Untangling the Effects of Credit Cards on Money Demand: Convenience Usage vs. Borrowing

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This paper examines whether households are using credit cards for the convenience of paying all cash at once and enjoying the float that is created in the meantime or merely using credit cards as an easy form of borrowing. Previous studies of credit cards on money demand are extended by adding borrowing into the empirical framework. By looking at the impact that the volume of a credit card revolving balance has on a transactions account as well as whether a household owns a credit card, the effects of convenience usage versus borrowing on the card can begin to be untangled. The results suggest that part of the negative effect of being a credit card-holder on money demand is due to borrowing.

Introduction

In the early 1990s, the popular press painted a picture of the credit card industry as a wolf pack devouring the innocent sheep who were borrowers. And it is true that from 1983 to 1995 average consumer revolving credit rose from $291 1983 dollars to $812 1983 dollars based on household data from the *1983 and 1995 Surveys of Consumer Finances*. This is a 179 percent real increase in borrowing. This large level of indebtedness was presented as a problem of epidemic proportions in the media. Yet little empirical research has been done on the credit card as a method of borrowing.

Understanding why and how people use credit cards is of interest. Are they using credit cards merely for the convenience of paying out all cash at once and enjoying the float that is created in the meantime? Or are they using credit cards as an easy form of borrowing (in the sense that once a consumer holds a credit card he or she does not have to apply for a small loan but may obtain it automatically by charging purchases)? By looking at credit cards and the effect that they have on different measures of individual money demand, one can begin to untangle the different

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uses of the credit card. This aids in understanding the buying and borrowing patterns of the consumer.

Some research has been done on the credit card as an alternate transaction medium. The most notable is a 1995 Duca and Whitesell study. It finds that credit card ownership and checking account deposit balances, a proxy for money demand, are negatively related, while there is a positive relationship between savings accounts and credit card ownership. These results are consistent with theories of money demand that include credit cards as alternate transaction media.

Work by Yoo (1997 and 1998) suggests that a very small number of card-holding households is responsible for the large amount of consumer revolving debt. Thus, the question remains: is credit card debt (and therefore borrowing) what is driving the negative result found between credit card ownership and checking account deposit balances? Without looking explicitly at borrowing, there is no way to know if any given credit card-holding household is borrowing on the card or using it as an alternate transaction medium. Given the large increases observed in revolving credit in recent years, at least some of the households are borrowing. Because this borrowing is so large, is it large enough to drive the results that others have suggested point to convenience usage of the credit card?

No work has been done that incorporates both the credit card's use as a method of borrowing and as an alternate transaction medium. This study attempts to address this issue. Households have the option of using their credit card because it is more convenient and perhaps financially advantageous to use a credit card instead of money. They may also choose to borrow on the credit card in the same month. Because households are not required to sign contracts stating that they will either only borrow on the card or always pay the card off at the end of each month,[1] empirically it may be difficult to see the difference between the two because both the convenience usage of the credit card and borrowing on the credit card may cause a negative relationship between checking balances and owning a credit card.

I extend the previous studies by adding into the empirical framework a theory of credit card usage introduced by Brito and Hartley (1995). By also looking at the impact that the volume of a credit card revolving balance has on a transactions account, the effects of convenience usage versus borrowing on the card can begin to be untangled. My results suggest that part of the negative effect of being a credit card-holder on money demand is due to borrowing. This is overlooked in the previous studies.

[1] Except in the case of some types of American Express cards where the major feature of the card is that an individual/household must always pay the card in full, thus incurring no large finance charges.

Literature Review

Credit cards are approached two ways in the theoretical literature. A credit card may be classified as a medium of borrowing or as an alternate transaction medium. The literature does not seem to overlap to include possibilities for both in the same model. Although in reality the card-holder probably does use the card both as a means of taking short term loans and as a way to delay payment for reasons other than the lack of available funds. Even if a household only uses a credit card in one way, it is still important empirically to consider the effects of both ways the card may be used, because within a dataset both households that use credit cards as a medium of borrowing and those that use credit cards as an alternate transaction medium may be represented. The tests conducted in this paper attempt to address the synthesis of the two sets of theory from an empirical standpoint.

The models of consumer borrowing on credit cards come out of the literature on credit card interest rate stickiness and non-competitiveness of the industry. The most influential paper in this area is by Lawrence Ausubel (1991). One of his main findings is that high interest rates on credit cards discourage high-risk customers from borrowing on credit cards.[2] Those who are desirable credit card-holders borrow on credit cards by accident. Because these are low risk customers, they intend to pay off the card at the end of each month. Therefore, these card-holders are not initially worried about high interest rates and, thus, the rates are not bid down in the market. Brito and Hartley (1995) call this the idea of the "irrational consumer."

Brito and Hartley (1995) construct a rational model of credit card use. The basic premise of the model is to maximize net wealth where

$$\text{net wealth} = \text{asset value} + \text{money balances} - \text{credit card borrowing}.$$

Net wealth is constrained by expenditure where

$$\text{expenditure} \equiv \text{change in money balances} + \text{change in credit card debits}.$$

Brito and Hartley (1995) find that the consumer will spend all money balances and will then move on to use the credit card to finance spending. r is defined as the return on an asset equivalent to a T-bill, and i is the finance charge on the credit card. Financing through credit cards happens r/i of the time, and financing through the use of money balances occurs 1-(r/i) of the time.

It is important to note that no grace period is allowed in this model. This implies that the amount of credit card use predicted by the model is understated. If there is a grace period, the results only change when the consumer never carries a balance from one month to the next. In this case consumers use credit cards to finance consumption throughout the entire period. Brito and Hartley (1995) also extend the

[2] This is counter to the intuition in the bank credit literature where credit rationing occurs (the Stiglitz-Weiss effect) because interest rates are kept low to make sure good credit risk customers are not priced out of the market.

model by allowing r to be the interest rate a consumer pays on a bank loan. Using simulations, they find that "even moderate transactions costs can lead to substantial borrowing on credit cards" (Brito and Hartley, 1995, p. 408).

The idea of the credit card as an alternate transaction medium is found in a model of money demand presented by Akhand and Milbourne (1986). In this paper the Baumol-Tobin model is extended to include credit cards and their effect on money demand. This model gives a rationale for why a consumer would choose to use a credit card with no intention of borrowing on the card. The goal is to minimize the number of trips to the bank while making interest on the money balances not needed at any point in time by investing this money in bonds just as in the original Baumol-Tobin model. Akhand and Milbourne (1986) find that credit cards allow consumers to hold less in money balances and more in bonds than in the normal Baumol-Tobin result. This is the idea of convenience usage. This model, therefore, highlights two advantages of the credit card. First, extra interest is earned on funds no longer needed as money balances. Second, the number of asset transfers (i.e., money to bonds, bonds to money) decreases. Because each asset transfer inflicts a cost, this implies an important cost reduction on top of the added interest earned.

