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Fueling the Credit Crisis: Who Uses Consumer Credit and What Drives Debt Burden?

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Excessive household debt contributed to the worst recession in decades. Insights about borrowing and spending behavior can inform economic recovery forecasts, policy decisions, and financial education. This study identifies life cycle and credit attitude as key determinants of who uses debt. Younger households are more likely to borrow for consumption, as are those who believe that it is all right to borrow to purchase luxury goods or cover living expenses. Furthermore, households that condone borrowing for these purposes have a higher consumer debt burden. Debt capacity (or creditworthiness) and financial discipline are also significant factors in determining household debt use.

Keywords: *consumer debt, credit attitude, personal savings*

The United States appears to be slowly recovering from the worst recession since the Great Depression. Many factors contributed to the conditions that led to the bursting of the consumer debt bubble and the resulting collapse in consumption. Access to credit eased during the booming housing market, expanding home ownership, especially in the lower brackets of the income distribution. Mortgage debt was used to finance consumer spending, which comprises 70 percent of the U.S. GDP. However, since the downturn that began in 2007, jobs have been lost, housing markets are down, and default rates are up. With traditional sources of credit drying up, people have made recent moves to cash out retirement and life insurance plans. A generation of Americans is experiencing, for the first time, depression-era economic conditions [Laise 2008].

Given the likely fundamental shift in the mindset of consumers, some wonder whether households will return to past patterns of spending and borrowing, or whether the changes in market structures are so substantial that a recovery will not resemble any others that have been experienced. Economic theory suggests that the way to get the economy back on its feet is accelerated spending. However, after nearing zero in early 2008, the personal savings rate briskly rose to levels unseen in over a decade. Consumers have just only begun to cautiously increase their spending. Conventional wisdom says that until concerns about job security are alleviated and consumer confidence increases, consumers and businesses will maintain their newfound austerity and reluctance to spend.

Although the future of the credit market is unknown, some insight into how household spending will respond in a new era of asset markets and access to credit can be gained by examining consumer credit use and attitudes about credit before the bubble burst. This study employs univariate and multivariate analyses to examine how household characteristics may be related to the incidence of consumer debt use and size of debt burden (consumer debt/annual income). Characteristics examined include stage of life cycle, attitudes about credit use, debt capacity, financial discipline, and economic expectations. Section 1 presents utility optimization models of household borrowing/spending behavior. Section 2 describes the survey data, Sections 3 and 4 present the analyses, and Section 5 provides conclusions.

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1. Household Saving and Borrowing

Saving and borrowing link household consumption and income. Households save when income exceeds spending and borrow (dissave) when spending exceeds income. Many theories of household saving/borrowing motives and behavior that link consumption and income have been developed over the past 70 years. This section reviews several optimization models, where saving/borrowing behavior optimizes a household's utility over time.

Optimization models include variations of the permanent income hypothesis (PIH) model, attributed to Friedman [1957] and variations of the Modigliani and Brumberg [1954] life-cycle (LC) model. For PIH/LC models, the objective of saving or borrowing is to smooth consumption over predictable fluctuations in income in order to achieve constant marginal utility of consumption over time. Although generally similar, the models differ in their assumptions about length of planning period. This period is infinite in PIH but finite over the life of the household for LC.

Over the life cycle of a typical household, variation in income is greater than the variation in spending or consumption. Income is low in the early stages of the life cycle, increases to a maximum before retirement, and then decreases during retirement. According to LC, in order to maintain a constant level of marginal utility, households will borrow during the early stages of life, save in the middle stages, and spend savings during retirement.

Expected income plays a key role in these models, where permanent income has much more influence on consumption than current or temporary income. Households expecting a permanent increase in income will reduce their savings and/or borrow against that higher income, realizing an increased level of consumption that they expect to sustain over time. Households anticipating a permanent decrease in income will decrease consumption—saving more and/or paying down debt. Temporary changes in income—such as might result from fluctuations in the economy—have no sustained impact on consumption. However, a temporary increase in income yields more saving and/or debt repayment; a temporary decrease yields less saving and/or more debt.

A household's savings and borrowing decisions are influenced by its preference for future vs. present consumption. A decision to borrow implies that current consumption is preferred to future consumption; a decision to save implies the opposite. If interest rates are expected to increase, the associated increase in prices, and the implied higher discount rate, reduces the present value of future consumption. This should generate a stronger preference for current consumption and encourage borrowing.

