Finance and Economics Discussion Series
Divisions of Research & Statistics and Monetary Affairs
Federal Reserve Board, Washington, D.C.

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Kathleen W. Johnson and Geng Li

2011-21

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Geng Li

Board of Governors of the Federal Reserve System[1]

March 7, 2011

Abstract

Past research argues that changes in adjustable-rate mortgage (ARM) payments may lead households to cut back on consumption or to default on their mortgages. In this paper, we argue that these outcomes are more likely if ARM borrowers are borrowing constrained, and find that ARM borrowers exhibit characteristics and behavior that are consistent with being borrowing constrained. Although the demographic and financial characteristics of ARM and fixed-rate mortgage (FRM) borrowers are quite similar, ARM borrowers differ from FRM borrowers in their uses of credit and attitudes towards it. In addition, we find the consumption growth of households with an ARM is more sensitive to past income than the consumption growth of other households, suggesting the ARM borrowers are more likely subject to borrowing constraints that hinder their ability to smooth consumption.

[1] Kathleen Johnson, Mail Stop #93, Board of Governors of the Federal Reserve System, Washington DC 20551; e-mail: Kathleen.W.Johnson@frb.gov; phone (202) 452-3644. Geng Li, Mail Stop #93, Board of Governors of the Federal Reserve System, Washington DC 20551; e-mail: Geng.Li@frb.gov; phone (202) 452-2995. The opinions, analysis, and conclusions of this paper are solely the authors' and do not necessarily reflect those of the Board of Governors of the Federal Reserve System or its staff. The authors would like to thank Mike Mulhall for excellent research assistance, and Brent Ambrose, Andreas Lehnert, Michael Palumbo, as well as participants at the 2009 AREUEA meetings and 2010 AEA meetings for their helpful comments.

1. Introduction

Mortgages in which the contractual interest rate adjusts periodically with a specified market rate, known as adjustable-rate mortgages (ARMs), began to grow in popularity during the high interest rate environment of the early 1980s (Buist and Yang (2000), Ambrose and LaCour-Little (2001) and Ambrose, LaCour-Little, Huszar (2005)). Since the early 1990s, ARMs have accounted for between 10 and 40 percent of new mortgage originations, with this proportion largely fluctuating with the interest rate environment. In the mid-2000s, the ARM share of new mortgage originations rose to about 40 percent and remained high until mid-2006, by which time ARMs accounted for about 20 percent of mortgages outstanding.

Prior research on ARMs argues that, unlike households with a fixed-rate mortgage (FRM), households with an ARM are subject to a "payment shock" when the interest rate on their mortgage resets to a higher level and their monthly mortgage payment increases. This payment shock, it is hypothesized, may lead households to cut back on their consumption or to default on their mortgages. For example, Buist and Yang (2000) link higher interest rates with higher default rates through an increasing payment burden and conclude that interest rate volatility can worsen ARM default risk. Ambrose, LaCour-Little and Huszar (2005) find relatively high rates of default among ARM borrowers, which they also attribute to "the payment shock that often affects adjustable rate loans."

A higher mortgage payment may lead households to cut back consumption if the increase was unanticipated. One could argue that while households may know when their payment will change, they cannot completely predict the magnitude of the change. Although a household can use the information provided in its ARM contract to infer changes in its mortgage payment for any given change in the underlying interest rate index, it faces uncertainty related to movements in the underlying index, which generally do not show a high level of persistence. Most ARMs are indexed to either the one-year Treasury bill or the London Interbank Offered Rate. In the past 20 years, annual changes in each of these interest rate series are not highly autocorrelated.

In addition, Bucks and Pence (2008) provide evidence that ARM borrowers can significantly underestimate the amount by which their mortgage payment can change. Although borrowers tend to accurately report whether their mortgage is an ARM or FRM,

they are considerably less knowledgeable about the index to which their ARM payment is pegged and the maximum amount by which their interest rate could change with this index. Because households are not familiar with their mortgage terms, they are more likely to be surprised by a change in their mortgage payments.