Between 1969 and 1989 there was a 1600 percent increase in *real* revolving consumer credit, yet there are few empirical studies on the effects of credit cards on money demand (Duca and Whitesell, 1995, p. 604). Most of the studies that have been done are from the 1960s and 1970s. Mandell (1972) found that families with credit cards have smaller demand deposit balances than those without credit cards, although the difference was not statistically significant. Using data from a single bank, White (1976) finds that household demand deposits decrease significantly with the ownership of credit cards.[3] Duca and Whitesell (1995) argue that there are problems with these studies. None of these studies controls for wealth or assets and the effect that they have on money. More importantly, the econometric techniques needed to handle selection bias in the models did not exist at the time of the earlier models and simultaneity bias was not addressed.

The Duca and Whitesell (1995) paper makes a major contribution to the empirical study of credit cards' effect on money demand by recognizing and correcting for selection bias in the money demand estimations. Transactions account balances are used as a proxy for money demand. Only those with some sort of deposit/transaction account show up in the data, thereby causing the selection problem. Duca and Whitesell (1995) also address an endogeneity issue that arises because in order to have a credit card most companies require a transaction account of some sort, and transactions accounts are also affected by credit card ownership in the model.

Using data from the 1983 *Survey of Consumer Finances*, Duca and Whitesell (1995) find that the probability of having a credit card is significantly and negatively

[3] Hammond (1982) also finds similar results for aggregate data.

correlated with checking, money fund, and total transactions deposits. This implies that credit cards minimize transactions deposits, which supports the convenience usage/synchronization of payments arguments for credit card usage.

The important contribution of this paper is to add Brito and Hartley's (1995) idea of the rational borrower into the interpretation of the money demand results fashioned from Akhand and Milbourne's (1986) theoretical model of money demand with credit cards. This is accomplished by adding a borrowing variable into the empirical model measuring the effects of credit cards on money demand that was introduced by Duca and Whitesell (1995).

The Data

The data used in this paper are from the 1995 *Survey of Consumer Finances*, which is collected triennially by the Board of Governors of the Federal Reserve System. The Survey of Consumer Finances is an extensive survey of household finances. Because the survey is interested in investment patterns as well as savings patterns, it oversamples the rich in order to get a good sample of those who are more involved in investment and the holding of financial assets. 4299 interviews were completed in the 1995 *Survey of Consumer Finances*. Of these, 2780 were from an area probability sample, while the other 1519 were from a list group for oversampling the rich. Definitions for all variables used in this paper may be found in Appendix A.

Beginning with the 1989 survey, missing data were estimated using a multiple imputation technique. The major advantage of multiple imputation is that it "simulates the distribution of missing data and, thus, allows a more realistic assessment of variances and a more efficient representation of first moments" (Kennickell, 1991, p. 9). This means that in data sets where missing observations have been estimated but only one complete data set has been created, true variances are underestimated because variability due to unknown missing values is ignored. Multiple imputation allows the researcher to estimate the variability caused by missing values that are unknown by creating an approximation of the true sampling distribution.

In the 1995 *Survey of Consumer Finances*, each household has five separate, internally coherent observations for each variable. If the respondent answered a question, all five observations are the same, but if there is non-response then five separate imputations have been done in order to give better estimated data points. This implies that five separate, complete data sets have been created. These data sets are meant to be used together in order to take advantage of the variance correcting properties of multiple imputation, thus each complete data set within the survey is referred to as a *replicate* of the entire data set. In general this implies that when all five replicates are used in estimations, the variance estimates are more accurate than for estimations in which only one imputation has been done to estimate missing variables.

The Model

The estimation technique used in this paper follows that of Duca and Whitesell (1995) whose empirical study on the effects of credit cards on money demand is the most recent. In order to see the effects of credit cards on money demand, a log linear money demand equation is estimated. Because cash holdings are unobservable (and, therefore, it is impossible to measure an individual's money demand), deposit account balances are used as proxies for money demand. The assumption is that because these are liquid accounts, they must be a good measure of how much money a household feels it needs to have on hand. Selection bias occurs in this model, as only money balances for account holders may be observed, and these are not the only people with money demand.

It is possible to correct for the selection bias using a Heckman selection model. The model in this paper is estimated with the full-maximum likelihood procedure. Y_t (household money demand) is only observed for those households with transactions accounts. This implies that, in this case, transactions accounts are d_t. The probability that $d_t = 1$ can be found using a probit model $z'_t \delta + \eta_t > 0$. Not having all households with money demand included in the linear money demand regression skews the disturbance term for the money demand regression. To add the expected value of the disturbance caused by the missing households, the inverse Mills ratio is calculated using the coefficients from the probit model (δ)**,** which is then added to the variance estimate of the linear money demand regression and is denoted $\lambda_t\sigma$.

Unfortunately, this model does not account for all sources of bias at this point. Simultaneity bias is also a problem in this model. The simultaneity bias occurs because in order to obtain a credit card, it is often necessary to have a deposit account of some sort. This makes the credit card variable endogenous. Duca and Whitesell (1995) explain that "the standard correction for this source of simultaneity bias is substituting the estimated probability of card ownership Φ (X_3b_3)[4] for the Card dummy in the money regressions" (p. 608). Omitted variable bias may also occur due to unobservable preferences of households that relate to both credit cards and money holdings, such as a higher propensity to consume from income or wealth.

I use data from the *1995 Survey of Consumer Finances* in a three-step process to estimate the effects of credit cards on money demand. This process is complicated by the presence of multiple imputation in the data set. Thus, before beginning the process, five separate data sets must be created. Then the three-step process is followed using each of the five replicates. The first step is to estimate a probit of credit card ownership in order to create a proxy variable of ownership of credit cards. Second, a linear regression for estimating revolving credit balances is estimated. Next, the full maximum likelihood Heckman procedure is used to estimate a log linear money demand model. The inverse Mill's ratio (i.e., Heckman's λ) is generated by this step

[4] b_3 is the estimated value of β_3.

and included in the log linear money demand model to account for the selection bias. Three types of account balances are used to proxy for money demand: checking account balances, savings account balances, and money market fund account balances. The three types of balances are also summed to give a loose measure for M2 as a proxy for money demand. The regression also includes scale variables standard in money demand models, income variables, precautionary/savings demand measures for the household, and demographic variables. The general model that will be followed is:

$$\text{credit card ownership} = X\beta + \varepsilon_1$$

$$\text{transactions account ownership} = Y\gamma + \varepsilon_2$$

$$\text{money demand/account balance} = Z\delta + \lambda_t\sigma + v_t \text{ where } \lambda_t = \text{Heckman's lambda}$$

Finally, the coefficient estimates computed for each of the replicates are averaged together and the variance for each coefficient estimate is corrected using variance information from all five replicates.[5] Thus the model estimated in this paper is as follows:[6]

[5] To find the variance for each coefficient, find the variance for each replicate and take the average. This is the within imputation variance. Next we must account for the between imputation variance. The between imputation variance is defined as "the sum of the squared deviations of the point estimates in each [replicate] from the overall average point estimate, divided by the number of [replicates] minus one" (Montalto, Sung, 1996, pp. 136-137). This is weighted by an adjustment factor for using a finite number of replicates. (This factor is 1.2 for five replicates.) This is necessary because in theory multiple imputation involves an infinite number of replicates. Thus, the total variance of a coefficient is the average within imputation variance plus the between imputation variance which has been multiplied by 1.2. From this t-statistics may be found in the normal way.

