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Credit Access, the Costs of Credit and Credit Market Discrimination

Christian E. Weller

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Gordon Hall
418 North Pleasant Street
Amherst, MA 01002

Phone: 413.545.6355
Fax: 413.577.0261
peri@econs.umass.edu
www.peri.umass.edu

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Christian E. Weller
Associate Professor
Department of Public Policy and Public Affairs
McCormack Building 03-420
University of Massachusetts Boston
100 Morrissey Boulevard
Boston, MA 02125

and

Senior Fellow
Center for American Progress
1333 H Street NW
Washington, DC 20005
cweller@americanprogress.org
(202) 741-6367

Abstract

Since the early 1990s, credit expanded relative to income, especially after 2001. It is hypothesized that traditionally uneven credit access and gaps in the costs of credit by demographic characteristics shrank during this period. Relying on data from the Federal Reserve's Survey of Consumer Finance, this study looks at financial constraints, the costs of credit and a number of contributions to the costs of credit, including sources and types of loans. The results indicate that taste-based discrimination and structural discrimination may have persisted and possibly increased over time. Gaps in credit access and costs of credit have widened by race, remained high by income, but shrank by ethnicity. Part of the overall differences in credit access was a varying reliance on professional information when making decisions on debt.

Keywords: Household credit, bank credit, loan denials, discrimination, debt payments, interest rates.

Introduction

Household debt can be, if used correctly, the grease for economic mobility. By borrowing, many more families can afford to buy a home, car, or a college education than would otherwise be the case. And debt allows families to smooth out income fluctuations due to short-term spells of unemployment, a medical emergency, among others.

Traditionally, not all families had the same access to credit. The chance of getting a loan and the costs of debt often varied by demographic characteristics. Minorities and low-income families in particular had fewer chances of getting a loan and paid higher costs for debt than their counterparts.

These differences have often been the result of credit market discrimination. Specifically, lenders may have denied loans to some borrowers solely on the base of race, ethnicity and other personal traits, or they may have steered these borrowers towards higher-cost loan products than were available for other borrowers.

Differences in credit access and costs of credit were expected to decline over time as US financial markets became more deregulated, starting in the late 1970s, but taking shape especially in the 1990s. In particular, market deregulation was meant to result in more competition and ultimately less financial market discrimination.

Prior research has shown some decline in the financial market discrimination. From the late 1980s to the early 1990s, differences in the chance of getting a loan approved seemed to decrease. More recent research, though, found that differences in loan denial rates and the costs of credit persisted over time, although it is unclear if this persistence was due to financial market discrimination.

This paper considers recent household level data on consumer debt to determine if credit market discrimination has declined, disappeared or persisted as financial markets have become more deregulated in the U.S. In particular, this paper analyzes the evidence on the chance of financial constraints as well as on the cost of credit for the period from 1989 to 2004. Consequently, this paper builds on the previous research in a number of important aspects. First, the empirical analysis extends beyond the late 1990s to test the impact of the latest round of financial deregulation on discrimination. Second, the research considers the evidence pertaining to taste-based and structural discrimination in credit markets. Third, this research includes the costs of credit and not just loan denials. In the analysis of potential cost differences, the research pays particular attention to the role sources and types of loans can play for the cost of credit. Fourth, the data analysis compares the experience of Latinos and African-Americans with each other to see if their gaps with whites and with each other have changed in any meaningful way over time.

I.   Literature Review

Debt allows families to purchase costly items and to master short-term income fluctuations. The biggest reason for families to go into debt is for a home, followed by

loans for investment properties, cars, and education (Weller and Douglas, 2007). Moreover, due to debt, consumption volatility is less severe than income volatility (Bloemen & Stancanelli, 2005; Krueger and Perri, 2002).

Credit access and costs of credit, though, tend to vary by demographic characteristics. These include personal characteristics of the borrower, such as family size, marital status, living arrangements, among others, and financial characteristics, such as credit history, income, and wealth. Also, a credit application may be denied because of issues associated with a loan, e.g. a lender may be prohibited from making a particular loan. And finally, there are reasons specific to a lender for denying credit, e.g. a requirement to have had a past banking relationship with a lender (Chakravarty, 2002).

These differences, though, may also result from discrimination. The origin and type of discrimination is debated. Becker (1957) uses the term "taste-based" discrimination, whereby minorities, low-income families, women, among others, receive disparate and less advantageous treatments than their counterparts. "Taste-based" discrimination should ultimately disappear with sufficient competition since it constitutes a cost to the lender.

