Determinants of Holdings of Types of Savings

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The determinants of holdings of IRAs and Keoghs, CDs, bonds, MMMFs, MMDAs, and stocks were investigated. Logistic procedures were run on data from the 1983 Survey of Consumer Finances. Savings were found not to be homogeneous products. Bonds were more likely to be held by households with children. Publicly traded stocks were found to be held by those with smaller households. Race, income squared and education were significant determinants for all types of savings.

The deregulation of banking as well as changes in federal tax laws has resulted in an increase in the offerings of financial assets. The financial market has expanded into individual retirement accounts and Keoghs, money market mutual funds, and money market deposit accounts. These changes have affected the entire market for savings, as well as credit. Avery, Elliehausen, and Canner (1984) noted from the 1983 Survey of Consumer Finances that the amount of holdings in saving and checking accounts decreased between 1977 and 1983. This decrease may reflect a shift from conventional checking and savings accounts into the more recent offerings of banks and other financial companies.

Although each type of saving instrument accounts for a small proportion of total savings, the dollar amount invested is into the billions. Mutual funds account for 4% of all assets or $226 billion dollars. Money market accounts make up 3.6 percent of all the savings in 1990; this was equivalent to $196 billion (Courtless, 1991). Courtless (1991) states that in the "last 40 years stocks have been a major share of financial assets of individuals" (p. 16). Savings bonds accounted for $57 billion of savings (Courtless, 1991).

Holdings of savings are affected by characteristics of households and also economic variables. Courtless (1990) suggests that the economic variables that affect savings are inflation, interest rates, the 1986 tax reform, social security, and availability of individual retirement accounts. Savings are decreased by a higher inflation rate (Courtless, 1991). The effect of the tax reform of 1986 on savings is unclear as is the relationship between savings and social security (Courtless, 1991). Venti and Wise (1990) found that savings created through individual retirement accounts was new savings and was not followed by a decrease in other types of savings.

Hefferan (1982) suggests that there are three aspects of the choice to save. These are the deferment of spending, saving a specific dollar amount, and the choice of instrument used. Her study analyzed the factors related to the decision to save and the amount saved. She describes what types of households used different types of saving instruments.

This study will deal with the last choice that consumers make; it will examine the determinants of the holdings of various types of saving. The purpose of the study is to further understand the factors determining ownership of each type of savings instrument.

Related Literature

The life cycle hypothesis of saving (Ando & Modigliani, 1963) has been used extensively to account for changes in savings over the life cycle. This theory is similar to Thurow's (1969) life cycle theory of consumption; the foundation of both of the theories is the same although they deal with converse issues. The basis of both theories is the utility function which says that consumers will optimize their saving over the lifetime.

There are three assumptions of the life cycle hypothesis of saving: 1) consumers think about the future 2) desire to borrow against the future and 3) preference for greater consumption (Wilcox, 1991). At any given period during their life, consumers could be saving or dissaving; however, the desired result is maximum utility over the lifetime. Because the types of savings have distinct qualities and risks associated with them, there will be a varied number of optimal uses of those types of savings. Thus, at different points in the life cycle, individuals will use the types of savings that best suit their consumption and savings patterns at that time.

Although Wilcox (1991) states that the life cycle theory of saving does not seem to hold up very strongly for aggregate data he concedes that there are some "valuable reference points" (p. 12) that remain from the theory. Juster (1986) also believes that the life cycle theory provides an important basis on which to study.

Previous research has suggested that the various types of saving should be studied separately (Lindqvist, 1980). Lindqvist's research begins to indicate that the determinants may be different for the holding of types of savings. He found that income and education are strong

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predictors of the change in total saving. Also, life cycle and type of residence were important factors. These variables all had a positive impact on the change in total saving of households.

Davis and Schumm, (1984) in their study comparing high and low income groups' saving, found that family income had no effect on saving in lower income households; however, it was a strong predictor of saving for higher income households. They found that there seemed to be a threshold level of income at which saving occurred.

Avery, Elliehausen and Canner (1984) have noted from the 1983 Survey of Consumer Finance that liquid assets increased with income. Through univariate analysis the researchers found that age, stage of the life cycle, education, home ownership, marital status, and race are also related to income. In the 1983 Survey of Consumer Finances, holdings of money market accounts, certificates of deposit, individual retirement accounts, Keoghs and savings bonds increase with income. Stocks, however, are lower for incomes between $20,00 and $29,000. These figures indicate that the market for financial assets may not be homogeneous.