[6] Note: each regression equation is presented in a single column. The first column was the first equation estimated and so on. This presentation also allows the reader to easily see how the system is identified.

Dependent Variable: Credit Card Ownership, ln(revolving balance)	Dependent Variable: Transaction Account Ownership (check dummy, save dummy, or MMA dummy)	Dependent Variable: Transaction Account Balance in ln(dollars): (ln(checking), ln(savings), or ln(MMA))
Independent Variables:	Independent Variables:	Independent Variables:
		ln(revolving balance)
		Credit Card Ownership[7]
ln(asset)	ln(asset)	ln(asset)
ln(income)	ln(income)	ln(income)
Welfare	Welfare	
No Credit History		
Bad Credit History		
Debt Bad		
ln(household size)	ln(household size)	ln(household size)
Age 24 or less	Age 24 or less	Age 24 or less
Age 25-34	Age 25-34	Age 25-34
Age 35-44	Age 35-44	Age 35-44
Age 45-54	Age 45-54	Age 45-54
Age 55-64	Age 55-64	Age 55-64
Sophisticated Advice	Sophisticated Advice	Sophisticated Advice
Unemployed	Unemployed	Unemployed
Race		Race
Gender	Gender	
Married	Married	Married
College	College	College
High School	High School	High School
No High School	No High School	No High School
Student	Student	Student
	Don't Save	Don't Save
	Risk Averse	Risk Averse
	Emergency Saving	Emergency Saving
	Ncentral	
	South	
	West	
		Own Home
		Medical Saving
		Selection Term (Heckman's λ)
Constant	Constant	Constant

From earlier works (Duca and Whitesell, 1996, p. 605),[8] the effects of credit cards on money demand have been found to be ambiguous. There are three possible reasons why a negative correlation between credit cards and transactions accounts may be observed. The first is that a credit card can be used for emergencies; thus, a household needs fewer funds in liquid accounts (i.e., less in precautionary/savings balances). Second, the household is able to hold funds in accounts with greater

[7] Due to the problem of endogeneity of having a credit card and having a transaction account, the estimated probability of having a credit card and the estimated value of revolving credit balances are used in the regression.

[8] Marcus (1960) and White (1976)

returns than those of checking type accounts until the end of the credit card billing cycle at which time some of those funds may be withdrawn and used to pay the bill (convenience usage). The third reason that credit card ownership may have a negative effect on money demand (as proxied by checking/transaction account balances) is that the household will be able to synchronize payments so that the credit card bill is due shortly after a paycheck is received.

Three reasons why a positive relationship between credit cards and checking balances could be observed have also been suggested. First, if credit cards are a substitute for currency, then fewer withdrawals from checking are necessary; thus, at any point there should be higher balances in the account. Second, it may be too costly to shift funds into higher yielding assets for short amounts of time, thus leaving a larger amount of funds idle in the checking account for longer periods. The last reason is that "card ownership may reveal a higher propensity to consume, an aspect that is ignored by the literature but is relevant for cross-section studies with income or wealth proxying for spending" (Duca and Whitesell, 1995, pp. 605-606). This last scenario occurs when the percentage difference in propensities to consume between non-card-holders and card-holders is greater than the ratio of card to check spending. This assumes a population with constant income and two different propensities to consume.

Based upon Brito and Hartley's model (1995), however, this last reason for seeing a higher transactions account balance may not be realistic. Although a household with a higher propensity to consume should have greater money demand than households with lower propensities to consume, this may not appear in monthly account balance information as higher account balances. It seems more reasonable to expect that a card-holder with a higher propensity to consume would spend all available money balances and then move into borrowing on credit cards. As Brito and Hartley (1995) suggests, this would imply a negative, not a positive, correlation between transactions accounts and credit cards. This is an example of how the differences between a credit card as a medium of borrowing and as an alternate medium of exchange can become blurred.

A negative sign on the predicted revolving balance coefficient implies that borrowing is at least contributing to lower account balances. This in turn implies that households with credit cards may have a higher propensity to consume and, per Brito and Hartley (1995), spend all available cash balances and then move to financing consumption using the credit card. This does not completely rule out synchronization of payments/convenience usage leading to lower account balances, however.

The Results

For all results given, t-statistics are reported under the coefficient estimates. Being a college student is dropped due to collinearity in the demand equations using

MMA and M2 as proxies for money demand, thus student is not included in these sets of results.

The first set of results given examines the effect of being a card-holding household on money demand. Three types of transactions accounts are used as proxies for money demand: checking accounts, savings accounts, and money market accounts (MMA). The fourth estimation combines the three types of accounts into a single variable called M2. This set of results only includes credit card ownership in the money demand regression. The results may be found in Table 1A. The selection probit results follow in Table 1B.[9]

Credit Card Ownership

Although insignificant, the sign on the probability of having a credit card (credit card ownership) is as expected based on Akhand and Milbourne's model (1986) when checking account balances proxy for money demand. The insignificance may be due to NOW accounts and other interest bearing checking accounts. Households do earn interest while leaving money in checking accounts today. Duca and Whitesell's earlier study found a significant relationship here, but the data were from 1983 when NOW accounts were new.

The results for the effects of credit cards on savings accounts are more convincing. The probability of having a credit card (credit card ownership) has a positive, significant effect on savings balances. This is strong evidence in support of the notion of using the credit card as a way to delay payment and thereby earning extra interest on the float. When coupled with the evidence that the probability of owning a credit card (credit card ownership) has a negative effect on checking balances, this argument becomes even more appealing. Together the results suggest that households move balances from checking accounts to savings accounts because they can use their credit cards for financing consumption.

