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Abstract

This paper uses data from the 1983 Survey of Consumer Finances to test the relationship between the banks' market power and households' self-reported levels of credit constraints. The 1983 Survey was the last to identify households' geographic location, making it useful for this analysis. There is evidence that borrowers, and particularly young borrowers, were less credit-constrained in markets where banks enjoyed more market power. Interest rates on consumer borrowing decreased more sharply with age in competitive markets than in concentrated markets. These results are consistent with the Sharpe (1990) and Petersen-Rajan (1995) models of information acquisition in credit markets.

JEL Classification: D1; E2; G2; L1

Keywords: Banks; market structure; consumption; credit constraints

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Consumer credit outstanding in 2009 amounted to $2.5 trillion, or 18 percent of GDP. This access to credit raises welfare by allowing households to improve the timing of their purchases of goods and services. Without credit, purchases are constrained by the level of financial assets on hand; with credit, households can smooth the path of consumption in ways that significantly improve utility.

This paper assesses the relationship between the market concentration of local financial sectors and households' reports of being credit constrained. The market concentration of the local financial sector reflects the number of competing banks, and is one element of a larger set of factors that affect how 'captive' consumer borrowers become once they establish a relationship with a lending institution. Using the 1983 Survey of Consumer Finances, I find evidence that households living in areas where banks enjoyed more market power were less likely to report that they were credit constrained. I also find evidence that interest rates on consumer borrowing decreased much more rapidly with the age of the borrower in competitive markets than in the more concentrated markets.

Both of these results are consistent with models of credit markets developed by Sharpe (1990) and by Petersen and Rajan (1995). Sharpe (1990) explores a dynamic aspect of the lending relationship between bank and borrower: as banks lend to borrowers, they learn about the borrowers' credit quality. Banks can then use this information about borrowers' credit quality to extract rents from long-time clients. As a result, profit-maximizing banks will lend to new borrowers on terms that reflect the ex-post profits that will be earned on the borrowers who turn out to be good credit risks.

Petersen and Rajan combine this insight with banks' ex-post market power. For banks that will ex-post enjoy the ability exploit their monopoly power, the ability to cross-subsidize and take initial risks lending to new borrowers is higher. For banks that will ex-post face a competitive market for borrowers who turn out to be good risks, there is less opportunity for cross-subsidization. If market concentration is a proxy for ex-post market power, banks in

concentrated markets, because they earn monopoly rents on borrowers who eventually prove to be good risks, will have more ex-ante incentive to lend to new borrowers and invest in learning whether these borrowers are in fact good risks. This model of competition and credit has been motivated and tested using data on the borrowing practices of small firms. In this paper, I present the first evidence that this type of model can help us understand consumer borrowing patterns.

I use data from the 1983 SCF because that year is the only year in which the triennial survey contained geographic identifiers that can link households to local banking markets. This makes the 1983 Survey uniquely useful for addressing this aspect of consumer behavior in banking markets. Financial markets have changed dramatically since 1983. In particular, banking markets in the United States are no longer as geographically segmented as they were before 1994 Riegle-Neal Interstate Banking and Branching Efficiency Act repealed restrictions in interstate bank holding companies.

But the underlying economic forces are still at play, and this paper can be viewed within a larger context of empirical work that studies the relationship between consumer switching costs and credit market outcomes. Consumer switching costs introduce stickiness to consumer choices that have an impact similar to ex-post monopoly power. A large empirical literature on switching costs is surveyed by Klemperer (1995).

Papers that have focused on banking markets include a study by Kim, Kliger and Vale (2003) that used a structural model to estimate switching costs in the market for bank loans using aggregated data on bank loans and interest rates from a panel of banks in Norway. The authors estimate switching costs for borrowers of 4.1 percent of the loan value. Switching costs of this magnitude create a substantial lock-in effect for existing customers. Sharpe (1997), Hannan (2008), and Carbo-Valverde, Hannan, and Rodriguez-Fernandez (2009) combine data on bank deposit interest rates with data on household migration patterns across regions to estimate customer lock-in. The idea behind their analysis is that banks will price more aggressively to win new customers in regions seeing inflows of households, and will price less aggressively in

regions losing households. Each of these papers finds evidence that banks price services more aggressively in regions seeing immigration, evidence consistent with lock-in effects.