In Avery, Elliehausen and Canner's (1984) second report on the 1983 Survey of Consumer Finances, they found that younger and higher income households hold brokered money market mutual funds more often than money market deposit accounts. This reflects the fact that higher incomes can accept the higher risk that is associated with money market mutual funds. Stockholders also have similar characteristics to money market mutual fund holders, although holders of stock have greater assets.

It has also been found that female headed households had lower holdings of savings overall when controlling for several variables (Hefferan, 1982). Hefferan controlled for income, number of workers in the household, contribution of the second worker, total assets, housing status, education, social class, and family life cycle. The assets
held by female headed households were one-third that of two earner families. The greatest disparity between female and two earner families was the dollar amount of holdings of securities and bonds.

Hypotheses

Only general predictions can be made from the literature in terms of the specific effects of variables on the various types of saving; there has not been sufficient research in this area to make predictions about every individual type of savings. Following the life cycle hypothesis, the holding of various saving instruments are expected to be related to factors associated with the households' life cycle stage. The period of greatest saving is during middle age when households are preparing for a decrease in income during retirement. The variables used in this study to operationalize the period of the life cycle are the age of the head of household, the number of persons under 18 in the household, the total number of persons in the household and the marital status of the head of the household. As the age of the head of household increases, it is expected that the holdings of those households will increase. A greater number of persons under 18 as well as a larger number of persons in the household are expected to decrease the holdings of the types of savings in those households. Heads of households that are married are expected to have holdings in a greater number of savings than those who are not married.

Income is hypothesized to have a positive relationship with the holdings of savings. This will be particularly strong for brokered money market mutual funds and stocks because higher income households will be better able to accept greater risk with their investments. Income squared was used to reflect the expected decline in the impact of income to affect ownership of types of savings instruments.

Consistent with findings of Hefferan (1982), it is hypothesized that female headed households will hold fewer types of savings instruments than male headed households.

The variables used to operationalize wealth are net worth, total amount of liquid assets and total amount of non-liquid assets. These variables are expected to have a positive relationship with holdings of all types of savings. This would be the case particularly with stocks and money market mutual funds due to the greater risk associated with these types of savings.

Various demographic variables were included to account for the effects of other variables on holdings of types of saving. Race was expected to have an effect such that nonwhites would have lower probabilities of holding than would whites, controlling for other variables in the model. This would be due to differing experiences and culture of different racial groups. Rural households were expected to have fewer holdings than were urban households. This may be simply because of the difficulty they may have of reaching financial institutions or differences in investment strategies. Occupation was expected to have a positive effect for white collar workers due to the fact that they have greater security in their jobs. Education was expected to have an effect similar to income. As the educational level increases the probability of holding all savings types will increase also.

Methodology

The 1983 Survey of Consumer Finance data collected by the Survey Research Center was used for this study. The original sample was 4,103 households. Those in the high income sample as well as those reporting negative incomes were not

used in this study. Those with negative net worth were left in the analysis. The remaining sample used in the analysis was 3663 households.

The dependent variables were converted to binary variables to run a logistic regression. If the survey indicated a dollar amount greater than zero for each of the savings, the household was assumed to hold that type of savings instrument. Logistic models were obtained for seven dependent variables: the ownership of individual retirement accounts and Keoghs, certificates of deposit, government savings bonds, money market mutual funds (brokered and non-brokered), money market deposit accounts, and stocks. Stocks were divided into publicly traded stocks and those given as benefits to employees (company stocks).

The independent variables are listed in Table 1.

Table 1
Independent Variables and their coding.

Life Cycle Variables:	
age	continuous
persons in the HH under age 18	1=yes 2=no
number of persons in the HH	continuous
marital status	1=married 2=not
Demographic Variables:	
race	1=white 1=non-white
gender	1=female 2=male
rural or urban HH	1=urban 2=rural
Financial Variables:	
rent or own their home	1=own 2=rent
income	continuous
total amount of:	
liquid assets	continuous
financial assets	continuous
net worth	continuous

The variable for the presence of persons under the age of 18 was an operationalization of part of the life cycle. It was assumed that this, in combination with age, number of persons in the household, and marital status, would indicate the family's placement in the life cycle. The variable for renting versus ownership of a home was a recode of a variable from the 1983 data for the value of the home. If the value of the home was zero it was assumed that the household was renting their residence.

A test for multicollinearity was done on the independent variables. The highest correlation between the variables was found between marital status and sex. The Pearson Correlation was .75 which was not assumed to be too great given the large sample size.