There is support for the notion that credit cards are a viable alternate transaction medium, leading to smaller highly liquid transactions balances and larger savings balances. This support would be even stronger if the correlation between credit card ownership and money market accounts were positive, as these are higher yielding accounts with less flexibility than checking accounts. These accounts tend to have large minimum balance requirements, but the depositor is allowed six pre-authorized transactions a month, three of which may be checks. Checks may be written for any amount.[10] The transactions options make the money market account more flexible than a savings account because depositors can not write checks on savings accounts. The size of the minimum balance requirement on the money market account, how-

[9] Selection probit results are reported for each set of estimations. Because the full maximum likelihood Heckman procedure is used, these probit results are somewhat different for each model estimated. This is because the starting values used change for each model estimated.

[10] In the 1980s minimum requirements were placed on the value of the checks.

Table 1a—Money Demand #1 with Credit Card Ownership

	ln(checking) Corrected Coeff	ln(saving) Corrected Coeff	ln(MMA) Corrected Coeff	ln(M2) Corrected Coeff
Credit Card Ownership	-0.462	2.048***	-2.007**	1.541
	(-1.640)	(3.387)	(-2.569)	(0.234)
Ln(income)	0.330***	0.264***	0.221***	0.959***
	(7.989)	(3.435)	(3.038)	(3.458)
Ln(asset)	0.327***	0.295***	0.308***	1.139***
	(11.844)	(5.376)	(5.123)	(4.499)
Student	-0.413	0.432	Dropped	Dropped
	(-0.832)	(0.783)		
Unemployed	-0.051	0.395	-0.736	0.953
	(-0.228)	(1.018)	(-1.115)	(0.598)
Risk Averse	-0.139**	-0.100	0.226	-1.423*
	(-2.197)	(-0.848)	(1.379)	(-1.810)
Don't Save	-0.534***	-1.017***	0.143	-2.611***
	(-7.014)	(-5.123)	(0.522)	(-3.096)
Emergency Saving	-0.072	0.069	-0.050	0.263
	(-1.254)	(0.648)	(-0.367)	(0.660)
Own Home	-0.302***	-0.236*	-0.422***	-0.793
	(-4.570)	(-1.712)	(-3.112)	(-1.385)
Medical Saving	-0.010	0.291	-0.475	1.898
	(-0.066)	(0.938)	(-1.195)	(0.862)
Sophisticated Advice	0.103*	-0.038	-0.227*	0.499
	(1.915)	(-0.370)	(-1.853)	(1.359)
Ln(household size)	-0.088	-0.085	-0.105	0.061
	(-1.306)	(-0.646)	(-0.642)	(0.121)
Married	-0.049	-0.138	0.035	-0.968
	(-0.601)	(-0.899)	(0.192)	(-1.471)
No High School	-0.169	1.021***	-0.596	0.948
	(-0.917)	(2.609)	(-1.353)	(0.313)
High School	-0.031	0.304**	0.244	1.124*
	(-0.450)	(2.305)	(1.200)	(1.770)
College	0.235***	0.107	-0.134	1.182*
	(3.603)	(0.844)	(-0.820)	(1.947)
Age 24 or Less	-0.778***	-1.038***	-0.058	-2.896**
	(-4.881)	(-3.609)	(-0.085)	(-2.191)
Age 25-34	-0.861***	-1.426***	0.041	-2.961***
	(-8.937)	(-6.734)	(0.148)	(-3.029)
Age 35-44	-0.810***	-1.098***	-0.433**	-2.465***
	(-8.279)	(-5.175)	(-2.107)	(-4.037)
Age 45-54	-0.583***	-1.020***	-0.253	-2.434***
	(-6.608)	(-5.202)	(-1.490)	(-4.361)
Age 55-64	-0.348***	-0.540***	-0.170	-1.790***
	(-3.780)	(-2.725)	(-0.957)	(-2.920)
Race	0.008	0.035	-0.009	-0.820
	(0.108)	(0.226)	(-0.055)	(-1.420)
Constant	1.445***	0.966	7.209***	0.193
	(4.522)	(1.340)	(7.625)	(0.036)
Heckman's lambda	-1.056***	-0.222	-2.088***	1.666
	(-10.472)	(-0.536)	(-13.183)	(1.470)

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

Table 1b—Selection Probits to Accompany Money Demand #1

	Checking Corrected Coeff.	Saving Corrected Coeff.	MMA Corrected Coeff.	M2 Corrected Coeff.
Ln(asset)	0.088***	-0.033**	0.236***	0.570***
	(4.610)	(-2.119)	(10.951)	(5.313)
Ln(income)	-0.070**	-0.049**	0.039	0.252
	(-2.164)	(-2.038)	(1.311)	(1.013)
Ln(household size)	0.014	0.114**	-0.148**	0.037
	(0.232)	(2.171)	(-2.251)	(0.163)
Unemployed	-0.311*	-0.300/	0.012	0.116
	(-1.912)	(-1.758)	(0.057)	(0.251)
Welfare	-0.733***	-0.463***	-0.008	-1.581***
	(-7.664)	(-4.430)	(-0.054)	(-2.716)
Student	0.335	-0.319	-6.479***	-4.646***
	(1.045)	(-1.139)	(-31.023)	(-8.483)
Married	0.138*	0.153**	0.082	-0.148
	(1.801)	(2.222)	(0.981)	(-0.543)
No High School	-0.170	-0.144	-0.004	-0.746
	(-1.043)	(-1.002)	(-0.022)	(-1.302)
High School	-0.015	0.050	-0.028	-0.103
	(-0.241)	(0.902)	(-0.396)	(-0.506)
College	0.080	0.027	0.308***	0.574**
	(1.265)	(0.504)	(5.233)	(2.039)
Sophisticated Advice	0.134**	0.047	0.163***	0.156
	(2.399)	(1.045)	(3.342)	(0.802)
Don't Save	-0.007	-0.380***	-0.435***	-0.355*
	(-0.101)	(-6.269)	(-5.325)	(-1.703)
Risk Averse	-0.110*	-0.114**	-0.251***	-0.554***
	(-1.922)	(-2.271)	(-4.294)	(-3.019)
Emergency Saving	0.050	0.051	-0.058	0.436**
	(0.889)	(1.070)	(-1.070)	(2.468)
Age 24 or less	-0.158	0.275**	-0.617***	-1.051*
	(-1.171)	(2.266)	(-3.159)	(-1.924)
Age 25-34	-0.024	0.363***	-0.468***	-0.445
	(-0.264)	(4.540)	(-4.756)	(-1.388)
Age 35-44	-0.022	0.389***	-0.213***	-0.213
	(-0.247)	(5.267)	(-2.611)	(-0.710)
Age 45-54	-0.080	0.323***	-0.204***	-0.535
	(-0.920)	(4.688)	(-2.755)	(-1.563)
Age 55-64	-0.094	0.081	-0.218***	-0.608
	(-1.044)	(1.138)	(-2.900)	(-1.501)
Gender	-0.028	-0.126*	-0.157**	-0.169
	(-0.387)	(-1.781)	(-2.182)	(-0.666)
North Central	0.029	-0.215***	-0.066	-0.264
	(0.408)	(-3.474)	(-1.201)	(-0.945)
South	-0.001	-0.408***	-0.072	-0.618
	(-0.009)	(-6.990)	(-1.296)	(-2.343)
West	0.161**	-0.299***	-0.069	-0.237
	(2.151)	(-4.689)	(-1.209)	(-0.586)
Constant	0.701**	0.549***	-3.461***	-8.111
	(2.358)	(2.638)	(-13.937)	(-3.752)