Others, though, have argued that discrimination can be structural (Dymski, 1995, 2001). In this perspective, the circumstances between two people can differ systematically by race, ethnicity, gender, or other characteristics. This view includes "taste-based" discrimination, but goes beyond it. Now, differences in income and wealth can themselves be result of previous or current systematic discrimination.

Part of this structural discrimination may be access to professional financial information. Financial education may play an crucial role for wealth creation (Fox, and Hoffman, 2004; Hilgert, et al., 2003; Weinberg, 2006), especially for minorities and low-income families (Choudhury, 2002; Lyons & Scherpf, 2004; Lyons et al., 2006; Schug et al., 2006; Yao et al., 2005), even as effective financial education is still developing (Fox & Hoffman, 2004: Fox et al., 2005; Lyons et al., 2006). Low-income and minority families, though, are substantially less likely than their counterparts to seek information from professionals, when making debt decisions.[1] Among whites, 45.7% relied on professionals in 2004, compared to 27.7% of African-Americans and 27.2% of Hispanics.[2] This may be related to structural inequities as it may reflect wealth and income levels and historically established relations with financial service providers.

A number of studies have documented the existence of primarily taste-based discrimination in financial markets, e.g. by looking at loan denial rates. The research, for instance, finds that loan denial rates vary by race, so that non-whites tend to have higher loan denial rates than whites, even after controlling for other relevant characteristics (Blanchflower et al., 2003; Canner et al., 1994; Cavalluzzo and Wolken, 2005; Cavalluzzo et al., 2002; Dymski, 2001; Gabriel & Rosenthal, 1991; Holloway & Wyly,

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[1] Professionals comprise brokers, lawyers, accountants, bankers, among others.
[2] There were no large differences with respect to collecting information themselves and relying on advertisements when making decisions pertaining to debt (Weller, 2007).

2001; Munnell, et al., 1996; Ross, 2005). Crook (1996) also finds that lower-income and older families were more likely than their counterparts to experience loan denials.

Credit market differences by demographic characteristics also include varying costs of credit. Very high cost loans include payday lending, car title loans, and overdraft loans. Interest rates on payday loans average typically about 400% (CRL, 2006), Fox and Guy (2005) estimate that the median annual interest rate for a car title loan is about 300% and Duby et al. (2005) argue that overdraft fees can quickly translate into triple-digit annualized interest rates. Moreover, credit card debt often costs more than other forms of credit (Manning, 2000) due to higher interest rates and additional fees (Westrich and Bush, 2005). Finally, subprime mortgages are by definition higher cost loans.

The evidence indicates that all forms of higher-cost credit are more prevalent among minorities and lower-income families than among their counterparts (Barr, 2001; CFA, 1998, 1999; Stegman & Faris, 2003). For example, payday lenders targeted African-American families, low-income families, and military families (CRL, 2005; CU, 2003; DOD, 2006; Graves & Peterson, 2005; Tanik , 2005). Also, repeat users of overdraft loans seemed to be more likely than not to be lower-income and non-white (James & Smith, 2006). And, car title loans tended to be more prevalent among lower-income families and military families than among others (Fox & Guy, 2005). And, credit card debt was relatively more prevalent among lower-income and minority families than among their families (Bird et al., 1998; African-American & Morgan, 1999; Manning, 2000; Yoo, 1996). Moreover, the terms and conditions of credit cards tended to be worse for low-income families than for higher-income ones (Ausubel, 1999; Stavins, 2000). Furthermore, minority borrowers were more likely to receive a subprime mortgage than their similarly situated counterparts (Bocian et al., 2006; Fishbein & Woodall, 2006).

Cost differences may also arise due segmented markets and limited services. Markets may be segmented because lenders tailor their products to specific groups, because of regulatory restrictions, such as limits on credit union activities,[3] and because lenders may restrict their geographic scope due to limited resources or discriminatory practices, such as red-lining (Munnell et al., 1996; Newman & Wyly, 2004; Wyly & Hammel, 2004).