Baek and Hong [2004] outline several limitations of the PIH/LC models and the lack of empirical evidence supporting them. The basic models do not recognize marital status nor allow for the presence of children in the household, determining life cycle stage solely by age of the household head [Browning Deaton and Irish 1985]. The basic PIH/LC models also do not provide for liquidity constraints. Although households may desire to borrow in order to smooth consumption, they may not qualify for adequate amounts of credit needed to smooth consumption [Deaton 1992]. Finally, the basic PIH/LC models do not recognize a precautionary motive of saving [Carroll and Summers 1991; Deaton 1991]. Prudence can explain why households in early life cycle stages may not borrow as much as the PIH/LC model would predict and why households in later life cycle stages may not draw down assets as quickly as would be predicted.

The PIH/LC models predict that households will borrow during a recession in order to maintain a level of consumption. When income declines, the savings rate should be low or at least decline. In other words, these models predict that borrowing increases and saving decreases during a recession. However, although the personal savings rate—defined by the Bureau of Economic Analysis as personal savings as a percent of personal disposable income—declined throughout 2007 and early 2008 to a low of 1.2 percent, it increased substantially as the recession deepened, reaching a high of 5.4 percent in the second quarter of 2009. In this regard, household behavior may better be explained by the buffer-stock model, discussed below.

According to the buffer-stock savings model [Deaton 1991; Carroll 1992], consumers hold assets to protect consumption against unpredictable fluctuations in income. Households can be both impatient—borrowing to finance current consumption if income is known with certainty—and prudent, by holding precautionary balances. A tradeoff of impatience and prudence ensures a target level of wealth held as a sufficient buffer against income fluctuations. Holding a target level of wealth to weather fluctuations in incomes

implies a precautionary motive for saving. Unlike in the buffer-stock model, uncertainty in future incomes plays no role in the PIH/LC models.

The possibility of unemployment leads to uncertainty in household income and so affects current consumption and saving. The more uncertain household income, the higher the buffer stock of wealth required; saving increases relative to consumption. This precautionary motive can explain the increases in personal saving rates in 2008 and 2009. With employment and income uncertainty rising during the recession, households save more in order to increase their buffer stock. And, as the economy entered its slow recovery, consumer spending increased cautiously and the personal savings rate began to decline, reaching 3.5 percent in the first quarter of 2010.

The PIH/LC models hold that stage of life cycle, expected interest rates, and expected changes in permanent income affect saving and borrowing as individuals seek to smooth consumption over their lifetimes. According to the buffer-stock model, uncertainty of future income and employment drive the size of buffer-stock assets, and thereby saving and borrowing, needed to smooth consumption. Both models assume rational tradeoffs, but neither address attitudes toward credit. The easy credit climate (until recently) and the seemingly unlimited appetite for consumption may influence households to consume now regardless of consequences later. Unwary consumers may underoptimize utility over their lifetimes by overconsuming today and limiting future consumption. Contrary to theoretical assumptions, they may not be looking beyond today. The analysis that follows examines the impact of credit attitudes on debt use, as well as factors proposed by the models.

2. Survey Data

The public database of the 2007 Federal Reserve Board Survey of Consumer Finances (SCF) is used for this analysis.[1] The purpose of the SCF is to provide a comprehensive view of the financial behavior of a cross-section of U.S. households. Information is gathered on all assets and liabilities of the household, as well as demographic characteristics such as home ownership, employment, income, and makeup of the household unit. Attitudes about the use of credit and savings behavior are also measured.

The SCF is distinguished in its sample design. Two sampling techniques are employed to obtain more detail on the financial behavior of those households holding a disproportionate share of the nation's wealth [Aizcorbe Kennickell and Moore 2003].[2] Two-thirds of the households included in the data set are randomly selected from across the United States; the remaining are wealthy households selected from a tax-return derived list. Although this sampling design prohibits the use of the sample as representative of the U.S. population, inferences can be made about the relationships among variables within households.

The 2007 SCF data were gathered mostly between May and December, with a small fraction of interviews conducted in early 2008. Although the survey data may not reflect the substantial decline in asset prices that followed, the economy was visibly slowing during the latter half of 2007. Returns in the stock market went from double digit growth in 2006 to relatively flat annual returns in 2007, with markets on the decline by year-end.[3] Housing prices had begun to decline in mid-2006 [S&P/Case-Shiller] and sales of existing homes were on a steady downturn since the second quarter of 2007. In the last quarter of 2007, household net worth fell for the first time in over five years [Gongloff 2008]. The national jobless rate was creeping upward. Personal consumption, and so real GDP, was rising at a slower pace, and the media were anticipating the release of pessimistic data for the fourth quarter of 2007. All of these signs of economic slowdown would impact households' responses about attitudes toward credit use and financial decisions.