Finally, a household who wishes to smooth its consumption responding to the change in the mortgage payment may have insufficient liquid assets and not be able to borrow. Bucks and Pence (2008) also find that borrowers who are the least certain of their interest rate exposure are those with less income and education, older, and minority borrowers. The mortgage borrowers that are least likely to anticipate the payment reset would also appear to be the most likely to be liquidity or borrowing constrained, and thus unable to smooth consumption in response to the mortgage payment changes. Indeed, several theoretical studies also suggest ARM borrowers are more likely to be borrowing constrained (see, for example, Alm and Follain (1984), and Campbell and Cocco (2003)). Posey and Yavas (2001) show theoretically that under asymmetric information, borrowers with higher default risk choose ARMs, suggesting that the ARM borrowers will have more difficulty obtaining credit going forward than the FRM borrowers.

The empirical evidence on whether ARM borrowers are borrowing constrained is thin and inconclusive. Coulibaly and Li (2009) conclude that more financially constrained households are more likely to prefer ARMs. However, they also find that highly educated households, who are less often borrowing constrained, are more likely to choose an ARM than households with lower educational attainment. Similarly, Brueckner and Follain (1988) find that high income borrowers, who are also less likely to be constrained, prefer ARMs.

This paper picks up from the literature at this point and asks whether ARM borrowers are more likely liquidity or borrowing constrained, and are thus unable to smooth their consumption through a payment reset. To answer this question, we look at the data from two perspectives. First, do the characteristics of ARM borrowers suggest they are borrowing constrained, at least relative to other mortgage borrowers? Specifically, are ARM borrowers more likely to be turned down for credit? Second, do the consumption dynamics of ARM borrowers suggest they are more borrowing constrained than other borrowers? Specifically, is the growth of consumption of ARM

borrowers more sensitive to past income? To our knowledge, no research has focused on the effect of ARM payment resets on consumption. If the consumption of ARM borrowers does react to mortgage payment resets, the proportion of households with ARMs is relevant for understanding consumption movements in a volatile interest rate environment.

We find that the ARM borrowers demonstrate certain characteristics that suggest they are borrowing constrained. Although the demographic and financial characteristics of ARM and FRM borrowers are quite similar, the data from the Survey of Consumer Finances (SCF) suggest that ARM borrowers differ from FRM borrowers in their uses of credit and attitudes toward it. ARM borrowers are more likely to have been turned down for credit in the past five years, hardly ever pay off their credit card balances in full, and utilize a higher share of credit card limits. Although due to data limitations we do not estimate the marginal propensity to consume vis-à-vis the disposable income changes due to ARM payment resets, using a test of borrowing constraints common in the consumption literature, we find the consumption growth of households who report having an ARM is indeed more sensitive to past income than the consumption growth of other households, indicating that perhaps they are more constrained than other households. An important caveat is that due to data limitations, we do not attempt to identify any causal relationship between choosing an ARM and being borrowing constrained. Future work should address this causality issue, as well as estimate directly the size of the effect of mortgage payment resets on consumption.

2. Data description

We will answer the above questions mainly using data from the 1992 to 2007 waves of the Survey of Consumer Finances (SCF) and the 1988 to 2008 waves of the Interview Survey of the Consumer Expenditure Survey (CE). The SCF is a triennial cross-sectional survey conducted by the Federal Reserve Board to collect extensive data on household finances, including detailed information about mortgage contract terms. As part of its expenditure data collection, the CE asks households to report whether their mortgage is a FRM. If the household reports that its mortgage is not a FRM, the CE follows up by asking the household to identify its mortgage from a list of options, one of which is an

ARM. [2] The CE also asks other mortgage-related information, such as when the mortgage was originated and payment information. The CE also collects household demographic and detailed consumption data, which will be used to test if the consumption of self-reported ARM borrowers suggests they are borrowing constrained.

We first compare the share of mortgage borrowers who have an ARM measured by the SCF and the CE with another measure provided by the Mortgage Bankers Association (MBA) (chart 1). The three measures are highly correlated over time, although the MBA share has somewhat higher volatility. In addition, the MBA share lies above the shares measured in the SCF and the CE. Because the MBA shares is computed using mortgage application data and the SCF and CE shares are estimated using information on outstanding mortgages, this discrepancy likely reflects that many ARMs were eventually refinanced into FRMs.

