using the schedule of statutory income tax rates. This methods ignores items such as payroll taxes, state income taxes and

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[4]She also employs a difference-in-difference approach in which she takes advantage of changes in the tax treatment of distributions introduced by the 1986 Tax Reform Act.

the phasing in and out of various credits and deductions that can cause an individual's statutory and effective marginal rate to differ substantially.

Burman et al. (1999) employ the 1988 and 1993 employee benefit surveys of the CPS to analyze cash outs. They derive estimates of individuals' marginal tax rates both at the time the distribution is taken and at the time of retirement. To do this, they rely on the strong assumption that individuals' incomes remain at the same income percentile, relative to their age cohort, throughout their life-cycle.

Amromin and Smith (2003) is the only study to make use of a large administrative data set–a ten-year panel of individual tax returns from 1987 to 1996–to study withdrawals from tax-deferred plans. While it lacks some of the background variables available in survey data, their study has the virtue of being able to generate precise estimates of individuals' marginal tax rates. They overcome the endogeneity of the tax price by including a lagged measure of the marginal tax rate in their model, which yields a marginal effect on the probability of a cash out of about -.5. [5]

As alluded to above, two primary empirical issues confront tax price studies, which have not necessarily been adequately addressed in the literature on early withdrawals from retirement plans. One is the potential endogeneity of the tax price variable; the other involves the identification of the tax price effect.

Endogeneity is a concern because the choices workers make regarding the disposition of their retirement savings will partly determine their taxable income, and hence the tax price. Feldstein and Taylor (1976), who examined charitable giving, was one of the earliest tax price studies to address the endogeneity issue. The solution they proposed was to use the "first-dollar" tax rate, or the rate that applies to the first dollar of a charitable contribution. In another study of charitable giving, Feenberg (1987) employs an instrumental variables approach to overcome the endogeneity of the tax price.

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[5]Amromin and Smith do not report a tax price semi-elasticity, as Chang does. However, assuming an average tax price between .2 and .3, this would generate a semi-elasticity between .1 and .15–slightly lower than Chang's estimates but more in line with my own.

Endogeneity of the marginal tax price is also a concern to the extent that the rollover decision may affect the individual's taxable income *indirectly*. For example, receipt of a lump-sum distribution triggered by a job separation may discourage workers from seeking other employment in that year, leading the decision to withdraw money to be associated with lower taxable income and hence lower marginal tax rates. A similar association may arise if workers who leave their job involuntarily are more apt than those who leave their jobs voluntarily to cash-out their plan balance because they face greater income risk. Moreover, this effect may be greater for workers who experience a job separation early in the year.

Variables that determine tax price, such as income and marital status, may well have a direct, as well as indirect (i.e., through tax price), effect on the disposition of retirement plan balances. Including these variables in the empirical model, along with the tax price variable, can thus give rise to a nonlinear dependence among the explanatory variables. Excluding these variables, on the other hand, will likely lead to a biased tax price effect.

Inflated standard errors are the typical symptom of this functional dependence among the independent variables. However, as Feenberg (1987) notes, the focus on standard errors is only diagnostic if the researcher can be certain that the estimated functional form is correct–something that researchers rarely possess *a priori*. In the presence of functional dependence, and without knowledge of the correct functional form, identification must come from exploiting some independent variation among the independent variables.

3.2.2 Empirical Approach

This study largely follows the approach to estimating the tax price effect advocated in Feldstein and Taylor (1976) and Feenberg (1987), who analyzed the tax price sensitivity of charitable giving. The first model estimate the tax price effect by using a "first dollar" tax rate as a proxy for the actual tax rate that workers face. The first-dollar rate the sum of the effective federal marginal tax rate, the effective state marginal tax rate and the ten

percent flat rate penalty (if the worker is under age 55), calculated net of any distribution from their retirement plan. In other words, it is the marginal tax rate that applies to the first dollar of a distribution. This leads to the following probit model:

$$Pr(Save\ All)\ =\ \Phi(\alpha FD\ MTR + \beta' X) \tag{3.2}$$

where Φ is the standard normal cumulative distribution function, $FDMTR$ denotes the first dollar marginal tax rate, and the X is the vector of demographic and plan characteristics defined above.

A second model uses a similar construct, the "last-dollar" tax rate, as a proxy for the actual tax rate. The last-dollar effective tax price is calculated in the same manner as the first-dollar rate, except that the worker's entire plan balance is added to their taxable income regardless of whether they actually took a distribution. Hence, the last-dollar rate captures the price of cashing out one's entire plan.

$$Pr(Save\ All)\ =\ \Phi(\alpha LD\ MTR + \beta' X) \tag{3.3}$$

where $LDMTR$ denotes the last dollar marginal tax rate.

Two features of the tax price variables used in these models should mitigate the identification problem. First, the use of effective tax rates, which exhibit greater variation within income classes than statutory rates, should lessen the potential for perfect dependence of the tax rate on income. Second, the inclusion of the state tax rate in the tax price draws upon a source of variation independent of personal characteristics.

In addition to estimating models using effective marginal tax rates, a third model follows the more typical methodology of using the statutory marginal tax rate.

$$Pr(Save\,All = 1) \quad = \quad \Phi(\alpha Stat\,MTR + beta'X) \tag{3.4}$$

where $Stat\,MTR$ denotes the statutory marginal tax rate. This rate is determined by finding where the worker's last dollar of federal taxable income (AGI minus deductions and exemptions) falls in the federal marginal tax rate schedule and can differ from the effective marginal tax rate, which reflects features of the tax laws not captured in the statutory rate. While for most taxpayers the effective marginal will equal the statutory rate, these two rates can also significantly diverge for a number of taxpayers (CBO, 2005). Again, this is because the effective rate also reflects the phasing in and out of various tax provisions, such as payroll taxes, deduction and credits.

The proxy variable approach goes some way toward mitigating the endogeneity of tax price. However, the identification and endogeneity problems can be more satisfactorily solved with an instrumental variables (IV) approach, provided suitable instruments for the actual tax price can be found. In this context, a suitable instrumental variable would be correlated with the tax price but not with other personal characteristics that affect the disposition of retirement plans. One possibility is to use the first dollar rate as an instrument, rather than just as a proxy, for the endogenous actual tax price. The first dollar rate satisfies the condition of being highly correlated with the actual tax price. Yet because it is so highly correlated with the endogenous variable, it may not be completely independent of other, unobserved characteristics affecting the disposition decision. Correlation between the instrument and the included variables again leads back to the identification problem, while correlation of the instrument with unobserved characteristics, captured in the error term, would lead to bias in the tax price coefficient.[6] The following two-stage IV model is estimated:

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[6]Feenberg (1986) notes, for example, that because the first dollar rate is likely to exhibit less variation than the endogenous tax rate, the IV estimates will be biased upward.

$$MTR = \alpha FDMTR + \beta'X + \epsilon \tag{3.5}$$

$$Pr(Save\,All = 1) = \Phi(\gamma \widehat{MTR} + \beta'X) \tag{3.6}$$

where MTR denotes the actual tax price that workers face, and $FDMTR$ is the first-dollar rate defined above.

A second set of instruments that I employ are dummy variables for the quarter of the year in which the participant separated from their job:[7]

$$MTR = \alpha'Quarter + \beta'X + \epsilon \tag{3.7}$$

$$Pr(Save\,All = 1) = \Phi(\gamma \widehat{MTR} + \beta'X) \tag{3.8}$$

where $Quarter$ denotes a vector of dummy variables for the quarter of separation.

The rationale for using the quarter of separation as an instrument is that workers who separate from a job earlier in the calender year are more apt to record lower earnings for that year than workers who separate from their employer very late in the year. In other words, workers who separate early in the year face greater uncertainty about their income for that year and, if they face any jobless spell, are likely to forecast lower earnings, and hence tax price, for that year. These instruments have greater validity, in terms of being uncorrelated with error term in the outcome equation, than the first-dollar rate, but are liable to be much weaker instruments.

Differences in state tax laws with respect to early withdrawals could deliver a more

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[7]This SIPP does not permit the researcher to match information from the disposition of distributions from their retirement plan to the specific job sponsoring that plan. It is possible, however, to produce a match based on the year in which a distribution was reported and the year a job separation was reported. As a consequence, there may be some measurement error for those few respondents who reported more than one separation in a year.

plausibly exogenous source of variation, but the correlation between these differences and the total tax price is likely to be weak. State taxes, after all, make up a relatively small percentage of the total tax price. And apart from differences in tax rates, state-level differences in the tax treatment of early pension withdrawals may not account for a great deal of variation in the tax price. A consequence of weak correlation between instrument and the endogenous variable is large standard errors. However, since the magnitude of tax price coefficients are typically quite large, the IV approach might still yield significant effects (Feenberg, 1987).

3.3 Data

This study uses data from the 2001 panel of the Survey of Income and Program Participation (SIPP), a national survey that tracks respondents over nine waves, or 36 months. An important advantage of the SIPP over other national surveys lies in its rather detailed breakdown of income sources which facilitates constructing more accurate measures of taxable income. In addition, the SIPP topical modules allow me to include other key items used to calculate effective tax rates, such as the amount of property tax, mortgage interest, spending on child care, out-of-pocket medical expenses and contributions to retirement accounts.[8] Another key advantage of using a national survey like the SIPP is that it allows the research to control for a richer set of background variables, which may themselves be driving the cash out decision.

However, analyzing the tax sensitivity of rollover decisions with survey data is also hampered by a number of data constraints. The first is the relatively low incidence of lump-sum distributions typically reported in a given cross-section. In fact, most of the distributions reported in national surveys were received more than a year prior to the interview and thus, without a sufficiently long panel, cannot be contemporaneously

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[8]Property taxes were imputed owing to low response rates.

matched with variables that tend to change over time. Second, survey respondents often report their income with error (Pedace and Bates, 2000; Roemer, 2000). Third, most national surveys lack a detailed breakdown of income sources that is useful for calculating many of the credits and deductions available to tax filers. Finally most surveys ask respondents about the lump-sum distributions they actually received and do not capture workers who left the money to accumulate in their former employer's plan. As a result, the proportion of workers who cash out is often overstated.