Turning back from the broader literature on consumer lock-in to the specific literature on market concentration and market power, a number of papers have looked at market structure and credit constraints for firms that are potential borrowers. Several of these papers are focused on assessing the level of credit constraints faced by minority-owned-businesses. Cavalluzzo and Cavalluzzo (1998) use the 1988-1989 National Survey of Small Business Finances (NSSBF), and find that minority small businesses are more likely to be denied credit than white-owned businesses. They find, however, that this effect is attenuated as credit markets become more competitive. Like this paper, Cavalluzzo and Cavalluzzo use self-reported measures of potential borrowers who were denied credit, and whose discouragement led them to avoid applying for credit. Bostic and Lampani (1999), and Cavalluzzo, Cavalluzo, and Wolken (1999) use a later iteration of the NSSBF and reach similar conclusions about the relationship between market structure and lending to minority-owned businesses.

Karceski, Ongena, and Smith (2005) investigate the impact of bank consolidation on the welfare of corporate borrowers, looking at the impact of bank merger announcements on borrowers' stock prices for a sample of publicly-traded firms in Norway. They find that on average, consolidating bank transactions lead to stock price declines of 1 percent among the banks' relationship borrowers. Their result is not inconsistent with my finding that increasing concentration in the consumer market lowers reported credit constraints: the Karceski, Ongena, and Smith sample frame is the set of borrowers currently borrowing from a particular bank, while this study focuses on the entire population, including borrowers, non-borrowers, and discouraged potential borrowers.

Although a number of papers have studied the relationship between banking market structure and commercial borrower outcomes, and other papers have investigated lock-in effects for both consumer and commercial borrowers, this paper is the first paper to investigate the

relationship between market concentration and consumer borrowing outcomes. The paper proceeds in four sections. The first section describes in more detail the data. The second section looks at the relationship between market concentration and consumer credit constraints and borrowing. The third section tests a second implication of the Petersen-Rajan model: that interest rates should fall more rapidly with the age of the bank-borrower relationship in competitive markets than in more concentrated markets. A final section concludes.

1. Data

The analysis that follows uses data from the 1983 Survey of Consumer Finances (SCF), a survey conducted every three years since 1983 by the Federal Reserve Board. The 1983 Survey sampled 4,262 households and asked a range of questions about household characteristics, income, and asset and liability totals. Of the 4,262 households sampled in the 1983 SCF, 438 were part of a high-income oversample group designed to provide a detailed picture of the asset holdings of the very wealthiest households. The locations of these households are not revealed on the public-use SCF dataset. The remaining observations come from an area sample, and of these households 2,553 are in 59 MSAs and can be linked to local information on financial market structure. **Table 1** presents summary statistics for the variables used in the analysis that follows. The first row presents the distribution of the variable used to measure credit constraint. This variable is based on responses to two survey questions; the first question asks whether the respondent has been turned down from credit in the past few years, or has not been given as much credit as requested. The precise wording of the first question is below:

TURNED DOWN FOR CREDIT IN LAST FEW YEARS?
Respondents were asked if he/she (or their spouse) had had a request for credit turned down by a particular lendor or creditor in the past few years, or had been unable to get as much credit as he/she had applied for.

1. yes, turned down
3. yes, unable to get as much credit as he/she wanted
5. not turned down

Households that either report being turned down for credit or report being unable to get as much credit as requested are considered credit constrained. The second question asks whether they have been dissuaded from applying for credit, meaning that they had thought about applying for credit at a particular place but changed their mind because they thought they might be turned down. The text of the question is below:

> DISSUADED FROM APPLYING FOR CREDIT?
> Respondents were asked if there had been any time in the past few years that he/she (or their spouse) had thought about applying for credit at a particular place, but changed their mind because he/she thought he/she might be turned down.
>
> 1. yes
> 5. no

In almost all of the analysis that follows, households are viewed to consider themselves credit constrained if they answer yes to either of the questions documented above. It is important to have both questions, because without the second question, changes in the share of households whose credit requests are turned down could reflect either true changes in credit constraint or changes in the share of households applying for credit, making the results more ambiguous than when the 'discouraged from applying' question is included as well. By the measure that includes both rejection and discouragement, I find that 23.3 percent of households in the recent sample consider themselves credit constrained. As the next row reports, 17.8 percent of households have had credit requests turned down, and 11.7 percent of households have resisted applying for credit because of concerns about being turned down. 6.2 percent of these households report both having credit requests denied *and* having failed to apply for credit because of concerns about being turned down.

