The Impact Of Debt Levels On Participation In And Level Of Discretionary Retirement Savings

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This study used the 1998 Survey of Consumer Finances to examine the relationship between consumer debt levels and discretionary retirement savings in IRAs, Keoghs, 401(k)s, 403(b)s, thrift savings and supplemental retirement annuities. Results of a two-stage analysis indicated that installment debt deterred participation in discretionary retirement savings. Among those who had discretionary retirement savings balances, accumulations were significantly lower for those who carried a credit card balance forward and for those who had installment debt.
Key words: *Debt levels, Discretionary savings, Retirement savings, Credit cards, Individual retirement accounts, Credit, Survey of Consumer Finances*

Introduction

During the past several decades, individuals have been asked to shoulder an increasing portion of the burden of the financial preparation for their retirement. Employers have shifted emphasis away from plans that promise retired employees a certain income for life to plans where value at retirement depends on employee investment decisions and market fluctuations. In this changing planning environment, tax-sheltered retirement savings vehicles such as individual retirement accounts (IRAs), Keogh plans for the self-employed, 401(k), 403(b), thrift plans, and supplemental retirement annuities have gained importance in retirement plans. These plans allow an employee to decide whether or not to participate, and to decide, within certain limits, how much to contribute to the plan. With these plans, the employee becomes a much more active decision maker in the retirement planning process and the level of living achieved during retirement will depend on the decisions made.

There is some evidence that debt obligations may be keeping employees from taking full advantage of such plans, possibly compromising their opportunities for achieving a desirable level of living during retirement. In a recent survey of investors, over one in 10 respondents stated that high levels of non-mortgage debt prevented them from contributing to their 401(k) plan. Thirty-five percent indicated that debt prevented them from contributing as much as they would like (Gunsauley, 2000). Given the importance of discretionary savings for retirement, it is of interest to explore the extent to which this situation represents a prevalent problem in the United States. This study uses nationally representative data to examine the relationship between debt levels and participation in and level of discretionary retirement savings.

Background and Relevant Literature

Retirement is consistently given as a reason why people save. Over one-third of the respondents of the 1998 Survey of Consumer Finances indicated that retirement was their most important reason for saving (Kennickell, Starr-McCluer & Surette, 2000). The 2002 Retirement Confidence Survey reported that 67% of workers are saving for retirement, down from 74% in 2000 (Employee Benefit Research Institute, 2002). These figures indicate that a significant number of workers still have not begun to save for retirement. Almost one in four non-savers report having no income or not being able to afford it (23%) and having too many financial responsibilities (22%) as the most important reasons why they do not save for retirement (Salisbury, Helman, Ostuw & Yakoboski, 2000). Additional reasons given include making house payments, paying for health care, educating children and unforeseen emergencies (National Summit on Retirement Savings, 1998; Salisbury et. al., 2000).

Recently, consumer debt levels have been blamed as another factor contributing to inadequate retirement savings (Gunsauley, 2000). This is a plausible argument. Use of debt by American families is prevalent.

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According to the 1998 Survey of Consumer Finances, 74% of all families have some level of debt. From 1995 to 1998, the median level of debt among families with debt rose 42% (Kennickell, Starr-McCluer & Surette, 2000). This rise in debt comes at the same time that the stability and adequacy of Social Security is being questioned and employers have been shifting greater responsibility for saving for retirement to the individual worker. When workers use debt to fund current consumption, they are making a commitment to spend future income on debt repayment rather than on other uses, including saving for retirement.

While retirement savings behavior of workers and financial adequacy for retirement have been important research topics for several years, few studies have considered the impact of debt levels on retirement savings. Debt level variables have primarily been included in studies assessing financial adequacy for retirement. Results of these studies suggest that debt holdings inhibit retirement savings. Yuh, Montalto, and Hanna (1998) found that those who had no mortgage debt were relatively more likely to have adequate retirement savings than those who had a mortgage. Other factors that contributed to greater likelihood of retirement fund adequacy included ownership of defined benefit or defined contribution plans and spending less than income (Yuh et al., 1998).

Research using the National Longitudinal Survey of Older Men indicated that holding debt was negatively associated with financial adequacy for retirement (Li, Montalto & Geistfeld, 1996). Research using the 1995 Survey of Consumer Finances found that home mortgage holders were less likely to have adequate retirement resources. Households with spending greater than or equal to income were only 11% as likely to have adequate retirement wealth as similar households that spent less than income (Yuh et al., 1998). Given a fixed level of household income (a reasonable assumption in the short run), it appears that debt repayment may "crowd out" retirement savings in discretionary accounts such as IRAs (for those employed by others), Keoghs (for the self-employed), 401(k) and 403(b) plans, or thrift plans.

Purpose
To extend the literature on the relationship between debt levels and retirement savings, this research examines the relationship between levels of various types of debt and participation in and fund balances of discretionary retirement savings accounts. In this study, discretionary retirement savings accounts are defined as Individual Retirement Accounts (IRAs), Keogh accounts, 401(k) and 403(b) plans, thrift savings accounts, and supplemental retirement annuities. These types of accounts allow an individual to choose whether or not to participate and, if a participant, to choose, within certain guidelines, the dollar level of saving. Recognizing this two-stage decision process, this study explicitly models each decision step: deciding to use discretionary retirement savings accounts and deciding how much to save in discretionary retirement savings accounts. This approach to analyzing the relationship between debt levels and discretionary retirement savings balances has not been used in previous research. Thus, it is a contribution of this study.

Method
Data
Data used for this study are from the public use 1998 Survey of Consumer Finances. The survey is conducted every three years by the National Opinion Research Center at the University of Chicago and sponsored by the Federal Reserve Board and the Department of the Treasury (Kennickell, Starr-McClure, & Surette, 2000).