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

Because each model is estimated using the full-maximum likelihood Heckman procedure, the transactions account probits differ from selection model to selection model. Thus, the probit models for each type of transaction account will be presented after each money demand model.

ever, may make it less attractive than a savings account for holding float. If a household plans wisely, it may withdraw money from its savings account when bills are due and stay within the restrictions on the account without having to worry about the minimum balance or at least having a much lower minimum balance. Thus, the negative relationship between money market accounts and credit cards may be because they are not feasible for investing float for the average household.

The last results in this section are for the effects of credit card ownership on M2. In this case M2 is loosely defined as checking deposits + savings deposits + MMA deposits. Given the differences in results across types of transactions accounts, it is not surprising that the overall impact of credit card ownership on M2 is insignificant. The impact of credit card ownership is seen in movements between M1 (proxied by checking account deposits) and one of the several less liquid components of M2 (savings account deposits).

Volume of Credit Card Borrowing

There is a possibility that the negative effect of having a credit card on checking balances is due to a larger propensity to consume. This would imply that the household spends all of its account balances and then finances the rest of its consumption through borrowing on its credit card. To untangle this effect, it is necessary to look at the effect that the volume of borrowing on the credit card has on account balances.

The results from the log linear money demand models are reported in Table 2A, with the selection probit results found in Table 2B.[11] In these estimations the natural log of transactions account balances is regressed on the estimated natural log of revolving credit. There is some evidence that borrowing is playing a role in what is occurring in transactions balances. The natural log of the revolving credit balance has a significant negative effect for both the checking and savings regressions. This is notable in the case of the savings account balances. Being a credit card holder has a positive effect on savings account balances, but borrowing on the card has a negative effect. This implies that one should be careful when interpreting how much of the effect on any of the transactions accounts is due to convenience use and how much is due to borrowing. It is expected that the effect would be negative for holding a credit card and revolving credit on the checking account balances, which gives further evidence that convenience use is not the only effect reflected in the data.

The sign of the natural log of revolving balances on MMA balances and M2 balances is also negative, although insignificant. The argument that borrowing plays a large role in the level of money demanded would be stronger if these impacts were significant, but given that the relationship for convenience use seems to be between checking and savings accounts, it isn't surprising that the effects of borrowing are only seen there.

[11] See footnote 9 for an explanation.

Table 2a—Money Demand #2 with ln(revolving balance)

	ln(checking) Corrected Coeff	ln(saving) Corrected Coeff	ln(MMA) Corrected Coeff	ln(M2) Corrected Coeff
Ln(revolving balance)	-0.629**	-1.766***	-1.110	-4.848
	(-2.411)	(-3.545)	(-1.365)	(-1.540)
Ln(income)	0.483***	0.756***	0.492**	2.147***
	(5.936)	(5.152)	(2.373)	(2.621)
Ln(asset)	0.302***	0.455***	0.258***	1.055***
	(12.234)	(7.856)	(4.599)	(3.700)
Student	-0.811	-0.287	Dropped	Dropped
	(-1.551)	(-0.357)		
Unemployed	-0.177	0.067	-0.927	0.013
	(-0.775)	(0.135)	(-1.400)	(0.010)
Risk Averse	-0.130**	0.082	0.279*	-1.223
	(-2.087)	(0.584)	(1.704)	(-1.493)
Don't Save	-0.497***	-0.353	0.196	-2.456***
	(-6.495)	(-1.560)	(0.743)	(-2.939)
Emergency Saving	-0.066	-0.031	-0.037	0.230
	(-1.140)	(-0.240)	(-0.278)	(0.612)
Own Home	-0.320***	-0.264*	-0.445***	-0.709
	(-4.829)	(-1.880)	(-3.316)	(-1.317)
Medical Saving	0.0002	0.176	-0.391	1.826
	(0.002)	(0.596)	(-0.927)	(0.821)
Sophisticated Advice	0.051	-0.206	-0.332**	0.211
	(0.906)	(-1.511)	(-2.475)	(0.497)
Ln(household size)	0.047	-0.029	0.147	1.017
	(0.594)	(-0.169)	(0.659)	(1.189)
Married	-0.196**	-0.414***	-0.279	-1.779**
	(-2.279)	(-2.092)	(-1.251)	(-1.995)
No High School	-0.150	0.741	-0.400	0.595
	(-0.807)	(1.587)	(-0.888)	(0.194)
High School	-0.137*	-0.086	0.032	0.311
	(-1.808)	(-0.502)	(0.135)	(0.402)
College	0.353***	0.538***	0.042	2.308**
	(3.883)	(2.855)	(0.169)	(2.519)
Age 24 or less	-0.464**	-0.298	0.691	-0.404
	(-2.168)	(-0.689)	(0.829)	(-0.186)
Age 25-34	-0.550***	-0.794**	0.550	-0.159
	(-2.945)	(-2.243)	(1.056)	(-0.080)
Age 35-44	-0.442**	-0.344	0.188	0.547
	(-2.113)	(-0.903)	(0.338)	(0.266)
Age 45-54	-0.125	0.023	0.535	1.289
	(-0.530)	(0.051)	(0.836)	(0.525)
Age 55-64	-0.035	0.376	0.375	0.801
	(-0.194)	(1.081)	(0.800)	(0.444)
Race	-0.152	-0.492**	-0.229	-2.275**
	(-1.413)	(-2.277)	(-0.760)	(-1.990)
Constant	3.941***	9.699***	10.561***	22.026
	(3.616)	(4.459)	(2.990)	(1.581)
Heckman's lambda	-1.052***	-2.261***	-2.033***	1.420
	(-10.702)	(-9.892)	(-12.697)	(0.985)

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

Table 2b—Probits to Accompany Money Demand #2[12]