We also compared the characteristics of ARM borrowers between the CE and the SCF (table 1). In both surveys, households that reported having an ARM have about 3 people on average; the average household head is in their early 40s; and about 75 percent are married. Among households with an ARM, the share of households are who are black is slightly higher in the SCF than in the CE. The household head's level of education differs somewhat across the surveys. In addition in the CE sample, over half of households with a mortgage have a high school education; this share is 8 percentage points lower in the SCF sample, but the SCF has a higher share of college-educated household heads.

[2] Although Bucks and Pence (2008) find that ARM borrowers generally know whether their mortgage is an ARM or a FRM, they show that measurement error remains a concern, especially among ARMs that were originated more than a few years prior to the interview. This concern arises because ARM borrowers, especially when facing a rate reset, may be more apt than FRM borrowers to refinance their mortgages in the first few years of origination. Several papers have documented the faster prepayment speeds of ARMs, relative to FRMs (see for example, Ambrose, LaCour-Little (2001)). In a separate analysis, we looked at the refinancing behavior of ARM borrowers to verify whether ARMs held longer than a certain period are rare, which, if is true, would require us to trim our ARM sample. We found that while many ARMs refinanced after one year, the average time to refinance is about 3.4 years, only slightly shorter than FRMs. Thus, we did not restrict the analysis to recently-originated ARMs. As will be discussed later in the paper, such a restriction does not qualitatively affect our results.

3. Results

a. Do ARM borrowers look borrowing constrained relative to other mortgage borrowers?

Prior research has demonstrated that younger, less educated, and minority households are more likely to be borrowing constrained than other households (Jappelli 1990). However, we find the demographic characteristics of ARM borrowers do not suggest that they are more likely borrowing constrained than FRM borrowers. Although households in the CE who reported having an ARM were 1½ years younger on average, they were slightly less likely to be black, and had slightly higher educational attainment than those who reported having other types of mortgages (table 1). In addition, the share of married households and mean household income are very similar between FRM and ARM borrowers. Although some of the differences in demographics between ARM and FRM borrowers are statistically significant, all of them are economically small.

In addition, according to an often-used indicator of whether a household is liquidity constrained—a low asset-to-income ratio—ARM borrowers do not appear more liquidity constrained than other borrowers. In the CE sample, the median ratio of a household's checking and savings accounts balance to income is close to 7 percent, regardless of whether the household has reported having an ARM or another type of mortgage (table 2). The liquid asset to income ratio at the low end of the distribution is also similar between the two types of borrower. The 25^{th} percentile of each distribution falls at a liquid asset to income ratio of 2 percent. This suggests that ARM and FRM borrowers have similar resources to draw upon given an unanticipated change in income or consumption. Of course, the liquid asset to income ratio may be affected by whether the household chooses a FRM or an ARM, which may cloud this comparison. If equity and bond holdings are included in the asset measure ARM borrowers have only slightly less financial resources than do FRM borrowers. When all financial assets are included, the median ratio of financial assets to income for ARM borrowers is 7 percentage points (about 13 percent) below that of FRM borrowers.

Because the asset data in the CE contain considerable measurement error, we also compared the financial ratios of ARM and non-ARM borrowers in the SCF, which we believe measures wealth more accurately (table 2). The conclusions drawn from this

survey are similar to those drawn from the CE. The median ratio of gross liquid assets to income among households who reported having an ARM is less than 1 percentage point below those reporting having another type of mortgage and the median ratio of total gross financial assets to income of ARM borrowers is just 4 percentage points lower. The SCF also allows comparison between non-financial asset to income ratios, which include assets such as house and automobile values. Under this measure, ARM borrowers have greater assets than FRM borrowers, mostly owing to greater home values. That said, ARM borrowers have lower home equity to draw upon than other borrowers (not shown).