The Survey of Consumer Finances uses a dual sampling frame. Approximately two-thirds of the original sample was drawn using a standard multi-stage area-probability design while the remaining one-third of the original sample was drawn from a list of high income households generated by the Internal Revenue Service. This sampling frame was chosen because some financial characteristics (e.g. ownership of stocks and bonds) are not observed for a large segment of the population and thus can be under-represented when using standard sampling designs. Since it was not possible to separate the probability sample from the list sample in the public use data, weights provided by the Federal Reserve Board were used in this research to help correct for the effects of over-sampling high income households.

The Federal Reserve Board used a multiple imputation process to estimate missing data. This process generates five so-called replicates or implicates of the data set. Treating the multiple implicates as if they were simply additional cases in standard statistical analysis can yield misleading estimates (Board of Governors, 2000). Repeated-imputation inference (RII) techniques were used in this study to obtain relatively more efficient estimates that, in turn, improve the basis for valid inference (Montalto & Sung, 1996; Montalto & Yuh, 1998).

Sample
Two basic selection rules were used in this study to focus on those still preparing for retirement. First, those included in the sample had to be age 64 or younger. This rule was imposed because age 65 was the current age for full receipt of Social Security retirement benefits at the time data were gathered. Thus, age 65 would mark a significant change in motivations and resources for saving for retirement. Second, those included in the sample had to have a tie to the labor market. This rule was imposed because virtually all discretionary retirement savings accounts require that an individual be actively employed to participate. An exception, a spousal IRA, requires that one's spouse be actively employed. Single individuals were included in the sample if employed. Married individuals were included in the sample if either they or their spouse were employed. With these selection rules imposed, sample size for this study was 3,026.

Conceptual Framework
In the economics literature, savings has been defined as the simple difference between income and current consumption, thus, theoretical models that address savings are fundamentally theories of consumption (Browning & Lusardi, 1996). Among the theories of consumption used to explain savings behavior, the life cycle model first proposed by Brumberg and Modigliani (1954) and further developed by Ando and Modigliani (1957, 1960, 1964) is perhaps the best known and most widely used.

The life cycle theory assumes that individuals seek to maximize their utility functions over T periods of consumption. In the early versions of this theory, it was assumed the interest rate was zero, and individuals neither inherit nor bequeath wealth (Landsberger, 1970). Over an individual's life span, income receipt typically varies such that income is relatively low prior to and during the early years of labor force entry, relatively high during the mid- and later career years, and relatively low again post-retirement. An implication of the life cycle theory is that consumption will likely exceed income (that is, dissaving will occur) during the early and later portion of the life cycle (pre- and early working years and post-working years), and that income will likely exceed consumption (that is, debt repayment and saving will occur) during the working years of mid-life.

Use of the life cycle model as a conceptual framework suggests that factors that could influence household utility should be included in an empirical model (Browning & Lusardi, 1996). In this study, such factors are the age of the respondent, presence of a child under age 18 in the household, and number of members in the primary economic unit. Other factors that might influence participation in discretionary retirement savings such as economic resources, saving motivation, and the race or ethnicity, education level and marital status of the respondent enter the model as controls.

The assumption of perfect capital markets suggests that optimal patterns of dissaving and saving occur so as to maximize consumption over the life cycle. Given the expected pattern of dissaving and saving over the life cycle, it would seem reasonable to expect that individuals would not allow dissaving in the form of debt to "crowd out" saving, especially saving designed to generate and maintain income in the post-retirement years. Thus, one would expect to find no significant relationship between debt levels and participation in and level of discretionary retirement savings.

The assumption of perfect capital markets has been challenged as unrealistic (Deaton, 1992; Hayashi, 1987). Individuals do not face a single rate of interest that permits them to borrow or lend as much as they desire. Further, individuals generally face rates for borrowing that exceed rates earned from saving. In the real market in which individuals live and act, perfect information and perfect capital markets are absent. In this real market, commitments made to repay debt may, indeed, influence decisions to save for retirement. This study examines this issue.

Empirical Analysis
The concept that spending and saving vary over the lifecycle as suggested by the life cycle hypothesis of consumption formed the basis of the empirical analysis used in this study. Discretionary retirement savings were measured as investment in Individual Retirement Accounts, Keogh plans, 401(k) and 403(b) plans, thrift, savings, or supplemental retirement annuity plans.

Nearly two-fifths of the sample did not have discretionary retirement savings balances. When a large portion of zeros is present in the dependent variable, ordinary least squares regression (OLS) is not appropriate as regression coefficients will be biased (Madalla, 1983). Tobit analysis has often been used as an alternative (Breen, 1996; Tobin, 1958). This approach, however, presents at least two limitations. First, Tobit analysis presumes that the independent variables will have the same sign and significance for

both participation and level decisions (Breen, 1996). It is not clear that this need be so. Second, Madalla (1992) suggests that clustering of values at a certain level is not, in and of itself, sufficient justification for use of a Tobit model. Rather, model selection must turn on the answer to the question of why values might be clustered at a certain level. If such clustering is the result of decisions made by respondents, the Tobit model is not appropriate. Instead, the decision to participate should be modeled separately from the decision of how much to participate.

In this study, a two-stage model proposed by Cragg (1971) is used. As is common with this type of model, it is assumed that the two stages are independent [a] (Breen, 1996). In general, this approach explicitly recognizes that the outcome at both stages reflects individual choices. First, a person must have made a decision to save. Then, that decision must be acted upon and money has to be deposited in a discretionary retirement account. Underlying this approach is the concept that certain characteristics of savers relate directly to the qualitative distinction between savers and nonsavers and are independent of the level of saving observed. Independence between factors affecting the decision to save and factors affecting the level of saving is plausible. There may be nonsavers that would not be influenced to become savers, regardless of incentives provided. Alternatively, a decision to save may be made at one point in time, but not acted on until a later point in time. Consequently, life or financial circumstances may impact the decision to save differently than they impact the decision about how much to save.

