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Patterns of Household Financial Asset Ownership

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Patterns of household financial asset ownership were investigated with data from the 1989 Survey of Consumer Finance. In terms of ownership associations between two assets, 22 pairs (61%) of assets showed positive effects on each other. For instance, owning a savings accounts increases the chance of owning checking accounts, and vice versa. Eight pairs (22%) did not affect each other in terms of ownership. Four pairs (11%) negatively influenced the ownership on each other. The remaining two pairs (6%) showed asymmetrical effects. These results may help planners better understand client behavior in owning various financial assets.

KEY WORDS: *financial assets, individual investors, saving, Survey of Consumer Finance*

More and more consumers have more diversified household asset portfolios that include a variety of financial assets (Kennickell & Shack-Marquez, 1992). Consumers are told to set financial goals and then choose appropriate financial instruments to achieve these goals (Garman & Forgue, 1994). The descriptive statistics of financial asset ownership imply that families have different propensities to own different categories of assets. For example, 75% of families had checking accounts, but only 19% owned stocks in 1989 (Kennickell & Shack-Marquez, 1992). Why are consumers more likely to own certain types of assets, but less likely to own other types? Are there associations between the ownership of various financial assets? These questions were pursued in this study. Findings of this study will help practitioners in family financial counseling and planning services better understand the consumer behavior in choosing various financial assets in order to effectively serve the needs of their clients.

The Literature

Financial Assets as Different Savings Components

The traditional life cycle hypothesis (Ando & Modigliani, 1963; Hanna, 1989) ignores the differences between various financial assets held by families, in which amount of money in different accounts could be exchangeable freely with each other. Because of the dominance of this traditional saving model, only a few studies in the literature treated family savings components with distinct characteristics. Weagley and Gannon (1991) categorized household assets into four groups: savings, housing, financial securities, and retirement investments. They found that on average, the diversification of household asset portfolios toward riskier investment categories increases as wealth increases.

Based on the behavioral life cycle hypothesis (Shefrin & Thaler, 1988) and human needs theory (Maslow, 1954), Xiao and Olson (1993) divided household financial assets into three groups[a] that were assumed to represent different levels of financial needs, and found that consumers were more likely to save in the group representing the higher level of financial needs than the other group representing the lower level of needs. Xiao and Anderson (1993) investigated the relationship between shares of financial assets and income levels. Shares of various assets displayed three distinctive patterns along with the increase of income levels, and these patterns were interpreted as indicators of different levels of financial needs.[b]

Ramaswami, Srivastava, and McInish (1992) investigated the relationship between portfolio objectives and asset holdings. They concluded that consumers have more saving objectives, other than parsimonious ones, such as only for retirement, maximizing returns, and minimizing risks, which supported the notion that consumers follow

a mental accounting system when they save (Shefrin & Thaler, 1988).[c] All these findings imply that different asset categories may have different meanings to consumers and they cannot be treated as homogeneous ones when the savings behavior is examined, which is contrary to the assumptions of the traditional saving model.

Factors Associated with Saving and Investment
Financial Resources Income and wealth are the most important determinants of family saving behavior, but their effects on savings are mixed. Income has been found to have positive effects on the level of saving (Avery & Kennickell, 1991; Chang, 1994; Davis & Schumm, 1987; Foster, 1981; Hefferan, 1982). Income was found to affect levels of household emergency funds (Johnson & Widdows, 1985) and ownership of various household assets (Hira, 1987). However, the negative effect of income was found on the net worth change when families moved from beginning to expanding life cycle stages (Fitzsimmons & Leach, 1994). Levels of savings (financial changes) were positively related to total assets (Hefferan, 1982), but negatively related to initial financial asset levels (Chang, 1994).