Since it uses the SIPP, this study does not overcome concerns about the measurement error endemic to survey data.[9] To ensure that income, and other variables, are measured in the same year as the distribution, I restrict my sample to distributions that were taken during the course of the 2001 SIPP panel.[10] The drawback of imposing this restriction is that my sample size is rather small, covering two years (2001 and 2002) and consisting of just over 700 observations eligible to take a distribution from their employer-sponsored plan.

Although the SIPP lacks direct information on whether workers who previously left a job were eligible to take a lump-sum distribution, it does permit me to account for a group of workers with a high eligibility rate; namely, workers who expect future benefits from a defined contribution (DC) plan sponsored by a previous employer. Hence, my sample is not limited to workers who actually received a lump-sum distribution, and includes many of those who were eligible to take a distribution but opted instead to leave the plan balance with their former employer. There may be some measurement error, however, to the extent that some individuals who expect future benefits from a DC plan may not have been eligible to take a lump-sum distribution, while some DB plan participants–excluded from the sample–may have been eligible to take a distribution.

Estimates of the marginal tax rates facing workers are generated with the NBER's

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[9]However, since the SIPP collects information on most income measures every four months, these concerns are somewhat mitigated by a short recall period.

[10]My sample includes the first seven waves of the 2001 panel, where each wave spans four months.

TAXSIM program. The TAXSIM program generates an individual's effective marginal rate, which reflects provisions of the tax code, such as the phasing in and out of various credits and deductions, that may cause the statutory and effective rates to differ for some tax filers (Congressional Budget Office, 2005). Another advantage of the TAXSIM program is that it generates both state and federal income tax rates, while also accounting for the interaction between the two by computing the credit allowed under federal tax law for the amount of state taxes paid, and vice versa. The state tax rate is important for deriving an accurate estimate of the tax price because funds from tax-deferred accounts that are not rolled over into another qualified plan are in most cases also taxed at the state level. Moreover, state tax rates provide an additional source of cross-sectional variation.

Table 3.1 presents summary statistics by whether participants saved their entire plan balance or cashed out some portion. The third column displays the difference between the first two columns and whether that difference is statistically significant using a t-test. Recall that saving one's plan balance refers here specifically to preserving the tax-deferred status of one's entire balance (i.e., either rolling it over into an IRA or into another employer's plan or, possibly, leaving the plan to accrue with their former employer).

A higher proportion of married participants rolled over their entire plan balance, while divorced participants were more likely to cash out some portion of their plan balance at separation. Only the youngest and oldest participants in the sample displayed significant differences in their unconditional probability of rolling over their plan balance. Participants under 35 years of age were more likely to take some money from their plan; the oldest participants (between 55 and 64 years of age) were more likely to roll over their entire balance. Each educational category recorded a significant difference in disposition choice. Participants who did not hold at least a bachelor's degree were more likely to take some money from their plan, whereas those with a bachelor's degree or higher were more likely to roll over their entire plan balance. Among the racial categories, whites were more likely to choose to save their distribution. Hispanics and blacks, on the other hand, were more

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Table 3.1: Descriptive Statistics by Disposition Choice

	Cash Out Some	Roll All	Diff.
Female	0.506	0.523	−0.017
Married	0.637	0.739	−0.102**
Single	0.135	0.129	0.006
Divorced	0.198	0.117	0.082**
Widowed	0.030	0.015	0.015
Age: under 35	0.401	0.261	0.140***
Age: 35-44	0.270	0.299	−0.029
Age: 45-54	0.249	0.263	−0.014
Age: 55-64	0.080	0.178	−0.098***
Less than HS	0.059	0.023	0.036*
High School	0.274	0.155	0.120***
Some College	0.405	0.303	0.102**
Bachelor's Degree	0.215	0.324	−0.109**
Advanced Degree	0.046	0.195	−0.149***
Owns Home	0.688	0.801	−0.113***
White	0.814	0.896	−0.082**
Hispanic	0.080	0.032	0.048**
Black	0.072	0.034	0.038*
Asian or Other	0.034	0.038	−0.004
Family Income	53991.905	91165.080	−37173.175***
Plan Balance	10251.163	40865.172	−30614.010***
Poor Health	0.283	0.337	−0.054
Previous LSD	0.249	0.206	0.043
Required Withdrawal	0.266	0.222	0.043
Owns IRA	0.105	0.326	−0.221***
Statutory MTR	0.255	0.294	−0.039***
First Dollar MTR	0.179	0.253	−0.074***
Observations	709		

Estimates weighted using cross-sectional survey weights. * $p < .1$, ** $p < .05$, *** $p < .01$.

likely to take some money from their plan, although the unconditional difference for blacks was only marginally significant.

Not surprisingly, average family income and average plan balances differed significantly across disposition outcomes. The average family income among participants who rolled over their entire balance was nearly $40,000 higher ($91,165 compared to $53,992); plan balances among this group were more than $30,000 higher ($40,865 compared to $10,251).

No significant unconditional differences were recorded for poor health status, having previously taken a lump-sum distribution or being required to withdraw money at separation. A significantly higher proportion of IRA owners, however, saved their entire distribution.

Participants who rolled over their entire distribution faced, on average, a higher statutory marginal tax rate (determined using the family's taxable income and the statutory marginal tax rate schedule) relative to those who took some money from their plan. The average first-dollar marginal tax rate (calculated using TAXSIM, net of any distribution reported) was also significantly higher among participants who rolled over their entire distribution and, in fact, the difference was larger than for the statutory rate.

3.4 Results from Probit Models

Table 3.2 presents marginal probit estimates from equation 3.2, which evaluates the probability of preserving the tax-deferred status of one's entire distribution. Here the tax price is defined as the first dollar rate; that is, the sum of the effective federal marginal tax rate, the effective state marginal tax rate and the ten percent flat rate penalty (if the worker is under age 55), calculated net of any distribution from their retirement plan. The model in column 1 omits both the natural logarithm of the individual's plan balance and of family income–variables likely to be collinear with the tax price. This specification yields a derivative of the probability of saving one's balance with respect to the tax price of .71–a

Table 3.2: Marginal Probit Estimates of Rolling Over Entire Distribution

	(1)	(2)	(3)
First Dollar MTR	0.71***	0.63***	0.39*
	(0.16)	(0.17)	(0.18)
Poor Health (d)	0.028	0.014	0.0093
	(0.040)	(0.041)	(0.042)
Previous LSD (d)	−0.16**	−0.17***	−0.18***
	(0.050)	(0.050)	(0.050)
Required Withdrawal (d)	−0.067	−0.018	−0.019
	(0.044)	(0.044)	(0.044)
Owns IRA (d)	0.21***	0.18***	0.17***
	(0.038)	(0.039)	(0.039)
ln(Plan Balance)		0.11***	0.10***
		(0.014)	(0.014)
ln(Family Income)			0.11**
			(0.039)
Semi-Elasticity	0.162	0.143	0.0887
N	709	709	709
Log Likelihood	−381.5	−342.1	−338.0
Pseudo-R2	0.156	0.243	0.252

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Models include controls for gender, race, marital status, education, children, year, income, industry, occupation, tenure and plans on job.

large and significant effect. Adding the natural logarithm of the individual's plan leads to an attenuation of the magnitude of this estimate and a very slight change in the standard error. Adding income to the model leads to an even larger reduction in the magnitude of the tax price effect and an additional loss of precision.

The marginal probit effects can easily be converted into semi-elasticities by multiplying the coefficient by the average tax price. Semi-elasticities permit a more natural interpretation of the tax price effect; namely, the percentage point change in the probability of a rollover induced by a one percent change in the tax price. These are reported at the bottom of each column. For instance, the tax price semi-elasticity in column 3–the preferred specification–indicates that a one percent increase in the effective marginal tax rate raises the likelihood of preserving one's entire plan balance by approximately .9 percentage points. This is about half the magnitude of the semi-elasticities estimated by Chang (1996), whose lower-bound on this measure was about 2.

Table 3.3 presents marginal probit estimates for the effect of four different tax prices on the probability of a worker rolling over their entire plan. The first column once again displays results from the model that uses the first-dollar marginal tax rate (equation 3.2). The second column present the marginal estimates from equation 3.3. The coefficient on the last-dollar rate is nearly identical to that of the first-dollar rate. The higher semi-elasticity, therefore, is a function of the higher average last-dollar tax rate.

Column 3 of table 3.3 displays the results from a model using the statutory marginal tax rate (equation 3.4. It is notable that this definition of the tax price, which follows Chang (1996), produces a tax-price elasticity that is higher than the effective tax rates in the first two models but very much in line with Chang's own estimates of tax-price elasticity, which range between 2 and 4.

While the lower estimates derived using the effective rates (i.e., the first- and last-dollar MTRs) may indicate that previous estimates using statutory rates overestimated the responsiveness of individuals to the tax price of taking a withdrawal, there are some

Table 3.3: Marginal Probit Estimates of Cashing Out Entire Distribution

	(1) First-Dollar	(2) Last-Dollar	(3) Statutory	(4) IV	(5) IV
MTR	0.42**	0.40**	1.36***	0.48	2.46***
	(0.19)	(0.19)	(0.39)	(0.34)	(0.54)
ln(Family Income)	0.088**	0.13***	0.058	0.087*	−0.15*
	(0.041)	(0.036)	(0.041)	(0.051)	(0.078)
ln(Plan Balance)	0.095***	0.092***	0.097***	0.085***	0.055***
	(0.014)	(0.015)	(0.014)	(0.017)	(0.019)
Poor Health (d)	0.010	0.0091	0.0077	0.031	−0.028
	(0.042)	(0.041)	(0.042)	(0.041)	(0.038)
Previous LSD (d)	−0.19***	−0.19***	−0.20***	−0.11**	−0.16***
	(0.050)	(0.051)	(0.051)	(0.056)	(0.042)
Required Withdrawal (d)	−0.023	−0.020	−0.016	−0.012	−0.0066
	(0.044)	(0.045)	(0.044)	(0.044)	(0.037)
Owns IRA (d)	0.14***	0.17***	0.17***	0.14***	0.099**
	(0.044)	(0.039)	(0.039)	(0.054)	(0.042)
Instrument(s): First Dollar MTR				√	
Instrument(s): Quarter of Separation					√
Semi-Elasticity	0.0952	0.142	0.381	0.132	0.669
N	709	709	709	709	709
Log Likelihood	−335.2	−338.2	−334.7	687.1	239.5
Pseudo-R2	0.258	0.251	0.259		

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < .1$, ** $p < .05$, *** $p < .01$.
Models include controls for gender, race, marital status, education, children, year, income and interview rotation.

reasons why the latter estimates might be preferred. It could be that the effective marginal tax rates are subject to greater measurement error and hence greater attenuation bias (provided that error is random). The difference may also be partly attributable to a key difference in the samples; namely, the inclusion in this study who were likely eligible to take a distribution at job separation but opted to leave the money in their former employer's plan to accumulate.