The decision to participate in discretionary retirement savings is modeled as a probit equation using all 3,026 sample cases:

Pr(R > 0) = f(debt variables, life cycle stage variables, economic resource variables, saving motivation variables, socioeconomic variables)   (1)

Pr(R > 0) designates the probability that a respondent has a non-zero discretionary retirement savings balance, indicating a decision to participate in such savings. In the probit equation, the dependent variable is set equal to 1 if respondent has discretionary retirement savings; zero otherwise.

The debt variables include housing debt (mortgage, home equity loans, home equity lines of credit), other lines of credit, debt for other residential property (land contracts, vacation homes), credit card debt, installment

loans, and other debts (loans from life insurance or pension funds, margin loans, other miscellaneous loans).

The life cycle stage variables include respondent age, presence of a child under age 18 in the household, and number in the household primary economic unit.

The economic resource variables include income and assets.

The savings motivation variables include saving for retirement, having a defined benefit plan, being self-employed, having saving for retirement as a stated goal of saving, and being willing to assume above average risk to gain above average return.

The sociodemographic variables include race or ethnicity, educational status, professional status and marital status of the respondent.

The decision regarding the level of discretionary retirement savings is made after one has decided to save. This decision is modeled as an ordinary least squares regression using the 1,931 cases that had a level of discretionary retirement savings balances greater than zero.

R = f(debt variables, life cycle stage variables, economic resource variables, saving motivation variables, socioeconomic variables)   (2)

R is the non-zero dollar level of investment in discretionary retirement savings. The independent variables are those previously described.

The Appendix lists the definition of variables in terms of the Survey of Consumer Finances Codebook variables (Board of Governors of the Federal Reserve System, 2000). The following section provides a more detailed description of the independent variables.

Independent Variable Measures
Debt variables. Not all debt is created equal. Some types of debt are tied to collateral (e.g. auto loan) while some types are not (e.g. installment debt). Some types of debt create a long-term, relatively fixed repayment obligation (e.g. home mortgage) while the repayment obligations on other types of debt may vary greatly depending on factors such as amount borrowed and speed of repayment (e.g. credit card debt). Given these differences, several different types of debt were considered in this study.

The variable named "carry credit card balance forward" was created by the interaction of two measures of credit card usage: 1) a dummy variable set equal to 1 if the respondent carried a credit card balance forward at the end of the billing cycle, zero otherwise and 2) the dollar level of credit card balance. The decision to use this interaction term was based on existence of two distinctly different types of credit card users. Those who find credit cards convenient to use treat the cards much like a check. Like a check, a card may be easier to use than cash and use will generate an expenditure record. Payment of the balance at the end of the billing cycle prevents accumulation of interest charges or other fees. Those who do not pay at the end of the billing cycle treat their credit card like a loan. Interest or other fees are charged against the balance carried forward. Given these differences in type of credit card user, for the purposes of this study it seemed best to net out the credit card balances of convenience users from the measure of credit card debt.

Housing debt includes the balance owed for mortgage on principle residence, home equity loans and home equity lines of credit. Other residential debt includes the balance owed on land contracts, Section E residential, miscellaneous vacation and Section I cottage or vacation home. Other lines of credit are the balance owed on lines of credit other than home equity lines of credit. Balance owed on automobile and other installment type loans is included in installment loans. Other debts include balance owed on loans taken out of life insurance or pension plans, margin loans, and any other miscellaneous loans not already accounted for.

Life cycle stage variables. Several variables were used to indicate life cycle stage. Age of the respondent was measured as a set of categorical variables to allow for a nonlinear relationship between age and retirement savings. It was expected that level of retirement savings would be low during early years of the life cycle when careers begin, homes are purchased and spouses and children join the household and then increase between mid-life and retirement as career earnings increase and adult children leave the household.

Presence of a child under age 18 was coded 1 if present, zero otherwise. It was expected that costs of rearing children would compete with retirement savings for a share of household income. The number of persons in the primary economic unit was simply a count of the individuals in a given household who were economically dependent or interdependent upon one another. Taken

alone, the effects of having more people in the primary economic unit on discretionary retirement savings balances is ambiguous. The greater the number in the unit that are economically dependent, probably the lower the level of discretionary retirement savings balances. The greater the number in the unit that contribute to the household income, probably the higher the level of discretionary retirement savings balances.

Economic resource variables. It would have been preferable to measure income as a continuous variable. Using this measure, however, prevented convergence of the probit model. Linear transformations of the variable did not correct this problem. To allow a non-linear relationship to exist between income and discretionary retirement savings balances, income quintiles were created. Income was measured as a series of indicator variables set equal to 1 if household income was in a given quintile, zero otherwise. The highest income quintile was the reference category.

Level of assets was a continuous variable measured in dollars. It was scaled by dividing by $10,000 to facilitate estimation of the probit equation with maximum likelihood methods.

Motivation variables. Several factors could affect the motivation to save for retirement. Defined benefit plans promise an individual a certain income stream that begins at retirement and typically continues until the death of either the retiree or the surviving spouse. An individual with such a plan might decide it was not necessary to save for retirement by other means. Have a defined benefit plan was coded 1 if true, zero otherwise

The self-employed may face different motivation for retirement saving than wage and salary employees. Research has indicated that while Keogh plans offer tax-advantaged means of saving for retirement, many business owners expect that equity in a business sold at retirement or income from a business retained during retirement will substitute for saving today for post-retirement income needs (DeVaney, Sharpe, Kratzer & Su, 1998). Self-employment was coded 1 if self-employed, zero otherwise.