Table 1 also documents the range in income in the sample. The mean in the sample is $25,266, and the range between the 10^{th} and the 90^{th} percentiles is $5,712 to $50,000. The median income in the sample is $21,000. For net worth, the mean is $78,605, and the median is $34,025. The 10^{th}-90^{th} percentile range is $150 to $180,658, reflecting the great variation in

wealth observed across American households. The mean household head age is 45.4 years, and the median is 42. As noted earlier, there is substantial variation in the interest rates that households report paying on their consumer and credit card debt. The mean rate paid is 14.4 percent, and the median is 16.1 percent. The range from the 25th to the 75th percentile is 10.9 percent to 18.3 percent. Approximately 64 percent of households report having any consumer debt at all.

This paper focuses on the relationship between ex-post switching costs of borrowers and ex-ante access to credit. To capture this variable in the context of monopoly power, we use the Herfindahl Index of market concentration. This index is 10,000 times the sum of squared market shares of the banks in each MSA, computed on the basis of deposits. Both the Justice Department and the Federal Reserve use the Herfindahl measure to capture the amount of competition in local banking markets. A completely monopolized market would have a Herfindahl Index of 10,000, while a market with 5 equal-size banks would have a Herfindahl Index of 2,000.

The use of a Herfindahl Index as a measure of market power is not without some controversy. There have been two competing views on Herfindahl Indexes. The structure-performance hypothesis argues that the measure reflects market power and that observed positive correlations between concentration and profitability can be explained by the exercise of this market power. A competing explanation, called the efficient structure hypothesis, argues that observed correlations between profitability and concentration do not reflect causation, but instead reflect a market outcome where dominant firms are both more profitable and enjoy greater market share. Berger and Hannan (1989) test these competing views using data on market concentration and the prices that banks charge for their services (which are more immune to the efficient structure critique than profitability measures) and find evidence strongly supporting the structure-performance hypothesis. This result provides a reasonable justification for our use of the Herfindahl index of market concentration as a measure of market power.

The SCF respondents live in 59 MSAs, and the mean Herfindahl index across these MSAs is 1643. The median is 1,561, and the range between 25th and 75th percentiles is 1,013 to 2,003. Reflecting the fact that more populous MSAs tend to have somewhat lower Herfindahl Indexes, these numbers are lower when weighted by household than when weighted by MSA.

2. Banking market concentration and borrower credit constraints

The first regressions estimate the relationship between market concentration and the share of borrowers reporting that they have had credit requests turned down or discouraged. In **Table 2**, equations (1), (2), and (3) estimate the same Probit specification:

(1) $\text{Prob}(\text{I}(\textit{credit constrained})_i^{MSA}) = \Phi(\alpha + \beta * \text{HHI}^{MSA} + X_i\Gamma)$

Equations (4), (5), and (6) fit an OLS model to a similar specification:

(2) $\text{I}(\textit{constrained})_i = \alpha + \beta * \text{HHI}_i^{MSA} + X_i\beta + \varepsilon_i$

The regressions also control for household age, and dummy variables control for household net worth and income. Columns (1) and (4) are based on regressions that include all households. Columns (2) and (5) include only households headed by respondents aged 40 and younger, while columns (3) and (5) include households headed by respondents older than 40. This split into older and younger households captures the cross-subsidization inherent in the Sharpe and Petersen-Rajan models: in markets where banks will ex-post enjoy market power over borrowers, they can make loans to new borrowers based on the anticipation of future profits. This drives my particular focus on self-reported credit constraints among the younger borrowers. If banks do not have the opportunity to earn profits on these borrowers later, as their credit quality is revealed, they will not ex-ante lend to them.

The Surveys of Consumer Finance are based on a stratified sample design, meaning that each observation is assigned a sampling weight. These sampling weights can be used to construct statistics, such as aggregate portfolio holdings, which represent the aggregate portfolio for US

households. In these regressions, however, we have followed standard practice and run the regressions on an unweighted basis. Use of the weights does not have a meaningful impact on the results, largely because the high-income oversample, a large number of observations with very low weights, has been excluded from the analysis because of the absence of geographic identifiers.

In this most simple reduced form, there appears to be a relationship between market concentration and the share of borrowers reporting being constrained. For the entire sample, the effect is statistically significant. An increase of 500 Herfindahl index points is associated with an increase of about 1.2 percentage points in the share of borrowers reporting that they are credit constrained. The effect is roughly double among the younger borrowers, and there is no significant effect among the borrowers older than 40. In the pooled samples, age is negatively associated with self-reported credit constraints: older borrowers are much less likely to report being credit constrained. Wealth and income are negatively associated with self-reported credit constraints: coefficients on both variables reflect richer borrowers being less credit-constrained.