Demographic Factors Several household demographic variables that had effects on family savings and investments were identified in empirical studies. The savings behavior was investigated in terms of the level of saving (Chang, 1994; Hefferan, 1982; Danziger, Van Der Gaag, Smolensky & Taussig, 1982), patterns of saving and dissaving (Hogarth, 1991), savings in various assets categories (Xiao & Malroutu, 1994; Xiao, 1994), and ownership of household assets (Hira, 1987). The major demographic factors displaying effects on the saving behavior included age, gender, employment status, race, education, household size, and marital status. Empirical evidence indicated that check writings were positively affected by number of credit cards (Murphy, 1991), but effects of credit card use on savings in other asset categories were not found in the literature.

Summary
Empirical evidence in the literature implied that consumers own different assets for achieving different financial goals or for meeting their various financial needs. If this notion is held, consumers should have different propensities to own different financial assets, depending on their financial goals or needs. Factors affecting the saving and investment behavior identified

in the literature may or may not have effects when the ownership of various financial assets are investigated separately. In addition, the empirical findings about consumer's saving behavior give little clue about the associations between the ownership of various financial assets. This study attempted to fill some of the research gap and the attention was focused on the associations between variables of household financial asset ownership. Bivariate and multivariate analyses were conducted to examine whether or not owning one asset would affect owning another asset to gain insights in consumer saving and investing behavior.

Methodology
Data
This study used the data from the 1989 Survey of Consumer Finances. The survey was sponsored by the Federal Reserve Board and several other federal agencies, and collected by the Survey Research Center of the University of Michigan. The data set has 3,143 observations, in which 2,277 were selected by standard multistage area-probability sampling methods from the 48 contiguous states, and the remaining 866 households in the survey were selected using tax data to oversample wealthier households (Kennickell, 1992). A multiple imputation technique was used to create the 1989 data file, which included five sets of data (Kennickell, 1991). All five data sets were used for the analyses. The samples were weighted to produce descriptive statistics and conduct bivariate and multivariate analyses.

Ownership of Financial Assets
The dependent variables included ownership of nine financial assets; checking accounts (excluding money-market-type checking accounts), savings accounts, certificates of deposits, money market accounts (including money-market-type checking accounts), retirement accounts (IRAs and Keogh plans), savings plans (employer-sponsored profit sharing, thrift and other savings plans), life insurance with cash values, bonds, and stocks. For example, if a household reported having checking accounts in 1989, the ownership of checking accounts would be coded as 1, otherwise 0.

Some financial assets defined in this study were different from ones used in a Federal Reserve study (Kennickell & Shack-Marquez, 1992). The Federal Reserve study divided bonds into taxable and nontaxable categories, and included U.S. savings bonds into other assets. The bonds defined in this study included all bonds. The

retirement accounts in the Federal Reserve study included both individual retirement accounts (IRAs or Keogh plans), and employer-sponsored savings plans. This study used two separate variables for the two categories. Life insurance with cash values was included in other assets in the Federal Reserve study, but this study defined it as a single category.

The variables indicating the ownership of various financial assets were used both as dependent and independent variables. In the multivariate analyses, when the ownership of one type of asset was investigated, the ownership of all other assets were entered into the model as independent variables. In this way, patterns between the ownership of various financial assets were examined.

Control Variables
Based on the literature review (Avery & Kennickell, 1991; Chang, 1994; Davis & Schumm, 1987; Fitzsimmons & Leach, 1994; Hefferan, 1982; Hira, 1987; Hogarth, 1991; Johnson & Widdows, 1985; Murphy, 1991; Weagley & Gannon, 1991; Xiao, 1994; Xiao & Malroutu, 1994), variables that might affect the ownership of various financial assets were included as controlling factors. The independent variables were: family income, household size, home ownership, possession of credit cards, head's age, race, gender, education, marital status, and employment status. Income, education, age, and household size were continuous variables, and others were categorical ones. To reduce the herteroscedasticity, which means the variances, log transformation of income was used in the multivariate analyses (Judge, Griffiths, Hill & Lee, 1980).