Those who state that retirement is a saving goal would probably be motivated to use tax-advantaged methods of saving for retirement. Save for retirement was coded 1 if a respondent stated that saving for retirement was a saving goal.

Currently, many discretionary retirement plans such as 401(k)s allow an individual some choice regarding the savings vehicle. Investment in stocks or mutual funds is allowed in some accounts. When certain conditions are met the investment is tax-free and the return on the investment can grow tax-deferred until withdrawn at retirement. Thus, individuals who are willing to accept relatively higher levels of risk in hopes of relatively higher levels of return can benefit from use of discretionary retirement saving accounts. Willing to accept above average risk to gain above average returns was coded 1 if true, zero otherwise.

Sociodemographic variables. This set of variables was included to control for other possible sources of variation in participation in and level of discretionary retirement savings. Race and ethnicity was measured as a set of indicator variables, white, Black, other race, Hispanic. The Survey of Consumer Finances public data set includes each of these designations in one variable. Thus, although Hispanic individuals may be of any race, it was not possible to distinguish them by both race and ethnicity in this study. Other race included Asian, American Indian, Alaska Native, Native Hawaiian, Pacific Islander, and other. This variable was coded 1 if a respondent reported being a given race or ethnicity, zero otherwise. White was the reference category.
Educational status was measured as a set of indicator variables: respondent did not complete high school, respondent has a high school diploma or GED, respondent has completed some college, respondent has a college degree. Each item was coded 1 if true for terminal degree reported, zero otherwise. Respondent has high school diploma or GED was the reference category. Professional status was coded 1 if respondent had a professional degree, zero otherwise.

Marital status was coded 1 if married or living with a partner, zero otherwise. It was expected that married individuals or those living with a partner could have more earners in the household and thus access to more economic resources and employee benefits as compared to single individuals.

Findings and Discussion
Results of Descriptive Analysis
Descriptive statistics are reported in Table 1 for the whole population, for those who carry a credit card balance forward, and for those with a non-zero level of retirement savings. Those who choose to carry a credit card balance seem qualitatively different from those with other kinds of debt obligations. Given the relatively high

rate of interest that would accrue on unpaid credit card balances, retention of such debt implies an inability to meet all present financial obligations and, consequently, an inability to fund discretionary retirement savings accounts. For the purposes of this study, it was of interest to observe how the characteristics of this group compare with those who did have discretionary retirement savings balances.

As would be expected, the average balance of discretionary retirement savings was much higher for the group with non-zero levels of such savings as compared with the other two groups. Median level of discretionary retirement savings for those with non-zero levels of such savings was $20,600 (not reported in Table 1). For those with a non-zero credit card balance and for the whole sample, median levels of discretionary retirement savings were $2,440 and $1,942, respectively.

Not surprisingly, average credit card debt levels were almost twice as high for the group that carried a credit card balance forward. This group also had a higher average level of installment debt. Levels of other types of debt were relatively higher for the group that had discretionary retirement savings balances. This finding suggests that those who are actively contributing to discretionary retirement savings accounts may simply be more comfortable using financial markets to both lend and borrow. Since the descriptive analysis does not control for other factors, it may also be that this group has the financial resources to have types of debt not generally found in a broad cross-section of the population such as mortgages on vacation homes or margin accounts for stock purchase.

In general, the life cycle characteristics of these three groups were similar. Average age in each group was about 40. Nearly half had a child under age 18 at home and average household size was 3.

Some interesting differences in economic resources were evident. Income quintiles were defined for the whole sample. Among those who carried a credit card balance, relatively fewer were represented in the bottom and top income quintiles. Among those who had discretionary retirement savings balances, the proportion in each income quintile was progressively larger. Only 6% of those with non-zero discretionary retirement savings balances were in the bottom income quintile, while nearly one-third of those with such savings were in the top income quintile. Mean asset level was lowest for those who carried a credit card balance and over twice as high

for those who had discretionary retirement savings balances.

The proportions of those who expected to receive income from a defined benefit plan or were self-employed were similar for the three groups. A larger proportion of those who had saving for retirement as a stated goal were represented among those with discretionary retirement savings balances. This group also has a relatively higher proportion of the non-risk averse.

Table 1.

Means of Selected Variables Entire Sample, For Those Carrying Credit Card Balances, and for Those with Retirement Savings Balances.

	Entire Sample Mean (standard deviation)	With Non-zero Credit Card Balances, Excluding Convenience Users	With Non-zero Discretionary Retirement Savings Balances
Proportion with discretionary retirement savings	0.57 (0.010)	0.59 (0.016)	1 (0)
Balance in discretionary retirement savings	37773.62 (2827.26)	24045.23 (2067.94)	65921.60 (4510.30)
Debt variables			
Credit card balance	2219.71 (95.27)	4699.83 (216.57)	2662.79 (129.29)
Proportion who carry credit card balance forward	0.45 (0.009)	1 (0)	0.46 (0.012)
Credit card balance carried forward	2014.55 (93.82)	4699.83 (216.57)	2366.33 (126.79)
Installment debt balance	8196.81 (429.77)	9867.17 (576.16)	9186.51 (527.79)
Mortgage balance	44837.22 (1499.24)	46323.76 (1893.20)	59345.94 (2131.51)
Other residential debt balance	3926.98 (572.46)	3153.35 (651.04)	5866.34 (913.72)
Other lines of credit dollar balance	179.85 (258.19)	171.51 (42.58)	249.82 (425.53)
Other debt balance	1609.95 (856.74)	1870.46 (804.97)	2335.35 (1409.02)
Life cycle stage			
Respondent age (proportion in each category)			
< 25	0.20 (0.008)	0.16 (0.012)	0.06 (0.006)
25 to 34	0.24 (0.008)	0.27 (0.014)	0.20 (0.009)
35 to 44	0.31 (0.008)	0.31 (0.014)	0.34 (0.011)
45 to 54	0.25 (0.008)	0.26 (0.014)	0.28 (0.010)
55 to 64	0.12 (0.006)	0.12 (0.010)	0.16 (0.008)
Proportion who have child < age 18 in household	0.47 (0.009)	0.50 (0.016)	0.46 (0.012)
Number in primary economic unit	2.71 (0.026)	2.80 (0.045)	2.73 (0.032)
Economic resources			
Income quintile 1	0.20 (0.008)	0.16 (0.012)	0.06 (0.006)
Income quintile 2	0.20	0.22	0.16