Table 3 presents results that disaggregate responses to the two questions about credit constraints. Columns (1), (2), and (3) use a dependent variable based on whether the household reports being denied credit, while columns (4), (5), and (6) use a dependent variable based on whether the household reported not applying for fear of being turned down. The marginal effects (columns (1) and (4)) are approximately the same for each of the two variables. For the variable based on denial of credit (columns (2) and (3)), the difference between old and young borrowers is pronounced, with the impact of market concentration being much stronger among the younger borrowers than among the old. For the discouragement variable, the marginal effect of bank market power is not statistically different among the old versus the young borrowers.

While Tables 2 and 3 focused on households' self reported measures of credit constraints, **Table 4** looks at the relationship between bank market power and whether households report having consumer debt at all. In the MSAs where banks enjoy more market power, households are

more likely to report having consumer debt. The effect is particularly strong again among the younger set of borrowers, although the difference in coefficients between young and old borrowers is not as pronounced as in Table 2. In the entire population, an increase of 500 Herfindahl index points is associated with an increase of about 1.5 percentage points in the probability of reporting consumer debt. Households with higher income are more likely to report having consumer debt, while those with higher net worth are less so.

Table 5 applies a broader set of controls than Tables 2-4. To control for potential racial discrimination in borrowing opportunities, the regressions control for household race. The regressions also control for household education and for the size of the city in which the household lives.

There is important variation across states in the amount of assets that bankrupt borrowers are allowed to shield from their creditors. States like Texas have been particularly generous, protecting the entire value of borrowers' homes from creditors in the event of bankruptcy. Other states, such as Iowa, have policies that are much less generous toward borrowers who declare bankruptcy. Because these differences in state bankruptcy exemptions affect the return to bank lending, they may also affect the share of consumers who find that they are unable to get credit. To control for this effect, Table 5 includes variables capturing the generosity of state bankruptcy exemptions using data from Gropp, Scholz, and White (1997) to construct dummy variables based exemption generosity. Finally, the regressions in Table 5 control for the region in which the household resides. All of these controls do not attenuate the estimated impact of market concentration on households' self-reported credit constraints. They do somewhat attenuate the difference in the estimated coefficients between the older and younger subsamples, with the coefficients moving closer together.

A number of the coefficients on the additional controls are statistically and economically significant in their own right. Households headed by African-Americans are about 12 percentage points more likely to report being credit constraint than households headed by whites.

Households in states with more generous bankruptcy exemptions were 5-10 percent more likely to report credit constraints than households states where bankruptcy law is more favorable to creditors. Conditional on the other variables, household head education has no independent effect on the probability of reporting credit constraints. Households in the North Central region are somewhat less likely to report being credit constrained, although this effect is significant only at the 10 percent significance level.

3. Lending interest rates and borrower age by market competitiveness

Cross-subsidization over time in a borrower-lender relationship is key to the Petersen-Rajan model: a monopolist can recoup losses on loans to new borrowers through higher interest rates on subsequent loans to borrowers who turn out to be good risks. **Table 6** tests an implication of this cross-subsidization: that the slope of interest rates on consumer loans should be steeper in more competitive markets than in concentrated markets.

Table 6 presents evidence supportive of the cross-subsidization hypothesis. Equation (3) below is the empirical model fit in these equations:

(3) $INTRATE_i^{MSA} = \alpha + \beta * AGE_i^{MSA} + X_i\Gamma + \varepsilon_i$,

This model is fit separately on a sample of concentrated MSAs (with Herfindahl indexes above 1,800) and a sample of less concentrated MSAs (Herfindahl indexes below 1,800). In the more concentrated sample, the coefficient on the age variable is –0.27 (standard error 0.21), meaning that as age rises by 10 years, the reported interest rate on consumer borrowing falls by 27 basis points. In less concentrated markets, reported interest rates decline much more steeply with age. In equation (6), which controls for the full set of demographic control variables, the coefficient of –0.57 (0.18) implies that a 10 year increase in age is associated with a 57 basis point drop in the interest rate on consumer borrowing. This result is also consistent with the Petersen-Rajan model. In the competitive markets, the set of older potential borrowers who are still able to borrow is borrowing at much more favorable rates than the younger pool of borrowers. In the

more concentrated markets, cross-subsidization between older and younger borrowers flattens the relationship between age and interest rates paid on consumer borrowing.

4. Conclusion

This paper presents the first evidence on the relationship between market concentration in the banking sector and household reports of credit constraints. There is substantial evidence that more concentrated banking markets have fewer constrained borrowers, particularly among the young borrowers. There is also strong evidence for the type of cross-subsidization across borrowers that is a key element of theoretical models of concentration and credit constraints. The magnitude of these effects is large: moving from concentrated to competitive banking market regimes in 1983 is associated with a change in credit constraint similar to moving from a state where assets are unprotected in bankruptcy to a state offering substantial opportunities to shield assets from creditors.