Data Analyses
Bivariate and multivariate analyses were conducted to examine interactions between variables of financial asset ownership. For bivariate analyses, a matrix was created indicating conditional ownership of financial assets, which means the proportion of owning one financial asset when holding another asset. For example, a proportion of owning checking accounts when holding savings accounts could be found in the first row and second column, and a proportion of owning savings accounts when holding checking accounts could be found in the second row and first column in the matrix. To examine the interaction between ownership variables, the relative change rate was defined as follows:

$$R = (C-A) / A,$$

where, R=relative change rate, C=proportion of conditional ownership, A=proportion of ownership in the whole sample. To illustrate, if the proportion of owning checking accounts when holding savings accounts is 85%, and the proportion of owning checking accounts in the whole sample is 75%, the relative change rate would be:

$$(85\% - 75\%) / 75\% = 13\%.$$

Logistic models were used for multivariate analyses. The dependent variables, dummies indicating ownership of financial assets, were assumed to represent the propensities of owning these assets. Thus, the logistic models are more appropriate than the linear probability models for the purpose of the study (Maddala, 1992, p. 327). The detail of using the weights and incorporating five data sets into the analyses can be found in the Endnote D.

Two sets of independent variables were used to investigate factors associated with the ownership of various financial assets. The first set of variables included asset ownership variables. The purpose of including these variables was to explore patterns of owning various financial assets. Since this study was exploratory in nature, ownership variables were considered exogenous when being used as independent variables. The ownership variables could be considered as endogenous variables in a more sophisticated research design which will be discussed in "the future research" section later on.

The second set of variables included family economic and demographic variables. These variables were used as control variables when patterns of financial asset ownership were investigated. In the preliminary analyses, all aforementioned variables were included in the logit models. Variables that had no significant impact (p>.05) on the dependent variables were excluded in the final models.

Findings and Discussion
Results from the Bivariate Analyses
The last column of Table 1 presents the ownership of various financial assets among American households in 1989. Based on the national representative sample, 75% households owned checking accounts, 44% owned savings accounts, and 35% owned cash value life insurance. About one fifth to one fourth households

owned following assets: bonds (28%), retirement accounts (24%), employer sponsored savings plans (22%), money market accounts (22%), certificates of deposits (20%), and stocks (19%). Table 1 also presents the conditional ownership of financial assets. The conditional ownership refers to the proportion of owning one asset when holding another asset. In Table 1, percentages above the diagonal of the matrix are greater than percentages below the diagonal. For example, the percentages in the first row (excluding the last figure in the first row which indicates the percentage of the whole sample) were greater than the corresponding percentages in the first column. It implied that proportions of owning checking accounts when other assets were held were greater than proportions of owning other assets when checking accounts were held.

Table 1
Conditional Ownership of Asset and Relative Change Rates[1]

% of Owning	If Owning[2]									Total Sample
	CHCK	SAV	LIFE	BOND	IRA	PLAN	MMA	CD	STCK	
CHCK		85	87	91	89	86	74	89	91	75
		(13)[3]	(16)	(21)	(19)	(15)	(-1)	(19)	(21)	
SAV	49		53	58	51	56	45	47	51	44
	(11)		(20)	(32)	(14)	(27)	(2)	(7)	(16)	
LIFE	40	42		47	53	45	45	44	54	35
	(14)	(20)		(34)	(51)	(29)	(29)	(26)	(54)	
BOND	34	38	38		47	45	46	47	53	28
	(21)	(36)	(36)		(68)	(61)	(64)	(68)	(89)	
IRA	29	29	37	40		38	47	42	50	24
	(21)	(21)	(54)	(69)		(58)	(96)	(75)	(108)	
PLAN	25	29	29	35	35		32	21	35	22
	(14)	(32)	(32)	(59)	(59)		(45)	(-5)	(59)	
MMA	22	23	29	36	43	32		42	47	22
	(0)	(5)	(32)	(64)	(95)	(45)		(91)	(114)	
CD	23	21	25	33	34	19	37		35	20
	(15)	(5)	(25)	(65)	(7)	(-5)	(85)		(75)	
STCK	23	23	29	36	39	31	40	33		19
	(21)	(21)	(53)	(89)	(105)	(63)	(111)	(74)		

[1] The table reads, for example, among families owning checking accounts, the proportion owning savings accounts is 49%.