On the other hand, deriving marginal tax rates from marginal tax brackets mitigates the measurement error inherent in the income measures and, hence, reduces this attenuation bias. Another possibility is that statutory rates are more likely enter into individuals' decision rules because they are less complicated to calculate than the effective rate and tend to be more familiar to tax filers. As noted in CBO (2005), " [...] the income tax system does not make effective marginal rates very apparent, even when people use tax-preparation software."

Column 4 displays the marginal probit estimates from equations 3.5 and 3.6, using the first dollar rate as an instrument for the actual tax price. The IV estimate is slightly larger in magnitude than the probit estimate of the first dollar rate. And, as expected, the IV estimate is considerably less precise. The IV estimates from equations 3.7 and 3.8 using the quarter of separation as instrument, shown in column 5, yields a very large tax price effect, much larger even than the effect measuring the statutory marginal tax rate. And although the standard errors are large, the coefficient on the tax price is still highly significant. In the first stage regression (not shown here) only the first quarter of separation is significant at the ten percent level and, as expected, the effect is negative; the instruments are not jointly significant, however. The weak correlation between the instruments and the endogenous accounts for the upward bias in the tax price coefficient in the second-stage probit, and this bias appears to be quite large.

3.4.1 State Penalties for Early Withdrawals

As previously discussed, state-level differences in the tax treatment of withdrawals could serve as instruments. However, IV probit models estimated using an indicator variable for states that impose an additional penalty for early withdrawals from employer-sponsored plans did not converge. Part of the difficulty in employing the probit IV approach, as opposed to a linear IV regression with a first-stage probit, is that identification cannot come from functional form difference in the first- and second-stage models.[11]

$$Pr(Save\,All) \;\; = \;\; \Phi(\alpha State\,Pen + \gamma FD\,MTR + \beta'X) \qquad (3.9)$$

where $State\,Pen$ denotes a dummy variable equal to one if the state in which the worker resides has a penalty for early withdrawals from employer-sponsored plans.

Although state-penalties proved to be poor instruments for the tax price, it may still be of interest to assess the independent effect of state-level penalties on the disposition decision. The heterogeneity in type of penalties that states impose is ignored. Instead, the existence of *any* state-level penalties is captured by an indicator variable that is equal to one if the state imposes any additional penalty, beyond assessing ordinary state income tax on a distribution.[12] I include the first-dollar tax rate in these models, since the TAXSIM program does not explicitly account for early withdrawal penalties. I also eliminate workers aged 55 and over, as they will not be affected by these penalties.

Table 3.4 presents the marginal probit estimates of the effect of state-level early withdrawal penalties. The results are consistent across specifications. An additional state

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[11]In addition, for models with multiple instruments, the IV probit model does not allow one to test for validity of overidentifying instruments

[12]Some states such as California and Maine assess a penalty that is equal to a percentage of the distribution, while others such as Wisconsin and Vermont assess a percentage of the federal tax on early withdrawals. My own examination of state income tax documents yielded six states that imposed an additional penalty on early withdrawals from employer-sponsored retirement plans.

Table 3.4: Marginal Probit Effects of State Penalties for Early Withdrawals on Rollover Decision

	(1) Save All	(2) Save Any	(3) Save None
State Penalty (d)	0.13*	0.13*	−0.11*
	(0.055)	(0.052)	(0.056)
First Dollar MTR	0.43*	0.32	−0.31
	(0.20)	(0.18)	(0.18)
ln(Family Income)	0.12*	0.099*	−0.098*
	(0.048)	(0.046)	(0.046)
ln(Plan Balance)	0.11***	0.10***	−0.10***
	(0.016)	(0.016)	(0.016)
Poor Health (d)	−0.00094	−0.021	0.022
	(0.046)	(0.045)	(0.046)
Previous LSD (d)	−0.21***	−0.16**	0.28***
	(0.055)	(0.054)	(0.055)
Required Withdrawal (d)	−0.0090	0.0068	−0.028
	(0.049)	(0.047)	(0.048)
Owns IRA (d)	0.19***	0.20***	−0.21***
	(0.044)	(0.042)	(0.044)
N	606	606	606
Log Likelihood	−294.3	−289.1	−297.7
Pseudo-R2	0.257	0.256	0.247

Robust standard errors in parentheses; (d) for discrete change of dummy variable from 0 to 1; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Models include controls for gender, race, marital status, education, children, year, income and rotation.

penalty raises the probability of preserving the tax-deferred status of one's plan balance by 13 percentage points. And it reduces the probability of cashing out one's entire plan by 11 percentage points. Each effect is significant at the 5 percent level. Considering that these models are controlling for state and federal tax rates, which includes the federal penalty, the magnitude of this effect is notable. In particular, it suggests that states may have considerable scope in further discouraging early withdrawals (and in potentially generating state revenues), if such a policy goal is deemed desirable.

3.5 Conclusion

This study has provided estimates of the responsiveness of rollover decisions to the tax price, adding to the rather limited knowledge about the effectiveness of this aspect of state and federal tax policy. The results broadly confirm the relative responsiveness of participants' rollover decision to the tax price. Using the preferred estimates of the tax semi-elasticity of between 1 and 1.5, a one percent increase in the tax price translates into a 1.5 to 2.3 percent decrease in cash outs. This points to the useful of this policy instrument to achieving specific goals, such as raising the penalty to further reduce early cash outs or, potentially, lowering it to raise tax revenue.

In particular, this study has attempted to address concerns about the endogeneity of the tax price in several ways. First, the use of the first dollar tax price, or the marginal tax rate net of any distribution, removes the most obvious source of endogeneity: the partial determination of the tax price by the disposition decision. In addition, IV probit methods were employed to overcome the endogeneity problem.

The first IV approach, suggested by Feenberg (1987), is to use the first dollar tax rate as an instrument for the endogenous tax rate. This model produced estimates very similar to those generated using the first dollar tax price as a proxy for the actual tax rate. IV estimates using quarter of separation produced much larger estimates, but the weakness of

these instruments cast some doubt on the reliability of these estimates. The estimate of the tax price effect derived using statutory rates were in line with those found in Chang (1996) who used the same method with data from the CPS. Interestingly, however, the estimates derived in this study using effective tax rates produced markedly lower elasticities, although still rather large. On the one hand, the effective rates used in this study, which are calculated using detailed information on income sources from the SIPP, incorporate more provisions of the state and federal tax codes and address the endogeneity of the tax price–are likely more accurate and thus preferable to previous estimates. The lower estimates obtained using effective marginal tax rates and a fairly rich set of control variables suggest that other factors may play a larger role in the rollover decision than commonly thought.

On the other hand, there is some question as to how well taxpayers perceive their effective marginal tax rate. If it is not well perceived by taxpayers, the effective rate may inform taxpayer's' decisions to a far lesser extent than the statutory rate and therefore the statutory marginal tax rates may be the behaviorally more relevant measure of the tax price. Moreover, because measurement error inherent in constructing taxable income from survey data is less likely to impair the estimates of the statutory tax rate, the tax price elasticity derived using statutory rates is subject to less measurement error. The addition of more data from future SIPP panels will be useful for obtaining more reliable estimates.

Finally, this study presented the first estimates, to my knowledge, of the impact of state-level early withdrawal penalties on the disposition decision. The results suggest that these state-level penalties are effective, even when accounting for the other differences in state tax regimes captured in the total tax price. If leakages from employer-sponsored plans continue to jeopardize individuals' retirement income security, states could take an expanded role in curbing the incidence of early withdrawals from employer-sponsored plans.

Chapter 4

Financial Attitudes and the Use of Cash Settlements from Retirement Plans

4.1 Introduction

This paper examines how participants' diverse set of financial attitudes and preferences affects what they do with their retirement plan balances when leaving a job. To this end, I take advantage of the broad range of questions in the Survey of Consumer Finances (SCF) that capture households' financial attitudes and behaviors to derive a summary measure of households' overall financial 'personality type.' These include questions on households' financial planning horizon, financial risk tolerance, savings goals and habits, attitudes toward buying on credit and spending out of capital gains. Another contribution of this study is to shed light on the relationship between the cash out decision and households' subjective expectations about longevity, retirement and income.

In addition to investigating whether certain financial personality types are at greater risk of taking money from their employer-sponsored retirement plan at job separation, this study looks at more specific uses of cash settlements. In evaluating the relative merits of taking a withdrawal from retirement savings, there is often an important distinction to be made between participants who use their settlement to gain some relief from indebtedness and those who simply use their settlement for current consumption. The charge that early withdrawals are largely the result of participants giving in to the temptation of spending a large lump-sum payout is vitiated to the extent that settlements are used to pay off bills, or even to invest in other non-tax-deferred instruments, rather than to finance consumption.

The growth of defined contribution (DC) plans has substantially increased the burden on

workers to manage their retirement savings. Workers covered under these plans typically face several decisions that can profoundly affect their retirement security, starting with the decision of whether to participate in their employer's plan to the subsequent decisions, if they do opt in, of how much to contribute, how to invest those contributions and, upon separation from the job, how to dispose of their plan assets.