American financial markets have changed substantially since the data used in this paper were collected. Many of these changes may have affected the relationship between banking market concentration and credit constraints, especially at the local level. In particular, banking markets may have become increasingly regional and national, as the relaxation of branching restrictions has enabled bank holding companies to expand and compete across a number of local markets. Perhaps most important, the proliferation of information technology and information about borrowers allows lenders to assess credit-worthiness of potential borrowers from afar almost as effectively as local banks can. Nevertheless, one can view local market concentration has one element of a set of factors influencing lenders' ex-post level of 'capture' of new borrowers. This paper provides strong evidence that the level of ex-post 'capture' matters for financial institutions' speculative lending to borrowers whose credit quality, ex-ante, they observe imperfectly.

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Table 1. Sample summary statistics. Data based on sample from 1983 Federal Reserve Board Survey of Consumer Finances. Banking market concentration provided by Philip Strahan, political variables from 1984 U.S. Statistical Abstract.

					Percentiles				
Variable	Unit	Obs.	Mean	S.D.	10th	25th	50th	75th	90th
SCF variables:									
Credit denied or discouraged	HH	2553	0.233	0.423	0	0	0	0	1
(denied)	HH	2553	0.178	0.382	0	0	0	0	1
(discouraged)	HH	2553	0.117	0.322	0	0	0	0	1
(both)	HH	2553	0.062	0.240	0	0	0	0	0
Dummy for consumer debt	HH	2553	0.642	0.480	0	0	1	1	1
Income	HH	2553	$25266	19922	5712	11303	21000	34050	50000
Net Worth	HH	2553	$78605	196872	150	4225	34025	89550	180658
Head age	HH	2553	45.4	16.9	25	31	42	59	70
Interest rate on consumer debt	HH		14.5%	6.8	4.7	10.9	16.6	18.3	21.0
Banking market concentration variables:									
Herfindahl Index	HH	2553	1586	846	562	991	1468	1935	2729
Herfindahl Index	MSA	59	1643	841	633	1013	1561	2003	2794

Table 2. Regressions of **consumer credit constraints** on **market concentration**. Probit regressions fit model Prob(I(*credit constrained*)$_i^{MSA}$)= $\Phi(\alpha + \beta*HHI^{MSA} + X_i\Gamma)$; OLS regressions are of form I(*credit constrained*$_i^{MSA}$) = $\alpha + \beta*HHI^{MSA} + X_i\Gamma + \varepsilon_i$, where I(*credit constrained*)$_i^{MSA}$ is set equal to 1 if the respondent reports having either been denied a loan in the past 5 years or has not applied for credit because of the anticipation of being denied a loan. HHI^{MSA} is the Herfindahl Index in the household's MSA's commercial banking sector, and X_i includes controls for age, income, and wealth. Standard errors in parenthesis corrected for MSA-level clustering.