	Checking Corrected Coeff	Saving Corrected Coeff	MMA Corrected Coeff	M2 Corrected Coeff
Ln(asset)	0.086***	-0.024	0.233***	0.569***
	(4.548)	(-1.519)	(10.819)	(5.257)
Ln(income)	-0.071**	-0.047*	0.038	0.253
	(-2.263)	(-1.927)	(1.278)	(0.980)
Ln(household size)	0.015	0.121**	-0.146**	0.016
	(0.244)	(2.359)	(-2.213)	(0.072)
Unemployed	-0.309*	-0.277*	0.011	0.161
	(-1.896)	(-1.662)	(0.052)	(0.349)
Welfare	-0.764***	-0.508***	0.028	-1.413***
	(-7.892)	(-5.230)	(0.180)	(-2.584)
Student	0.334	-0.314	Not reported+	-4.555***
	(1.050)	(-1.164)		(-7.594)
Married	0.137*	0.117*	0.082	-0.146
	(1.789)	(1.800)	(0.987)	(-0.536)
No High School	-0.170	-0.142	-0.010	-0.735
	(-1.036)	(-0.999)	(-0.058)	(-1.275)
High School	-0.015	0.046	-0.032	-0.094
	(-0.238)	(0.841)	(-0.451)	(-0.459)
College	0.081	0.008	0.309***	0.583**
	(1.283)	(0.146)	(5.221)	(2.030)
Sophisticated Advice	0.135**	0.050	0.163***	0.165
	(2.414)	(1.128)	(3.365)	(0.839)
Don't Save	-0.007	-0.338***	-0.440***	-0.360*
	(-0.106)	(-5.511)	(-5.441)	(-1.726)
Risk Averse	-0.113**	-0.103**	-0.256***	-0.553***
	(-1.978)	(-2.097)	(-4.373)	(-2.993)
Emergency Saving	0.051	0.033	-0.059	0.430**
	(0.894)	(0.724)	(-1.092)	(2.365)
Age 24 or less	-0.161	0.245**	-0.637***	-1.068*
	(-1.185)	(2.070)	(-3.246)	(-1.940)
Age 25-34	-0.027	0.336***	-0.484***	-0.465
	(-0.286)	(4.288)	(-4.836)	(-1.459)
Age 35-44	-0.025	0.369***	-0.225***	-0.234
	(-0.272)	(5.009)	(-2.725)	(-0.776)
Age 45-54	-0.082	0.304***	-0.212***	-0.557
	(-0.945)	(4.417)	(-2.832)	(-1.619)
Age 55-64	-0.095	0.078	-0.224***	-0.616
	(-1.058)	(1.088)	(-2.962)	(-1.508)
Gender	-0.027	-0.113**	-0.160**	-0.155
	(-0.377)	(-1.989)	(-2.183)	(-0.605)
North Central	0.024	-0.132***	-0.065	-0.254
	(0.342)	(-2.582)	(-1.154)	(-0.903)
South	-0.003	-0.263***	-0.076	-0.599**
	(-0.047)	(-4.686)	(-1.343)	(-2.273)
West	0.155**	-0.156***	-0.068	-0.191
	(2.092)	(-2.869)	(-1.172)	(-0.454)
Constant	0.744***	0.345	-3.389***	-8.100***
	(2.577)	(1.617)	(-13.727)	(-3.620)

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level
+ Not reported because standard error calculation not possible

Convenience Usage vs. Borrowing

The logical question to ask given the results discussed above is, how much of the effect on money demand is caused by borrowing and how much is caused by convenience usage/synchronization of payments. One way to approach this question is to put both measures of credit card usage into the same money demand equation and compare the impacts. The regression results are in Table 3A, with selection probit results presented in Table 3B.[12] The comparison of the impacts of the two variables in each equation is presented in Table 4.

The results for the money demand equation with checking balances are as expected. Both the probability of having a credit card (credit card ownership) and the predicted natural log of the revolving credit balance (ln(revolving balance)) have negative effects on checking balances, although credit card ownership is not significant. The negative sign on credit card ownership accounts for convenience usage, and the negative sign on ln(revolving balance) accounts for borrowing that could be due to a higher propensity to consume among some households with credit cards. Comparing the sizes of the coefficients does not, however, show the *impacts* that each has on account balances because the two variables are measured in different ways. In order to compare the impacts of credit card ownership and ln(revolving balance), a one standard deviation change in each variable is considered. With checking account balances as the proxy for money demand, a one standard deviation change in ln(revolving balance) has about 1½ times the impact as a one standard deviation change in credit card ownership. Given the large size of consumer revolving debt, this is not surprising. It also means that the negative impact on money demand attributed to convenience usage in the original model with only credit card ownership is probably being driven in part by the large amount of debt that a minority of households accumulated. Similar to the results where credit card ownership and ln(revolving balance) are included individually, credit card ownership has an insignificant effect on the natural log of checking balances and ln(revolving balance) has a significant effect.

When savings account balances are used as the proxy for money demand, once again the magnitudes of the effects of convenience usage/synchronization of payments as captured in credit card ownership and the effects of borrowing as captured in ln(revolving balance) are similar, although of opposite signs. Their impacts are similar as well. Credit card ownership has 1.027 times the impact on savings balances as does ln(revolving balance). This implies that convenience usage plays about the same role as borrowing on the impact on savings account balances.

For the money demand equation using money market account balances as a proxy for household money demand, borrowing as captured by ln(revolving balance) is negative, although insignificant. The effect of the probability of having a credit

[12] See footnote 9 for an explanation.

Table 3a—Money Demand #3 with Credit Card Ownership and ln(revolving balance)