	Entire sample	CC bal>0	Ret.savings>0
	(0.008)	(0.014)	(0.009)
Income quintile 3	0.20	0.23	0.23
	(0.009)	(0.013)	(0.011)
Income quintile 4	0.20	0.23	0.25
	(0.008)	(0.013)	(0.010)
Income quintile 5	0.20	0.17	0.30
	(0.009)	(0.013)	(0.013)
Value of assets (in units of $10,000)	31.82 (3.351)	20.40 (1.532)	45.79 (5.214)
Saving motivation (proportion)			
Have defined benefit plan	0.08 (0.005)	0.08 (0.008)	0.10 (0.007)
Self-employed	0.17 (0.008)	0.15 (0.011)	0.16 (0.009)
Save for retirement given as reason to save	0.54 (0.009)	0.54 (0.015)	0.68 (0.011)
Willing to take above average risk	0.29 (0.009)	0.29 (0.014)	0.37 (0.012)
Sociodemographic variables			
Respondent marital status			
Married	0.67 (0.009)	0.70 (0.014)	0.72 (0.011)
Single	0.33 (0.009)	0.31 (0.014)	0.28 (0.011)
Respondent race or ethnicity			
White	0.77 (0.008)	0.78 (0.013)	0.84 (0.009)
Black	0.11 (0.006)	0.11 (0.010)	0.09 (0.007)
Hispanic	0.09 (0.005)	0.08 (0.008)	0.04 (0.004)
Other race	0.04 (0.004)	0.03 (0.005)	0.04 (0.004)
Respondent education			
Less than high school	0.13 (0.006)	0.11 (0.009)	0.07 (0.006)
High school diploma	0.31 (0.009)	0.32 (0.0150)	0.26 (0.011)
Some college	0.26 (0.008)	0.30 (0.014)	0.27 (0.010)
College degree	0.38 (0.010)	0.36 (0.015)	0.47 (0.012)
Professional status	0.13 (0.006)	0.10 (0.009)	0.17 (0.009)

Proportions may not total 1.00 due to rounding

Results of the Multivariate Analysis

Table 2 presents the results of the multivariate analysis. In the two-stage model used in the multivariate analysis, each step of the model reflects a decision made by the respondent. First, a decision is made to have or not have discretionary retirement savings. Then, for those who decide to have discretionary retirement savings, the level of such savings must be decided. Differences in the sign and significance of the independent variables in each stage of the model indicate that use of the two-stage model was superior to the Tobit model in this research. Tobit would have forced the sign and significance levels of the parameter estimates to be the same for both decision stages.

Table 2.
Results of Two-Stage Multivariate Analysis of Decision to Participate in a Retirement Account and the Dollar Balance in a Discretionary Retirement Account

	Decision to Participate	Balance in Retirement Account
	Probit	Ordinary Least Squares Regression
Credit card balance carried forward	6.247E-6	-1.4764*
Installment debt	-6.389E-7*	-0.5655†
Mortgage	7.749E-7	0.0491
Other residential debt	1.190E-6	0.1683
Other lines of credit	6.958E-6	-0.2899
Other debt	8.705E-7	0.7365‡
Respondent age		
25 to 34	0.2769*	-9269.438
35 to 44	0.4684‡	4003.6637
45 to 54	0.3489*	14371.413
55 to 64	0.5297‡	66935.674†
Have child < age 18	0.0911	-4536.2910
# in primary economic unit	-0.0825*	-2747.8160
Income (income quintile 5 reference category)		
Income quintile 1	-1.5665‡	-76931.5300‡
Income quintile 2	-0.9059‡	-71377.6900‡
Income quintile 3	-0.5324‡	-66976.7000‡
Income quintile 4	-0.3481†	-47328.1300‡
Assets (in $10,000)	0.0004‡	180.3117‡
Have defined benefit plan	0.1826	-20401.1600
Self-employed	-0.3946‡	11346.317
Save for retirement	0.3750‡	8963.8288
Above average risk	0.3715‡	6448.5362
Single (married reference category)	-0.0348	-12037.45
Respondent race or ethnicity (white reference category)		
Black	0.0430	-8274.9650
Hispanic	-0.5771‡	-951.5042
Other race	-0.2406	14736.7680
Respondent education (high school reference category)		
Less than high school	-0.0640	-13833.1100
Some college	0.0290	-4686.9350
College	0.1673*	12138.6330
Professional status	-0.0980	43233.9630‡
Intercept	-0.3844*	84178.3590†

* p < .05   † p < .01   ‡ p < .001

The level of installment debt had a significant negative effect on the decision to participate in discretionary retirement savings, but other levels of debt did not have

a significant effect on participation. In addition to installment debt, the number in the primary economic unit, income level (as compared with the highest income quintile), self-employment, and being Hispanic had significant negative effects on participation in discretionary retirement savings. Those who were older (as compared with those less than age 25), had higher levels of assets, had saving for retirement as a goal, were willing to take above average risk and had a college education were significantly more likely to participate in discretionary retirement savings. Among those who chose to participate in discretionary retirement savings, the level of other debt, being 55 to 64 years of age (as compared with those less than age 25), and having professional status had a significant positive effect on the level of such savings, while carrying a credit card balance forward, level of installment debt, and income level (as compared with the highest income quintile) had significant negative effects on the level of discretionary retirement savings.