[2] CHCK=checking accounts, SAV=savings accounts, CD=certificate of deposits, IRA=retirement accounts, PLAN=other savings plans, LIFE=life insurance with cash values, MMA=money market accounts, BOND=bonds, STCK=stocks.

[3] Figures in parentheses are relative change rates (%), indicating the relative change of the proportion of owning Asset A when holding Asset B to the proportion of owning Asset A in the whole sample. For example, the proportion of owning saving accounts when holding checking accounts was 49%, and the proportion of owning savings accounts in the whole sample was 44%. Then, the relative change rate was (49%-44%)/44%=11%.

In Table 1, numbers in parentheses indicate the relative change rates, which showed several interesting patterns. First, the majority of the relative change rates were positive. For example, the percentage owning checking accounts when savings accounts were held increased by 13% relative to the percentage of owning checking accounts in the whole sample. Only four rates were zero or negative in two pairs of assets (checking vs. money market account, and CD vs. savings plan). Second, the relative change rates were fairly symmetrical in a pair. In the case of checking accounts and money market accounts, the two corresponding relative change rates were zero or close to zero. Another example was savings plan and CD, in which both of the corresponding relative rates were negative. For the pairs that have positive relative change rates, the extent of change was very similar. For the pair of money market account and stock, both of the corresponding relative change rates were

high, around 110%. For savings accounts and money market accounts, the relative change rates were low, 2% and 5%, respectively.

Results from the Logit Analyses
Table 2 presents the findings from the logit analyses. The findings revealed following patterns. First, among the asset pairs, 61% (22 out of 36 pairs) showed positive effects to each other in terms of ownership, such as checking and savings accounts, checking and cash value life insurance, and so forth. Second, 22% of asset pairs (8 out of 36) did not affect to each other. For example, owning checking accounts did not influence the ownership of savings plans, neither did savings plans on checking accounts. Third, four pairs showed negative effects to each other. One example is savings plan and CDs, in which owning savings plan decreased the chance of owning CDs, and vise versa. Fourth, two pairs of assets (6%) showed asymmetrical effects. Owning checking increased the chance of owing stocks by 49%, but owning stocks did not affect checking account ownership. Interestingly, owning stocks decreased the chance of owning savings accounts by 12%, but owning savings did not influence the stock ownership.

The logit analyses also identified effects of some economic and demographic variables on the financial asset ownership. Since these household characteristic variables are served as control variables, and not the focus of this paper, their effects are discussed briefly in the following. It seemed that income and education often had positive effects, and household size had negative effects (with some exceptions) on financial asset ownership. Households having credit cards and/or owning homes were more likely to own various financial assets. Households with white heads were more likely to own all financial assets, so were for households with married heads (with some exceptions). Age and gender showed mix effects on various financial assets. Households with older and/or male heads were more likely to own some assets but less likely to own other assets.

Conclusions and Implications
Using the data from the 1989 Survey of Consumer Finances, this study investigated patterns of household financial asset ownership. The major finding was that there were diverse patterns among financial assets in terms of ownership. Owning one asset could have either positive, negative, or no effects on the ownership of

another asset. The majority of pairs of assets (22 out of 36 pairs, or 61%) had positive effects on each other, when demographic variables were controlled. Eight pairs (22%) did not affect each other in terms of ownership. Four pairs (11%) negatively influenced the ownership on each other. The remaining two pairs (6%) showed asymmetrical effects.