Although the demographic and financial characteristics of ARM and FRM borrowers are quite similar, the SCF data suggest that ARM borrowers differ from FRM borrowers in some of their uses of credit and attitudes towards it. For example, among households with a credit card, ARM borrowers utilize a significantly higher fraction of their credit limit than FRM borrowers (table 3). Consistent with this finding, a smaller share of ARM borrowers pay off their credit card each month and a larger share hardly ever pay off their credit card. While ARM borrowers appear to have a similar attitude towards installment credit in general, differences in attitude arise in the details. For example, a higher fraction of ARM borrowers believe it is okay to use debt when one loses income. ARM borrowers are significantly more likely to have a financial planning period of less than one year and are significantly more likely to have been turned down for credit.

The SCF asks households whether they have recently been turned down for credit and whether they have refrained from applying for credit because they believed they would be turned down. This question provides a more direct measure of borrowing constraints. If households who report having an ARM are more likely to be turned down for credit, they may be unable to use other forms of credit to smooth through a payment reset.

Using the probit model of the likelihood of being turned down for credit in Johnson and Li (2010), we tested whether reporting having an ARM is associated with a higher likelihood that a household would report being turned down for credit. In addition to a dummy variable for whether the household reported having an ARM, this model also included the education, age, race, and marital status of the household head, as well as

household income and size. We restricted the model to households with a mortgage, although the results are robust to the inclusion of all households (with dummy variables for homeownership and mortgage). Our estimates show that households who reported having an ARM are more likely to be turned down for credit than other households by 1.6 percentage points, or more than 10 percent (table 4).

We also estimated probit models of the probability that a household hardly ever pays off its credit card and the probability that the household is currently utilizing more than 80 percent of its credit limit using similar specifications. High utilization rates have been used by other authors to proxy for credit constraints (Gross and Souleles 2002). These models suggest that controlling for other household characteristics, ARM borrowers are 2.4 percentage points (or 6 percent) more likely to utilize a high proportion of their credit card limits. They are also 3.5 percentage points (more than 10 percent) more likely to hardly ever pay off their credit card balance in full each month.

In summary, the demographics that usually indicate borrowing constraints, such as age, education and income do not consistently support the hypothesis that households with an ARM are more borrowing constrained than households with a FRM. However, ARM borrowers do appear to have slightly different attitudes towards debt and there is evidence that households who currently report having an ARM are more likely to have been turned down for credit in the past than other households, utilize a higher proportion of their credit card limits and are more likely to hardly ever pay their credit cards in full each month. These results support the idea that households with an ARM are more likely to be borrowing constrained such that their consumption may react to a mortgage payment reset.

b. Does the consumption growth of ARM borrowers suggest they are borrowing constrained?

Next, we investigate whether households who report having an ARM appear borrowing constrained by testing whether their consumption growth is sensitive to past income—one frequently-used test for violations of the Rational Expectations/Permanent Income Hypothesis (REPIH). Importantly, these tests do not directly address whether the consumption of ARM borrowers reacts to changes in mortgage payment resets, they

address the general question of whether households are able to smooth consumption in the face of disposable income fluctuations. We begin with a specification that is commonly used to test for consumption's excess sensitivity to lagged income (see, for example, Zeldes (1989), Jappelli, Pischke, and Souleles (1998) and Johnson and Li (2010)).

$$(1)\quad \log\left(C_{i,t}/C_{i,t-1}\right) = \beta_0 + \beta_1\,\Delta\theta_{i,t} + \gamma \log\left(Y_{i,t-1}\right) + \varepsilon_{i,t},$$

where $C_{i,t}$ is period t consumption for household i, $\theta_{i,t}$ is a vector of household demographic characteristics that would affect the marginal utility of household i, and $Y_{i,t-1}$ is household income in the earlier period. The coefficient γ reflects the degree to which consumption growth is sensitive to past income. According to the REPIH, consumption growth should be orthogonal to the household's past information set; violations of the REPIH indicate that the household potentially is liquidity constrained. We generalize equation (1) to allow the consumption growth of ARM households to follow a different path than that of other households. Letting $A_{i,t} = 1$ if household i has an ARM at time t, and $A_{i,t} = 0$ otherwise, we write the following for the consumption growth of household i at time t:[3]

$$(2)\quad \log\left(C_{i,t}/C_{i,t-1}\right) = \beta_0 + \beta_1\,\Delta\theta_{i,tt} + \gamma\ \log\left(Y_{i,t-1}\right) + A_{i,t}\left[\beta_0^A + \beta_1^A \Delta\theta_{i,t} + \gamma^A \log\left(Y_{i,t-1}\right)\right] + \varepsilon_{i,t}$$

