Hitting the Wall: Credit as an Impediment to Homeownership

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Abstract

This paper analyzes the changing trends in credit quality for the overall population and demographic subgroups in the United States. The paper discusses the role that poor credit quality plays in limiting household access to homeownership. We begin by tracing how the proportion of the overall, minority, and lower-income populations that face credit-quality constraints have evolved over the past decade. We find that disadvantaged populations have worse credit quality and that credit quality has deteriorated over time, exclusively among renters. Policies to increase homeownership rates must face this fact. Key credit history blemishes are identified in this context and potential strategies for mitigating these problems are highlighted.

Introduction

Representing the "American Dream," homeownership has long held a special place in the United States. A significant fraction of the typical American household's wealth is wrapped up in its primary residence, which makes homeownership a vital investment tool (Kennickell, Starr-McCluer, and Surette, 2000). Moreover, homeownership has been found to have ancillary benefits, such as improved homeowner citizenship, better health outcomes for members of a homeowner's family, and a lower incidence of neighborhood challenges such as crime and blight (Aaronson, 2000; DiPasquale and Glaeser, 1999; Rohe, McCarthy, and van Zandt, 1996; Haurin, Dietz and Weinberg, 2002). These perceived benefits have been the motivation for the many homeownership incentives extended by all levels of government, including the mortgage interest deduction for federal income tax calculations and the Bush Administration's American Dream Downpayment Initiative, whose goal is to dramatically increase homeownership rates among lower-income households.

Given the important role that homeownership plays for households and communities in the United States, barriers to homeownership are an important social and public policy issue. This is especially true for minority and lower-income communities, many of which have struggled to build and maintain the wealth and stability that homeownership has been shown to confer. Identifying how changing credit quality impacts access to homeownership for middle and low income groups is a key first step to informing policies to overcome these barriers.

Many changes in credit practices, including the emergence of a sub-prime market, occurred between 1989 and 2001 with implications for the distribution of credit quality across the population. This article examines how credit quality – poor credit quality being one of the three major financial barriers to homeownership that households must overcome – has evolved during this period. The focus is on the distribution of credit quality and the incidence of poor credit quality, with an eye toward identifying those segments of the population that have seen significant improvements or setbacks over the past decade. The results of the analysis are considered in the context of homeownership and the success of policy initiatives designed to increase the homeownership rate. Given

areas of current policy focus, a central issue is the experience of minority and lower-income individuals and their prospects looking forward.

Background

Many researchers have studied the extent to which households have been unable to become homeowners due to borrowing constraints, which include income, wealth, and credit quality limitations. Most of this work has centered on the importance of income and wealth constraints[1], with only more recent studies explicitly quantifying the importance of poor credit quality as a barrier to homeownership (Rosenthal; BBCW 2003). This recent research has found that all three constraints have been important, with insufficient wealth being the biggest barrier for households contemplating homeownership. Rosenthal (2002) in particular finds that credit quality is indeed a barrier to homeownership for households, as bankruptcy and a history of delinquent loan repayment are positively related to the likelihood of being credit constrained but unrelated to the probability of wanting to own a home. The key finding is that the removal of credit constraints, as defined by Rosenthal, would increase the homeownership rate by about 4 percentage points (or about 6 percent).

Recent research on the role of credit quality provides evidence that credit quality is becoming an increasingly important barrier to homeownership. BBCW (2003), like Rosenthal (2002), incorporates credit quality into the analysis of terminal outcomes. But, in addition, BBCW distinguishes among the effects of income-based, wealth-based, and credit-based constraints and quantifies the importance of each over time.

BBCW tracks how the impact of each type of constraint has evolved during the 1990s. The mortgage industry has expended a substantial effort to provide "affordable lending" products in recent years. The increased prevalence of these products, which are designed to be more accessible to households with relatively limited means in terms of income and wealth, coincides with declines in the importance of income and wealth constraints. Further, the widespread use of automated underwriting, based largely on credit scores established by national credit agencies, has migrated from consumer credit

[1] See Rosenthal (2002), Stiglitz and Weiss (1981), Linneman and Wachter (1989), Zorn (1989), Haurin, Hendershott, and Wachter (1997) and Quercia, McCarthy and Wachter (2003)

to mortgage credit markets only fairly recently, which suggests that credit-based constraints may have become more important over time.

BBCW (2003) finds that in 1998 the homeownership rate among recent movers would increase by 10 percent if those households with poor credit quality had had unblemished credit records.[2] This compares to a 6 percent increase for a comparable thought experiment in 1989. Thus, for this population , the importance of credit quality constraints nearly doubled during the 1990s.

Several researchers have directly examined how borrowing constraints have impacted minority and lower-income households. Wachter et al. (1996) and Quercia, McCarthy and Wachter (2003) demonstrate that income, and in particular wealth, constraints are a significant impediment to homeownership for "underserved" groups in the population, including younger families, low-income individuals, and especially, minority households. Similarly, Rosenthal (2002) finds that the effects of borrowing constraints are most pronounced among Hispanic households and lower-income households. However, unlike BBCW, these papers do not separately identify the role of credit quality and thus could not estimate the impact of changing credit quality across sub-groups over time. Though BBCW accomplishes this, the research is based on a sample of recent movers. While the results indicate that over time credit quality has become more of a constraint in the homeownership decision for recent movers, the paper does not examine how the distribution of credit quality for the U.S. population has changed over time. Given the development of the sub-prime market and growth of credit and debt, such change is likely.

Thus, this paper uses the Survey of Consumer Finance's (SCF) representative sample of the U.S. population to measure how pervasive credit problems are to households in the U.S., how they are distributed across population subgroups, and how they have changed over time.[3] The current research blends the focus on the experiences of segments of the population that these latter studies feature with the intertemporal emphasis of BBCW

[2] BBCW defines recent movers as those households that have moved in the last two years. These households represent a sample that recently faced the choice of whether to rent or buy a home.

[3] We also choose to focus on changes in credit quality over time rather than on wealth or income constraints. While the evidence is that wealth constraints remain important in access to homeownership, the ability to overcome this barrier depends on savings which is linked to the use of credit. The ability to pay credit in a timely way and the ability to repay credit allows growth of savings. Thus a measure of credit quality is likely to be linked to the ability to overcome the wealth constraint as well.

(2003). The analysis quantifies the extent to which credit quality constraints are a significant factor for households as they consider homeownership and other purchases that will require some degree of indebtedness. It also provides insights as to whether the importance of credit constraints have increased, lessened, or remained the same. The study does so by stratifying the population by demographic subgroups, including income and ethnicity, which permits an assessment of how these trends vary across various segments of the population. If such variation exists, then public policy might seek to address this, particularly if trends indicate that minority and lower-income populations have fallen behind, and improve the standing of the disadvantaged populations.

Credit quality: What are the trends?

For this portion of the analysis, we use the Survey of Consumer Finances (SCF), which provides detailed information on U.S. families' assets and liabilities, use of financial services, income, and housing and demographic characteristics.[4] Household balance sheet and financial variables used in this study include liquid and semi-liquid financial assets; total non-housing assets; monthly mortgage payments and other monthly debt payments; and percent down payment at the time of purchase of the primary residence (for households with a home mortgage).[5] Housing-related variables employed include whether the household rents or owns, date of moving into the current residence (which, combined with the survey date, yields length of tenure), and the original purchase price and current house value (for owners). Demographic variables employed include age, years of education, marital status and number of dependents, and racial/ethnic classification. The SCF is a triennial survey, and our analysis uses data from the 1989, 1995, 1998, and 2001 surveys.[6]

[4] The SCF is a triennial survey of U.S. households sponsored by the Board of Governors of the Federal Reserve System in cooperation with the U.S. Department of the Treasury, and conducted by the Survey Research Center at the University of Michigan.

[5] Liquid and semi-liquid financial assets as defined by the SCF include all financial assets other than long-term savings instruments, such as pension plans, that cannot be borrowed against.

[6] The SCF employs a dual-frame sample design that overlays a standard geographically based random sample with a special sample of relatively wealthy households (Kennickell, 2000). Weights are provided for combining observations from the two samples to make estimates for the full population. We estimate regression models without weights but use sample weights when calculating summary statistics and predictions based on the estimated equations in order to generate summary statistics and predictions representative of the United States.