Financial market deregulation, though, could have contributed to declining differences in credit market outcomes. Since the 1970s, deregulation resulted in a wave of merger and acquisition activities and consolidation in the financial services industry (Rhoades, 2000; Wheelock & Wilson, 2004). Evaluations of the wave of bank consolidations generally find that banks have become more profitable and their loan portfolios less risky (Akhigbe & Madura, 2004; Akhigbe et al., 2004; Al Mamun et al., 2005; Yildirim et al., 2006), which potentially reflected greater economies of scale and thus the possibility of improved banking services for previously underserved borrowers. This is further supported by the limited evidence that suggests that small business access to credit did not shrink in the wake of financial service consolidation (Avery & Samolyk, 2004; Hein et al., 2005; Carow et al., 2006; Rauch & Henderson, 2004; Rose 1993).

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[3] Limits on credit unions have decreased over time (Leggett & Strand, 2002; Tripp & Smith, 1993).

This tentative conclusion may be further supported by the fact that new technologies and policy interventions may have offset possibly adverse effects of credit market consolidation. More widespread use of information technologies resulted in more credit access for vulnerable groups, such as small businesses (Berger, 2003; Ely & Robinson, 2001; White, 2002). In addition, regulatory tools, in particular the Community Reinvestment Act, and a proliferation of loan programs targeted at underserved borrowers seemed to help to counter the effects of credit market discrimination with respect to credit access and costs of credit (Bates, 2000; Bostic et al., 2002).

Previous studies have found some indication that credit market discrimination may have persisted, but decreased over time. Cavalluzzo and Cavalluzzo (1998), for instance, find that financial market discrimination diminished in more competitive markets. Also, Dymski (2001) finds that the difference in racial inequality persisted, but declined in many U.S. cities between 1992 and 1998. Finally, Lyons (2003) finds that between 1992 and 1998 all families saw improved credit access with particularly strong improvements for African-American families and families with low earnings.

This paper expands the previous research in several ways. First, the time horizon extends beyond the late 1990s to test the impact of the latest round of financial deregulation on discrimination. Second, it considers evidence on taste-based and structural discrimination. Third, it includes the costs of credit. Fourth, the data analysis compares the experience of Latinos and African-Americans with each other.

II.   Credit market trends

The primary data set used here is the Federal Reserves' tri-annual data Survey of Consumer Finances (SCF), which includes comprehensive information on household debt and assets. The SCF surveys a cross-section of the U.S. population every three years with 2004 as the last survey year. Consistent data for most variables are available since 1989.

By 2004, there were still large differences by race, ethnicity and income in the probability of denied and discouraged applications. By 2004, 14.9% of African-American families and 11.9% of Hispanic families said that they did not apply for a loan because they feared that they would be turned down, compared to only 4.9% of whites. In addition, the share of discouraged loan applications continuously decreased with income. Also, African-Americans and Hispanics were twice as likely as whites to have a denied loan application in 2004 and loan denial rates also tended to be higher with lower incomes (Table 1).

The chance of being financially constrained seems to have increased over time. All groups had a higher likelihood of discouraged applications in 2004 than in 1989 and, for almost all groups, loan denial rates were higher in 2004 than in 1989 (Table 1).

Importantly, the data also suggest diverging levels of financial constraints by income and possibly by race. The differences in discouraged applications widened by income and remained comparatively stable by race and ethnicity and denial rates diverged by income and by race, but narrowed between Hispanics and whites (Table 1).

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Another aspect of credit market access is the cost of credit. To approximate costs, the ratio of debt payments to outstanding debt is calculated. Debt payments capture several cost components of debt – interest, fees, and other payments – terms for all loans. This makes it preferable to using interest rates, which only reflects one loan condition on the most recent loan. The composite payments measure can be influenced by the types of loans, by the sources of loans and by payment conditions, such as shorter or longer maturities. The multivariate analysis will consider a number of cost components separately to analyze the impact of a range of possible contributing factors.

Minorities and lower-income families paid more relative to their debt than whites and higher-income families. For instance, African-Americans paid 22.1% of their debt in debt payments in 2004, compared to 19.7% for Hispanics and 15.7% for whites (Table 2).

Again, credit market trends diverged, even though the median ratio of debt payments to debt declined for all groups. In 2004, the typical borrower had payments equal to 16.8% of their total debt, down from 28.2% in 1989. This was true for all groups, but there were larger relative declines for whites than for Hispanics between 1989 and 2004 and at about the same rate as for African Americans. Also, the decline in the cost of debt was relatively larger for higher-income families than for lower-income ones (Table 2).

III. Empirical analysis

This section provides multivariate analyses of credit access and the cost of credit. The literature suggests that differences by race, ethnicity and income should have decreased over time, while the descriptive data indicate that differences may have actually increased, especially by race.