Variable definitions and descriptive statistics for the sample are provided in Tables 1 and 2. The measure of consumer debt utilized is expanded beyond the standard definition. As individuals increasingly face a "credit crunch," they access

[1]The data are available at www.federalreserve.gov/pubs/oss/oss2/2007/scf2007data.html.

[2]The SCF also treats nonresponses differently. The method of multiple imputation replaces each missing value with a set of five values that represent a distribution of possibilities. Thus, the final database consists of five complete observations for each respondent, which are combined for the analysis [Rubin 1987 and Kennickell 1991].

[3]The S&P 500 Index rose 15.8 percent in 2006 and 5.5 percent in 2007. The DJIA rose 16.3 percent in 2006 and 6.4 percent in 2007.

Table 1. Variable Definitions and Statistics

Dependent Variables	Definition	Descriptive Statistics
Consumer Debt	Total of credit card balances, installment credit, other debt such as loans against pensions, life insurance, and margin loans, as well as second mortgage and home equity lines of credit borrowings used to purchase consumer goods	Median value for those with consumer debt: $15,000
Consumer Debt Burden	Consumer debt divided by annual household income	Median value for those with consumer debt: 0.218
Consumer Debt Use	Household has consumer debt	Proportion of Sample: 0.605
Explanatory Variables	**Definition**	**Descriptive Statistics**
Life Cycle		Proportion of Sample:
Young Single	Single, age under 40, no children under 18 years	0.055
Young Couple	Married or with partner, age under 40, no children under 18 years	0.043
Young Family	Married or with partner, age under 40, children under 18 years	0.118
Single Parent	Single, age under 50, children under 18 years	0.065
Middle-Aged Couple	Married or with partner, age 40–49, no children under 18 years	0.041
Mature Family	Married or with partner, age 40 plus, children under 18 years	0.189
Mature Couple	Married or with partner, age 50 plus, no children under 18 years	0.326
Mature Single	Single, age 50 plus, no children under18 years	0.164
Credit Attitude	Respondent indicates that it is all right to (1) borrow money to cover vacation expenses or purchase a fur coat or jewelry and/or (2) cover living expenses when income is cut	0.556
Debt Capacity		
FT Income	Household earns at least one full-time income	0.719
Uncertain Income	Household reports next year's income is uncertain	0.366
Housing Status	Household owns home	0.742
Financial Discipline		
No Saving Rule	Household has no consistent plan for saving income	0.484
Revolve	Household only sometimes or hardly ever pays total balance owed on credit cards	0.324
Late Pay	Household got behind or missed loan payments in the past year	0.228
Economic Expectations		
Higher Interest Rates	Respondent expects interest rates to increase over the next 5 years	0.633
Lower Interest Rates	Respondent expects interest rates to decrease over the next 5 years	0.077
Control Variables	**Definition**	**Descriptive Statistics**
Net Worth	The value of all real and financial assets owned, including business equity, less the value of all mortgage and consumer debt outstanding; in $000s	Median value for all households: $302.15
Income	Total gross income received by the household in 2006 from all sources, including withdrawals from IRAs and pension accounts; in $000s	Median value for all households: $70.00

credit in new ways—including tapping home equity, pension plans, and life insurance. The distinction between credit card debt and installment loans is blurred—credit limits are so high that cardholders can use their lines of credit to purchase durable goods and finance vacation expenses. Second mortgages and home equity lines of credit can be utilized for a variety of purposes beyond home improvement and remodeling. This analysis attempts to capture the use of borrowings against

Table 2. Characteristics of Life Cycle Stages

Life Cycle Stage	Median Age	Median Income ($000 s)	Have Consumer Debt (%)	Median Consumer Debt Burden*(%)
Young Single	28	32.0	73.7	39.1
Young Couple	29	58.5	78.1	29.5
Young Family	34	60.0	79.3	26.6
Single Parent	37	26.0	71.8	34.6
Middle-Aged Couple	45	89.0	70.0	22.5
Mature Family	48	130.0	65.8	16.5
Mature Couple	63	160.0	49.8	17.4
Mature Single	65	31.0	45.6	18.1
Overall ($n = 4,418$)	51	70.0	60.5	21.8

*For those with consumer debt.