We identify an individual's credit quality by using a procedure based on the "credit scoring" statistical methodology used by most credit-granting institutions.[7] Using a database of credit records from the Board of Governors of the Federal Reserve System, we develop an empirical model of a credit score by regressing credit score on various individual characteristics chosen to match those available from the SCF survey in all four survey years.[8] Because the data are proprietary, we are restricted on the extent to which we can report further details of the specification or estimation results.[9] Given the model each household in the SCF receives a predicted credit score by calculating **Zb**, where **Z** consists of the values of the variables included in the regression model for the household and **b** is the vector of estimated parameters from the credit score model.[10]

Credit-constrained individuals are defined as those whose credit score falls below some minimum threshold level below which credit is unlikely to be extended. The mortgage industry generally views individuals with credit scores in about the bottom 20 percent of the national credit score distribution as not of good credit quality, and those in about the 20-25th percentile range as requiring "extra attention."[11] Therefore, we adopt the 22nd percentile of the score distribution in our credit records database (a score of 620) as an important threshold for identifying a credit-constrained individual.[12] Along similar lines, the mortgage industry generally views individuals with credit scores exceeding 660

Beginning with the 1989 survey, missing data in the SCF have been imputed using a multiple imputation model, as described in Kennickell (1991) and Kennickell (1998). Each missing value in the survey is imputed five times, resulting in five replicate data sets, referred to as "implicates." Here, we pool the five implicates and adjust regression standard error estimates for the multiple imputation, following the procedure described in Kennickell (2000).

[7] For a more complete discussion of credit scoring, see Avery, Bostic, Calem, and Canner (1996).

[8] The credit record database contains credit scores on a nationally representative sample of about 250,000 individuals, along with their full credit records. Scores range from 480 at the 1st percentile to 820 at the 99th percentile, with a median of 716 and mean of 696, and with a lower score indicating greater credit risk (lower probability of repayment).

[9] Some of the key predictive variables in the credit score model are indicators for 30-day delinquency and 60-day or longer delinquency within the past year; aggregate balance and utilization rate on bank credit cards; and age of the individual.[9] The R^2 for the imputation regression equation is .70; predicted scores range from 561 at the 1st percentile to 818 at the 99th percentile, with a median of 738 and a mean of 724.

[10] The main limitation in attempting to predict scores and the main source of unexplained variation in scores in the imputation equation are lack of information in the SCF on episodes of delinquency more than one year old, accounts in collection, and derogatory public records (other than bankruptcy). Moreover, even delinquencies within the past year may be underreported in the SCF.

[11] These ranges correspond to individuals with FICO scores below 620 and those with FICO scores between 620 and 660; see www.ficoguide.com.

[12] About 20 percent of the full SCF sample for 1998 had imputed scores in this range, suggesting that the proportion of SCF respondents of with low credit quality is reasonably close to the proportion of such individuals in the general population.

as being clearly creditworthy and not requiring more time-consuming file reviews. We therefore also use this cutoff to measure the percentage of the population likely to be subject to more extensive reviews, which could serve as a deterrent for those considering becoming homeowners.

The credit scoring procedure was applied to each observation in the 1989, 1995, 1998, and 2001 surveys. Thus, in addition to identifying the cross-sectional distributions of credit scores, we can also identify how this distribution has shifted over the past 12 years.

Results

The estimates provide many insights regarding the general state of credit quality in the United States and how it has changed over the past decade (Table 1). The first key observation is that average credit quality is good, as both the mean and median credit score for the population are well above the 660 threshold that is typically the most stringent requirement lenders use. Moreover, average credit quality has been relatively stable over time.[13]

That said, the distribution of credit quality is skewed, with the number of people having very poor credit quality exceeding the number with very strong credit histories. Consistent with this observation, a significant percentage of the population is credit-constrained, independent of how being constrained is defined. Importantly, estimated [we do not use actual credit scores, although we could if they were available] credit quality has deteriorated for the population, as the percentage that was estimated to be credit constrained in 2001 was, depending on the threshold chosen, either 27 or 40 percent higher than the corresponding percentage in 1989. By 2001, one-sixth of the population was estimated to be unlikely to be rated highly for consumer credit [? Why are we calling this consumer credit when we earlier explained our use of 620 as from the mortgage lender perspective?] AGREED, WE SHOULD CALL IT MORTGAGE CREDIT AND USE THE HIGHLY AND MODERATELY CREDITWORTHY (620 threshold) and almost one-quarter would not be viewed favorably for mortgage credit (660 threshold).

[13] Estimated average credit quality was a bit higher in the 1995 and 1998 samples.

The consistency of the population's average estimated credit quality masks considerable variation in the experiences of subgroups in the population. As one example, we observe divergent trends by ethnicity, as the average estimated credit quality for whites increased through the 1990s while the average credit quality for minorities (blacks and Latinos) declined. These divergent trends are also present in the constraint estimates, as the percentage of credit-constrained minorities grew significantly while the percentage of credit-constrained whites rose only slightly.

Similar divergences are seen when the population is stratified by income, education, and age. Average estimated credit quality for lower-income individuals fell, while the average quality for upper-income individuals, which was already quite high in 1989, had increased further by 2001. Constraint trends for lower- and upper-income populations also moved in opposite directions. Perhaps surprisingly, among upper income individuals, blacks had significantly worse credit quality than all others, particularly in 1989 (not shown). While the credit quality of these blacks was still well above the important 660 cutoff, it does suggest that cultural and perhaps other factors play an important role in how blacks interact with credit markets. Though beyond the scope of the current study, this issue merits additional attention by researchers.

Similarly, the less-educated saw their credit quality fall while those with much more education had credit quality improvements. This divergence is especially evident in the credit constraint estimates, where the percentage of credit-constrained people with less than a high school degree more than doubled (620 threshold) while the percentage of credit-constrained people with some graduate school training fell by 33 percent. [I THINK WE MIGHT WANT TO DROP THE AGE DISCUSSION, BECAUSE AGE IS EXPLICITLY IN THE SCORING MODEL.I agree] Regarding age, the young had credit quality deterioration while senior citizen credit quality increased significantly. By 2001, members of the youngest cohort were more likely to be constrained than or unconstrained at the 660 level. By contrast, as a group, senior citizens had the best credit quality of any group we examined. This could be a function of a number of factors, including experience with credit markets and a conservative approach to credit arising from Depression-era experiences.

Credit trends and tenure

While the overall trends are illuminating from a general credit policy perspective, for the purposes of housing policy and the issue of increasing homeownership rates it is more useful to evaluate the trends separately among renters and homeowners. This breakout provides initial evidence regarding the extent to which poor credit quality is likely to impede efforts to increase homeownership. Such estimates can also indicate the degree to which the importance of credit quality, and in particular the role that poor credit quality has played in limiting household options, has grown or declined over the 1990s. Further, to gain additional insights as to how trends vary across the population, we conduct this analysis by interacting the grouping categories identified in Table 1 to generate pairwise statistics.

The first set of results, which partitions the samples by race and income, reveal a striking pattern. The relatively stable average credit quality found for the overall population masks starkly different experiences among renters and homeowners. During the 1990s, estimated credit quality for homeowners improved. This was a broad phenomenon, as it held for virtually every race-income combination in the sample. Similarly, in contrast to the rise in the percentage of credit-constrained individuals seen in the full samples, the percentage of credit-constrained homeowners fell in a majority of the categories. Thus, for homeowners, credit quality appears to have become less important as a barrier to obtaining consumer and mortgage credit.

The homeowner experience differs substantially from the renter experience. For renters, the 1990s represent a period of significant credit quality deterioration. Average credit quality declined by about 3 percent, and average credit quality for renters in 2001 averages hovered just above the 660 threshold, an important cutoff for mortgage credit. The decline in renter credit quality is perhaps most evident when one examines how the incidence of credit constraints has changed over the decade. Here, the percentages of renters that are constrained increased by more than 75 percent using the 660 threshold and nearly doubled at the 620 cutoff.

As was the case for homeowners, the renter trends are not limited to a few subgroups. Rather, the same patterns are observed for all racial categories and among lower-income groups. In the context of homeownership attainment, NEW EDIT HERE. minority and

lower-income renters appear to be particularly challenged, as 55 to 65 percent of minority renters and almost half of the lower-income renters were credit-constrained at 660. Thus, homeownership for these "vulnerable" groups is less likely from a credit perspective unless their members are willing and able to secure more costly credit in subprime mortgage markets.

Table 3 repeats this exercise by interacting the income quintile and urban locational variables. Here again, the homeowner/renter dynamic observed in Table 2 holds sway. In all three locational categories, average homeowner credit quality rose and average renter credit quality fell through the 1990s. Consistent with the lack of notable distinctions observed in the full population between individuals located in central city, suburban, and rural areas, the size of the increases and decreases are similar across the location groups.