DC plans have generally required that participants take a far more active role in planning for their retirement than under traditional defined benefit (DB) plans, which take most of these decisions out of workers' hands. Indeed, the benchmark against which participant behavior in DC plans is typically evaluated is that of a "good financial planner" (MacFarland et al., 2004; EBRI, 2002). The set of behaviors expected of a such a "planner" has been summarized as follows: (MacFarland et al., 2004):

> [R]ational participants would be expected to calculate an adequate savings rate and construct an optimal investment portfolio. When they change jobs, participants would be expected to avoid tax penalties and not spend their assets. At retirement, [...] workers would be expected to generate a suitable income stream from their savings for life, managing mortality risk and avoiding premature depletion of assets.

In reality, however, DC plan participants differ widely in terms of their knowledge and interest in financial matters, as well as their savings preferences, with many falling short of the "planner" paradigm. In fact, the evidence indicates that most individuals lack confidence in their ability to plan for retirement and, perhaps because of this, also spend very little time putting together any sort of long-term financial plan (Bernheim, 1994; Lusardi, 2000, 2003; Ameriks et al., 2003). A retirement readiness survey by the Employee Benefits Research Institute (EBRI) found, for instance, that only about one-third of respondents had undertaken even the very basic task of setting a savings goal (EBRI, 2002). Similarly, results from a Vanguard Group survey suggested that only about half of the respondents held beliefs and attitudes consistent with a "successful planner" (MacFarland et al., 2004). As DC plan coverage extends to more and more workers who

lack the inclination or aptitude for the financial decisions associated with these plans, the question arises as to whether this deficit is translating into poor plan management and, ultimately, into decreased retirement security for plan participants. The concern is that financially diffident, or indifferent, participants might be more prone to making poor decisions that jeopardize their retirement income security.

To help "non-planners" navigate through these financial decisions and to "nudge" them toward more optimal behavior, many plans have default options which have increased participation and contribution rates (Thaler and Sunstein, 2008; Madrian and Shea, 2001; Benartzi and Thaler, 2004). Until recently, however, one aspect of DC plan management arguably not covered by an "optimal" default–at least from the perspective of the worker–was participants' disposition options at job separation. In particular, the default in most plans was for employers to automatically cash out smaller balances (those under $5,000), which may have significantly contributed to the high cash out rates among plans with small balances.[1]

As noted above, the expectation is that, when changing jobs, "rational" participants should generally avoid incurring the substantial tax penalties associated with early withdrawals from their retirement plans. These include a 10 percent excise tax for workers under age 55 if the withdrawal is taken in conjunction with a job separation (under $59\frac{1}{2}$ otherwise), a 20 percent withholding tax as well as the ordinary income tax assessed on a distribution. Moreover, participants are giving up the substantial benefit of tax-deferred compounding when they withdraw assets from their retirement plans.

Despite these costs, households have taken withdrawals at a surprisingly high rate when changing jobs. How basic participant and plan characteristics affect the likelihood of a cash out have been fairly well established. In particular, age, income and the size of the settlement tend to be inversely related to the probability that participants choose to cash

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[1]This default was changed in 2005 so that employers are required to roll over balances under $5,000 into an IRA if not instructed to do otherwise by the employee.

out (Munnell and Sundén, 2004; Moore and Muller, 2002; Purcell, 2000). Considerably less is known, however, about how households' heterogeneous savings preferences and attitudes influence participants' decisions.

This study confirms the independent effect of financial attitudes and behaviors on the cash out decision. It identifies a segment of plan participants–comprising about one-quarter of the sample–whose financial attitudes and behaviors do not comport well with those of a "successful planner" and who are at significantly higher risk of depleting their retirement savings at job separation. These participants display significant differences along a number of dimensions, most notably planning horizon, savings goals and habits and credit card behaviors. Additionally, there is evidence that cash outs by this at-risk segment are driven to a large extent by a need for current consumption. Unlike cash settlements that are used to pay off debt or to invest in other, non-tax-deferred instruments, this use of cash outs means that indeed, for many of these participants, there is a total leakage from their retirement savings.

4.2   Empirical Approach

4.2.1   Financial Personality Types

This study first performs a cluster analysis to create distinct attitudinal and behavioral segments, or "financial personality" types. The clusters are generated using an iterative, non-hierarchical, k-means clustering procedure with a Jaccard binary similarity coefficient. This statistical technique assigns participants to a pre-determined number of segments, or clusters, based on their degree of similarity according to the items selected for the analysis. Essentially, it attempts to tease out of the data "natural groupings" of participants along the specified dimensions (MacFarland et al., 2004). The clusters are generated in such a way that the difference of participants within each cluster are minimized and the differences of participants between clusters are maximized.

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The results from the cluster analysis are then used to analyze relationship between financial types and the probability that households withdraw some money from their plan is then investigated with both probit and multinomial logit models. The specific items used as inputs in the cluster analysis reflect various facets of households' financial attitudes and preferences and behaviors. These items are briefly described below.

Financial Fortunes, Planning Horizon, and Risk Tolerance The first item reflects households' financial planning horizon, which can also serve as a proxy for their rate of time preference (Lusardi, 1998). Households reporting a planning horizon of a year or less are characterized as short-term planners; those with a horizon of more than a year and up to ten years are labeled medium-term planners; and those with a horizon of more than 10 years are denoted long-term planners. The SCF also asks households about the amount of financial risk they are willing to take in exchange for a corresponding potential reward; for instance, whether they are willing to take substantial risk for substantial reward or no risk for no reward. Lastly, as a measure of their perceived financial fortunes, respondents are also asked to what extent that would agree, or disagree, with the statement that they have been "lucky" in their financial affairs.

Savings Goals and Habits The more than twenty responses to the question on households' savings goals have been collapsed into four categories: whether households are saving primarily for retirement, for precautionary reasons, for human capital and other investments or to make large purchases. I classify respondents as retirement savers if their primary reason for saving was either explicitly for retirement or, more generally, "for the future." Precautionary savers were those primarily motivated to save for the following reasons: to have reserves in case of unemployment, illness, emergency or for "rainy days," other unexpected needs, security and independence, liquidity or to have cash on hand. "Family" savers are those putting aside money for their own education or that of a family

member, for some other family-related reason, for a business or for some other investment. The last category of savings goals includes those who are essentially saving to make a large purchase or for some other, non-investment expenditure (or not saving at all). This category is comprised primarily of respondents saving for a home, home improvements, a vehicle, vacation and other miscellaneous expenditures.

Since the responses to these questions are collected after households decided on the use of their cash settlements, a causal interpretation of these variables in this model hinges on the assumption that respondents' attitudes and habits have remained relatively fixed, at least over the last few years and, more crucially, were not themselves changed by their disposition decision. It is also important to bear in mind that the types of savings goals that households deem important are in many cases borne out of their recent financial experience. For instance, respondents may have begun saving for precautionary reasons because they recently suffered an income shock. To the extent that I am unable to adequately control for past shocks, a self-reported precautionary savings goal may reflect recent volatility in the household's income history. If this is the case, precautionary savers might be more apt to use their cash settlement to pay off debt or expenses incurred as a result of this income volatility.

Saving Habits   Respondents' saving habits are captured in the SCF by a question that asks whether respondents regularly put aside money each month, saved somewhat irregularly or whether they were generally unable to put aside any money at all. Households with strong savings habits should be less inclined to use their settlement for consumption, whereas those that have had difficulty saving may have a substantial need to take a cash out. Another measure of savings habits is whether households have saved, or have begun saving, for a large, anticipated expense. This may be liquidity needed for a down payment on a house or to finance an education. Although framed as "expected" at the time of the survey, these expenses may have initially arisen from a shock. That is, at

the time the cash settlement was taken, some of these expenses may have been unanticipated. This may be true, for instance, with expenses related to the care of the respondent or a respondent's family member. Education related expenses, on the other hand, are less likely to have arisen from past shocks.

Credit Card Behaviors   A key dimension of financial management is how households use their credit cards. The SCF queries households on whether they own a credit card and, if they do, how often they typically pay off their entire balance each month: always, almost always, sometimes or hardly ever.

Other Attitudes towards Consumption   The SCF contains several other questions that elicit respondents' attitudes toward consumption. One asks how likely respondents are to spend more if the assets they own increase in value. Another question asks whether respondents find it acceptable to borrow for various uses. The measure extracted from this question is whether respondents believe that it is okay to borrow for a vacation or other luxury items like a fur coat or jewelry. Finally, the SCF queries respondents about their attitude toward making purchases on installment plans. The variable related to this question equals unity for workers who believe that buying on installment is an unequivocally bad idea. Each of these variables attempts to capture households' propensity to spend.

Interest in Financial Matters   Also included in the cluster analysis are items that attempt to capture households' interest in, or attention to, financial decisions. The first of these items measure how much shopping households do when making both credit and investment decisions. Each variable equals one if households indicated that they shop "a lot." In general, households that research their financial decisions by "shopping around" should be less prone to making a poor decision about the disposition of their retirement plan when leaving a job. One issue with these questions is that they do not identify those

who may shop very little for, say, investments because they do not invest much. By the same token, households that shop a lot for credit may do so because they have taken on a lot of debt and hence may have a greater need for liquidity.

In addition, the SCF asks respondents about the sources of financial information that they use for both credit and investment decisions. The categories created from these questions include "calling around," media, financial professionals, and friends and relatives. The sources of information on which households rely for financial decisions may also provide some indication of their level of financial literacy and interest. In general, friends and relatives are seen as less reliable sources of financial information than financial professionals or even media sources. Furthermore, relying on financial information from media sources and from "calling around" may signal that the household is a more avid consumer of financial information.

Two other studies have used cluster analysis to segment retirement plan participants into financial personality types. MacFarland et. al (2004) examine the link between attitudes toward money and retirement planning using a 26-item survey sponsored by The Vanguard group. The authors carry out cluster analysis to classify respondents as one of five different "money attitude" segments. Individuals with the most desirable set of attitudes and behaviors are labeled "successful planners." As the name implies, these individuals have a long-term financial planning horizon, believe they are well prepared for retirement, have strong savings habits, are willing to take financial risks for financial gain and rely on a number of different sources when making decisions. A second group, labeled "Up and Coming Planners," closely resemble "successful planners" in most every respect except that they lack the successful planners' confidence in their financial plans. Like the previous two groups, "Secure Doers" exhibit a strong interest in saving but more out of a sense of obligation and, further, lack the zeal for planning that characterize the two groups of "planners." The "Secure Doers" also distinguish themselves from the previous two "planner" segments by their greater aversion to financial risk. Finally, among those with

the least desirable set of "money attitudes," MacFarland et al. (2004) identify two groups of "avoiders." "Stressed Avoiders" are individuals who have not put much effort into financial planning, primarily because it causes them stress and anxiety. "Live-for-Today Avoiders" have similarly given little thought to their future future but not out of stress or anxiety.