IV.1 Financial constraints

First, two logit regressions, one for discouraged applications and one for denied applications, are estimated to test for the persistence of financial constraints. In each case, the dependent variable takes the value of "1" if the family was financially constrained and "0" otherwise.

The explanatory variables fall into three categories. First, there are personal characteristics, such as age, education, family size, marital status, race, and ethnicity. If race and ethnicity are correlated with financial constraints, it would be an indication of taste-based discrimination. Second, the analysis includes data on a family's credit history, particularly an indication if a family has been delinquent for 60 days or more on any bill

in the past five years and if a family self-identifies as saver.[4] For the years after 1995, the analyses also include an indicator variable if the household had declared bankruptcy over the past five years, an indicator variable if the household relied on itself for financial information on debt, an indicator variable if the household relied on professionals for financial information on debt, and an indicator variable if the household relied on advertisements for financial information. Each indicator variable takes the value of "1" if the answer is "yes" and zero otherwise. The professional information indicator is used as one measure of structural inequities. Third, the regression includes financial background variables, particularly income, labor force participation, net worth and homeownership. All four variables capture structural inequities since minorities tend to have consistently lower incomes than whites and since minorities and lower-income families are less likely to be homeowners, have less net worth and have a less labor force attachment.[5]

Each regression is estimated separately for the period from 1989 to 1995 and for the years from 1998 to 2004.[6] Since data on financial market competitiveness are not available, this split proxies for the effect of large-scale financial deregulation.

With respect to discouraged applications, there are systematic differences by race, ethnicity and income (Table 3). Specifically, African-Americans were 89.3% more likely than whites to feel discouraged between 1989 and 1995, while the difference between Hispanics and whites was 50.0%. Also, regardless of the time period, higher-income families were less likely to feel discouraged from applying for a loan. Moreover, after 1995, the difference increased by race, but declined by income and ethnicity. Still, Hispanics were 33.5% more likely than whites to feel discouraged.[7]

Finally, structural differences matter for discouraged applications. Homeownership, in particular, shows a stronger inverse correlation with discouraged applications in the later years than in the earlier ones. Income is also inversely related with income, although the size of the estimated coefficient is lower after 1995 than before 1998. Professional information and household wealth, though, have no significant relationship with discouraged applications (Table 3).

*** INSERT TABLE 3 ABOUT HERE****

These results differ in a number of important aspects from those of denied applications (Table 4). First, loan denial rates did not differ by ethnicity, although they varied by race.

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[4] Savers are families, who indicated that they "save income of one family member, spend the other", "spend regular income, save other income", or "save regularly by putting money aside each month". They are classified as non-saver if they "don't save - usually spend more than income they", "don't save - usually spend about as much as income", or "save whatever is left over at the end of the month - no regular plan".
[5] Wealth differed by race and ethnicity, e.g. Hispanics owned 20.6% of the average wealth of white families in the earlier period and 21.8% of the real net worth of white families in the latter period. Similar differences exist by race. Calculations are based on SCF.
[6] A likelihood ratio Chow test rejects the null hypotheses that the estimated parameters are identical for the two subperiods in all instances.
[7] Odds ratios are not shown here.

Between 1998 and 2004, African-Americans were 41.7% more likely than whites to be denied a loan application.

Second, the difference by race dropped only slightly. In the early years, the gap between African-Americans and whites was with 49.5% only 6.8 percentage points higher than in the later years, implying a slow decrease in taste-based discrimination.

Third, structural differences in part explain the gap in loan denial rates. Families, who relied on professional information for their debt decisions, were 17.3% less likely than those, who did not, to be denied a loan application. In addition, homeownership has become a larger predictor of loan denials over time. Even though there is no evidence for taste-based discrimination by ethnicity, there is evidence that structural differences can account for part of the gaps in loan denial rates by ethnicity after 1995 (Table 4).

*** INSERT TABLE 4 ABOUT HERE ****

IV.2 Cost components

To understand the differences in the cost of credit by race, ethnicity and income, first separate regressions are estimated for the determinants of interest rates, here proxied by mortgage rates, the chances of having loans from particular sources, specifically from traditional banks and from consumer banks,[8] and the share of loans from specific sources, limited again to mortgages as the largest single source of loans.

The determinants on mortgage rates are estimated since comprehensive interest rate information on all loans is not available. The regression equation is based on a credit supply function since interest rates are determined by lenders under credit rationing.