Tables 4 through 6 continue the presentation of interactions between various population groupings and offer the same results. In all cases, only renters show a deterioration in average credit quality and an increase in the incidence of binding credit constraints. For homeowners, average credit quality generally rises between 1989 and 2001 and the incidence of binding credit constraints falls. Moreover, among renters, the tables show that "vulnerable" populations – those with the fewest resources and those that have historically had limited access to credit markets – fared the worst and now face considerable credit-related challenges to achieving homeownership.

Central city and suburban minority renters have had their average credit quality plummet from above 660 to 600 and below in some cases (Table 4). In addition, over 60 percent of the people in these four categories are constrained using a 660 cutoff. Table 5 introduces education as a factor and the results show that the degree of renter credit quality deterioration rises as a renter's level of education falls. Poorly educated minorities fare particularly badly, with median credit scores around the 620 cutoff for consumer credit (blacks with less than a high school degree are an exception, barely). For these groups, the incidence of being credit-constrained has soared to 45 or 50 percent, with some categorical cells climbing well above this. Table 6 shows that lower-income renters with relatively little education show the greatest declines in average credit quality.

For this group, the incidence of binding constraints is high using either the 620 threshold (35-45% incidence) or the 660 threshold (over 50%).

Additional analysis (not shown in tables) revealed that younger minority renters show the largest quality deterioration. Unlike other cases, minority deterioration occurs throughout virtually the entire age distribution; only minority senior citizen renters have increases in average credit quality. As before, this result raises questions as to the origins of poor minority credit performance, as it suggests that extended experience in credit markets may not translate into improved performance for many minority individuals.

In these tables, there is one notable exception to the overall homeowner/renter credit quality dynamic that prevailed during the 1990s. Renters with a graduate school education did not show deterioration in credit quality. Average credit quality rose – median credit quality rose from 716 to 722 – and the incidence of being credit-constrained either fell or remained essential flat. It thus seems that this group is qualitatively different from other renter groups. Perhaps these individuals are identical to homeowners with these characteristics, except that they have a preference for renting. This seems plausible, given that those with graduate school educations generally have ample incomes and significant accrued wealth and, given their strong credit scores, could likely achieve homeownership. By contrast, renters in other categories may have a preference for ownership but have limited options due to wealth and credit constraints.[14]

Validation of the trends: Regression estimates

To account for any correlation between income, race, education, age, and location that exists in the sample, regressions of our measures of credit quality on individual characteristics were estimated. The results of these estimates, which are shown in Tables 7 through 9, corroborate the earlier findings. In each sample year, lower-income individuals, people with less education, ethnic minorities, and younger people had significantly lower estimated credit scores and were more likely to be credit constrained than others in the population. The biggest effects are associated with age, with the very young being severely disadvantaged compared to senior citizens. Among the racial

[14] The other renter category that showed no deterioration in credit quality was senior citizens (not shown). Like highly educated renters, this population might be more like homeowners save a preference for renting.

categories, being black is associated with the largest effects, and not surprisingly, the income and education effects were largely monotonic: more income and more education were both associated with improvements in credit score and reductions in the likelihood of being credit constrained.

The tables also document what appears to be a general deterioration in credit quality among the "disadvantaged" or "vulnerable" groups during the analytical period. Table 7 shows that the average credit score was almost identical in 1989 and 2001. However, the estimated regression coefficients for income, race, and age are significantly larger in 2001 than in 1989, indicating that the magnitude of the effect – in this case, a reduction in credit quality – is larger in 2001. Interestingly, the differences for the education coefficients, particularly at the extremes, are not significantly different in the two years. This suggests that the education effect observed in the cross tabs is simply an artifact of the correlation between level of education and race and income characteristics.

Tables 8 and 9, which show the results for the likelihood of being credit constrained, tell the same story. Regardless of the credit score threshold used, being an individual in a disadvantaged group was associated with a higher likelihood of being credit constrained, sometimes a considerably higher likelihood. For example, having an income in the lowest income quintile basically doubles one's likelihood of being credit constrained by either metric. The effect of being black is almost the same, although the effect using the 660 cutoff is a bit smaller. In addition, the deterioration in credit quality observed in earlier tables also is present in the likelihood of being credit constrained estimates. The marginal effect of being a minority, lower-income, or young on the probability of being credit constrained was greater in 2001 than in 1989, and caused members of these groups to be more likely to be credit constrained in the more recent year.

For each year, we also run a regression that includes a dummy variable indicating whether the individual is a household or renter to further explore the prior observation that credit quality for renters deteriorated relative to homeowners. The results, shown in the second set of columns for a given year in tables 7 through 9, corroborate the earlier findings. Renter credit quality is worse than homeowner credit quality, whether measured by credit score or the probability of being credit-constrained. Because the estimates differ in their intercept and coefficient values, the most direct way to

demonstrate this is by reporting the predicted likelihoods of being constrained for individuals that are identical save their tenure choice. For example, in 1989, a 40-year old white, college-educated homeowner who is in the 50 percentile of the income distribution and lives in the suburb has a 20.8 (12.3) percent probability of being credit-constrained at the 620 (660) threshold, while a person who is identical except for being a renter has a probability of 24.2 (15.5) percent.[15] Other simulations of this sort suggest that, on average, renters have a 20 to 25 percent higher probability of being constrained at the 620 level and a 15 to 20 percent higher probability of being constrained at the 660 level.

The data also indicate deterioration of credit quality over time. For example, our hypothetical homeowner from above saw their likelihood of being credit-constrained at the 660 threshold fall from 20.8 to 15.1 while the hypothetical renter's probability of being credit constrained rose from 24.2 percent to 29.3 percent. Consistent with the results in tables 2 through 6, the deterioration of renter credit quality relative to the 660 and 620 thresholds was were even more pronounced among black households and those with lower educations.

Concluding thoughts

With homeownership acknowledged as an important goal for ensuring the well-being of both individuals and broader society, understanding barriers to achieving homeownership is an important first step in designing policies to expand its reach. This paper traces the evolution of the importance of credit quality as a key barrier to homeownership. In particular, it describes how credit quality has changed over time for the general population as well as for various segments of the population; information that has not previously been known to researchers and policy-makers.

The key finding is that trends in credit quality vary in important ways depending on one's tenure status. Independent of how measured, credit quality has improved between 1989 and 2001 for homeowners. This is a general result, and does not depend on an

[15] This also assumes that the household has $50,000 in financial assets, lives in the West, has had some health problems in the past 3 years, and is self-employed.

individual's age, ethnicity, level of education, or income. It is also not dependent on whether one lives in an urban area or not.

In a striking contrast, credit quality for renters has deteriorated significantly over the same period. Declines are most pronounced among the young, those with lower incomes, and ethnic minorities – populations often referred to as "underserved" or "vulnerable." Importantly, sizable majorities of these subgroups, up to 50 and 60 percent, would not be eligible for conventional mortgage credit by current mortgage market underwriting standards. Thus, the decline in credit quality among members of these groups may have the effect of largely precluding entry into homeownership, except via more expensive subprime mortgage markets. This latter possibility raises other issues, which are beyond the scope of this examination.

While we identify an important trend, the analysis does not address the question of causation. That is, we do not disentangle the many different factors that could underlie the worsening credit profiles of renters. One possibility is that renters have fundamentally different preferences and tend to be more risk-seeking than owners. By this notion, renters would be more likely to accept credit and credit terms that an objective analysis would suggest had relatively low probabilities of being repaid. This would yield more renter delinquencies and defaults. The question remains, however, why the risk seeking behavior appears to increase only among renters.

A different explanation might be that lenders have become more risk-seeking in their credit granting behavior. Some have alleged that in recent years lenders have aggressively sought out borrowers with poor credit histories with the objective of generating significant fee income while others point to the documented increase in predatory lending through the late 1990s. Such aggressiveness might be more likely to succeed in underserved populations that have historically had relatively little experience with credit markets, particularly among renters. By obtaining a mortgage, one would expect that homeowners would be savvy and less likely to accept a credit relationship that they could not support. If so, then one would expect to observe the divergent credit quality trends found here.