Not surprisingly, the authors find important differences in the demographic and socio-economic makeup of these groups: Successful Planners were older, more educated, better paid and had saved more than other segments. On the other hand, Live-for-Today Avoiders were younger, less educated, lower paid than other segments. Another finding of interest to the present study is that the authors' cross-tabulations reveal that both types of "avoiders" exhibited a greater willingness to tap their retirement plan for needs other than retirement. However, the authors do not employ multivariate methods to test for significant differences in the behavior of these financial personality types.

An EBRI (2002) study undertakes a similar cluster analysis on the beliefs and attitudes of individuals using data from their annual Retirement Confidence Survey. This study arrives at a similar typology: Planners, who are enthusiastic about retirement and financial planning; Savers, who have good savings habits but are financially risk-averse; Strugglers, who have good intentions but are held back by financial problems; Impulsives, who lack good savings habits; and Deniers, who avoid planning because they feel achieving retirement security is a futile endeavor.

It should be noted that the data used in this study does not contain the same detailed information on attitudes and behaviors related specifically to retirement planning as the data sources in EBRI (2002) or MacFarland et al. (2004). The segments in this study therefore reflect more general financial attitudes and behaviors. Moreover, the number of items used in the cluster analysis is also not quite as extensive; as a result, fewer clusters are employed.

Table 4.1 presents a summary of financial attitudes and behaviors by financial

Table 4.1: Financial Attitudes and Habits by Personality Type

| | *Financial Personality Type* | | | | |
	1	*2*	*3*	*4*	*Total*
Planning Horizon					
Short Term	18.04	14.36	22.52	62.50	24.16
Medium Term	52.78	68.32	58.56	32.81	54.16
Long Term	29.18	17.33	18.92	4.69	21.69
Financial Risk Tolerance					
Above Average	46.55	47.03	29.73	19.53	40.67
Average	42.98	46.53	49.55	31.25	42.92
None	10.47	6.44	20.72	49.22	16.40
Primary Reason for Saving					
Retirement	63.92	53.96	46.85	22.66	53.60
Precautionary Reasons	16.26	18.32	20.72	35.16	20.00
Human Capital or Other Investments	13.59	18.32	17.12	17.19	15.62
Housing or Large Purchases	6.24	9.41	15.32	25.00	10.79
Adequacy of Retirement Income					
1: Totally Inadequate	28.73	34.65	39.64	46.09	33.93
2	20.94	16.34	26.13	20.31	20.45
3	25.61	29.21	24.32	25.00	26.18
4: Very Satisfactory	24.72	19.80	9.91	8.59	19.44
Savings Habits					
Saves Regularly	96.88	33.17	14.41	3.91	58.76
Saves Irregularly	3.12	59.90	47.75	26.56	24.94
Does Not Save	0.00	6.93	37.84	69.53	16.29
Saving for Major Expense					
Saving or Already Saved	48.78	50.99	18.92	14.06	40.56
Not Saving Yet	16.70	16.34	54.05	49.22	25.96
No Major Expense	34.52	32.67	27.03	36.72	33.48
Buying on Installment					
Good Idea	32.52	29.21	31.53	27.34	30.90
Good & Bad	36.30	33.17	35.14	32.81	34.94
Bad Idea	31.18	37.62	33.33	39.84	34.16
Borrow for luxury items?					
No	79.73	83.66	78.38	77.34	80.11
Yes	20.27	16.34	21.62	22.66	19.89
Spend More when Asset Values Increase?					
Agree	26.50	32.67	29.73	33.59	29.33
Undecided	12.92	11.39	11.71	20.31	13.48
Disagree	60.58	55.94	58.56	46.09	57.19
Pay Off Credit Card Balance?					
Always or Almost Always	60.13	67.82	31.53	8.59	50.90
Sometimes	17.15	15.84	19.82	17.97	17.30
Hardly Ever	14.03	8.91	43.24	29.69	18.76
No Credit Cards	8.69	7.43	5.41	43.75	13.03
N	449	202	111	128	890

Weighted estimates based on author's tabulations from the SCF.

Table 4.2: Financial Shopping Habits by Personality Type

| | Financial Personality Type | | | | |
	1	2	3	4	Total
How much do you shop for credit?					
Very Little	17.82	18.32	15.32	33.59	19.89
Some	37.86	41.58	39.64	41.41	39.44
A Lot	44.32	40.10	45.05	25.00	40.67
Primary Source of Credit Information					
Calling Around	28.29	43.07	3.60	35.94	29.66
Media	33.41	6.44	87.39	21.88	32.36
Professionals	20.71	27.72	3.60	13.28	19.10
Friend or Relative	12.92	17.82	3.60	22.66	14.27
Does Not Borrow	4.68	4.95	1.80	6.25	4.61
How much do you shop for investment?					
Very Little	22.49	23.27	28.83	57.03	28.43
Some	33.18	31.68	41.44	24.22	32.58
A Lot	44.32	45.05	29.73	18.75	38.99
Primary Source of Investment Information					
Calling Around	14.25	23.27	5.41	11.72	14.83
Media	24.72	20.30	53.15	9.38	25.06
Professionals	39.42	31.19	27.93	21.09	33.48
Friend or Relative	20.71	24.75	10.81	38.28	22.92
Does Not Invest	0.89	0.50	2.70	19.53	3.71
N	449	202	111	128	890

Weighted estimates based on author's tabulations from the SCF.

'personality' types generated from the cluster analysis. And table 4.2 displays financial shopping habit and sources of financial information by personality type.

Type 1 corresponds most closely to what is characterized in EBRI (2002) and MacFarland et al. (2004) as a "planner" or "successful planner." These participants have the strongest orientation toward long-term financial planning, in general, and toward saving for retirement, in particular. As a consequence, they are also the most secure about their retirement savings. They also have the strongest savings habit and are the most willing to take above average financial risks to earn above average returns. They are fairly diligent in shopping for both credit and investments and are the most apt to rely on financial professionals for both credit and investment decisions.

Type 2 in this analysis resembles the "up and coming planners" set forth in MacFarland et al. (2004). Participants in this segment are focused more on the medium-term and are somewhat less focused on saving for retirement. They are also less confident about their retirement savings and less willing to take financial risks. Interestingly, though, this group is somewhat more conservative in its borrowing attitudes than successful planners but somewhat more aggressive in its attitude toward spending. That is, up and coming planners are less keen to borrow, either for purchases in general or for luxury items in particular, yet are more likely to agree that they would increase their spending if the value of their assets increased. What really distinguishes the "up and coming" planners from the more "successful" planners, however, is that they are far less likely to save regularly and, instead, tend to save on a irregular basis. Yet these poorer habits do not appear to be reflected in a lessened ability to save for large, future expenses, which they do just as well as the successful planners. Credit card behaviors between these two groups are also rather similar. Up and coming planners are similarly diligent about shopping around before making financial decisions, though somewhat less so for credit decisions, which may be attributable to their lower demand for credit. However, they differ from successful planners in terms of their primary sources of financial information. Up and coming planners are

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more likely to rely on friends and relatives, and less likely to rely on media and financial professionals.

Again invoking the EBRI (2002) typology, participants in the third segment might be best characterized as "strugglers." They are somewhat more likely than up and coming planners to plan for the short-term financially, yet are very similar to this segment in terms of the proportion of participants planning for the long-term. This segment's focus on saving for retirement is similar to up and coming planners, but they are considerably less confident in the adequacy of their retirement savings. They also display a higher degree of risk aversion, markedly poorer savings habits (including whether they are saving for a large, future expense) and credit card behaviors. Furthermore, they are less inclined to spend out of capital gains than up and coming planners, but are more apt to borrow for luxury goods. They put in less effort shopping around before making investment decisions, though this could be partly due to their lower propensity to invest. Strugglers also have a strong tendency to rely on the media for their information on credit and investment decisions.

Participants in the fourth segments are clearly the worst off in terms of attitudes and behaviors and, for this reason, are termed "acute strugglers." Participants in this segment have a decidedly short-term planning horizon, are highly risk averse financially and have, by far, the weakest orientation toward saving for retirement. In fact, they have a markedly higher precautionary motive. Surprisingly, though, they are not markedly less secure about their retirement savings than the "strugglers" in the third segment. Participants in this segment have even greater difficulty putting aside money, with nearly 70 percent reporting that they generally do not save each month. A high proportion (nearly 43 percent) also report not even owning a credit card; and those who do, struggle to pay off their credit card balance each month. Acute strugglers are by far the least likely to invest, which explains why they do little shopping for investments. And those who do invest, rely primarily on friends and relatives. Moreover, while they are somewhat less likely to borrow than other segments, they do decidedly less shopping for credit decisions.