Installment debt deterred participation in discretionary retirement savings. Among those who had discretionary retirement savings balances, accumulations were significantly lower for those who carried a credit card balance forward and for those who had installment debt. These findings give some support to the notion that debt payment obligations inhibit discretionary retirement savings. The fact that it is installment and credit card debt that is associated with lower participation in and levels of discretionary retirement savings balances and not simply debt, per se, is noteworthy. The other types of debt included in this study generally would require substantial qualification, collateral that was expected to increase in value (e.g. home mortgage) or ownership of assets not typically held by the broad public (e.g. margin loans on stock). Use of these types of debts often forces some forward thinking due to either the qualification procedures or the long-term repayment commitment established. In contrast, installment and credit card debt are relatively easy to obtain and use. While credit cards are issued with an upper limit on balance owed, in practice, this limit is often raised as a reward for using the card. Use of either installment or credit card debt can be impulsive, with little regard as to how the repayment commitment will affect ability to make or keep other financial obligations. Further, both types of debt are acquired to obtain goods and services that are immediately consumed or that depreciate quickly, thus there is no asset appreciation to offset the relatively high rates of interest or fees for late payments. These characteristics can quickly lead to financial difficulties if installment or credit card debts are created without thought and planning. If discretionary retirement savings are treated as a residual of disposable income, growth in monthly obligations to these types of debt has the potential to quickly and insidiously crowd out retirement savings, especially for those individuals who tend to consider the present rather than the future when making financial decisions.

Interestingly, the larger the level of other debt, the larger the level of discretionary retirement savings balances, even after controlling for differences in economic resources. This result may reflect some aspects of financial savvy and use of debt leverage to increase wealth that has not been captured in other independent variables.

Life cycle stage seemed to have a different impact at each decision stage. Those in the youngest age category were significantly less likely to participate in discretionary retirement savings than those in the other age categories. Among those who had discretionary retirement savings balances, only those in the 55 to 64 age group had significantly higher levels of discretionary retirement savings as compared with those in the less than 25 age group. Presence of a child under age 18 in the household did not influence the decision to save or the level of savings. The larger the household, the less likely a respondent had discretionary retirement savings balances. Household size was not a factor in the decision of how much to save. Thus it would seem that it is age (perhaps as an indicator of proximity to retirement) rather than life circumstances such as being married or having young children in the home that is relatively more influential in level of discretionary retirement savings. In considering these results, it is important to note that it is not possible to distinguish the effects of aging from the effects of birth cohort in cross sectional data. That is, one cannot be sure that, were this study replicated in 20 years, the behavior of a 20 year old in this study will emulate the behavior of a 40 year old in this study. Indeed, several factors suggest this might not be so. First, both the mean and the median age in this study are 41. When these individuals entered the work force during the 1970s, real growth in median income was just beginning to slow to an average of around 1% per year after virtually three decades of an aggressive upward climb that averaged 3% per year (Mishel, Bernstein & Schmitt, 2001). When making financial decisions, this group was apt to rely on recent economic trends, not realizing that the economic future they would experience would not be nearly as bright. The generation now

entering the work force has experienced nothing but slow economic growth and would be apt to temper their future economic expectations accordingly. Second, the credit card industry as it is known today was launched and developed during the lifetime of the median age group in this study. When the credit card was introduced, paradigms about debt financing began to change from something that was cautiously used and restricted to purchase of homes or durable goods to a means of purchasing a wide variety of consumer goods and services. Ease of use led to over extension of debt for many. The younger generation has had opportunity to observe both the benefit and pitfalls of credit use and, thus, may be more judicious about its use. Third, when the forty-year olds in this study entered the labor market, defined benefit plans were still prevalent. Such plans place the burden of financial planning on the employer rather than the employee. The shift toward plans that make the employee responsible for the level of funds available at retirement as well as doubts about the stability and adequacy of Social Security has taken place during the working years of this group. The generation now entering the work force is much more aware of the need to take personal responsibility for funding their retirement early in their career. Fourth, marital dissolution has become more common in recent years, making establishment of own retirement plans versus relying on a spouse's plan relatively more important. Rise in the proportion of dual earning couples has made establishment of separate retirement accounts not only more possible but also more prevalent.

The relationship between income, assets and discretionary retirement savings was as expected. Higher levels of income and assets were positively associated with both the decision to have discretionary retirement savings balances and with the decision to have higher levels of such savings. Note that the dollar differences in contribution to discretionary retirement savings balances are substantial when each of the four lower income quintiles is compared to the top income quintile. Given the tax sheltering of interest and dividend earnings in these accounts, these differences will be even larger over time.

Motivation for saving was relatively more important in the decision to have discretionary retirement savings balances as compared with the decision of how much to save. Although not statistically significant at the conventional 5% level, at a 10% level of significance, those who expected to receive funds from a defined benefit plan were more likely to have a discretionary

retirement plan but would have saved about $21,500 less than those who didn't have that expectation. The self-employed were less likely to have discretionary retirement savings balances, perhaps reflecting previous research findings that the self-employed tend to rely on the business itself to provide retirement funds. Self-employment was not a significant factor in level of discretionary retirement savings balances. Being willing to take above average risk was associated with a greater likelihood of having discretionary retirement savings balances but was not a factor in the amount saved.