251 households (5.7 percent of the original sample) could not be classified in Bojanic's life cycle measure, for example, a single person over 50 with young children does not fit into any category.

home equity as a substitute for the usual installment or consumer credit. The amounts owed on second mortgages or home equity lines of credit that were used to purchase durable goods (for example, cars, recreational vehicles, major appliances, furniture) or for consumption (for example, entertainment equipment, vacations, general living expenses) are included in the measure of consumer debt. According to this measure, just over 60 percent of the households in the sample use consumer debt. For those households with consumer debt, the median consumer debt outstanding is $15,000 and the median debt burden—measured by the ratio of consumer debt outstanding to annual household income—is 21.8 percent.[4]

Although no standard definition of household life cycle stages exists, it is generally accepted that age, marital status, and the presence of children should be taken into consideration. The life cycle variables in this analysis follow the construct presented by Bojanic [1992], where the nontraditional Single Parent and Middle-Aged Childless Couple are included to capture changes in today's household structure. The most common stage, Mature Couple, comprise almost one-third of the sample, followed by Mature Family and Mature Single at roughly half their size.

Age, income, consumer debt use, and debt burden by stage of life cycle are presented in Table 2. Young Single households (median age 28 vs. 51 for the overall sample) have the highest median consumer debt burden at just over 39 percent, with 74 percent of such households having consumer debt. These households only have one income earner, if that, and are likely to use consumer debt to meet current consumption, borrowing against expectations of debt repayment out of future earnings. Although a greater proportion of Young Couples and Young Families, who are a slightly older, have consumer debt (78 and 79 percent, respectively), they have higher income; and their median consumer debt burdens are less than 30 percent. Even with two income-earners, the consumption needs of young households in their family formation years render consumer debt an attractive option. About 72 percent of Single Parents (median age 37) have consumer debt, and their low median income of $26 thousand results in a consumer debt burden of nearly 35 percent. Like Young Singles, these households only have one income earner, and like Young Families, they have children with voracious consumption appetites.

The Middle-Aged Couple has an older household head (median age 45) and no children at home. Although 70 percent of these households have consumer debt, their median income of $89 thousand results in a median debt burden of 22.5 percent. The Mature Family is similar in age but still have children at home. Two-thirds of these households have consumer debt; a high median income of $130 thousand yields the lowest median consumer debt burden at just 16.5 percent. Both of

[4]Influenced by high outliers, the mean amount of consumer debt outstanding is $151,996 and the mean debt burden is 48.5 percent.

these types of households are in a life cycle stage of earning income and building assets, and they may be able to borrow against more than one income stream.

The Mature Couple and the Mature Single are similar in age (low to mid-60s). Less than half of these households use consumer debt, resulting in median debt burdens of 17 to 18 percent. However, the couple has a median income of $160 thousand, compared with $31 thousand for the single household. These households are in the life cycle stage where they have accumulated assets. Either their consumption needs are not as extensive, or they can liquidate assets rather than incur debt.

Debt Capacity or creditworthiness is measured with three variables—whether the household head and/or partner earns a full-time income, whether next year's household income is uncertain, and whether the household owns their home vs. renting or otherwise. Nearly 72 percent of the households in this sample have at least one full-time income and over 74 percent are homeowners. Both of these indicate ability to qualify for consumer credit. However, almost 37 percent of the households are uncertain about next year's income—perhaps a sign of the slowing economy, rising unemployment, and falling asset values.

Financial Discipline is measured with three variables—the existence of a consistent savings plan, paying off credit-card balances in full each month, and making loan payments on time. The variables are coded to represent the lack of discipline. A consistent plan for saving includes setting money aside each month or spending the income of one family member while saving all other income. Forty-eight percent of the households report no savings plan or profess not to save at all. Nearly one-third of households report that they typically revolve their credit card balances, and 23 percent report that they have either missed or made late loan payments in the past year.

3. Univariate Analysis of Credit Attitude

Until the recent recession, the personal savings rate in the United States had been on a steady decline while consumer borrowing had increased. Responses to two survey questions can provide insight into households' attitude toward the use of credit to finance consumer spending. One question addresses borrowing to purchase luxury items: "Is it all right for someone like yourself to borrow money to cover vacation expenses or purchase a fur coat or jewelry?" Another considers borrowing to meet day-to-day expenses: "Is it all right for someone like yourself to borrow money to cover living expenses when income is cut?"