There are other, and less provocative, potential cause for the patterns that are more structural and also address shifts over time. It could be that, among renters, those with

the best credit quality are more likely to become homeowners. In such a case, the patterns we identify would simply be due to a selection process where the best credits leave the renter population, a selection process that has become more accurate and pervasive over time. Such a "skimming effect" would be far more benign from a policy perspective, as it would not clearly point to ways that incentives could be created to generate different market behaviors and outcomes. A separate explanation that addresses changing patterns over time is that access to homeownership itself provides conditions that make it easier to improve credit quality over time. This is after all what the old forced savings and the new hyperbolic preference (Laibson) literatures imply. A third possibility is that immigrants are more likely to become renters than homeowners, and that successive waves of immigrants have had larger proportions with credit quality below the critical threshold levels.

Of course, none of these possibilities is mutually exclusive and neither are they exhaustive. For example, race-based discrimination could play a role in these patterns, perhaps in the context of predatory lending. These questions are ripe for future research, the results of which will help provide a considerably deeper and richer understanding of how credit markets operate.

Regardless of its cause, however, our results indicate that the renter population is currently not in a particularly good position to become homeowners, and that it is in a worse position in this regard than it was 5 or 10 years ago. This has implications for initiatives with goals to significantly increase the overall homeownership rate and the homeownership rate for vulnerable populations. In order to achieve these goals, policy makers will need to focus on strategies to improve renter performance with their existing credit accounts, such as promoting education and financial literacy program. By improving financial literacy and consequently their credit performance, renters can see their credit quality improve to the point where they are eligible for conventional mortgage credit. They would then avoid the high prices and potential pitfalls of subprime and predatory mortgage markets while still being able to enjoy the full wealth-, neighborhood-, and health-related benefits that homeownership has been shown to impart.

A final, and important, caveat is that the analysis relies on the assumption that the relationship between individual characteristics and credit quality did not change over the course of the 1990s. We use a single model to estimate an individual's credit score in both 1989 and 2001. If the relationship between an individual's characteristics and the likelihood of repaying a loan evolved over time, though, then we might have mis-estimated an individual's credit quality in either 1989 or 2001. If so, then our temporal analysis would be somewhat misleading. However, we have little reason to believe that, even if the relationship has evolved over time, the changes have been sufficiently large to dismiss that the general trends we highlight here. If there had been such a change, one might have expected to see some of the models used by the industry over this time perform particularly poorly. To date, we are aware of no such incidences. As a result, we have a degree of confidence that the results we uncover are robust.

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Table 1. Selected credit score characteristics, 1989 and 2001

	Median score		Mean Score		Pct. constrained at 620		Pct. constrained at 660	
	1989	2001	1989	2001	1989	2001	1989	2001
Total	721.3	730.1	700.8	706.7	11.3	15.7	19.3	24.5
Income quintile								
Bottom	702.5	688.3	690.5	687.7	12.6	27.5	21.0	38.7
2	716.1	704.9	724.2	700.6	13.6	18.1	20.1	28.7
3	728.7	725.5	712.6	712.8	11.4	11.0	20.4	19.3
4	739.3	743.3	723.3	727.3	7.2	5.2	16.2	10.0
Top	729.0	753.5	729.0	742.9	4.4	0.6	7.7	2.8
Race								
White	727.0	737.7	714.3	717.4	9.8	11.2	17.0	18.8
Black	693.0	676.0	682.3	673.5	15.8	29.6	27.1	41.7
Latino	695.0	670.0	682.4	663.4	16.4	35.6	25.4	48.5
Other	710.9	725.5	694.0	693.3	15.2	19.4	25.3	32.9
Location								
Central City	724.1	727.3	707.8	701.5	11.8	17.6	19.7	27.4
Suburb	714.8	725.2	705.5	711.6	12.4	13.0	19.4	22.2
Rural	724.6	734.9	706.6	710.7	10.5	14.7	18.9	22.2
Education								
LT HS	709.1	701.6	701.8	692.7	11.0	24.8	18.1	33.2
HS Diploma	715.3	712.4	699.9	698.9	14.6	19.2	23.8	30.0
Some college	726.9	719.7	707.0	703.1	11.8	16.8	18.7	25.8
College dipl.	730.5	742.8	714.3	719.8	8.5	7.5	19.2	14.7
Graduate sch.	734.4	750.6	728.5	734.7	5.5	3.7	11.2	10.0
Age								
LT 25	664.7	639.6	656.8	643.3	21.0	38.1	38.8	57.7
25-34	684.1	676.4	681.1	666.3	21.1	28.5	28.9	40.4
35-54	719.8	723.9	706.0	699.4	11.8	17.2	21.6	26.1
55-64	730.9	750.3	718.8	721.1	5.8	9.4	15.1	20.5
GT 65	742.2	773.6	740.4	762.6	1.4	0.4	2.9	2.0

Table 2, Panel A. Median credit scores, by income and race, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	White	699.1	696.5	705.8	725.7	719.5	702.7
	Black	691.9	677.9	655.1	666.0	\	687.2
	Hispanic	685.2	684.0	691.0	\	\	685.2
	Other	687.2	691.5	614.4	692.7	708.0	690.1
	All	693.0	692.8	699.9	719.8	719.1	696.0
2001	White	683.0	680.6	702.9	726.7	738.5	694.7
	Black	636.1	633.0	685.6	674.1	\	641.9
	Hispanic	599.2	626.2	692.4	662.4	\	623.7
	Other	643.0	668.1	690.8	719.8	\	668.2
	All	657.3	669.2	699.4	722.3	736.6	679.5
Owners							
1989	White	718.5	728.9	738.8	741.9	729.3	733.6
	Black	698.1	710.0	697.4	720.4	687.0	704.6
	Hispanic	684.1	701.0	711.3	731.2	722.5	702.7
	Other	719.2	682.0	735.6	740.9	742.9	728.6
	All	716.1	727.2	735.6	740.9	729.5	730.7
2001	White	740.1	740.1	740.7	747.8	754.0	747.5
	Black	712.6	706.0	708.0	729.0	747.8	709.0
	Hispanic	664.5	718.3	691.5	719.9	745.7	713.5
	Other	715.8	752.5	737.2	748.6	753.1	745.9
	All	733.4	735.3	735.8	746.1	753.8	744.5

Table 2, Panel B. Mean credit scores, by income and race, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	White	688.6	693.8	694.6	714.2	700.5	693.8
	Black	681.7	664.9	663.4	675.8	\	676.7
	Hispanic	678.1	682.6	671.0	\	\	678.4
	Other	668.1	682.5	655.9	688.9	708.0	673.8
	All	683.7	688.1	689.1	707.2	700.5	687.6
2001	White	683.4	678.4	688.6	717.2	727.4	685.7
	Black	652.3	645.7	671.4	677.0	650.7	653.0
	Hispanic	630.2	646.6	671.4	667.2	\	641.4
	Other	665.7	673.2	674.6	705.7	\	671.0
	All	665.9	668.8	684.6	710.6	713.6	673.0
Owners							
1989	White	716.3	725.1	725.8	726.4	733.8	725.1
	Black	671.9	698.7	691.2	723.3	667.3	690.5
	Hispanic	672.4	683.3	696.0	712.5	700.4	688.2
	Other	713.4	687.4	731.9	727.1	741.1	716.4
	All	704.0	718.0	721.8	725.9	731.8	719.8
2001	White	731.6	729.7	727.9	733.0	744.4	731.0
	Black	703.6	695.8	692.3	696.9	750.4	697.6
	Hispanic	671.9	710.1	680.0	719.6	748.9	694.1
	Other	671.0	756.6	722.3	712.3	740.9	715.5
	All	721.8	725.4	721.8	729.5	744.5	725.6

Table 2, Panel C. Percent credit-constrained – 620 threshold, by income and race, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	White	12.3	17.4	18.2	9.3	19.4	15.2
	Black	9.7	24.6	29.7	28.7	\	15.0
	Hispanic	10.3	15.0	29.5	\	\	14.1
	Other	24.8	17.0	57.6	22.5	0.0	24.9
	All	12.1	18.1	21.2	12.9	19.3	15.6
2001	White	37.5	24.4	19.8	1.8	0.0	22.6
	Black	45.4	42.8	20.3	32.2	66.8	41.7
	Hispanic	61.0	39.5	23.6	3.6	\	48.0
	Other	37.2	24.9	0.0	0.0	\	28.7
	All	38.0	29.4	19.9	3.6	12.0	29.9
Owners							
1989	White	9.0	7.5	18.2	9.3	19.4	7.0
	Black	24.7	17.5	10.1	12.5	2.0	17.0
	Hispanic	30.0	23.4	11.3	5.2	26.5	19.6
	Other	0.0	11.1	0.0	0.0	21.3	4.5
	All	13.5	9.8	7.5	6.3	2.9	8.4
2001	White	7.4	7.9	7.1	4.4	0.0	6.2
	Black	14.4	20.4	11.3	16.8	0.0	15.3
	Hispanic	35.7	11.5	22.4	0.0	0.0	18.2
	Other	31.6	0.0	0.0	15.0	0.0	10.2
	All	10.9	9.3	8.2	5.4	0.0	7.8