Dependent variable	(1) Denied or discouraged	(2) Denied or discouraged	(3) Denied or discouraged	(4) Denied or discouraged	(5) Denied or discouraged	(6) Denied or discouraged
Technique	(Probit)	(Probit)	(Probit)	(OLS)	(OLS)	(OLS)
Sample	All	Age<=40	Age>40	All	Age<=40	Age>40
Variable						
HHI (/ 10000)	-0.88***	-1.12***	-0.41	-0.21**	-0.38***	-0.06
	(.33)	(0.32)	(0.53)	(0.08)	(0.11)	(0.08)
$\left.\frac{\partial E(discouraged\|\vec{x})}{\partial HHI}\right\|_{\vec{x}=\bar{\vec{x}}}$	-0.23	-0.41	-0.06	-0.21	-0.38	-0.06
Age (/ 100)	-2.79**	-0.78	-3.52***	-0.70***	-0.27	-0.59***
	(0.19)	(0.73)	(0.60)	(0.05)	(0.26)	(0.10)
Income variables:						
Income ≥ $ 10000	-0.10	-0.10	-0.23	-0.02	-0.04	-0.03
	(0.09)	(0.10)	(0.16)	(0.03)	(0.04)	(0.03)
Income ≥ $ 20000	-0.33***	-0.52***	-0.17	-0.10***	-0.19***	-0.02
	(0.09)	(0.11)	(0.15)	(0.03)	(0.04)	(0.03)
Income ≥ $ 35000	-0.49***	-0.54***	-0.62**	-0.13***	-0.20***	-0.10**
	(0.14)	(0.16)	(0.26)	(0.03)	(0.05)	(0.05)
Income ≥ $ 50000	-0.48***	-0.55***	-0.58**	-0.14***	-0.20***	-0.10**
	(0.15)	(0.21)	(0.27)	(0.04)	(0.06)	(0.05)
Net worth variables:						
Net worth ≥ $ 0	-0.15	-0.18	-0.09	-0.06*	-0.07	-0.03
	(0.10)	(0.14)	(0.16)	(0.04)	(0.05)	(0.04)
Net worth ≥ $ 10000	-0.22*	-0.24*	-0.18	-0.10**	-0.10*	-0.06
	(0.12)	(0.14)	(0.23)	(0.04)	(0.06)	(0.06)
Net worth ≥ $ 25000	-0.51***	-0.57***	-0.47**	-0.18***	-0.21***	-0.12**
	(0.10)	(0.13)	(0.19)	(0.03)	(0.05)	(0.05)
Net worth ≥ $ 100000	-0.77***	-0.82***	-0.74***	-0.21***	-0.27***	-0.16***
	(0.14)	(0.20)	(0.24)	(0.04)	(0.06)	(0.05)
Net worth ≥ $ 250000	-0.81***	-0.81***	-0.80***	-0.18***	-0.26***	-0.014**
	(0.17)	(0.29)	(0.30)	(0.04)	(0.08)	(0.06)
Constant	1.14***	0.67***	1.46***	0.78***	0.74***	0.61***
	(0.13)	(0.24)	(0.37)	(0.05)	(0.09)	(0.08)
R^2	0.171	0.086	0.130	0.170	0.108	0.088
N	2553	1199	1354	2553	1199	1354

* / ** / *** : Significant at 10 / 5 / 1 % level.

Table 3. Regressions of **consumer credit constraints** on **market concentration**. Probit regressions fit model Prob(I(*credit denied*)$_i^{MSA}$)= $\Phi(\alpha + \beta*HHI^{MSA} + X_i\Gamma)$ in columns (1)-(3); Prob(I(*credit discouraged*)$_i^{MSA}$)= $\Phi(\alpha + \beta*HHI^{MSA} + X_i\Gamma)$ in columns (4)-(6). Denied credit variable captures respondents who report having either been denied a loan in the past 5 years. Discouragement variable captures households that report having avoided applying for credit because of the anticipation of being denied a loan. HHI^{MSA} is the Herfindahl Index in the household's MSA's commercial banking sector, and X_i includes controls for age, income, and wealth. Standard errors in parenthesis corrected for MSA-level clustering.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Denied	Denied	Denied	Discouraged	Discouraged	Discouraged
Technique	(Probit)	(Probit)	(Probit)	(Probit)	(Probit)	(Probit)
Sample	All	Age<=40	Age>40	All	Age<=40	Age>40
Variable						
HHI (/ 10000)	-0.52*	-0.91***	0.26	-0.96***	-0.69	-1.89***
	(.31)	(0.32)	(0.62)	(0.36)	(0.45)	(0.67)
$\left.\frac{\partial E(discouraged\|\vec{x})}{\partial HHI}\right\|_{\vec{x}=\bar{\vec{x}}}$	-0.11	-0.30	0.03	-0.13	-0.16	-0.11
Age (/ 100)	-2.47***	-0.88	-3.04***	-2.08**	0.36	-3.20***
	(0.23)	(0.76)	(0.60)	(0.90)	(0.80)	(0.79)
Income variables:						
Income ≥ $ 10000	0.10	0.13	-0.10	-0.21**	-0.35***	-0.06
	(0.09)	(0.10)	(0.20)	(0.09)	(0.11)	(0.17)
Income ≥ $ 20000	-0.02	-0.17	0.13	-0.62***	-0.83***	-0.44**
	(0.11)	(0.11)	(0.18)	(0.12)	(0.15)	(0.22)
Income ≥ $ 35000	-0.18	-0.15	-0.38	-0.75***	-1.00***	-0.53*
	(0.15)	(0.16)	(0.30)	(0.15)	(0.23)	(0.29)
Income ≥ $ 50000	-0.24	-0.14	-0.53*	-0.53***	-0.84***	-0.32
	(0.17)	(0.23)	(0.29)	(0.19)	(0.25)	(0.32)
Net worth variables:						
Net worth ≥ $ 0	-0.04	-0.12	0.21	-0.21*	-0.21*	-0.17
	(0.12)	(0.14)	(0.26)	(0.11)	(0.13)	(0.21)
Net worth ≥ $ 10000	-0.10	-0.15	0.04	-0.21	-0.27	-0.09
	(0.13)	(0.14)	(0.29)	(0.15)	(0.17)	(0.26)
Net worth ≥ $ 25000	-0.43***	-0.54***	-0.21	-0.50***	-0.50***	-0.62**
	(0.12)	(0.14)	(0.26)	(0.14)	(0.16)	(0.29)
Net worth ≥ $ 100000	-0.62***	-0.74***	-0.40	-0.86***	-0.74***	-1.14***
	(0.15)	(0.21)	(0.28)	(0.17)	(0.24)	(0.34)
Net worth ≥ $ 250000	-0.68***	-0.76***	-0.41	-0.92***	-0.77***	-1.25***
	(0.18)	(0.30)	(0.37)	(0.28)	(0.42)	(0.29)
Constant	0.45***	0.13	0.47	0.57***	-0.13	1.14***
	(0.14)	(0.23)	(0.35)	(0.14)	(0.25)	(0.49)
R^2	0.135	0.054	0.108	0.169	0.106	0.167
N	2553	1199	1354	2553	1199	1354