Implications for Practitioners
These findings revealed some features of consumer behavior in owning various financial assets, which would help practitioners in family financial counseling and planning services better understand their clients when serving them. Financial planners and counselors should pay attention to diverse patterns of financial asset ownership. Depending upon asset categories, consumers who own one type of asset may increase or decrease the chance of owning another type of asset. For example, owning checking accounts would increase the chances of owning savings accounts, cash value life insurance, CDs, bonds, and stocks by 38% to 69%. However, owning checking accounts would decrease the chance of owning money market accounts by 190%, and does not have an effect on owning savings plans and retirement accounts. When financial planners design financial portfolios for their clients, they should consider these positive and negative associations. Consumers would be easily to accept the advice to save or invest in certain accounts, and more reluctantly do so in other accounts, given their current asset portfolios. For convenience of using the results, patterns of household financial asset ownership are summarized and presented in Table 3. Again, the caveat for financial service practitioners is that the findings in Table 3 are the case of typical consumers, and some of their clients may display different behavioral patterns.

Limitations of the Study
One limitation of the study is the assumption of decision making process. The study assumed that consumers make independent decisions in acquiring different types of financial assets, in which ownership variables were exogenous ones when being used as independent variables. It is possible that consumers could own two or more than two assets at the same time, in which ownership variables should be considered as endogenous ones.[e]

Another limitation is that the study did not explore the relationship between the behavioral pattern of typical

consumers and the actual behavior of individual consumers. In the real world, financial planners and counselors seldom give advice to their clients following the investment patterns of the typical consumer. They will make recommendations based on the needs and goals of the clients, and the needs and goals are outcomes of communications between the practitioners and clients.

Implications for Future Research
The limitations of the study suggest possible directions for future research. One possible direction is to formalize the consumer behavior of owning financial assets under the assumption of making joint decision, implying that consumers own some assets at the same time. The simultaneous equations may be used to explore this issue.

To examine the similarities and differences between the behavioral patterns of typical consumers and individual consumers in terms of financial asset ownership, the future research should be designed, implemented, and interpreted in conjunction with financial service practitioners. The research questions that could be asked include: What are significance of behavioraal patterns of owning financial assets in financial planning and counseling practices; Are findings of behavioral patterns of owning financial assets based on national samples meaningful to understand the behavior of individual clients. If so, what are advantages and limitations?

Endnotes

a. *The first group included checking, savings, money market accounts, and certificates of deposits, meeting daily and emergency financial needs. The second group included individual retirement accounts and Keogh plans, employer-sponsored profit sharing, thrift and other savings plans, trusts, and other financial assets, meeting future financial needs. The third group included bonds and stocks (including stocks in mutual funds but excluding money market or IRA accounts), meeting social and personal developmental needs (Xiao & Olson, 1993).*

b. *The patterns were shown when the charts of income levels and asset shares were drawn. The share of checking accounts decreased when income levels went up, displaying a mirror-image-J-shape curve which represented basic needs. The curves of shares of CDs and Money Market Accounts, IRAs, Savings plans, and cash value life insurance were in inverted-U-shape, representing security needs. The curves of shares of bonds, stocks, and other financial assets were in J-shape, representing growth needs (Xiao & Anderson, 1993).*

c. *The saving objectives reported by consumers were current income, future purchases, family education, conservative capital accumulation, aggressive capital accumulation, speculative capital accumulation, retirement, sheltering income from taxes, preventing loss from inflation, and having funds in an emergency (Ramaswami, Srivastava & McInish, 1992).*

d. *An approach proposed by Rubin (1987) was used to conduct bivariate analyses when five sets of data were incorporated, in which weights were adjusted as suggested by Kennickell (1992). If w=original weight, then the adjusted weight: w'=w/5. Using w' and data from the five sets, contingency tables were produced. However, Rubin (1987) did not discuss the treatment of logistic analyses when data sets produced by multiple imputation techniques were used, and no literature on this topic can be found elsewhere. The researchers often use one of the five data sets in conducting multivariate analyses. This study used a different approach, in which all five sets of data were used to conduct logistic analyses, and four dummy variables identifying data from data set 1 to 4 were included with the variable indicating data set 5 as reference variable. Since all the four variables were not statistically significant in the preliminary analyses, they were excluded in the final models. When the logistic analyses were conducted, another adjusted weight variable was used: w"=w'(sample size*5)/(sum of w'). In this way, national representative estimates were produced with adjusted weights, without increasing the degree of freedom in the multivariate analyses.*

e. *A two-stage estimation procedure should be used, e.g., Lee (1981).*

Table 2
Logit Results - Factors Associated with Asset Ownership in the Weighed Sample[1]