Table 2, Panel D. Percent credit-constrained – 660 threshold, by income and race, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	White	23.9	23.8	28.4	22.0	19.8	24.6
	Black	18.0	34.6	41.6	30.0	\	24.1
	Hispanic	18.6	16.5	37.7	\	\	20.5
	Other	33.2	17.0	57.6	37.5	0.0	30.5
	All	22.2	24.1	31.0	24.4	19.6	24.4
2001	White	39.6	40.3	29.2	14.3	0.0	35.4
	Black	56.9	57.3	35.4	32.2	66.8	54.2
	Hispanic	75.0	55.4	34.1	48.2	\	63.3
	Other	52.1	45.5	28.3	0.0	\	45.2
	All	50.4	45.2	30.4	17.4	12.0	43.1
Owners							
1989	White	11.8	12.3	14.1	14.4	4.8	12.9
	Black	33.7	29.9	32.3	28.7	21.0	31.5
	Hispanic	41.3	34.1	28.2	21.5	26.5	32.6
	Other	17.0	38.3	11.9	6.5	21.3	19.6
	All	18.8	16.6	16.2	14.9	6.5	15.8
2001	White	16.6	13.9	12.7	7.6	2.2	11.6
	Black	23.7	30.6	30.1	23.7	11.5	27.1
	Hispanic	44.0	19.1	36.0	0.9	3.2	27.8
	Other	49.2	0.0	18.0	19.7	0.0	20.6
	All	20.3	15.7	15.7	9.0	2.3	14.1

Table 3, Panel A. Median credit scores, by income and urban location, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	Central City	688.7	694.1	705.8	702.7	717.7	695.0
	Suburb	700.9	683.9	699.1	718.0	715.6	700.0
	Rural	691.3	693.0	696.6	736.2	723.3	696.0
	All	693.0	692.8	699.9	719.8	719.1	696.0
2001	Central City	649.3	663.2	701.6	718.5	732.1	678.6
	Suburb	676.8	671.9	705.3	765.9	738.5	687.3
	Rural	656.9	672.1	694.3	711.5	738.8	677.7
	All	657.3	669.2	699.4	722.3	736.6	679.5
Owners							
1989	Central City	717.0	729.6	744.2	740.9	729.2	733.5
	Suburb	714.1	722.2	727.3	734.6	731.8	720.0
	Rural	716.7	728.6	735.6	741.9	729.5	733.2
	All	716.1	727.2	735.6	740.9	729.5	730.7
2001	Central City	732.5	742.1	736.3	746.1	752.9	745.2
	Suburb	730.0	728.1	729.0	736.7	759.4	734.6
	Rural	734.6	734.4	737.8	746.6	754.4	746.1
	All	733.4	735.3	735.8	746.1	753.8	744.5

Table 3, Panel B. Mean credit scores, by income and urban location, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	Central City	680.5	697.8	696.0	696.3	702.4	690.3
	Suburb	689.2	670.8	685.0	720.0	678.3	685.1
	Rural	683.0	686.9	684.1	706.6	703.4	686.6
	All	683.7	688.1	689.1	707.2	700.5	687.6
2001	Central City	660.7	663.5	684.1	706.9	712.0	668.6
	Suburb	680.2	679.6	703.7	742.8	734.6	686.2
	Rural	667.7	672.8	679.5	708.8	714.8	674.4
	All	665.9	668.8	684.6	710.6	713.6	673.0
Owners							
1989	Central City	699.9	714.5	728.0	725.4	735.8	720.4
	Suburb	710.6	715.4	716.1	733.5	737.3	718.1
	Rural	700.1	723.0	719.7	723.9	728.4	720.2
	All	704.0	718.0	721.8	725.9	731.8	719.8
2001	Central City	719.0	731.0	719.6	726.6	741.7	725.1
	Suburb	721.5	716.1	722.1	734.2	750.1	722.7
	Rural	725.1	724.4	723.8	731.1	746.2	727.3
	All	721.8	725.4	721.8	729.5	744.5	725.6

Table 3, Panel C. Percent credit-constrained – 620 threshold, by income and urban location, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	Central City	14.3	11.5	22.8	19.5	15.2	15.2
	Suburb	15.8	32.8	16.3	6.4	31.1	20.3
	Rural	8.2	17.0	21.3	12.8	22.9	13.7
	All	12.1	18.1	21.2	12.9	19.3	15.6
2001	Central City	40.5	31.3	17.5	3.2	18.1	31.3
	Suburb	30.8	26.7	10.7	0.0	0.0	25.0
	Rural	37.4	27.5	25.0	5.3	0.0	29.6
	All	38.0	29.4	19.9	3.6	12.0	29.9
Owners							
1989	Central City	16.0	11.4	7.8	6.6	2.2	9.3
	Suburb	7.2	11.1	8.5	1.6	0.03	7.5
	Rural	18.4	7.3	7.0	7.5	3.6	8.3
	All	13.5	9.8	7.5	6.3	2.9	8.4
2001	Central City	10.5	7.5	8.8	6.8	0.0	7.8
	Suburb	9.2	10.6	7.6	0.6	0.0	7.7
	Rural	13.1	10.5	7.8	5.2	0.1	7.9
	All	10.9	9.3	8.2	5.4	0.0	7.8

Table 3, Panel D. Percent credit-constrained – 660 threshold, by income and urban location, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	Central City	28.1	16.0	25.9	37.2	15.3	23.6
	Suburb	24.3	39.3	34.3	12.8	31.1	29.3
	Rural	16.5	24.8	34.7	24.1	23.9	22.8
	All	22.2	24.1	31.0	24.4	19.6	24.4
2001	Central City	52.3	47.1	28.5	20.2	18.1	44.6
	Suburb	42.1	43.1	20.6	0.0	0.0	37.3
	Rural	51.2	43.2	25.4	17.2	0.0	43.1
	All	50.4	45.2	30.4	17.4	12.0	43.1
Owners							
1989	Central City	23.8	21.0	12.9	15.6	8.5	16.9
	Suburb	10.2	15.4	18.3	7.6	1.6	13.3
	Rural	24.0	13.3	17.8	16.7	5.5	16.3
	All	18.8	16.6	16.2	14.9	6.5	15.8
2001	Central City	20.5	16.1	17.5	10.8	1.7	15.0
	Suburb	20.5	19.2	13.1	6.2	1.2	15.6
	Rural	19.9	13.7	14.9	8.1	3.1	12.6
	All	20.3	15.7	15.7	9.0	2.3	14.1

Table 4, Panel A. Median credit scores, by race and urban location, 1989, 2001

		Race				
		White	Black	Hispanic	Other	All
Renters						
1989	Central City	702.7	693.3	681.3	694.0	695.0
	Suburb	706.3	678.1	703.1	683.1	700.0
	Rural	702.7	685.2	689.3	691.5	696.0
	All	702.7	687.2	685.2	690.1	696.0
2001	Central City	696.4	638.5	624.7	672.9	678.6
	Suburb	698.5	618.4	599.2	696.5	687.3
	Rural	693.0	664.0	624.0	649.8	677.7
	All	694.7	641.9	623.7	668.2	679.5
Owners						
1989	Central City	737.1	713.2	700.4	735.6	733.5
	Suburb	723.6	698.9	700.9	707.3	720.0
	Rural	734.4	704.9	719.7	739.1	733.2
	All	733.6	704.6	702.7	728.6	730.7
2001	Central City	749.5	709.3	708.9	743.7	745.2
	Suburb	736.7	698.6	734.1	730.4	734.6
	Rural	748.4	715.1	714.0	748.6	746.1
	All	747.5	709.0	713.5	745.9	744.5