Overall, 15 percent of the households answer yes to borrowing to purchase luxury items whereas almost 50 percent respond yes to borrowing to cover living expenses. The univariate analyses presented in Tables 3a and 3b illustrate whether attitude about credit use differs significantly across household Life Cycle stages and measures of Debt Capacity and Financial Discipline.

Responses to both survey questions vary significantly across stage of life cycle. Compared with the Mature Single, more than twice as many Young Singles condone borrowing to pay for luxury items. The focus on immediate gratification—purchasing luxury items on credit rather than saving for the purchase—is deemed more acceptable by the young. Borrowing to cover living expenses is also significantly more acceptable to those households in younger stages of the life cycle. Although Single Parents and Young Families may find it necessary to borrow in the face of a cut in income to meet the needs of their dependents, Young Singles and Young Couples have similar attitudes without the pressure. Older households are more likely to have accumulated assets that can be liquidated in the face of income cuts, so they find borrowing to pay for living expenses less acceptable.

Examining credit attitude across Debt Capacity measures reveals insights into what fueled the recent credit crisis. Households with less debt capacity—next year's income is uncertain or they do not own a home—are less likely to qualify for consumer credit. Surprisingly, a significantly greater percentage of these households condone borrowing to purchase luxury items or to cover living expenses when income is cut. Perhaps these attitudes are driven by the abundance of consumer credit that has been available (until recently) and the desire to meet current consumption wants and needs.

Financial Discipline is another factor related to responses to these credit attitude questions. Households who do not exemplify sound financial practices may deem borrowing for any reason to be appropriate. Almost twice the percentage of those who carry a balance on their credit cards indicate that it is all right to borrow to purchase luxury items compared with those who pay their

Table 3. (a) Credit Attitude about Luxury Items by Household Characteristics; (b) Credit Attitude about Living Expenses by Household Characteristics

	Percent Responding Yes
(a)	
Is it all right for someone like yourself to borrow money to cover vacation expenses or purchase a fur coat or jewelry?	
Overall sample	15.4
Life Cycle	*$p<0.0001$
Young Single	24.5
Young Couple	19.1
Mature Family	18.3
Single Parent	17.8
Young Family	14.4
Mature Couple	13.6
Middle-Aged Couple	13.0
Mature Single	11.6
$n=4,167$ (251 unclassified)	
Debt Capacity	
FT Income	*$p<0.0001$
Has full-time income	16.5
No full-time income	12.7
Uncertain Income	*$p=0.0003$
Next year's income is uncertain	16.6
Next year's income is predictable	14.7
Housing Status	*$p<0.0001$
Homeowner	14.8
Renter or other	17.1
Financial Discipline	
Saving Rule	$p=0.95$
No saving rule	15.4
Has saving rule	15.4
Revolve	*$p<0.0001$
Revolve balance on credit cards	23.5
Pay off balance in full	12.4
$n=3,498$ (920 have no credit cards)	
Late Pay	$p=0.49$
Late/missed loan payment in past year	17.2
All payments on time	16.7
$n=3,417$ (1001 have no loans)	
(b)	
Is it all right for someone like yourself to borrow money to cover living expenses when income is cut?	
Overall Sample	49.7
Life Cycle	*$p<0.0001$
Single Parent	67.3
Young Single	66.4
Young Couple	63.5
Young Family	62.9
Mature Family	50.8
Middle-Aged Couple	50.5
Mature Single	42.8
Mature Couple	38.9
$n=4,167$ (251 unclassified)	
Debt Capacity	
FT Income	*$p<0.0001$
Has full-time income	52.1
No full-time income	43.5
Uncertain Income	*$p<0.0001$
Next year's income is uncertain	54.3
Next year's income is predictable	47.0
Housing Status	*$p<0.0001$
Homeowner	45.8
Renter or other	60.8
Financial Discipline	
Saving Rule	*$p<0.0001$
No saving rule	53.9
Has saving rule	45.7
Revolve	*$p<0.0001$
Revolve balance on credit cards	58.8
Pay off balance in full	42.7
$n=3,498$ (920 have no credit cards)	
Late Pay	*$p<0.0001$
Late/missed loan payment in past year	58.2
All payments on time	49.1
$n=3,417$ (1001 have no loans)	

$n=4,418$ except where noted.

*The percent of households responding "Yes" is statistically different across household characteristics at the 99 percent level of confidence.

balance in full each month. A higher percentage of households demonstrating no Financial Discipline—those who have no savings plan, revolve their credit balances, or have been late or missed loan payments—condone borrowing when income is cut.