Independent Variable	Dependent Variable[2]								
	CHCK	SAV	LIFE	CD	PLAN	MMA	BOND	STCK	IRA
CHCK		.38	.40	.59		-1.9	.69	.49	
SAV	.34		.27		.12	-.21	.49		-.09
LIFE	.36	.25						.40	.36
CD	.55				-.21	.72	.72	.32	.49
PLAN		.10		-.22		.41	.26	.33	
MMA	-1.9	-.29		.66	.32		.38	.60	.53
BOND	.53	.43		.68	.31	.36		.56	.15
STCK		-.12	.32	.12	.25	.49	.54		.18
IRA		-.22	.32	.40		.43	.09	.17	
log(income)	.23	.14	.17	.06	.61	.80	.46	.69	.64
age	.02	-.01	.01	.03	-.02	.02		.02	.01
education	.12	.05				.14	.06	.11	.11
household size	-.11			-.12		-.17	.13	-.20	-.17
male (vs. female)	.13	-.63	.49	-.30	-.58		-.15	.79	.28
white (vs. nonwhite)	.92	.17	.15	1.1	.20	.53	.48	.84	.79
married (vs. other)		.36	.36	.45	.22		.32	-.61	
home owner (vs. other)	.71	.38	.44		.53			.47	1.0
worker (vs. nonworker)	.29	.27	.27		2.5	-.57			.54
having credit card (vs. other)	1.4	.41	.44	.30	.31	.84	.42	.78	1.0
intercept	-5.2	-3.0	-5.0	-5.5	-9.2	-11.0	-8.8	-14.0	-11.0
-2 log likelihood	12201	19621	17663	12882	12294	12303	14822	11089	12588

[1]All estimates are at significance levels of 5% or better.

[2]CHCK=checking accounts, SAV=savings accounts, CD=certificate of deposits, IRA=retirement accounts, PLAN=other savings plans, LIFE=life insurance with cash values, MMA=money market accounts, BOND=bonds, STCK=stocks.

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Table 3
Summary of Patterns of Household Financial Asset Ownership

Chance to Own, If Owning:	
Checking accounts (CHCK)	Increase: SAV[1], LIFE, CD,BOND, STCK
	Decrease: MMA; Unchanged: PLAN, IRA
Savings accounts (SAV)	Increase: CHCK, LIFE, PLAN, BOND
	Decrease: MMA, IRA; Unchanged: CD, STCK
Life insurance (LIFE)	Increase: CHCK, SAV, STCK, IRA; Unchanged: CD, PLAN, MMA, BOND
Certificate of deposits (CD)	Increase: CHCK, MMA, BOND, STCK, IRA
	Decrease: PLAN; Unchanged: SAV, LIFE
Savings plan (PLAN)	Increase: SAV, MMA, BOND, STCK
	Decrease: CD; Unchanged: CHCK, LIFE, IRA
Money market accounts (MMA)	Increase: CD, PLAN, BOND, STCK, IRA
	Decrease: CHCK, SAV; Unchanged: LIFE
Bonds (BOND)	Increase: CHCK, SAV, CD, PLAN, MMA, STCK, IRA; Unchanged: LIFE
Stocks (STCK)	Increase: LIFE, CD, PLAN, MMA, BOND, IRA
	Decrease: SAV; Unchanged: CHCK
IRA or Keogh plans (IRA)	Increase: LIFE, CD, MMA, BOND, STCK
	Decrease: SAV; Unchanged: CHCK, PLAN

[1]The table reads, for example, if one owns checking accounts, the chance of owning savings accounts will increase.