Table 4.3: Demographic Characteristics by Financial Type

	Financial Type				
	1	2	3	4	Total
Age					
Under 35	27.84	19.31	36.04	42.19	28.99
35 to 44	31.63	32.18	32.43	35.16	32.36
45 to 54	27.84	31.68	19.82	14.84	25.84
55 to 64	12.69	16.83	11.71	7.81	12.81
Ethnicity of Head					
White	85.08	84.16	81.08	82.81	84.04
Black	7.57	5.45	5.41	11.72	7.42
Hispanic	3.56	2.48	6.31	3.91	3.71
Asian or Other	3.79	7.92	7.21	1.56	4.83
Educational Attainment of Head					
High School or Less	19.60	19.80	31.53	42.19	24.38
Some College	21.83	17.33	34.23	32.81	23.93
Bachelor's Degree	30.07	27.72	18.02	18.75	26.40
Advanced Degree	28.51	35.15	16.22	6.25	25.28
Marital Status					
Never Married	14.03	6.93	19.82	23.44	14.49
Married	73.27	77.23	64.86	42.97	68.76
Divorced or Widowed	12.69	15.84	15.32	33.59	16.74
Typical Annual Income					
1st Quartile	16.26	16.83	26.13	60.16	23.93
2nd Quartile	25.17	24.75	45.05	31.25	28.43
3rd Quartile	34.97	22.28	19.82	8.59	26.40
4th Quartile	23.61	36.14	9.01	0.00	21.24
LSD Balance-Last 5 years					
Less than 5,000	20.71	20.30	29.73	49.22	25.84
5,000-19,999	22.05	23.76	31.53	36.72	25.73
20,000-99,999	30.96	24.26	24.32	13.28	26.07
More than 100,000	26.28	31.68	14.41	0.78	22.36
N	449	202	111	128	890

Weighted estimates based on author's tabulations from the SCF.

Table 4.3 provides a breakdown of some demographic characteristics by financial personality type. Not unexpectedly, table 4.3 reveals a strong relationship between age and financial type in that the "strugglers" in segments three and four are younger on average than the "planners" in segments one and two. Interestingly, the successful planners are younger on average than the up and coming planners. Educational attainment of the household head is also strongly tied to financial type, with education attainment decreasing in type.

The strugglers in segments three and four are more likely to have never been married than participants in segments four and five. What is troubling, however, is to find such a high proportion of widowed or divorced participants (34 percent) among the acute strugglers.

Acute strugglers overwhelmingly fall in the first, or lowest, quartile of typical earnings (58 percent), whereas strugglers earn slightly better, falling predominantly in the second earnings quartile (53 percent). The income distribution is less concentrated for the up and coming planners relative to successful planners, with a higher proportion of up and coming planners falling in both the lowest and highest income quartiles.

A very distinct pattern emerges in the cross-tabulation of the settlement size and financial type. Moving from successful planners (segment 1) to acute strugglers (segment 4), one observes a progressively larger proportion of smaller settlements (i.e., less than $5,000 and between $5,000 and $19,999). The obverse pattern holds for larger settlements. In other words, the "strugglers" tend to have lower plan balances than the "planners."

4.2.2 Data

The SCF is a cross-sectional survey repeated every three years and contains detailed information on households' finances as well as a number of unique questions on financial attitudes and behaviors. Wealthy households are oversampled in the survey, so population weights are used to derive more representative estimates.

The SCF began asking respondents about the receipt of cash settlements from previous jobs as early as the 1989 interview, but a question on how those settlements were used was not introduced until the 1998 survey.[2]

While respondents can provide information on up to six cash settlements–who received each, when and in what amount–, the question on how these settlements were used is a general one that does not refer to any one specific settlement (if multiple settlements were reported). Consequently, a one-to-one match of each cash settlement to its disposition cannot be established in cases where respondents reported more than one settlement *and* more than one use.

My unit of observation is therefore any cash settlements reported within four years of the interview. If a household reported more than one settlement and more than one use for its settlements, the additional restriction is imposed that their first settlement had to have occurred within four years from the interview date. This is to ensure that the disposition outcomes households reported actually occurred in the four year period of this study.

Another drawback of the SCF question on cash settlements from previous jobs is that the first question in this series refers specifically to "cash settlements received from a pension or retirement plan of a previous job" and thus may be missing workers who simply left their plan with their former employer. As a consequence, the results may overstate the rate at which workers cash out their retirement plan balances. A final issue with the SCF data is that, because it is a repeated cross-section, some of the variables used in the analysis are not measured prior to the receipt of the cash settlement(s). To mitigate this problem I have restricted the sample to settlements that occurred in reasonable proximity to each interview.[3] Of course, this does not completely resolve the problem, so that, ultimately, some of the relationships in the multivariate analysis cannot necessarily be

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[2]The SCF has not been used to rigorously study pre-retirement withdrawals from employer-sponsored retirement plans Munnell and Sundeén (2004) use the 2001 survey to generate some descriptive statistics on the incidence and size of lump-sum distributions and the income and age of those who take these distributions.

[3]The need for proximity to the interview had to be weighed against the need to generate a reasonable sample size.

interpreted as strictly causal.

The sample is composed of households whose heads are under 65 years of age, who have previously worked full-time and who, if not working full-time at the time of the interview, intend to return to full-time work. These cuts attempt to ensure that the sample is limited to workers who have not dropped out of the labor force. Also omitted from the sample are workers with less than five years of full-time work experience, if not working or only working part-time at the time of interview, or with less than three years of full-time experience, if working full-time at the time of interview. [4]

4.2.3 Estimation

This study analyzes both the primary decision to cash out or roll over a settlement as well as more specific uses of cash settlements. The SCF question on households' use of their settlements has evolved with each survey, adding more detailed to the menu of options.[5] To maintain consistency across surveys, I have collapsed the various uses of a cash out into three categories: 1) other investments (outside of another employer-sponsored retirement plan or IRA); 2) paying off bills, debts or living expenses; and 3) spending on durables or other purchases.

Table 4.1 presents the breakdown of disposition choices by financial types. The proportion of participants cashing out at least some portion of their plan steadily increases in financial type, with 36 percent of successful planners (type 1) and 77 percent of acute strugglers (type 4). In general, the same pattern holds with respect to using settlements to pay off bills or for other spending, with the exception that successful planners (type 1) are slightly more likely to pay off bills than up and coming planners (type 2). This may be a result, for instance, of succesful planners' somewhat more favorable attitudes toward borrowing. No clear pattern emerges, by contrast, with respect to investing one's

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[4]This cut was dictated by the fact the SCF does not collect some key employment history information, such as occupation and industry, from respondents who do not meet these criteria.

[5]However, the more specific uses introduced in later surveys generated very few responses.

Table 4.4: Disposition Choices by Financial Type

| | Financial Personality Type | | | | |
	1	2	3	4	Total
Disposition of Settlement					
Cashed Out None	70.38	67.82	45.05	21.88	59.66
Cashed Out Some	29.62	32.18	54.95	78.13	40.34
Other Investment					
None	91.09	88.12	93.69	90.63	90.67
Some	8.91	11.88	6.31	9.38	9.33
Paid Off Bills					
None	91.09	93.56	80.18	72.66	87.64
Some	8.91	6.44	19.82	27.34	12.36
Spent					
None	86.41	84.65	71.17	57.03	79.89
Some	13.59	15.35	28.83	42.97	20.11
N	449	202	111	128	890

Weighted estimates based on author's tabulations from the SCF.

settlement, other than that up and coming planners (type 2) are the most, and strugglers (type 3) the least, likely to re-invest their settlements into other, non-tax-qualified instruments.

The first model evaluates the probability that a households takes any money from their employer-sponsored retirement plans.

$$
Cash\,Out = \begin{cases} = 1 \ \text{if any money taken from plan(s)} \\ = 0 \ \text{if no money taken from plan(s)} \end{cases}
$$

$$
Pr(Cash\,Out = 1) = \Phi(\beta'X + \gamma'Income + \delta'Liquidity + \mu'Health +
$$
$$
\theta'Expect + \alpha'Type)
$$

In this model, Φ denotes the cumulative normal probability function. It controls for the determinants of household savings behavior present in the life-cycle model: a measure of household income, age and other demographic characteristics of the household, such as the

the number of dependents in the household, race, education and marital status. Plan characteristics include the total value of cash settlements taken over the previous four years and the total number of cash settlements from an employer's plan *ever* received. The vector X captures these demographic, job and plan characteristics. *Income* is a vector of variables that includes the household's self-reported "usual" income as well as indicator variables for growth in real income over the past five years, expectations of real income growth in the coming year and typical certainty over next year's income. *Liquidity* is a vectors that contains both measures of households' liquid asset holdings and their borrowing constraints. *Health* denotes a vector of variables related to the health of the household's head (and spouse/partner) and whether the head smokes. *Expect* is a vector of subjective expectations related to the household head's retirement and longevity. Finally, *Type* is a vector that captures the financial personality types generated by the cluster analysis.

Income   Despite providing some information on households' employment history, the SCF does not permit the researcher to determine in a definitive way households' income at the time of job separation.[6] I employ instead what households report as their "usual" income.[7] This particular definition of income could be considered a rough approximation of households' permanent income.

The SCF also provides information on households' past and (expected) future income trends. First, households are asked to indicate whether their income grew faster or slower than inflation over the last five years. Households that experienced a decline in real income over the previous five years may, as a result of their poor income growth, have incurred debt to smooth consumption or may have pent up demand for large purchases. Hence,

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[6]The employment history module only provides earnings for respondents' longest held job prior to their current one.

[7]To be more precise, the SCF asks if respondents' income in the year prior to the interview was usually high or low and, if it was, what their usual income was. Hence, the income measure used here will be equal to the households' income in the year prior to the interview if that income was not unusually high or low.

these households might be more apt to use their cash settlement to pay off debt or for consumption.

As a measure of income uncertainty, households are also asked if they are usually certain about their income in the coming year. Households that are typically less certain about their income might also be expected to behave as precautionary savers; that is, they might seek greater liquidity or they might need to pay off debt incurred from past shocks. Or, being exposed to general income uncertainty over a number of years, they may have accumulated sufficient precautionary savings so that they have no need to cash out their settlement. Lastly, households are asked to report whether they expect a growth, decline or no change in their real income in the coming year. In general, households that expect adverse income trends would not be well served to spend their settlement.

Liquidity and Borrowing Constraints   Households are defined as credit constrained if in the past five years they had a credit application denied, did not receive as much as requested or were discouraged from applying. A separate group was classified as non-applicants if they did not request credit in the past five years, but not because they thought they would be turned down. Households that have not been able to acquire the amount of credit they desire may well tap their retirement savings to meet this unsatisfied demand.

Households' holdings of liquid assets are also included in the model, despite the fact that these measures reflect holdings *after* the disposition of cash settlements. The resulting endogeneity of the liquid asset measure is somewhat mitigated by use of quartile categories. That is, the incidence of households moving into a different quartile since their cash settlement should be relatively low. Liquid assets include the value of money in checking and savings accounts, certificates of deposit and money market mutual funds.