Hispanic individuals were less likely to have discretionary retirement savings balances. Other than that, race and ethnicity did not appear to influence the decision to use discretionary retirement savings or level of discretionary retirement savings. Education level had different results. Probability of having discretionary retirement savings balances was higher for those with a college degree as compared to those with a high school degree. But, among those who had such accounts, professionals saved significantly more than non-professionals did.

Limitations

To really know if debt obligations displace discretionary retirement savings, it would be best to evaluate payments made to each during the same time frame (e.g. during the same month). A negative relationship between debt payments and payments to discretionary retirement accounts builds a stronger case for debt obligations "crowding out" retirement savings, all else equal. Because these data were not available, levels of debt and discretionary savings were used in this study. This substitution presents some limitations. Debt levels and level of savings in discretionary retirement savings reflect past decisions; decisions that may have been made at different time frames with different economic conditions, future expectations, resources, constraints, and goals present. The average age of 41 for the sample suggests that proximity to retirement might lead to a relatively larger portion of the sample having at least some discretionary retirement savings. Further, although weights were used in this research to correct for the over sampling of those with high income, the impact of having these households included in the sample was still noticeable in this research. Not only would levels of discretionary retirement savings balances typically be higher for this group, the higher levels of such savings would have enjoyed substantial growth during the 1990s bull market.

Summary

Results of this study suggest that certain types of debt affect ability to save for retirement using discretionary retirement savings accounts. Those with installment debt had a significantly lower probability of having discretionary retirement savings balances, all else equal. Among those who had discretionary retirement savings balances, lower levels of discretionary retirement savings balances were found for those with higher levels of installment debt and credit card debt after controlling for life cycle stage, economic resources, savings motivations, and sociodemographic characteristics of the respondent.

In general, life cycle stage, economic resources, motivation for savings, and sociodemographic characteristics of the respondent were significantly related to the probability of having discretionary retirement savings balances. Those who had larger households, lower income levels, were self-employed, were Hispanic, or who had installment debt were less likely to have discretionary retirement savings balances. Being older, having a higher level of assets, having retirement as an explicit saving goal, being willing to accept above average risk to gain above average returns, or having a college education was associated with greater probability of having discretionary retirement savings balances. Among those who had discretionary retirement savings balances, life cycle stage and economic resource variables appear to be the more relevant factors. Lower levels of such savings were noted for those who were older, had lower levels of income, carried a credit card balance forward, or had installment debt. Having higher levels of assets, a professional degree and "other debt" was associated with higher levels of discretionary retirement savings balances.

Conclusions and Implications

From study results, it can be concluded that installment debt and credit card debt (excluding convenience users) adversely affect participation in and level of discretionary retirement savings accounts. It may further be concluded that while psychological, social, and economic factors play a role in the decision to have discretionary retirement savings balances, among those who have such savings, the factors affecting the level of discretionary retirement savings balances are largely economic. This is a result that would have been masked had Tobit rather than a two-stage model been used in the empirical analysis.

The findings of this study have several implications for financial counselors, educators, planners, and others who are interested in knowing how to encourage people to participate in discretionary retirement savings accounts and how to encourage those who are now participating to contribute more. The United States Congress clearly designed discretionary retirement savings accounts to encourage participation by low to moderate-income households. The tax advantages of these accounts are either restricted or eliminated as income rises above specified thresholds. Underutilization of discretionary retirement savings in a planning environment that is increasingly shifting financial responsibility for retirement to the individual suggests that strategic education is needed rather than more law.

While the basics of saving for retirement are simple, they are not always easy to implement, given the changes in thinking and lifestyle required. Results of this study suggest that having saving for retirement as a stated goal and being willing to accept above average risk increases the probability of participating in discretionary retirement savings accounts. One challenge of education then, is to convert non-savers to savers and to expand understanding of risk and return among savers. To be effective, education efforts must clearly communicate specific, concrete, measurable benefits of shifting from a short-term "enjoy today, pay tomorrow" to a long-range "save today to live well tomorrow" view. In economic terms, the marginal benefits of reducing current consumption must convincingly exceed marginal costs. The drive to put oneself first that so often spurs consumption can be redirected to "pay yourself first." Finding ways to reduce non-essential expenditures (such as bringing a thermos of gourmet coffee from home every work-day morning rather than buying it from the coffee shop) can be presented as savvy ways to increase wealth rather than as ways that reduce the pleasure of current consumption.

Clearly, given the inverse relationship between installment and credit card debt levels and discretionary retirement savings balances, the principles of cash flow management need to be stressed in education efforts. The fact that younger individuals are less likely to have discretionary retirement savings balances or, if they do, they reduce contributions during their early working years suggests this audience needs to become more aware that the time value of money can make a significant difference in the amount they need to set aside to attain a desired level of living during retirement. The finding in this study that Hispanics were significantly less likely to participate in discretionary retirement savings is a concern given the fact that the Hispanic population has

increased more than 50% between the 1990 and 2000 census (U.S. Census Bureau, 2002). Special efforts may need to be made to reach this specific ethnic group.

When financial counselors help those overextended in debt regain financial stability, the debt repayment process can be presented as the first step in a long-range savings plan. The cash flow allocated to debt repayment can gradually be shifted into a savings account as debts are repaid. In the process, the client is engaged in learning how to forgo current consumption and consider the future. Those who protest that the little they save could not possibly make a difference can be shown that even $50 a month faithfully set aside in a tax sheltered account for 35 years at a modest 5% return would give them $56,804 more at retirement than they currently would have. Being willing to take a little more risk to gain an average 8% return would more than double that figure ($114,694). Seeing such figures might change their perspective. The restricted access to the funds can help steel the resolve of those tempted to withdraw the funds to spend today.