* / ** / *** : Significant at 10 / 5 / 1 % level.

Table 4. Regressions of **consumer debt dummy** on **market concentration**. Probit regressions fit model Prob(I(*HH has non-mortgage debt*)$_i^{MSA}$)= $\Phi(\alpha + \beta*HHI^{MSA} + X_i\Gamma)$; OLS regressions are of form I(*HH has non-mortgage debt*$_i^{MSA}$)= $\alpha + \beta*HHI^{MSA} + X_i\Gamma + \varepsilon_i$. HHI^{MSA} is the Herfindahl Index in the household's MSA's commercial banking sector, and X_i includes controls for age, income, and wealth. Standard errors in parenthesis corrected for MSA-level clustering.

Dependent variable	(1) Consumer debt dummy	(2) Consumer debt dummy	(3) Consumer debt dummy	(4) Consumer debt dummy	(5) Consumer debt dummy	(6) Consumer debt dummy
Technique	(Probit)	(Probit)	(Probit)	(OLS)	(OLS)	(OLS)
Sample	All	Age<=40	Age>40	All	Age<=40	Age>40
Variable						
HHI (/ 10000)	0.79**	1.13***	0.60	0.23**	0.30**	0.19
	(0.40)	(0.43)	(0.45)	(0.12)	(0.11)	(0.14)
$\left.\frac{\partial E(debtdum\|\vec{x})}{\partial HHI}\right\|_{\vec{x}=\bar{\vec{x}}}$	0.29	0.34	0.24	0.23	0.30	0.19
Age (/ 100)	-2.38***	0.75	-4.44***	-0.83***	0.23	-1.49***
	(0.20)	(0.82)	(0.37)	(0.06)	(0.25)	(0.11)
Income variables:						
Income ≥ $ 10000	0.50***	0.62***	0.33***	0.18***	0.22***	0.11***
	(0.08)	(0.11)	(0.11)	(0.03)	(0.04)	(0.04)
Income ≥ $ 20000	0.92***	1.00***	0.66***	0.31***	0.32***	0.23***
	(0.09)	(0.12)	(0.12)	(0.03)	(0.04)	(0.04)
Income ≥ $ 35000	1.13***	1.07***	0.87***	0.38***	0.34***	0.29***
	(0.12)	(0.19)	(0.17)	(0.04)	(0.05)	(0.05)
Income ≥ $ 50000	1.20***	1.15***	0.87***	0.40***	0.36***	0.30***
	(0.10)	(0.19)	(0.16)	(0.03)	(0.05)	(0.05)
Net worth variables:						
Net worth ≥ $ 0	-0.31***	-0.55***	0.06	-0.10***	-0.17***	0.02
	(0.12)	(0.14)	(0.18)	(0.04)	(0.04)	(0.06)
Net worth ≥ $ 10000	-0.12	-0.37*	0.20	-0.04	-0.12**	0.07
	(0.15)	(0.19)	(0.27)	(0.04)	(0.05)	(0.08)
Net worth ≥ $ 25000	-0.07	-0.45***	0.30	-0.02	-0.13***	0.09
	(0.13)	(0.17)	(0.21)	(0.04)	(0.05)	(0.07)
Net worth ≥ $ 100000	-0.46***	-0.59***	-0.15	-0.14***	-0.17***	-0.05
	(0.13)	(0.20)	(0.22)	(0.04)	(0.05)	(0.07)
Net worth ≥ $ 250000	-0.75***	-1.15***	-0.30	-0.24***	-0.34***	-0.11
	(0.16)	(0.30)	(0.23)	(0.05)	(0.10)	(0.07)
Constant	0.94***	0.06	2.07***	0.83***	0.53***	-0.11
	(0.19)	(0.30)	(0.34)	(0.06)	(0.10)	(0.07)
R^2	0.163	0.079	0.198	0.204	0.091	0.248
N	2553	1199	1354	2553	1199	1354

* / ** / *** : Significant at 10 / 5 / 1 % level.