Although the notation is suppressed, the estimated equation also includes dummy variables for the year and month of the household's observation to capture any effect of macroeconomic and seasonal factors on consumption growth. If only ARM households violate the REPIH, then we should expect:

$$(3)\quad \gamma = 0, \quad \gamma^A < 0\,.$$

Among unconstrained households, income in the previous period, $Y_{i,t-1}$, should not affect consumption growth, $C_{i,t}/C_{i,t-1}$, while among constrained households, higher income in the previous period implies a relaxation of the constraint, which leads to higher

[3] The data that will be used to estimate equation (2) is a short panel that yields only one observation of consumption growth per household.

consumption relative to the current period and a related reduction in consumption growth.[4]

We contrast the sensitivity of consumption growth to past income for ARM borrowers with that of three control groups: all other households, regardless of homeowner or mortgage status; all other homeowners, regardless of mortgage status; and all other mortgagors. Regardless of the control group choice, the results suggest that both ARM borrowers and the control group violate the REPIH (see table 5). The consumption sensitivity of households who do not have an ARM (columns 1 and 2) is quite small but is highly statistically significant; a one percent rise in lagged income reduces the consumption growth of these households by 0.8 percentage point. For households who report having an ARM, the decline in consumption is three times larger. The magnitudes of these effects for ARM borrowers and the control group are in line with estimates of constrained and unconstrained households presented in other research (see for example, Jappelli, Pischke and Souleles, 1998 and Johnson and Li 2010). The results are similar if the sample is restricted to homeowners (columns 3 and 4). Restricting the sample further to include only mortgagors (columns 5 and 6), the difference between the consumption sensitivity of ARM borrowers and other mortgage borrowers is not statistically significant, although the consumption sensitivity of ARM borrowers is a bit more than twice as large as that of other mortgage borrowers. Other demographic characteristics also affect the growth in consumption, such as education, marital status, and a change in family size, but the effect of these characteristics do not differ statistically between ARM borrowers and other households.

This result is not sensitive to whether the ARMs in question were originated recently or a long time ago. We tested the robustness of this result with respect to the seasoning of the ARMs by further interacting the variable of interest with a dummy variable for whether the ARM was originated less than two years ago or more than two years ago. The coefficients on these two variables were almost identical.

[4] In the CE data, a consumer unit was asked for income information twice; once in the first interview (time t-1) and nine months later in the last interview (time t). For a consumer unit that is first interviewed in month, m, Y_{t-1} refers to the income earned in the previous twelve months (between *m-12* and *m-1)*, C_{t-1} refers to consumption expenditures in the previous three months (*m-3*, *m-2*, and *m-1)*, and C_t refers to consumer expenditures during months *m+6*, *m+7*, and *m+8*. We test whether for constrained households a rise in Y_{t-1} leads to a rise in C_{t-1}, relative to C_t.

The sensitivity of consumption to past income for ARM borrowers may have increased over this decade as during the mid-2000s, many subprime borrowers obtained ARMs to purchase homes, which may have changed the characteristics of ARM borrowers. In addition, this sensitivity may have increased as declining house values over the past few years eroded household wealth. Given the economic climate of the past two years, we tested for whether the consumption of ARM borrowers became more sensitive to past income since 2007 (not shown). Consistent with this hypothesis, we found the point estimate γ^A a bit more negative in the later period (-0.027, compared with -0.022). However, given the size and statistical insignificance of the difference, our conclusion that ARM borrowers are likely borrowing constrained does not rely solely on recent developments.

4. Discussion

In this work, we found that standard demographic and financial characteristics, such as age, education and balance sheets, of ARM borrowers do not suggest that they are more borrowing constrained than other borrowers. However, we find other characteristics of ARM borrowers suggest that they are more borrowing constrained than other borrowers. Households with an ARM are more likely to be turned down for credit in the past five years, hardly ever pay off their credit cards, and utilize a higher share of their credit card limits. Consistent with these results, we find the consumption growth of households who report having an ARM more sensitive to past income than the consumption growth of other households. The decline in consumption growth associated with a rise in past income is about three times larger for households who reported having an ARM, than that of all other homeowners.