Table 4, Panel B. Mean credit scores, by race and urban location, 1989, 2001

		Race				
		White	Black	Hispanic	Other	All
Renters						
1989	Central City	698.9	684.5	672.6	681.5	690.3
	Suburb	690.1	666.0	676.8	672.0	685.1
	Rural	692.1	675.9	689.7	669.2	686.6
	All	693.8	676.7	678.4	673.8	687.6
2001	Central City	682.9	652.3	641.1	671.6	668.6
	Suburb	694.0	643.1	616.9	715.6	686.2
	Rural	685.2	656.4	645.4	666.1	674.4
	All	685.7	653.0	641.4	671.0	673.0
Owners						
1989	Central City	729.5	688.6	682.9	723.7	720.4
	Suburb	723.0	687.9	713.3	677.0	718.1
	Rural	723.1	693.1	702.2	732.6	720.2
	All	725.1	690.5	688.2	716.4	719.8
2001	Central City	733.2	698.0	683.3	703.4	725.1
	Suburb	724.6	694.6	730.5	730.4	722.7
	Rural	732.0	698.1	704.0	726.2	727.3
	All	731.0	697.6	694.1	715.5	725.6

Table 4, Panel C. Percent credit-constrained – 620 threshold, by race and urban location, 1989, 2001

		Race				
		White	Black	Hispanic	Other	All
Renters						
1989	Central City	15.5	7.1	19.3	18.2	15.2
	Suburb	17.9	26.2	30.0	34.4	20.3
	Rural	13.4	15.5	1.7	26.2	13.7
	All	15.2	15.0	14.1	24.9	15.6
2001	Central City	22.9	41.9	47.1	25.4	31.3
	Suburb	20.4	54.1	62.0	0.0	25.0
	Rural	23.4	38.7	47.7	35.3	29.6
	All	22.6	41.7	48.0	28.7	29.9
Owners						
1989	Central City	6.1	23.3	23.7	0.0	9.3
	Suburb	6.6	14.5	0.0	14.7	7.5
	Rural	7.7	14.3	9.1	4.3	8.3
	All	7.0	17.0	19.6	4.5	8.4
2001	Central City	5.5	13.4	23.8	9.5	7.8
	Suburb	7.4	13.2	0.0	0.0	7.7
	Rural	6.4	18.4	13.0	11.2	7.9
	All	6.2	15.3	18.2	10.2	7.8

Table 4, Panel D. Percent credit-constrained – 660 threshold, by race and urban location, 1989, 2001

		Race				
		White	Black	Hispanic	Other	All
Renters						
1989	Central City	22.1	23.0	27.1	27.8	23.6
	Suburb	27.7	35.3	29.6	34.4	29.3
	Rural	24.8	21.2	6.7	30.9	22.8
	All	24.6	24.1	20.5	30.5	24.4
2001	Central City	34.8	55.6	63.1	45.7	44.6
	Suburb	32.8	66.5	73.3	0.0	37.3
	Rural	37.6	48.7	62.2	48.9	43.1
	All	35.4	54.2	63.3	45.2	43.1
Owners						
1989	Central City	11.8	31.4	39.2	16.1	16.9
	Suburb	11.1	22.7	0.0	46.2	13.3
	Rural	14.5	36.1	15.1	6.5	16.3
	All	12.9	31.5	32.6	19.6	15.8
2001	Central City	10.8	28.8	36.7	26.6	15.0
	Suburb	14.9	28.3	0.0	0.0	15.6
	Rural	10.8	24.7	19.4	15.8	12.6
	All	11.6	27.1	27.8	20.6	14.1

Table 5, Panel A. Median credit scores, by education and race, 1989, 2001

		Education					
		LT HS	H.S. Diploma	Some College	College Diploma	Graduate School	All
Renters							
1989	White	702.5	696.9	697.3	720.6	722.3	702.7
	Black	695.0	677.9	677.9	703.2	666.0	687.2
	Hispanic	683.1	682.7	687.3	641.8	749.7	685.2
	Other	692.7	683.1	689.2	703.8	691.5	690.1
	All	697.1	689.5	693.0	717.8	716.3	696.0
2001	White	680.0	676.3	693.0	706.0	727.8	694.7
	Black	648.1	627.2	664.5	686.7	665.0	641.9
	Hispanic	603.9	603.9	665.3	661.7	676.3	623.7
	Other	607.5	698.5	625.5	659.2	725.1	668.2
	All	656.1	659.9	683.0	702.9	722.3	679.5
Owners							
1989	White	720.7	733.1	742.8	732.8	735.6	733.6
	Black	703.8	699.0	713.4	727.5	736.4	704.6
	Hispanic	704.3	701.3	727.6	667.1	740.1	702.7
	Other	716.3	742.9	678.0	738.2	731.7	728.6
	All	717.8	728.9	740.3	732.8	735.4	730.7
2001	White	736.8	737.2	714.3	749.6	753.5	747.5
	Black	715.3	715.1	690.7	677.2	735.9	709.0
	Hispanic	713.0	714.5	718.4	721.5	706.8	713.5
	Other	738.1	728.3	729.2	746.1	754.4	745.9
	All	731.7	733.7	736.2	748.4	752.7	744.5

Table 5, Panel B. Mean credit scores, by education and race, 1989, 2001

		Education					
		LT HS	H.S. Diploma	Some College	College Diploma	Graduate School	All
Renters							
1989	White	692.7	691.4	691.0	697.1	709.9	693.8
	Black	684.9	666.6	672.1	687.5	661.9	676.7
	Hispanic	682.2	669.5	672.7	641.8	741.1	678.4
	Other	678.9	652.0	692.7	687.8	673.5	673.8
	All	688.0	682.4	686.2	694.3	706.5	687.6
2001	White	680.1	676.1	685.1	696.9	716.7	685.7
	Black	656.1	643.7	661.0	663.5	672.1	653.0
	Hispanic	636.8	629.9	659.4	687.9	676.4	641.4
	Other	646.2	681.2	652.5	664.1	703.8	671.0
	All	661.6	662.9	678.1	691.7	709.1	673.0
Owners							
1989	White	723.6	718.3	726.3	725.2	738.2	725.1
	Black	687.6	683.8	690.8	703.6	711.5	690.5
	Hispanic	688.4	671.3	708.5	702.9	665.8	688.2
	Other	704.2	740.0	682.0	730.9	740.0	716.4
	All	712.8	714.4	721.4	724.1	735.6	719.8
2001	White	726.3	726.7	726.9	734.7	743.2	731.0
	Black	707.5	706.7	674.6	681.9	721.3	697.6
	Hispanic	686.9	686.3	703.6	717.3	698.9	694.1
	Other	708.9	728.4	688.0	705.0	737.0	715.5
	All	719.4	722.2	719.4	730.5	740.4	725.6

Table 5, Panel C. Percent credit-constrained – 620 threshold, by education and race, 1989, 2001

		Education					
		LT HS	H.S. Diploma	Some College	College Diploma	Graduate School	All
Renters							
1989	White	16.5	14.8	14.5	17.2	12.1	15.2
	Black	9.3	21.9	17.4	5.3	39.4	15.0
	Hispanic	4.7	20.2	27.2	0.0	0.0	14.1
	Other	34.6	37.4	18.7	10.5	7.5	24.9
	All	13.2	17.9	16.8	14.8	12.0	15.6
2001	White	28.8	25.9	24.6	13.6	7.0	22.6
	Black	46.1	47.0	28.2	39.5	26.4	41.7
	Hispanic	52.2	57.8	28.1	22.9	0.0	48.0
	Other	61.9	25.9	32.6	22.5	13.3	28.7
	All	40.1	34.9	25.8	16.8	9.6	29.9
Owners							
1989	White	5.2	10.8	7.5	5.4	2.8	7.0
	Black	20.8	8.0	28.4	0.0	12.6	17.0
	Hispanic	18.0	39.1	4.3	9.3	15.3	19.6
	Other	6.1	7.4	0.0	8.4	0.0	4.5
	All	9.3	11.8	8.3	5.4	3.4	8.4
2001	White	8.1	8.0	8.7	3.0	2.7	6.2
	Black	15.8	12.5	25.9	15.6	0.0	15.3
	Hispanic	28.8	18.7	9.7	9.2	0.0	18.2
	Other	24.2	0.0	28.4	8.6	1.9	10.2
	All	11.5	9.0	10.9	4.0	2.4	7.8

Table 5, Panel D. Percent credit-constrained – 660 threshold, by education and race, 1989, 2001