Since discretionary retirement accounts have close ties to earned income, employer sponsored workshops would be a logical place to disseminate information about such accounts (Shirer & Wollan, 1998). Cooperative Extension System specialists and county educators in Consumer and Family Economics would be natural partners in such educational efforts. These extension professionals are well versed in personal financial planning, are not subject to marketing interests, and are expert in the education of adult audiences. There could also be a role for financial planning professionals in such settings, provided information is presented in an unbiased manner as a true community service rather than simply as a marketing tool. While such efforts may not directly increase the firm's client base, the firm could still gain. Involving junior financial planners in such efforts could provide an avenue for their professional growth as well as developing the name recognition and the good will of the company.

Financial planners who work with the self-employed sole-proprietor or partnership can stress the importance of diversifying retirement plan investments. While a strong and prosperous business can make a significant contribution to retirement income, economic downturns, loss of key employees or shifts in consumer demand can swiftly undermine business viability. Strategic use of Keogh accounts for the self-employed can offset some of that risk while also providing some tax advantages.

In short, opportunity exists for education on the characteristics and costs of using various types of debt instruments, signs of over extension in debt, time value of money, tradeoffs between risk and return, basic investing strategies, tax advantages of discretionary retirement savings and the future consequences of not engaging in saving today. At a time when individuals must bear an increasing level of responsibility for saving for their own retirement such education becomes increasingly vital.

Appendix
Variable Definitions

Variable Name Used in this Analysis	Code for Variables Using SCF Variable Names
Proportion with discretionary retirement savings	= 1 if discretionary retirement savings > 0; 0 otherwise
Dollar balance in discretionary retirement savings	= IRA + Thrift from SAS programming code for net worth in the SCF
Credit card dollar balance	From SAS programming code for net worth in the SCF
Proportion who carry credit card balance forward	CARRY =1 if {X432 = 3 or X432 = 5 or X7577 = 1}; 0 otherwise
Credit card dollar balance carried forward	created by the interaction of two measures of credit card usage: 1) CARRY (see above) and 2) The dollar level of credit card balance.
Installment debt dollar balance	From SAS programming code for net worth in the SCF
Mortgage dollar balance	From SAS programming code for net worth in the SCF
Other residential debt dollar balance	From SAS programming code for net worth in the SCF
Other lines of credit dollar balance	From SAS programming code for net worth in the SCF
Other debt dollar balance	From SAS programming code for net worth in the SCF
Respondent age	
< 25	X14 < 25
25 to 34	X14 $\geq$ 25 $\leq$ 34
35 to 44	X14 $\geq$ 35 $\leq$ 44
45 to 54	X14 $\geq$ 45 $\leq$ 54
55 to 64	X14 $\geq$ 55 $\leq$ 64
Proportion who have child < age 18 in household	= 1 If {X108 or X114 or X120 or X126 or X132 or X202 or X208 or X214 or X220 = 4} and {X110 or X116 or X122 or X128 or X134 or X204 or X210 or X216 or X 222 $\geq$ 1 and $\leq$ 18}; 0 otherwise
# in primary econ. unit	X7001
Income quintiles	X5729 arrayed in quintiles
Dollar value of assets (in units of 10,000)	SAS programming code for ASSET in the SCF / 10,000
Have defined benefit plan	= 1 If {X 6712 = 17 or X6717 = 17 or X5601=1}; 0 otherwise
Self-employed	= 1 If {X4106 = 2 or X4706 = 2}; 0 otherwise
Save for retirement given as reason to save	= 1 If {X3006 or X3007 or X 7513 or X 7514 or X7515 or X6848 = 22}; 0 otherwise
Willing to take above average risk	=1 If {X3014 = 1 or 2}; 0 otherwise
Respondent marital status	
Married	= 1 If {X8023 = 1 or 2}; 0 otherwise
Single	= 1 If {X8023 = 3 or 4 or 5 or 6}; 0 otherwise
Respondent race or ethnicity	
White	= 1 If {X6809 = 1}; 0 otherwise

Black	= 1 If {X6809 = 2}; 0 otherwise
Hispanic	= 1 If {X6809 = 3}; 0 otherwise
Other race	= 1 If {X6809 = -7}; 0 otherwise
Respondent education	
Less than high school	=1 If X5901 < 12; 0 otherwise
High school diploma	= 1 {If X5902 $\geq$ 1 and X5902 $\leq$ 2}; 0 otherwise
Some college	= 1 {If X5901 $\geq$ 13 and X5901 $\leq$ 15}; 0 otherwise
College degree	= 1 {If X5904 =1}; 0 otherwise
Professional status	= 1 {If X5905 $\geq$ 3 and X5905 $\leq$ 12}; 0 otherwise

Endnotes

a. *If the assumption of independence between the two decision steps is incorrect, the estimated coefficients in the OLS participation equation will be biased. Alternatively, a sample selection model presumes dependence between the two decision steps. This model generates unbiased coefficients by including λ (lambda), an estimate of the inverse Mill's ratio computed from the probit equation, as an additional regressor in the OLS participation equation (Breen, 1996). Note that selection of either model turns on assumptions made about the relationship between the first and second decision stage. While a review of the literature uncovered no statistical test for independence of the two stages, the statistical significance of λ in a sample selection model can give some indirect evidence of the validity of the assumption of dependence. When a sample selection model was used with these data, λ was not statistically significant at the .05 level. This result did not support the assumption of dependence between the two decision stages. Therefore, the assumption of independence was retained.*

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