Health Variables To measure health status I include an indicator variable for whether the head of the household or the spouse/partner are in either poor or fair health. As another measure of health I include an indicator variable for whether the respondent smokes. Smoking may be related not only to health status (and longevity) but also to individuals' rates of time preference and other behavioral factors. For instance, smoking may signal a high discount rate as well as problems with self-control, each of which are likely associated with a higher risk of cashing out.

Subjective Expectations An innovation in the SCF compared to most other national surveys is the range of subjective expectations collected from respondents.[8] Two questions pertinent to retirement planning concern how long respondents expect to live and how long they expect to work.[9]

Unlike DB plans, which are required by law to provide participants with lifetime annuities, DC plans typically offer only a lump-sum distribution option at retirement (workers can, of course, subsequently purchase an annuity). Therefore, DC plan owners face a greater risk of outliving their savings and, consequently, should take into account their longevity expectations when determining how much they will need to save for retirement.

In general, respondents who expect to live longer should also anticipate a longer retirement. Therefore, individuals who are optimistic about their longevity ought to place a higher value on building their retirement nest egg. The same line of reasoning would suggest that those who intend to retire earlier would also need more savings to finance a longer retirement, unless of course they also expect to die early. However, it may also be that individuals plan to retire early because they believe that they will be financially

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[8]Many of the questions are quite similar to those found in the Health and Retirement Study, which tracks an older cohort than the SCF.

[9]Evidence from the HRS has shown that these subjective longevity forecasts are, in general, remarkably accurate (Hurd and McGarry, 1997). One key difference, however, is that the SCF samples younger cohorts, whose longer-term forecasts may be less accurate.

secure enough to do so, while those who plan to delay retirement believe they must do so because they have not saved adequately.

Table 4.5: Marginal Probit Estimates of Taking Any Cash Settlement

		Uses of Cash Out		
	Cash Out	Invest	Pay Bills	Spent
Female Head (d)	−0.026	−0.047**	0.014	0.046
	(0.080)	(0.019)	(0.037)	(0.054)
Married (d)	−0.13*	−0.026	−0.056	0.0043
	(0.070)	(0.028)	(0.040)	(0.046)
Black (d)	0.18**	−0.0042	−0.014	0.090
	(0.080)	(0.029)	(0.033)	(0.059)
Hispanic (d)	0.10	−0.012	0.067	0.031
	(0.11)	(0.036)	(0.069)	(0.082)
Age: 35-44 (d)	0.033	0.015	0.057*	−0.050
	(0.061)	(0.026)	(0.033)	(0.036)
Age: 45-54 (d)	0.038	0.026	0.095**	−0.092**
	(0.075)	(0.034)	(0.048)	(0.038)
Age: 55-64 (d)	−0.14	0.039	0.080	−0.19***
	(0.11)	(0.057)	(0.074)	(0.027)
Total Number of Dependents	0.046**	−0.0020	0.010	0.028**
	(0.022)	(0.0087)	(0.011)	(0.014)
Rents Home (d)	0.14**	−0.0055	0.058*	0.076*
	(0.058)	(0.023)	(0.033)	(0.043)
One Prior Settlement (d)	−0.024	−0.023	−0.016	0.021
	(0.059)	(0.020)	(0.025)	(0.044)
More than One Prior Settlement (d)	0.065	−0.050**	−0.070***	0.25***
	(0.090)	(0.022)	(0.025)	(0.096)
Less than High School (d)	−0.020	−0.044*	0.053	0.017
	(0.13)	(0.022)	(0.072)	(0.085)
Some College (d)	0.017	−0.043**	0.032	0.0032
	(0.066)	(0.021)	(0.033)	(0.042)
Bachelor Degree (d)	−0.061	−0.031	0.017	−0.074*
	(0.076)	(0.025)	(0.042)	(0.041)
Advanced Degree (d)	−0.12	−0.044**	0.11*	−0.16***
	(0.082)	(0.022)	(0.060)	(0.032)
Usual Income: Q1 (d)	−0.17	0.023	−0.047	−0.071
	(0.12)	(0.055)	(0.056)	(0.090)
Usual Income: Q2 (d)	−0.14	−0.030	0.0022	−0.041
	(0.11)	(0.042)	(0.060)	(0.091)
Usual Income: Q3 (d)	−0.074	−0.0057	0.033	−0.034
	(0.097)	(0.036)	(0.062)	(0.085)
Real Income Decline (d)	0.036	−0.038*	0.038	0.027
	(0.060)	(0.022)	(0.033)	(0.039)
Real Income Growth(d)	0.019	−0.014	0.027	−0.0070
	(0.059)	(0.023)	(0.033)	(0.043)
Income Usually Uncertain (d)	0.020	0.00033	−0.052**	0.065

Continued on next page

Table 4.5 – continued from previous page

	Cash Out	Uses of Cash Out		
		Invest	Pay Bills	Spent
	(0.058)	(0.022)	(0.022)	(0.041)
Expects Real Income Growth (d)	−0.13**	0.013	−0.060***	−0.054
	(0.055)	(0.025)	(0.023)	(0.035)
Expects Real Income Decline (d)	−0.094	−0.0056	0.028	−0.097***
	(0.062)	(0.025)	(0.033)	(0.034)
ln(LSD)	−0.080***	−0.0065	−0.0019	−0.050***
	(0.018)	(0.0074)	(0.0075)	(0.012)
Fair or Poor Health (d)	0.10	0.0077	0.039	0.029
	(0.065)	(0.024)	(0.033)	(0.045)
Head smokes (d)	0.10*	0.038	0.011	−0.0066
	(0.061)	(0.028)	(0.030)	(0.038)
Longevity: 70 to 80 years old (d)	−0.061	−0.014	0.031	−0.070
	(0.078)	(0.025)	(0.042)	(0.046)
Longevity: 80 to 90 years old (d)	−0.057	−0.045**	0.0084	−0.026
	(0.068)	(0.022)	(0.034)	(0.043)
Longevity: more than 90 years old (d)	0.14*	0.0044	0.052	0.032
	(0.073)	(0.029)	(0.046)	(0.052)
Stop Full-Time Work: after age 65 (d)	0.060	−0.0060	0.0051	0.031
	(0.057)	(0.021)	(0.026)	(0.039)
Stop Full-Time Work: before age 62 (d)	0.068	0.025	−0.013	0.046
	(0.058)	(0.025)	(0.029)	(0.042)
Liq Assets: Q1 (d)	0.35***	0.018	0.22***	0.21*
	(0.10)	(0.046)	(0.081)	(0.11)
Liq Assets: Q2 (d)	0.27***	0.023	0.13*	0.23**
	(0.097)	(0.041)	(0.073)	(0.11)
Liq Assets: Q3 (d)	0.11	0.044	−0.00064	0.14
	(0.098)	(0.046)	(0.057)	(0.11)
Credit Constrained (d)	0.058	−0.0057	0.0072	0.015
	(0.072)	(0.025)	(0.030)	(0.043)
No Credit Requests (d)	0.030	0.026	−0.029	0.026
	(0.079)	(0.037)	(0.033)	(0.060)
Up & Coming Planners (d)	0.049	0.016	−0.029	0.071
	(0.067)	(0.025)	(0.030)	(0.054)
Strugglers (d)	0.17**	−0.019	0.049	0.11**
	(0.072)	(0.026)	(0.041)	(0.058)
Acute Strugglers (d)	0.21***	−0.019	0.049	0.11**
	(0.070)	(0.025)	(0.040)	(0.056)
Year Effects	Yes	Yes	Yes	Yes
Occupation Effects	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes
N	890	890	890	890
Log Likelihood	−424.7	−245.6	−298.6	−379.1

Robust standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$; (d) for discrete change of dummy variable from 0 to 1.

Table 4.5 presents the marginal effects from a probit model of the disposition choice. The first column displays the model for cashing out any portion of one's plan. As previously mentioned, the sample for this model is restricted to cash settlements occurring within four years of the interview.

Among the financial personality types–the key variables of interest–, acute strugglers (type 4) were 20 percent more likely to cash out than successful planners (type 1). Strugglers (type 3) are also significantly more likely to cash out. As expected, the magnitude of this effect, and statistical significance ,is slightly diminished relative to acute strugglers. The coefficient on up and coming planners is positive but not significant. The results from the probit model confirm that, relative to the successful planners (type 1), the two struggler types (3 and 4) are indeed at considerably greater risk of depleting their employer-sponsored retirement savings at job separation.

Rather surprisingly, very few of the general demographic characteristics are statistically significant, which may be attributable to the unusually rich array of variables in the model reflecting household preferences. However, a rather stark result emerges with respect to race; namely, a household in which the head is black is 18 percentage points more likely to cash out than one in which the head is white. Another notable result is that neither education nor income are significant in this model. In fact, the coefficients on the quartiles of income are negative. Part of this may be attributable to the somewhat unconventional definition of household income employed in this study. However, results from more parsimonious models (not shown here) reveal that it is indeed the inclusion of other variables in the model, particularly education, that absorbs much of the effect, and eventually reverses the sign, of the income variables. Thus it is important to bear in mind the *ceteris paribus* interpretation of these variables.

More dependents in the household and renting one's home were also associated with a significantly greater likelihood of cashing out. Married households, on the other, were less likely to cash out relative to never married, divorced and widowed households. Finally, the

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expected inverse, and highly significant, relationship to the cash out probability obtains for the size of settlements.

Past real income movements and typical uncertainty about next year's income had no significant relationship with the cash out probability. An expectation of real income growth in the coming year, however, decreased the probability of cash out. Indeed, households anticipating favorable income movements should have less need to tap their retirement savings. The coefficient on the expectation of a real income decline was also negative, but not significant.

Households in which the head smokes were more likely to cash out; smoking raises the probability of a cash out by more than ten percentage points. It should be noted that this significant effect obtains even with controls in the model for health status (of the head and spouse), expected longevity (of the head), and a proxy for the household's rate of time preference–all variables thought to be correlated with the decision to smoke. And, as previously noted, the effect for smoking may also reflect behavioral factors not explicitly captured in the model such as self-control.