4. Multivariate Analysis of Consumer Debt Use

The decision to participate in the consumer debt market

This section begins with an analysis of the determinants of the household decision to utilize

consumer credit. Logistic regression is used to estimate the probability that households participate in the consumer debt market. The model assumes that the household's choice to have consumer debt is characterized by a logistic distribution, and the maximum likelihood estimates of the regression coefficients yield an estimated probability derived from the cumulative logistic distribution function.

The odds ratio is the probability that an event occurs divided by the probability that it does not occur. In the logit model, the log of the odds is linear:

$$\log[\Pr \text{Consumer Debt}/(1 - \Pr \text{Consumer Debt})] = \alpha + \sum \beta_k x_k$$

The explanatory variables that are hypothesized to influence the probability that the household has consumer debt are denoted by x_k, and the regression coefficients from the model are denoted by β_k. The estimate of the odds ratio (derived from taking the exponential of the maximum likelihood estimates, β_k) indicates the impact that a unit change in x_k has on the probability of an event, holding all other factors constant. An odds ratio of 1.00 indicates equal odds, meaning the explanatory variable has no significant impact on the event probability.[5] The results of the estimated model are presented in Table 4 and are interpreted as follows.[6]

For the indicator variables, the odds ratio estimate denotes the marginal effect on the probability that the household will participate in the consumer debt market when the variable is turned on, takes the value 1. If it is not turned on, the value is 0. For the continuous variables that measure household net worth and income, the odds ratio estimate indicates the marginal impact on the probability that the household will participate in the consumer debt market given a $1,000 change in the variable.

Table 4. Logistic Regression Analysis of Consumer Debt Use

Explanatory Variable	Odds Ratio Estimates: Point estimate	95% confidence interval estimate	*p*-value
Life Cycle			
Young Single	2.17*	1.53–3.07	0.000
Young Couple	2.29*	1.54–3.39	0.000
Young Family	2.45*	1.87–3.20	0.000
Single Parent	2.12*	1.54–2.92	0.000
Middle-Aged Couple	1.52*	1.06–2.17	0.022
Mature Family	1.42*	1.16–1.72	0.001
Mature Single	0.97	0.79–1.19	0.798
Credit Attitude	1.45*	1.27–1.67	0.000
Debt Capacity			
FT Income	2.47*	2.09–2.92	0.000
Uncertain Income	0.93	0.81–1.07	0.324
Housing Status	1.21*	1.00–1.45	0.048
Financial Discipline			
No Saving Rule	1.30*	1.13–1.50	0.000
Economic Expectations			
Higher Interest Rates	1.20*	1.03–1.39	0.018
Lower Interest Rates	1.13	0.86–1.49	0.390
Net Worth ($000)	0.99*	0.99–0.99	0.000
Income ($000)	0.99*	0.99–0.99	0.002
Intercept	0.38*	0.29–0.50	0.000

$n = 4{,}167$.

*Odds Ratio Estimate differs from 1.00 at a 5 percent significance level.

The *p*-value is the observed level of significance for the maximum likelihood estimates of the regression coefficients, β_k.

The chi-square statistics for the likelihood ratio tests in each of the five imputations are significant at less than the 1 percent level.

As predicted by the PIH/LC models, a household's Life Cycle stage significantly impacts its probability of participating in the consumer debt market.[7] Younger households (those with median age under 40) are more than twice as likely to have consumer debt than Mature Couples. For example, a Young Single household is 117 percent more likely, with the confidence interval estimate indicating a 53 percent to 207 percent higher probability. Young Couples are 129 percent and Young Families are 145 percent more likely to have

[5]The confidence interval estimate of the odds ratio—derived from the parameter estimates and their covariance matrix—indicates whether the explanatory variable has a significant impact at the 95 percent level of confidence. If the value 1.00 is within the interval, then the estimated coefficient is not significantly different from zero and the explanatory variable has no statistically significant impact on the event probability.

[6]The original sample of 4,422 households is reduced to 4,167 for the logit analysis. Besides those eliminated because of the inability to classify their life cycle, four observations were excluded from the public database because of concerns about confidentiality.

[7]The most common group in this sample—the older Mature Couple whose children are no longer at home—is in the constant.

consumer debt than Mature Couples. These results, as expected, reflect that as households move into their family formation years and children are added, the demand for consumer spending increases beyond income streams.