This income sensitivity indicates that, consistent with what has been suggested in the literature, a mortgage payment reset may influence the consumption of ARM borrowers. If ARM borrowers cut back consumption in reaction to an increase in their mortgage payment, the general dampening effect of interest rates on consumption may rise with the share of ARM borrowers in the economy.

While this research has yielded some promising results, an important question left unanswered is whether an ARM causes extra consumption sensitivity or the borrower's

choice of having an ARM and its lack of ability to smooth consumption are both caused by a separate unobserved factor. Future work on this issue should address causality, as well as directly measure the effect of mortgage payment resets on consumption.

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Chart 1: Share of ARM Originations

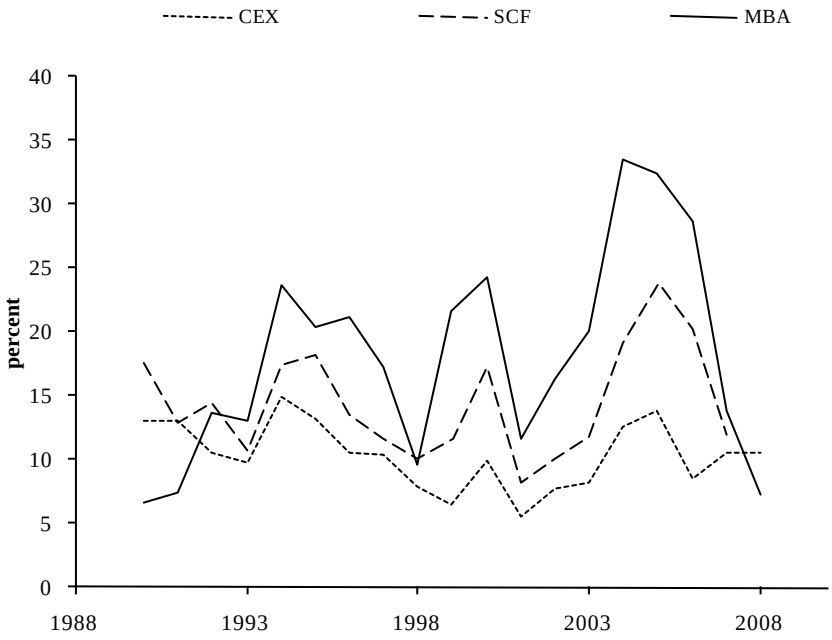

Table 1. Mortgagors Demographic Characteristics, by mortgage type

	CE		SCF	
Consumer Expenditure Survey	ARM	Non-ARM	ARM	Non-ARM
Family Size	3.2	3.1	3.0	3.0
Age (years)	41.8	43.7	43.4	44.3
Married (percent)	74%	74%	75%	77%
Black (percent)	5.3%	7.8%	9.0%	9.0%
High school graduate (percent)	53%	56%	45%	48%
College graduate (percent)	39%	34%	47%	45%

Table 2. Distribution of Homeowners Financial Ratios, by housing tenure and mortgage type

	CE		SCF	
	ARM	Non-ARM	ARM	Non-ARM
Consumer Expenditure Survey				
Liquid asset to income ratio				
Mean	18%	19%	21%	19%
25th	2%	2%	3%	3%
50th	**7%**	**6%**	**6%**	**7%**
75th	18%	19%	17%	17%
Financial Asset to income ratio				
Mean	126%	128%	146%	132%
25th	19%	23%	14%	16%
50th	**52%**	**59%**	**51%**	**55%**
75th	126%	146%	148%	150%
Nonfinanical asset to income ratio				
Mean			528%	390%
25th			211%	190%
50th			**312%**	**276%**
75th			540%	423%