	ln(checking) Coeff	ln(saving) Coeff	ln(MMA) Coeff	ln(M2) Coeff
Credit Card Ownership	-0.348	1.650***	-1.909**	-1.178
	(-1.234)	(2.662)	(-2.400)	(-0.132)
Ln(revolving balance)	-0.584**	-1.944***	-0.907	-5.037
	(-2.284)	(-3.794)	(-1.087)	(-1.459)
Ln(income)	0.474***	0.792***	0.444**	2.215**
	(5.907)	(5.428)	(2.072)	(2.393)
Ln(asset)	0.315***	0.372***	0.292***	1.017***
	(11.303)	(5.463)	(4.663)	(3.167)
Student	-0.783	-0.423	Dropped	Dropped
	(-1.509)	(-0.540)		
Unemployed	-0.204	0.145	-0.955	-0.117
	(-0.888)	(0.307)	(-1.426)	(-0.063)
Risk Averse	-0.135**	0.085	0.224	-1.049
	(-2.151)	(0.610)	(1.363)	(-1.107)
Don't Save	-0.510***	-0.331	0.142	-2.352**
	(-6.604)	(-1.440)	(0.525)	(-2.329)
Emergency Saving	-0.066	-0.020	-0.048	0.210
	(-1.145)	(-0.158)	(-0.354)	(0.474)
Own Home	-0.305***	-0.326**	-0.418	-0.730
	(-4.620)	(-2.315)	(-3.094)	(-1.052)
Medical Saving	-0.006	0.192	-0.477	1.897
	(-0.041)	(0.659)	(-1.194)	(0.832)
Sophisticated Advice	0.061	-0.248*	-0.287**	0.177
	(1.092)	(-1.823)	(-2.104)	(0.424)
Ln(household size)	0.023	0.089	0.069	1.023
	(0.288)	(0.499)	(0.303)	(1.185)
Married	-0.158*	-0.582***	-0.127	-1.770**
	(-1.711)	(-2.870)	(-0.552)	(-2.026)
No High School	-0.194	0.961**	-0.645	0.653
	(-1.016)	(2.063)	(-1.385)	(0.170)
High School	-0.123	-0.121	0.093	0.284
	(-1.619)	(-0.726)	(0.379)	(0.357)
College	0.364***	0.488**	0.076	2.293**
	(4.010)	(2.568)	(0.305)	(2.190)
Age 24 or less	-0.475**	-0.295	0.473	0.006
	(-2.250)	(-0.681)	(0.583)	(0.003)
Age 25-34	-0.547***	-0.808**	0.510	0.121
	(-2.980)	(-2.235)	(0.973)	(0.049)
Age 35-44	-0.444**	-0.334	0.121	0.732
	(-2.158)	(-0.862)	(0.214)	(0.305)
Age 45-54	-0.139	0.079	0.427	1.519
	(-0.605)	(0.168)	(0.655)	(0.532)
Age 55-64	-0.045	0.398	0.301	0.988
	(-0.255)	(1.127)	(0.629)	(0.477)
Race	-0.158	-0.446**	-0.276	-2.346
	(-1.487)	(-2.020)	(-0.919)	(-1.855)
Constant	3.839***	10.136***	10.948***	24.254
	(3.588)	(4.530)	(2.977)	(1.214)
Heckman's lambda	-1.078***	-2.153***	-2.078***	0.761
	(-11.565)	(-8.109)	(-13.115)	(0.259)

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

Table 3b—Selection Probits to Accompany Money Demand #3[12]

	Checking Coeff	Saving Coeff	MMA Coeff	M2 Coeff
Ln(asset)	0.087***	-0.023	0.236***	0.564***
	(4.597)	(-1.463)	(10.946)	(5.223)
Ln(income)	-0.069**	-0.049**	0.039	0.263
	(-2.175)	(-2.004)	(1.304)	(0.988)
Ln(household size)	0.018	0.116***	-0.145**	0.000
	(0.286)	(2.259)	(-2.195)	(0.002)
Unemployed	-0.306*	-0.289*	0.014	0.187
	(-1.885)	(-1.750)	(0.069)	(0.398)
Welfare	-0.779***	-0.450***	-0.050	-1.262
	(-8.054)	(-4.542)	(-0.308)	(-1.580)
Student	0.346	-0.325	-6.555***	See note below
	(1.085)	(-1.217)	(-20.746)	
Married	0.134*	0.119*	0.079	-0.176
	(1.755)	(1.823)	(0.946)	(-0.655)
No high school	-0.170	-0.142	-0.003	-0.696
	(-1.037)	(-1.000)	(-0.019)	(-1.191)
High school	-0.015	0.048	-0.028	-0.073
	(-0.244)	(0.879)	(-0.399)	(-0.328)
College	0.078	0.011	0.307***	0.598**
	(1.241)	(0.215)	(5.220)	(2.023)
Sophisticated advice	0.134**	0.049	0.162***	0.171
	(2.404)	(1.109)	(3.327)	(0.863)
Don't save	-0.002	-0.344***	-0.435***	-0.355
	(-0.032)	(-5.585)	(-5.330)	(-1.562)
Risk averse	-0.109*	-0.106**	-0.251***	-0.550***
	(-1.904)	(-2.155)	(-4.287)	(-2.824)
Emergency saving	0.049	0.036	-0.059	0.386
	(0.864)	(0.786)	(-1.088)	(1.238)
Age 24 or less	-0.158	0.246**	-0.618***	-1.108**
	(-1.170)	(2.077)	(-3.168)	(-2.056)
Age 25-34	-0.028	0.339***	-0.469***	-0.493
	(-0.305)	(4.324)	(-4.768)	(-1.561)
Age 35-44	-0.025	0.375***	-0.215***	-0.264
	(-0.274)	(5.087)	(-2.630)	(-0.894)
Age 45-54	-0.085	0.308***	-0.206***	-0.580*
	(-0.988)	(4.473)	(-2.778)	(-1.744)
Age 55-64	-0.095	0.078	-0.217***	-0.640
	(-1.063)	(1.086)	(-2.889)	(-1.592)
Gender	-0.026	-0.104*	-0.156**	-0.131
	(-0.364)	(-1.782)	(-2.160)	(-0.471)
North central	0.025	-0.141***	-0.066	-0.255
	(0.355)	(-2.639)	(-1.199)	(-0.897)
South	0.000	-0.275***	-0.072	-0.579*
	(0.002)	(-4.601)	(-1.299)	(-1.827)
West	0.159**	-0.171***	-0.069	-0.100
	(2.141)	(-2.973)	(-1.204)	(-0.171)
Constant	0.708**	0.352	-3.455***	-8.146***
	(2.425)	(1.640)	(-13.895)	(-3.433)

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level
Not reported because standard error calculation not possible.

card (credit card ownership) is negative and significant. These results look similar to those found when credit card ownership and ln(revolving balance) were introduced into the money demand equations individually, and the sign on credit card ownership being opposite of what would be expected given the theory is explained in the same way. Theory would suggest that borrowing (ln(revolving balance)) would have a negative impact on higher yielding accounts, so there is some loose support for this, although alone it is not compelling. The impact of ln(revolving balance) is about half that of credit card ownership.

When all three types of accounts are combined into the loose measure of M2, again both effects become insignificant (and card ownership has the wrong sign). Given the mixed results on significance across the types of accounts, this is not surprising. The impact of ln(revolving balance) is about 1½ times as large as the impact of credit card ownership.