Results

Table 2 shows the results of the logistic analysis. Race, education, and income squared were significant for all of the types of savings. Race is positive, indicating that whites have a greater probability of holding all of these types of saving when controlling for other variables in the model. The greater amount of educational attainment of heads of households, the greater the probability of holding these types of savings. Income squared is negatively related to savings which indicates that as higher income levels are attained the probability of ownership decreases. This would indicate that the relationship between income and ownership of savings produces a bell-shaped curve.

Age is a significant variable for determining holdings of certificates of deposit, money market deposit accounts and publicly traded stocks. The relationship is negative for government savings bonds which indicates that holdings of bonds are less likely as age increases, controlling for all other variables in the model.

The existence of children under 18 in the household is only significant for government savings bonds. This may be due to the purchase of bonds by parents in the child's name.

Contrary to what was hypothesized and also found by Hefferan (1982), sex was not significant in determining ownership of any of the types of savings.

The number of persons in the household was significant and negative for publicly traded stocks. This may be due to the fact that as household size decreases, discretionary income increases, allowing saving because they lack the financial burden of children.

Marital status was significant for IRA's and Keoghs and government savings bonds. Those who are married may place a higher priority on planning ahead for their retirement years than unmarried households. Government savings bonds may be purchased more for children by those who are married, as mentioned above.

The concordance for each model is listed in Table 2. The values ranged from 70.6% for government savings bonds to 87.6% for certificates of deposit.

Pseudo R-squares were calculated for each model as well and are shown in Table 2. Pseudo R-squares are created in logistic procedures to produce greater interpritability of the data; and, they can be interpreted in the same manner as R-squares produced in regression analysis. These values range from 7% for money market deposit accounts to 22.9 percent for certificates of deposit.

Table 2
Beta Values of Determinants of Types of Savings.

	IRAs/Keoghs	CDs	Bonds	MMMF	MMMD	Company Stocks	Public Stocks
intercept	-6.015 **	-5.189**	-3.889**	-9.264**	-5.885**	-7.0978**	-5.626**
age	0.006	.021**	-.0069	.0018	.0139**	.0156**	.0046
under 18	-.013	.0445	.3719**	-.1750	-.3144	.0287	-.1071
sex	.221	-.2958	.00119	-.2951	.0753	-.1296	-.0894
race	.881 **	1.111**	.7060**	1.11**	.8403**	.9654**	.8778**
# in HH	-.106	-.0773	-.0439	-.0999	-.1040	-.1881*	-.0978
own/rent	.549 **	.6213**	.5477**	.1411	.4892**	.5343**	.5265**
education	.092 **	.0732**	.0781**	.3105**	.0813**	.1855**	.1341**
net worth	-2.39E-7	-4.94E-9	-1.63E-7	-3.685E-8-	.226E-8	2.413E-7	4.293E-8
liquid	.00001 **	.000065**	5.688E-6**	7.72E-6**	9.28E-6**	-3.92E-6	-.00002**
financial	-1.11E-6	-2.33E-6*	1.184E-7	-4.956E-7	1.377E-6	.00001**	.000022**
marital	.397 *	.2369	.3744*	.3395	.1892	.3848	.3056
urban/rural	.403 **	-0.0147	.2178*	.8400**	.3663*	.6262**	.5846**
income	.00004 **	-1.68E-6	.000015**	.00002**	.000016**	.00001**	.000019**
income^2	-96.7E-12 **	-41.5E-12*	-53.5E-12 **	-3.8E-11**	-.539E-10**	-.343E-10**	-.615E-10**
pseudo R^2	.165	.229	.081	.087	.07	.124	.15
concordance	82.7%	87.6%	70.6%	83.8%	78.8%	81.6%	81.4%

** denotes significance level of .01
* denotes significance level of .05

Conclusions

There are differences between the types of savings. The findings indicate that government savings bonds are an important method of saving for those with families. Stocks and money market mutual funds may be useful to those with higher incomes who could accept the risk of these types of accounts. These findings may be important to financial planners to better understand the users of thevarious types of savings. Through these findings the financial planner would be knowledgeable about the types of households that would be most apt to use the individual types of savings.

It was an intention of this study to analyze money market mutual funds that are brokered and those that are not brokered separately. The sample of households holding these types of accounts was not large enough to do this, however. It is assumed that these accounts would not be held by the same groups of people. A study to analyze these individually would be useful.

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