Households in which the head expects to live to between 70 and 80 years of age or between 80 and 90 years of age were not significantly less likely to cash out than those who did not expect to reach age 70 (though the coefficients on these variables were negative). And those who expect to live the longest–beyond 90 years of age–are actually significantly *more* likely to cash out than those who do not expect to live to 70. At first blush, this result may seem difficult to reconcile with the *a prior* expectation that those who anticipate living the longest should be the least inclined to cash out. But upon closer inspection, the greater propensity of respondents who report a very long life expectancy to cash out may actually have a psychological basis. Because retirement planning can evoke thoughts of aging and, ultimately, of one's own demise, it may generate the same negative affect in individuals as questions eliciting a forecast of their lifespan. As Mitchell and Utkus (2004) note, "being good at retirement savings requires an accurate estimate of uncertain

future processes," including health and longevity. Consequently, respondents who provided answers more in line with typical longevity expectations may also be better retirement planners than those who believed they would live to a very old–perhaps unrealistically old–age (a fair number of respondents believed they would live to 100 or more).

Liquid asset holding were significantly, and strongly, related to the cash out probability and exhibited the expected sign and pattern, with lower-asset households more likely to cash out. Households who were either turned down, or discouraged from applying, for credit in the past five years were not significantly more likely to cash out.[10]

4.2.4 Specific Uses of Cash Settlements

Probit Models In addition to the cash out equation, table 4.5 also display the results of separate probit models of specific uses. The three uses of a settlement include investing it (in a non-tax-qualified vehicle), putting it toward the payment of bills or other debt, or spending it (on durables or other consumer items). The dependent variable in each of the three separate probit models are defined as follows:

$$Invest = \begin{cases} = & 1 \text{ if any money was invested outside of plan(s)} \\ = & 0 \text{ if no money was invested outside of plan} \end{cases}$$

$$Pay\,Bills = \begin{cases} = & 1 \text{ if any money was used to pay of bills, debt or other expenses} \\ = & 0 \text{ if no money was used to pay of bills, debt or other expenses} \end{cases}$$

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[10]Scherpf (2009), for instance, found a significant positive effect on the cash out probability for borrowing constraints using the nearly identical in the National Longitudinal Survey of Youth 1979. Accounting for this differences might be not only the different samples but also the richer set of covariates for financial attitudes and subjective expectations.

$$Spent = \begin{cases} = & 1 \text{ if any money was spent on durables and other consumption} \\ = & 0 \text{ if no money was spent on durables and other consumption} \end{cases}$$

Hence, in each column what is being evaluated is the probability that households used any portion of a settlement for a given purpose relative to all of the other uses (including a rollover). The estimates reported are again the marginal effects of a probit model.

Investigating the uses of cash outs sheds additional light on households' motivation for taking a premature withdrawal and also permits the researcher to better evaluate the rationality of a cash out. For instance, investing a settlement outside of a retirement plan is generally viewed more favorably than simply consuming it. However, because in most cases investing a settlement still entails a tax penalty, it is not always clear whether such a portfolio reallocation is an optimal decision. More detailed information on the types of investments chosen would be desirable. For instance, settlements used to finance an education or start a business may well be worth the penalty for early withdrawal (and the other costs associated with a withdrawal). Movements into other financial investments are more difficult to justify, at least based solely on returns to investment. However, households may desire such a portfolio reallocation not necessarily to maximize their returns but to satisfy a need for greater liquidity. Perhaps the most easily justified use of a cash out is to pay down unsecured debt, particularly high-interest credit card debt, since in many cases the cost of carrying such debt will exceed that of a cash out. One general observation at the outset is that the models of specific uses appear to explain less of the variation in disposition choices than the model of the more general cash out/rollover decision.

With respect to the financial personality types, both "strugglers" (types 3 and 4) were significantly more likely to spend their settlements than planners. No significant effects for investing or paying off bills obtained for these personality types.

As in the general cash out model, there are few significant demographic variables. The

exceptions are the effects for females, who are significantly less likely to invest their settlement, and for older households, which are more likely to use their settlement to pay bills but less likely to spend it. The models of specific uses do yield strong effects, however for households who have received more than one prior settlement. These households are significantly less likely to use their settlement for investments or paying off bills, but they are much more likely to spend their settlement. This latter effect is quite strong and highly significant. This may provide some indication that taking a settlement for consumption purposes becomes something of a habit for certain households.

An additional dependent increases the probability of a cash out by about three percentage points. Participants with a college degree (either a bachelor's or an advanced degree) are less likely to use their settlement for consumption. This is perhaps some indication that better educated workers–even in the general sense–are better able to avoid what is generally regarded as the least desirable use of a cash settlement.

Interestingly, households with uncertain earnings are significantly less likely to use their settlement to pay off bills, as are those who expect real earnings growth. It was speculated that because of their uncertain income these households may have incurred more debt or other expenses, which a cash settlement could have helped to to pay off. It is possible, then, that, facing an uncertain income stream, these households cut consumption to build up precautionary savings. An encouraging finding with respect to anticipated income is that households that expect a decline in real income are significantly less likely to spend their settlement. Households with low liquid asset holdings (i.e., those in the first and second quartiles) are more likely to use their cash settlement both for paying off bills and consumption.

Multinomial Logit Model   Specific uses of cash settlements are also investigated by estimating a multinomial logit model. A key difference between this model and the separate probit models estimated in table 4.6 is that here each coefficient is interpreted as

the relative odds of using the settlement for the indicated purpose relative only to the reference category, which in this case is a rollover.[11] Finally, I should note that the choice of a multinomial logit–as opposed to, say, a conditional or nested logit–specification was dictated by the lack of obvious alternative-specific regressors. One other difficulty with estimating a multinomial model lies in accounting for multiple reported uses of settlements. Rather than creating a dependent variable with more than three (mutually exclusive) outcomes to reflect mixed use of settlements, I have opted to code all outcomes as "spent" if *any* spending was reported, "other investments" if any portion of a settlement was invested but not spent, "pay bills" if any portion of a settlement was put to this use but not spent or invested. Besides ensuring mutually exclusive categories, the rationale for constructing the dependent variable in this fashion lies in the perceived 'rational hierarchy' of uses for settlements.

Table 4.6: Multinomial Logit Estimates of Cash Out Uses

	Invest	Disposition Pay Bills	Spend
Expects Real Income Growth	0.890	0.366***	0.568*
	(0.390)	(0.137)	(0.164)
Expects Real Income Decline	0.907	0.893	0.436**
	(0.433)	(0.355)	(0.147)
Up & Coming Planners	1.421	0.542	1.408
	(0.576)	(0.261)	(0.527)
Strugglers	1.235	1.968	2.443**
	(0.729)	(0.842)	(0.923)
Acute Strugglers	1.915	2.624**	3.074***
	(1.023)	(1.145)	(1.177)
N	890		
Log Likelihood	−758.7		

Robust standard errors in parentheses; exponentiated coefficients; * $p < .1$, ** $p < .05$, *** $p < .01$.

Table 4.6 displays the results from the multinomial logit estimation for financial personality types. By and large, the multinomial logit model confirms the results of the

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[11]In the separate probit models the coefficients were to be interpreted relative to all other uses, not just a rollover.

probit models. It does, however, bring out a greater distinction between strugglers and acute strugglers in terms of their propensity to use their cash settlements for specific purposes. In particular, acute strugglers are at higher risk of using a settlement for all three uses relative to rolling it over. For instance, they are nearly three times as likely as successful planners to spend their settlement as they are to roll it over. Another multinomial logit model also indicates that acute struggles are at significantly higher risk of using their settlement to pay off bills, whereas in the probit the only significant effect for a specific use obtained for spending. This is a somewhat more encouraging result, since it indicates that cash outs by acute strugglers are not driven primarily by current consumption.

4.3   Conclusion and Discussion

With participant-directed DC plans increasingly supplanting, rather than supplementing, DB plans, workers have had to assume greater responsibility–and risk–for managing their retirement savings and planning for retirement. As a result, there has been growing concern about how well workers are able to cope with this increased decision-making responsibility. One of the key decisions that DC plan participants will face is how to dispose of their plan assets when leaving their employer. Participants have been thought to be particularly vulnerable to committing 'mistakes' here because the disposition choices in these plans have generally not encouraged workers to keep money in tax-deferred accounts. This study has examined how the heterogeneity in participants' financial attitudes and behaviors is related to their decision on whether to take money from their plans at job separation and what they do with that money if they do take a withdrawal.

Cluster analysis was used to generate four attitudinal and behavioral segments of participants. The first, and largest, segment exhibited attitudes and behaviors that appeared to be consistent with the successful planner type envisioned by retirement

planning experts. The other three segments progressively diverged from this first type. Probit models confirmed that these other three segments were increasingly likely to cash out at job separation, although only the effects of the last two "struggler" segments were statistically significant.

An encouraging result from this study is that about half of the participants in this sample were classified in the "successful planner" segment, exhibiting desirable attitudes and behaviors and cashing out at a low rate. Roughly another quarter fell into the up and coming planner segment (type 2) that still exhibited fairly strong attitudes and behaviors and were not significantly more likely to cash out than Type 1 planners in the multivariate analysis. On the other hand, just over one-quarter of participants exhibited attitudes and behaviors that diverged significantly form this planner type, and these differences are reflected in a significantly higher probability of cashing out and, more specifically, of spending their settlement. It is also somewhat notable that significant effects on the cash out probability should be obtained for financial type variables in a model controlling for typical determinants of life-cycle savings, income uncertainty, asset holdings and subjective expectations.

The results in this study raise some concerns over how well "struggler" types served by DC plans if the likelihood is high that they will deplete a substantial portion before reaching retirement. For financial educators and employers alike, these results point to the need to identify groups of participants who are at particular risk for depleting their account balances at job separation and how to provide them with the information and education that might have them conform more to the "planner" model. This need has been particularly acute in the absence of a strong default options that encourage workers to save their cash settlements. The recent mandate for employers to roll over balances less than $5,000 and greater than $1,000 is a positive step in this direction.

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