A household's Credit Attitude has a significant impact on its probability of participating in the credit market. This finding, given that measures of wealth, income, stage of life cycle, debt capacity, and financial discipline are held constant, underscores the important role that mindset plays in the borrowing decision. Households who believe that it is all right to borrow for vacations and other luxury items, or to cover living expenses when income is cut, are 45 percent more likely to participate in the consumer debt market than those who do not condone borrowing for these purposes.

Financial Discipline also significantly impacts consumer debt use.[8] As expected, households with no consistent saving rule are significantly more likely (30 percentage points) to have consumer debt than those households who do have a saving rule. When spending wants/needs arise, a household that has a saving rule is not as likely to participate in the consumer debt market.

The results reveal opportunities for change in consumers' attitudes about borrowing and their financial discipline. Education that impacts consumers' attitudes about credit use and increases financial discipline may prevent a repeat of the credit crisis. For example, consumers could be more educated about the length of time required to pay off a balance given a particular payment, or about the benefits of saving regularly. Raising awareness about the difference between needs and wants and emotions attached to purchases may provide a different perspective on consumption. As households' attitude toward borrowing becomes more conservative and awareness of the benefits of saving increases, they may borrow less, regardless of the loose guidelines and incentives offered by lenders to entice them.

A household's Debt Capacity significantly impacts its ability to participate in the credit market. Households with at least one full-time income stream are 147 percent more likely to have consumer debt. Because the model is controlling for household income, the results capture the willingness of lenders to extend credit and the household's willingness to take on debt. According to the odds ratio, homeowners are 21 percent more likely to have consumer debt than others. Perhaps this is a reflection of the use of home equity for consumption, or the readiness of lenders to extend credit to homeowners.

At the time of the survey, nearly two-thirds of the households believed that the economy would exhibit increasing interest rates in the near future. Consistent with the PIH/LC models, those households believing that interest rates will rise are 20 percent more likely to participate in the consumer debt market than those who think that interest rates will remain level. Higher interest rates often result from inflation, and so households are more likely to borrow and spend today if they think prices will rise. Higher interest rates also reflect a higher opportunity cost of waiting to consume, so that households consume today.

The analysis of consumer debt burden

This study next examines households' debt burden, which reflects the ability to sustain the debt and repay it. Selecting only those households with consumer debt, multiple linear regression analysis is used to test the relationship between consumer debt burden and stage of life cycle, credit attitude, financial discipline, debt capacity, and economic expectations, holding constant the household's wealth (net worth) and income. Results are presented in Table 5.[9]

Although the household's stage of life cycle is very significant in explaining who participates in the consumer debt market, it is not a powerful determinant of the debt burden. Compared with Mature Couples, only Young Singles have a significantly higher consumer debt burden. Younger households make less income than they expect to in the future, so they borrow to smooth consumption over their lifetime. Mature Couples typically earn more income and are repaying debt, thereby carrying a significantly lower debt burden than Young Singles. Although the relationship is not as strongly significant, Mature Singles have less debt burden than Mature Couples. Mature Singles have a higher median age than Mature Couples, and are

[8]For the logistic model, only the No Saving Rule measure of financial discipline is included. The variables Revolve and Late Pay are undefined for those households with no credit cards or loan payments.

[9]Those households with no income are excluded because the debt burden is undefined, reducing the sample to 2,086 observations.

Table 5. Regression Analysis of Consumer Debt Burden for Households with Consumer Debt

Explanatory Variable	Estimated Coefficient	*F* Statistic	*p*-value
Life Cycle			
Young Single	0.67*	24.61	0.000
Young Couple	0.12	0.75	0.387
Young Family	0.03	0.07	0.786
Single Parent	0.16	1.49	0.223
Middle-Aged Couple	−0.07	0.23	0.633
Mature Family	−0.03	0.10	0.753
Mature Single	−0.17**	2.99	0.084
Credit Attitude	0.14*	6.06	0.014
Debt Capacity			
FT Income	−0.25*	9.97	0.002
Uncertain Income	0.12*	4.34	0.037
Housing Status	−0.06	0.58	0.448
Financial Discipline			
No Saving Rule	0.11**	3.60	0.058
Revolve	0.08	1.91	0.167
Late Pay	−0.06	0.62	0.432
Economic Expectations			
Higher Interest Rates	0.02	0.06	0.813
Lower Interest Rates	−0.03	0.09	0.770
Net Worth ($000)	0.00	2.08	0.151
Income ($000)	−0.00	2.19	0.139
Intercept	0.49*	15.38	0.000

$n = 2{,}086$.