Table 4—Impact of Credit Card Ownership and ln(revolving balance)

Checking	1995			
	Std. Dev.	Coeff.	(std. dev)*(coeff)	|cardhat|/|lcpayhat|
cardhat	0.28188	-0.3479	-0.098	0.657
lcpayhat	0.25571	-0.584	-0.149	
Saving	1995			
	std. dev.	coeff.	(std. dev)*(coeff)	|cardhat|/|lcpayhat|
cardhat	0.6198801	1.6498	1.023	1.027
lcpayhat	0.5124216	-1.9439	-0.996	
MMA	1995			
	std. dev.	coeff.	(std. dev)*(coeff)	|cardhat|/|lcpayhat|
cardhat	0.7953134	-1.909	-1.518	2.006
lcpayhat	0.8345563	-0.9071	-0.757	
M2	1995			
	std. dev.	coeff.	(std. dev)*(coeff)	|cardhat|/|lcpayhat|
cardhat	8.9215661	-1.1781	-10.510	0.604
lcpayhat	3.4530739	-5.0365	-17.391	

Conclusion

There is evidence to support a money demand theory such as that in Akhand and Milbourne (1986), which states that credit cards allow households to keep less money in extremely low yielding accounts such as checking accounts and to take advantage of the float opportunities of credit card usage. There is also evidence that would caution against believing that the total effect of holding a credit card on money demand is due to convenience usage. People are also using credit cards as a means of borrowing, which suggests that at least some credit card-holders may have a higher propensity to consume than do non-card-holders. The impact of conven-

ience usage versus borrowing varies across types of transactions accounts, with ln(revolving balance) playing about the same role or a larger role in three of four cases. Given the large levels of consumer revolving debt that have been accumulated by a minority of households in the US, this result is not surprising. Because both convenience usage and borrowing are wrapped up in the data, it is important to combine the two sets of theories on credit cards. A credit card is both an alternate medium of exchange and a method of borrowing. Focusing on one aspect without the other, while enlightening in a theoretical sense, may omit part of the empirical picture.

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Appendix A

ln(checking)	=	The natural log of checking account balances other than money market accounts in dollars
check dummy	=	A dummy variable equal to one if a household has a checking account; a household is defined as having a checking account if checking is greater than 0
ln(saving)	=	Natural log of savings account balances in dollars
save dummy	=	A dummy variable equal to one if a household has a savings account balance greater than 0, taken to mean the household has a savings account
ln(MMA)	=	Natural log of total money market account balances (includes both money market deposit accounts and money market mutual fund accounts) plus call account deposits at brokerages in dollars
MMA dummy	=	A dummy variable equal to one if MMA is greater than 0 for a household, taken to mean the household has a money market or call account
ln(revolving balance)	=	Natural log of household credit card balance in dollars after last payment (excluding gas cards). This includes all cards held by the household
ln(asset)	=	Natural log of checking + saving + money market account + call accounts at brokerages + cds + total of directly held mutual funds, excluding money market mutual funds + stocks +bond +sum of IRAs and thrift accounts + saving bonds + cash value of whole life insurance +other managed assets (includes trusts, annuities, and managed investment accounts) + other financial assets (includes loans, future proceeds, royalties, futures, non-public stock, deferred compensation, oil/gas/mineral investments, and cash n.e.c + vehicles + houses + real estate + business interests (for active businesses, value is net equity if business were sold today, plus loans from household to business, minus loans from business to HH not previously reported, plus value of personal assets used as collateral for business loans reported earlier) (dollar value). Portions of this definition were copied from the SAS program by the Board of Governors to find net worth http://www.bog.frb.fed.us/pubs/oss/oss2/95/codebk95pt5.html
ln(income)	=	Natural log of pre-tax (and other deductions) 1994 household income in dollars

welfare	=	Dummy variable equal to one if household received income from ADC, AFDC, food stamps, or other forms of welfare or assistance such as SSI in 1994.
no credit history	=	Dummy variable equal to one if household has no credit history.
bad credit history	=	Dummy variable equal to one if household had problems making loan payments in the last year.
debt bad	=	Dummy variable equal to one if household believes that buying things on credit is bad. Those who believe credit is good in some ways and bad in others have been left in the group that believe buying in credit is ok because they probably would use credit to some degree.
ln(household size)	=	Natural log of the number of people in the household top-coded at 10. The data that is collected in the survey is for a subset of what is generally considered a household. It "consists of an economically dominant single individual or couple (married or living as partners) in a household and all other individuals in the household who are financially dependent on that individual or couple (Codebook for 1995 Survey of Consumer Finances, http://www.bog.frb.fed.us/pubs/oss/oss2/95/codebk95pt1.html)." The Survey of Consumer Finances refers to this as a PEU (primary economic unit).
age 24 or less	=	Dummy variable equal to one if the household head is 24 years old or less
age 25-34	=	Dummy variable equal to one if the household head is 25-34 years old
age 35-44	=	Dummy variable equal to one if the household head is 35-44 years old
age 45-54	=	Dummy variable equal to one if the household head is 45-54 years old
age 55-64	=	Dummy variable equal to one if the household head is 55-64 years old
age 65 or more	=	Dummy variable equal to one if the household head is 65 years old or more
race	=	Dummy variable equal to one if the household head is non-white
gender	=	Dummy variable equal to one if household head is male
married	=	Dummy variable equal to one if household head is married

sophisticated advice	=	Dummy variable equal to one if household uses some sort of professional investment advice. Things that constitute professional advice are: 1. Accountant 2. Lawyer 3. Financial planner/BROKER 4. Bankers; other institutions 5. Computerized data services; other data services 6. Investment club 7. Investment seminars
credit card ownership	=	Dummy variable equal to one if household has a credit card (This includes all types of credit cards except gas cards)
student	=	Dummy variable equal to one if head of household is a non-employed student
unemployed	=	Dummy variable equal to one if head of the household is unemployed and not retired or a student (those who are disabled are also not included in unemployed)
no high school	=	Dummy variable equal to one if the head of household did not attend high school. (Last grade completed was 8^{th} grade)
high school	=	Dummy variable equal to one if last grade completed by head of household was 12^{th} grade
college	=	Dummy variable equal to one if head of household completed college or graduate school
risk averse	=	Dummy equal to one if household is not willing to take on any risk in investing family savings
emergency saving	=	Dummy equal to one if household saves for a rainy day
own home	=	Dummy equal to one if household owns their home. This variable excludes mobile homes and farms/ranches that are operated as businesses
medical saving	=	Dummy variable equal to one if saving for medical expenses is the first or second most important reason that a household saves.
don't save	=	Dummy variable equal to 1 if a household says that it does not save money, but spends more than or exactly the same amount as its income
Neast	=	Household is located in CT, ME, MA, NH, RI, VT, NY, NJ, or PA
Ncentral	=	Household is located in IL, IN, MI, OH, WI, IA, KS, MN, MO, NE, ND, or SD

South	=	Household is located in DE, DC, FL, GA, MD, NC, SC, VA, WV, AL, KY, MS, TN, AR, LA ,OK, or TX
West	=	Household is located in AZ, CO, ID, MT, NV, UT, WY, NM, AK, CA, HI, OR, or WA