		Education					
		LT HS	H.S. Diploma	Some College	College Diploma	Graduate School	All
Renters							
1989	White	23.6	29.0	17.8	31.4	17.6	24.6
	Black	16.2	33.0	24.4	26.4	39.4	24.1
	Hispanic	10.9	27.1	31.2	100.0	0.0	20.5
	Other	34.6	37.4	18.7	25.6	28.7	30.5
	All	19.7	30.0	20.5	30.7	18.4	24.4
2001	White	39.1	43.2	35.4	26.3	15.7	35.4
	Black	52.6	63.4	43.3	39.5	46.4	54.2
	Hispanic	67.0	67.4	52.4	43.6	34.7	63.3
	Other	61.9	38.7	60.4	55.2	13.3	45.2
	All	50.6	50.9	38.8	30.0	19.3	43.1
Owners							
1989	White	9.8	17.0	14.8	13.2	6.5	12.9
	Black	33.9	28.2	33.4	11.3	38.8	31.5
	Hispanic	29.2	39.1	25.5	38.9	63.8	32.6
	Other	27.0	10.9	36.5	14.4	0.3	19.6
	All	16.7	18.6	17.4	13.5	9.0	15.8
2001	White	15.4	14.7	14.4	6.3	6.4	11.6
	Black	20.0	24.0	36.3	36.6	17.2	27.1
	Hispanic	35.1	30.7	20.0	9.2	31.3	27.8
	Other	24.2	0.0	28.4	34.0	10.8	20.6
	All	18.3	16.5	17.3	8.9	7.9	14.1

Table 6, Panel A. Median credit scores, by income and education, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	LT HS	700.9	690.9	680.6	712.7	719.1	697.1
	HS Diploma	685.2	684.5	703.0	760.3	692.3	689.5
	Some college	688.3	692.4	700.2	716.3	717.9	693.0
	College dipl.	673.3	724.1	713.0	732.9	719.9	717.8
	Graduate sch.	706.4	695.4	710.4	722.3	735.7	716.3
	All	693.0	692.8	699.9	719.8	719.1	696.0
2001	LT HS	654.1	636.3	672.9	750.9	713.2	656.1
	HS Diploma	641.0	652.4	670.5	696.2	720.8	659.9
	Some college	671.6	679.8	703.1	698.5	725.9	683.0
	College dipl.	694.5	677.0	713.3	738.1	757.4	702.9
	Graduate sch.	691.8	716.4	719.1	744.8	738.8	722.3
	All	657.3	669.2	699.4	722.3	736.6	679.5
Owners							
1989	LT HS	714.3	720.6	725.5	737.5	730.4	717.8
	HS Diploma	716.7	727.2	733.2	740.2	735.5	728.9
	Some college	709.3	742.7	734.5	743.9	738.9	740.3
	College dipl.	738.2	738.4	743.6	734.8	724.6	732.8
	Graduate sch.	721.8	735.02	750.0	744.2	728.6	735.4
	All	716.1	727.2	735.6	740.9	729.5	730.7
2001	LT HS	731.7	728.1	721.0	735.0	747.4	731.7
	HS Diploma	735.6	734.8	729.3	732.4	758.8	733.7
	Some college	725.4	728.2	732.7	731.1	761.2	736.2
	College dipl.	740.1	744.6	741.0	744.9	755.7	748.4
	Graduate sch.	739.4	759.6	748.8	755.8	751.4	752.7
	All	733.4	735.3	735.8	746.1	753.8	744.5

Table 6, Panel B. Mean credit scores, by income and education, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	LT HS	690.6	687.4	668.7	695.9	719.1	688.0
	HS Diploma	676.4	681.4	689.8	724.6	598.6	682.4
	Some college	681.5	687.2	689.7	701.4	713.2	686.2
	College dipl.	666.9	711.1	695.9	699.6	703.9	694.3
	Graduate sch.	713.1	711.1	699.4	709.1	699.8	706.5
	All	683.7	688.1	689.1	707.2	700.5	687.6
2001	LT HS	659.7	657.0	684.1	719.2	713.2	661.6
	HS Diploma	660.4	660.8	663.6	696.4	641.6	662.9
	Some college	676.3	672.7	684.3	706.9	710.0	678.1
	College dipl.	684.9	675.1	707.7	712.1	760.6	691.7
	Graduate sch.	682.9	710.7	711.7	727.0	709.0	709.1
	All	665.9	668.8	684.6	710.6	713.6	673.0
Owners							
1989	LT HS	702.3	715.9	718.4	733.8	716.0	712.8
	HS Diploma	706.8	717.8	709.9	718.3	748.4	714.4
	Some college	680.5	715.2	726.7	727.4	725.1	721.4
	College dipl.	743.1	731.0	724.0	718.8	728.3	724.1
	Graduate sch.	702.2	727.9	739.0	736.3	734.4	735.6
	All	704.0	718.0	721.8	725.9	731.8	719.8
2001	LT HS	716.6	731.2	699.3	726.3	748.7	719.4
	HS Diploma	728.3	718.9	719.3	725.2	754.4	722.2
	Some college	728.1	717.8	716.5	720.2	750.0	719.4
	College dipl.	704.9	735.7	729.9	730.2	742.1	730.5
	Graduate sch.	729.0	751.0	738.0	739.3	743.4	740.4
	All	721.8	725.4	721.8	729.5	744.5	725.6

Table 6, Panel C. Percent credit-constrained – 620 threshold, by income and education, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	LT HS	9.2	17.5	30.0	8.7	0.0	13.2
	HS Diploma	14.4	23.7	14.2	18.1	88.1	17.9
	Some college	14.6	15.8	23.5	17.2	0.1	16.8
	College dipl.	12.8	8.6	25.0	11.1	21.1	14.8
	Graduate sch.	8.2	0.0	21.3	8.6	20.2	12.0
	All	12.1	18.1	21.2	12.9	19.3	15.6
2001	LT HS	43.3	38.0	21.0	4.0	0.0	40.1
	HS Diploma	40.8	34.1	28.1	12.3	71.9	34.9
	Some college	29.7	25.8	25.5	1.2	0.0	25.8
	College dipl.	27.0	24.0	6.4	0.0	0.0	16.8
	Graduate sch.	27.9	11.1	3.2	0.1	0.0	9.6
	All	38.0	29.4	19.9	3.6	12.0	29.9
Owners							
1989	LT HS	12.2	8.8	7.0	5.2	0.0	9.3
	HS Diploma	16.7	10.9	12.5	10.6	0.0	11.8
	Some college	20.4	13.2	5.6	6.2	5.9	8.3
	College dipl.	0.0	7.5	6.5	5.3	3.2	5.4
	Graduate sch.	33.3	4.9	2.5	3.4	2.6	3.4
	All	13.5	9.8	7.5	6.3	2.9	8.4
2001	LT HS	13.5	6.1	21.3	4.0	0.0	11.5
	HS Diploma	9.5	12.0	8.2	4.6	0.0	9.0
	Some college	3.5	13.4	11.0	11.8	0.0	10.9
	College dipl.	17.5	1.9	4.6	3.3	0.0	4.0
	Graduate sch.	8.8	3.4	0.6	3.5	0.0	2.4
	All	10.9	9.3	8.2	5.4	0.0	7.8

Table 6, Panel D. Percent credit-constrained – 660 threshold, by income and education, 1989, 2001

		Income Quintile					
		Bottom	2	3	4	Top	All
Renters							
1989	LT HS	15.7	24.5	34.3	20.7	0.0	19.7
	HS Diploma	30.0	30.6	30.9	23.7	97.9	30.0
	Some college	19.0	20.2	25.6	18.1	10.0	20.5
	College dipl.	42.5	14.9	36.6	33.3	21.1	30.7
	Graduate sch.	11.6	0.0	30.8	20.0	20.2	18.4
	All	22.2	24.1	31.0	24.4	19.6	24.4
2001	LT HS	52.0	54.1	26.3	29.0	0.0	50.6
	HS Diploma	56.3	53.3	40.8	23.7	71.9	50.9
	Some college	46.0	38.0	34.4	13.8	0.0	38.8
	College dipl.	36.3	41.3	17.4	14.9	0.0	30.0
	Graduate sch.	32.8	21.4	14.1	12.4	0.0	19.3
	All	50.4	45.2	30.4	17.4	12.0	43.1
Owners							
1989	LT HS	16.7	16.8	17.9	16.9	0.0	16.7
	HS Diploma	18.0	16.0	22.6	18.2	1.8	18.6
	Some college	44.9	22.8	12.1	15.7	9.8	17.4
	College dipl.	4.8	11.3	16.3	14.2	10.5	13.5
	Graduate sch.	33.3	7.4	8.5	10.9	4.6	9.0
	All	18.8	16.6	16.2	14.9	6.5	15.8
2001	LT HS	22.2	12.8	24.0	7.9	0.0	18.3
	HS Diploma	17.8	18.2	17.1	10.9	2.2	16.5
	Some college	13.1	20.4	19.5	13.6	0.6	17.3
	College dipl.	36.7	9.4	10.0	6.0	2.4	8.9
	Graduate sch.	17.3	6.5	9.2	8.3	2.7	7.9
	All	20.3	15.7	15.7	9.0	2.3	14.1