Table 5. Regressions of **consumer credit constraints** on **market concentration**. Probit regressions fit model Prob(I(*credit constrained*)$_i^{MSA}$)= $\Phi(\alpha + \beta*HHI^{MSA} + X_i\Gamma)$; OLS regressions are of form I(*credit constrained*$_i^{MSA}$) = $\alpha + \beta*HHI^{MSA} + X_i\Gamma + \varepsilon_i$, where I(*credit constrained*)$_i^{MSA}$ is set equal to 1 if the respondent reports having either been denied a loan in the past 5 years or has not applied for credit because of the anticipation of being denied a loan. HHI^{MSA} is the Herfindahl Index in the household's MSA's commercial banking sector, and X_i includes controls for age, income, wealth, household head education and race, the city size, dummy variables capturing the generosity (to borrowers) of state-level bankruptcy exemptions, and dummy variables capturing 4 census regional divisions. Standard errors in parenthesis corrected for MSA-level clustering.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Denied or discouraged	Denied or discouraged	Denied or discouraged	Denied or discouraged	Denied or discouraged	Denied or discouraged
Technique	(Probit)	(Probit)	(Probit)	(OLS)	(OLS)	(OLS)
Sample	All	Age<=40	Age>40	All	Age<=40	Age>40
Variable						
HHI (/ 10000)	-0.92**	-1.06***	-0.62	-0.23***	-0.35***	-0.12
	(0.38)	(0.32)	(0.64)	(0.09)	(0.10)	(0.10)
$\left.\frac{\partial E(discouraged\|\vec{x})}{\partial HHI}\right\|_{\vec{x}=\bar{\vec{x}}}$	-0.24	-0.39	-0.09	-0.23	-0.35	-0.12
Age (/ 100)	-2.81***	-0.53	-3.41***	-0.67***	-0.16	-5.35***
	(0.22)	(0.76)	(0.65)	(0.05)	(0.26)	(1.04)
Additional dummy variables:						
Household income	Yes	Yes	Yes	Yes	Yes	Yes
Household net worth	Yes	Yes	Yes	Yes	Yes	Yes
Household head education	Yes	Yes	Yes	Yes	Yes	Yes
Household head race	Yes	Yes	Yes	Yes	Yes	Yes
City size	Yes	Yes	Yes	Yes	Yes	Yes
State bankruptcy exemption level	Yes	Yes	Yes	Yes	Yes	Yes
Region (4 census)	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.193	0.113	0.167	0.192	0.146	0.115
N	2553	1194	1350	2553	1199	1354

* / ** / *** : Significant at 10 / 5 / 1 % level.

Table 6. Regressions of **consumer credit interest rates** on **age**, by concentration of market.
OLS regressions are of form $INTRATE_i^{MSA} = \alpha + \beta * AGE_i^{MSA} + X_i\Gamma + \varepsilon_i$, where $INTRATE_i^{MSA}$ is the interest rate on consumer and credit card borrowing. X_i includes controls for income and wealth. .
Standard errors in parenthesis corrected for MSA-level clustering. .

	(1)	(2)	(3)	(4)	(5)	(6)
Sample	Concentrated MSAs (HHI ≥ 1800)			Competitive MSAs (HHI < 1800)		
Technique	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)
Variable						
Age (/10)	-0.27	-0.22	-0.22	-0.56**	-0.53**	-0.57**
	(0.21)	(0.24)	(0.23)	(0.15)	(0.16)	(0.18)
Dummy variables:						
Bankruptcy exemptions		Yes	Yes		Yes	Yes
Income		Yes	Yes		Yes	Yes
Net worth		Yes	Yes		Yes	Yes
Education			Yes			Yes
Race			Yes			Yes
Region			Yes			Yes
Constant	16.10**	12.72**	10.03**	16.58**	14.02**	11.67**
	(0.90)	(2.01)	(2.75)	(0.79)	(1.08)	(1.70)
R^2	0.003	0.003	0.045	0.013	0.013	0.082
N	570	570	570	1062	1062	1062

* / ** / *** : Significant at 10 / 5 / 1 % level.