Overall F statistic = 4.99*.

The adjusted R^2 ranged from 0.033 to 0.036 across the five separate imputation regressions.

*Significant at the 95 percent level of confidence or higher. An F statistic, rather than the traditional t-statistic, is calculated from the estimated parameters and parameter variances across the five imputations. The p-value is the observed level of significance associated with each F statistic.

**Significant at the 90 to 95 percent confidence level.

half the household size, which may explain their lower debt burden.

A household's Credit Attitude drives its debt burden. As expected, households indicating that it is all right to borrow to purchase luxury items or to cover living expenses carry higher consumer debt to income relative to those who replied no to both questions. Considering a household's Financial Discipline, only the measure of savings behavior is significant in explaining consumer debt burden. Households who do not have a consistent saving rule carry a higher debt burden than those with a saving rule. As with debt use, education that impacts consumer attitudes about credit and the benefits of regular saving may go far in reducing households' debt burden.

Consumer debt burden is related to a household's Debt Capacity. Even while holding income and wealth constant, households earning a full-time income maintain a significantly lower consumer debt balance to income. Uncertain income is positively related to the household's consumer debt burden, even though their creditworthiness and ability to repay is questionable. This result reflects the eagerness of lenders to make loans as well as the abundance of credit available even to high risk borrowers during the time preceding the survey. Given that the household's income is held constant, this result could indicate household borrowing to smooth out consumption in times of uncertainty. This result is contrary to the buffer-stock model prediction that those with uncertain income carry higher buffer stock, that is, less debt and more savings.

5. Conclusion

The United States is experiencing the worst recession since the Great Depression, and many point to the burden of too much household debt as a cause. Booming asset markets and easy access to credit markets led Americans to borrow in record amounts. Although some believe that mindsets are fundamentally changed forever and we will never again experience those levels of borrowing (and spending), it is important to understand factors that influenced borrowing so that we can begin to understand what will shape credit use in the future.

This study utilizes survey data to examine household consumer credit use on two dimensions: factors that determine the likelihood of borrowing and factors that determine how much is borrowed relative to income (debt burden). The results indicate that the likelihood of participating in the consumer debt market depends upon stage of life cycle and attitudes toward credit use. Not surprisingly, younger households are more likely to have consumer debt than mature couples. As households move into their family formation years and children are added, the demand for consumer spending increases beyond income streams. As households age and enter the later stages of life, we expect that they will they be less likely to use credit to meet consumption wants and needs.

More enlightening is the evidence of the significant influence of the attitude toward credit use. Those who believe it is all right to borrow for luxury items or to cover living expenses are much

more likely to use consumer credit, and have a higher consumer debt burden. Another notable finding is that households with no consistent savings plan are both more likely to borrow and to carry a higher debt burden when they do borrow.

Data as of 2010 suggest that "deleveraging" and "retrenchment" is spreading throughout the economy. Total consumer credit outstanding has been declining since the onset of the recession, as households that had relied on easy access to credit are paying off debt balances [St. Louis Fed 2010]. Ongoing concerns about job security, along with reduced housing and financial asset values may make consumers cautious about returning to past levels of borrowing and spending. At the same time, lenders are more restrictive in granting credit. Consumers with a credit score below 600—an indication of high default risk—are unlikely to qualify for additional credit. Historically, 15 percent of those with active credit accounts are in this category. However, a recent report by FICO Inc. shows that 25.5 percent of consumers are now at that level [Li 2010]. Perhaps the thinking about credit use will shift, or perhaps not. In the second half of 2009 the savings rate began to decline from its recession high. The evidence does not clearly point toward a persistent shift in attitude toward credit use.

Policies designed to protect the consumer from unfair and abusive lending practices are prevalent. For example, new regulations require credit card issuers to make interest charges easier to understand and due dates more transparent. Mortgages with zero-down payments or amounts higher than the home values are quickly disappearing. Although these changes may serve to protect borrowers, a more sustainable solution may lie, not in more regulation, but rather in education—informing consumers about the consequences of borrowing beyond an amount that their income and wealth can bear. The study's results support the need for financial education that changes consumers' attitudes about credit use and increases financial discipline. As households' attitude toward borrowing becomes more conservative and their awareness of the benefits of saving increases, they may disregard lenders' enticing offers, reducing debt burdens and default rates.

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