Table 7. Estimates for regressions on individual credit score

	1989 SCF sample				2001 SCF sample			
Parameter	Estimate	S. E.	Estimate	S. E.	Estimate	S. E.	Estimate	S. E.
Intercept	731.774***	3.172	730.479***	3.165	755.872***	2.824	750.656***	2.779
Income quintile (Top omitted)								
Bottom	-10.987***	1.843	-7.436***	1.873	-30.373***	1.504	-20.378***	1.518
2	-4.302**	1.596	-2.065	1.608	-18.018***	1.341	-11.424***	1.337
3	5.438***	1.472	6.489***	1.471	-6.153***	1.246	-3.439**	1.228
4	9.365***	1.337	9.682***	1.333	1.315	1.127	1.971	1.107
Education (less than H.S. omitted)								
Grad Sch.	19.572***	1.507	18.799***	1.504	19.342***	1.369	18.504***	1.345
Coll.	11.301***	1.490	10.818***	1.486	17.458***	1.303	17.007***	1.280
Some coll.	16.945***	1.372	16.605***	1.368	10.052***	1.242	10.870***	1.220
H.S. dipl.	7.517***	1.220	7.573***	1.217	6.030***	1.161	6.227***	1.141
Race (white omitted)								
Other	-4.602*	2.053	-4.124*	2.047	-9.550***	2.053	-8.100***	2.017
Latino	-12.856***	1.880	-12.452***	1.875	-20.192***	1.456	-18.337***	1.432
Black	-19.750***	1.421	-18.787***	1.420	-25.563***	1.175	-21.889***	1.161
Age (65+ omitted)								
LT 25	-74.424***	2.469	-69.023***	2.524	-96.282***	1.845	-84.541***	1.858
25-34	-59.916***	1.458	-56.535***	1.495	-85.093***	1.262	-76.185***	1.279
35-54	-37.751***	1.204	-36.110***	1.211	-53.412***	1.012	-49.780***	1.002
55-64	-20.821***	1.246	-20.502***	1.242	-35.855***	1.108	-34.697***	1.089
Location (Suburb omitted)								
Rural	4.257***	1.073	4.451***	1.070	-1.039	1.044	-0.479	1.026
Cent. City	6.251***	1.150	6.439***	1.147	-1.648	1.049	-0.049	1.032
Renter	--	--	-9.818***	1.010	--	--	-24.765***	0.868
Dep. Variable mean	714.64		714.64		714.60		714.60	
Observations	15675		15675		22210		22210	
R-squared	0.237		0.241		0.408		0.429	

NOTE: Other controls include gender, self-employment, marital status, health condition, and regional dummy variables, as well as a variable for the number of children the individual is responsible for. *** - $p < .001$, ** - $p < .01$, * - $p < .05$.

Table 8. Estimates for regressions on percent credit constrained using the 620 threshold

	1989 SCF sample				2001 SCF sample			
Parameter	Estimate	S. E.	Estimate	S. E.	Estimate	S. E.	Estimate	S. E.
Intercept	0.034	0.018	0.038*	0.018	-0.034*	0.017	-0.012	0.017
Income quintile (Top omitted)								
Bottom	0.024*	0.010	0.013	0.010	0.161***	0.009	0.118***	0.009
2	0.052***	0.009	0.044***	0.009	0.073***	0.008	0.045***	0.008
3	0.034***	0.008	0.031***	0.008	0.013	0.008	0.001	0.008
4	0.022**	0.007	0.021**	0.007	-0.009	0.007	-0.011	0.007
Education (less than H.S. omitted)								
Grad Sch.	-0.060***	0.008	-0.058***	0.008	-0.084***	0.008	-0.080***	0.008
Coll.	-0.047***	0.008	-0.045***	0.008	-0.086***	0.008	-0.084***	0.008
Some coll.	-0.044***	0.008	-0.042***	0.008	-0.049***	0.008	-0.052***	0.008
H.S. dipl.	-0.010	0.007	-0.010	0.007	-0.033***	0.007	-0.034***	0.007
Race (white omitted)								
Other	0.0182	0.011	0.017	0.011	0.042***	0.013	0.036**	0.012
Latino	0.019	0.010	0.018	0.010	0.111***	0.009	0.103***	0.009
Black	0.045***	0.008	0.042***	0.008	0.109***	0.007	0.093***	0.007
Age (65+ omitted)								
LT 25	0.167***	0.014	0.149***	0.014	0.276***	0.011	0.226***	0.011
25-34	0.186***	0.008	0.175***	0.008	0.241***	0.008	0.203***	0.008
35-54	0.104***	0.007	0.099***	0.007	0.140***	0.006	0.125***	0.006
55-64	0.035***	0.007	0.034***	0.007	0.086***	0.007	0.081***	0.007
Location (Suburb omitted)								
Rural	-0.028***	0.006	-0.028***	0.006	0.025***	0.006	0.023***	0.006
Cent. City	-0.023***	0.006	-0.023***	0.006	0.025***	0.006	0.018**	0.006
Renter	--	--	0.032***	0.006	--	--	0.106***	0.005
Dep. Variable mean	.084		.084		.127		.127	
Observations	15675		15675		22210		22210	
R-squared	0.089		0.091		0.200		0.214	

NOTE: Other controls include gender, self-employment, marital status, health condition, and regional dummy variables, as well as a variable for the number of children the individual is responsible for. *** - $p < .001$, ** - $p < .01$, * - $p < .05$.

Table 9. Estimates for regressions on percent credit constrained using the 660 threshold

	1989 SCF sample				2001 SCF sample			
Parameter	Estimate	S. E.	Estimate	S. E.	Estimate	S. E.	Estimate	S. E.
Intercept	0.012	0.023	0.017	0.023	-0.008	0.020	0.022	0.020
Income quintile (Top omitted)								
Bottom	0.052***	0.013	0.040***	0.013	0.217***	0.011	0.159***	0.011
2	0.080***	0.011	0.072***	0.012	0.128***	0.010	0.090***	0.010
3	0.077***	0.010	0.073***	0.011	0.040***	0.009	0.025**	0.010
4	0.050***	0.010	0.049***	0.010	-0.006	0.008	-0.010	0.008
Education (less than H.S. omitted)								
Grad Sch.	-0.087***	0.010	-0.084***	0.011	-0.072***	0.010	-0.067***	0.010
Coll.	-0.040***	0.011	-0.039***	0.011	-0.067***	0.009	-0.065***	0.009
Some coll.	-0.070***	0.010	-0.069***	0.010	-0.034***	0.009	-0.039***	0.009
H.S. dipl.	-0.009	0.009	-0.009	0.009	0.004	0.008	0.003	0.008
Race (white omitted)								
Other	0.021	0.015	0.020	0.015	0.070***	0.015	0.062***	0.015
Latino	0.019	0.013	0.018	0.013	0.128***	0.011	0.117***	0.010
Black	0.088***	0.010	0.085***	0.010	0.125***	0.008	0.104***	0.008
Age (65+ omitted)								
LT 25	0.322***	0.017	0.303***	0.018	0.411***	0.013	0.345***	0.014
25-34	0.234***	0.010	0.223***	0.011	0.325***	0.009	0.273***	0.009
35-54	0.163***	0.009	0.157***	0.009	0.190***	0.007	0.169***	0.007
55-64	0.086***	0.009	0.085***	0.009	0.150***	0.008	0.143***	0.008
Location (Suburb omitted)								
Rural	-0.019*	0.008	-0.019*	0.008	0.015*	0.008	0.012	0.007
Cent. City	-0.015	0.008	-0.016	0.008	0.021**	0.008	0.012	0.008
Renter	--	--	0.034***	0.007	--	--	0.142***	0.006
Dep. Variable mean	.153		.153		.204		.204	
Observations	15675		15675		22210		22210	
R-squared	0.096		0.097		0.239		0.256	

NOTE: Other controls include gender, self-employment, marital status, health condition, and regional dummy variables, as well as a variable for the number of children the individual is responsible for. *** - $p < .001$, ** - $p < .01$, * - $p < .05$.