Table 3. Homeowner Other Characteristics, by mortgage type

Survey of Consumer Finances	ARM	Non-ARM	
Credit card utilization (percent)	41%	31%	**
Always pay off credit card (percent)	44%	49%	***
Sometimes pay off credit card (percent)	23%	23%	
Hardly ever pay off credit card (percent)	32%	28%	**
Debt is okay (percent)	68%	67%	
Debt is okay - vacation (percent)	17%	16%	
Debt is okay - loss of income (percent)	50%	45%	***
Debt is okay - luxuries (percent)	8%	7%	
Debt is okay - purchase a car (percent)	87%	88%	
Debt is okay - education (percent)	89%	88%	
Financial planning period < 1 year (percent)	28%	24%	**
Turned down for credit (percent)	14%	12%	**
N	1640	8187	

***Significantly different at the 1 percent or better confidence level
**Significantly different at the 5 percent confidence level
*Significantly different at the 10 percent confidence level

Table 4: Marginal Effect of Household Characteristics on the Likelihood of Borrowing Constraint among Mortgage Borrowers

Household Characteristic	**Turned down for credit**	**High card utilization rate**	**Hardly ever pays off card**
Adjustable rate mortgage	0.016 *	0.024 ***	0.035 **
High school graduate	-0.017	-0.044 ***	-0.041 *
College graduate	-0.056 ***	-0.074 ***	-0.139 ***
Married	-0.019 **	-0.003	0.008
Age	0.000	0.005 *	0.017 ***
Age squared	0.000	0.000 **	-0.002 ***
Black, non-hispanic	0.094 ***	0.052 ***	0.103 ***
Family size	0.010 ***	0.014 ***	0.018 ***
Log of household income	-0.063 ***	-0.053 ***	-0.133 ***
1992 SCF	-0.019 *	-0.015	-0.040 **
1995 SCF	-0.016	-0.022 **	-0.059 ***
1998 SCF	0.006	-0.016 *	-0.032 **
2001 SCF	-0.010	0.003	-0.063 ***
2004 SCF	0.016	-0.006	-0.067 ***

***Underlying coefficient significantly different from zero at the 1 percent or better confidence level
**Underlying coefficent significantly different from zero at the 5 percent confidence level
*Underlying coefficent significantly different from zero at the 10 percent confidence level

Table 5: Sensitivity of Consumption Changes to Past Income and Interest Rates

Control Group:	All households		All homeowners		All mortgagors	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
	(1)	(2)	(3)	(4)	(5)	(6)
Lag of logged real income	-0.008	0.003 ***	-0.008	0.004 **	-0.013	0.004 ***
Lag of logged real income*ARM	-0.024	0.014 *	-0.023	0.014 *	-0.019	0.014
Age	-0.050	0.050	-0.123	0.063 **	-0.189	0.072 ***
Age squared	0.193	0.179	0.441	0.219 **	0.676	0.253 ***
Age cubed	-0.328	0.274	-0.690	0.332 **	-1.051	0.387 ***
Age fourthed	0.203	0.154	0.397	0.185 **	0.600	0.217 ***
Change in family size	0.069	0.003 ***	0.068	0.004 ***	0.065	0.004 ***
Black	-0.014	0.006 **	-0.012	0.008	-0.020	0.009 **
High school graduate	0.012	0.005 **	0.013	0.007 *	0.016	0.009 *
College graduate	0.024	0.006 ***	0.026	0.008 ***	0.033	0.009 ***
Married	0.016	0.004 ***	0.008	0.005	0.009	0.006
Age*ARM	0.018	0.021	0.012	0.020	0.009	0.020
Age squared*ARM	-0.034	0.117	0.001	0.115	0.008	0.116
Age cubed*ARM	0.010	0.248	-0.059	0.246	-0.066	0.246
Age fourthed*ARM	0.012	0.177	0.059	0.174	0.061	0.175
Change in family size*ARM	0.004	0.012	0.005	0.012	0.008	0.012
Black*ARM	0.020	0.033	0.019	0.033	0.026	0.032
High school graduate*ARM	-0.003	0.028	-0.003	0.027	-0.007	0.028
College graduate*ARM	0.002	0.030	-0.001	0.029	-0.007	0.029
Married*ARM	0.013	0.018	0.021	0.018	0.020	0.018
N	41183		29,562		23,046	

*Significant at the 10 percent level
**Significant at the 5 percent level
***Significant at the 1 percent level or better