The results show interest rate differences by race and ethnicity. There was a gap by ethnicity in the earlier period, which disappeared over time (Table 5). In comparison, though, the difference between whites and African-Americans became statistically significant over time. Similarly, income played only a significant role after 1995. Thus, credit market differences by income appear to have changed from loan denials to cost of credit over time (Table 5).

In addition, structural differences matter for mortgage rates. Specifically, professional information is associated with lower mortgage rates (Table 5).

**** INSERT TABLE 5 ABOUT HERE ****

The source of credit may be another potential source of cost differences. Loans from consumer banks, such as credit cards and installment loans, tend to carry substantially higher interest rates than loans from traditional lenders, such as commercial banks (Weller, 2007). I estimate two separate logit regressions, whereby the dependent variable

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[8] Traditional lenders include commercial banks, savings and loans, and real estate lenders. Consumer banks include credit card lenders and finance companies.

takes on the value of "1" if the family has a loan from a traditional bank and from a consumer bank, respectively. The explanatory variables are the same as for the determinants of loan denials, with the exception of the homeownership dummy and the value of net worth due to the obvious simultaneity problems.

Minorities and lower-income families are less likely than their counterparts to borrow from traditional banks (Table 6). The gap by race, ethnicity and income, though, declined over time.

Structural differences seem to matter for having a relationship with traditional banks. Families, who relied on professional information, were significantly more likely to have loans from traditional banks than those, who did not (Table 6). Also, higher incomes are correlated with a larger probability of having a relationship with traditional banks. Hence, structural inequities may pose an obstacle to a relationship with lower-cost providers.

**** INSERT TABLE 6 ABOUT HERE ****

The fact that minorities borrowed less from traditional lenders, though, does not mean that they were more likely to borrow from typically more costly sources, such as finance companies and credit card companies. There is no statistically significant difference by race and ethnicity when it comes to borrowing from consumer lenders (Table 7). The combination of these results with the ones on traditional banks, which showed a lower likelihood for minorities than for whites to have a loan from such banks, is consistent with the earlier finding that denied and discouraged applications are larger for minorities. It again indicates that minorities have less bank credit than whites.

In a similar vein, professional information also increases the probability of having a loan from a consumer bank, confirming the earlier finding that professional information reduces the chance of loan denial. It could suggest that professional information does not matter for the cost of credit, although the results further below do not lend support to this.

**** INSERT TABLE 7 ABOUT HERE ****

Finally, there are only differences in the composition of debt, measured by the share of mortgages out of total loans, by race (Table 8). The results indicate a statistically significant difference between African-Americans and whites, which declines over time. There is no systematic difference between Hispanics and whites. Also, the results indicate that income reduced the share of mortgages out of total debt in the earlier years, but not in the later years. This may indicate that higher-income families have access to a range of loan products. Similarly, relying on professional information reduces the share of mortgages, which is consistent with lower loan denials.

**** INSERT TABLE 8 ABOUT HERE ****

IV.3 Total cost of credit

To analyze the determinants of the total debt payments, an OLS regression is estimated. Importantly, the results on differences in debt payments can shed some light on possible fee differences, when considered in connection with the previous results on interest rate differences. For instance, if debt payments are higher for some groups than others, but interest rates are statistically indistinguishable, it would imply that fees and other non-interest payments are higher for the group with the higher payments.

The explanatory variables are similar to those used before, with some additions. In particular, the regression includes interactive terms between race, ethnicity, income and type of financial institutions and the share of mortgages out of total debt. These interactive terms are meant to test if there is a differential cost effect of the sources and types of loans on the overall cost of credit by race, ethnicity, and income. These differences were not controlled for in the previous results, but could explain credit market differences, e.g. if credit steering occurs within a given financial institution.

Differences in the cost of credit widened by race and ethnicity over time. Specifically, the estimated coefficients for African-Americans and Hispanics indicate no significant cost difference with whites for the years 1989 to 1995, while African-Americans and Hispanics had larger debt payments than whites between 1998 and 2004 (Table 9).

The results indicate that higher debt payments in the later period followed higher interest rates for African-Americans. The same was not true for Hispanics. It is thus possible that higher debt payments for Hispanics between 1998 and 2004 thus mirrored higher costs other than interest, such as fees, for Hispanics than for whites.[9]

Another estimate, though, shows an offsetting effect on total cost of credit. The interactive term for African-Americans and consumer banks indicates that having a loan from a consumer bank lowers total cost for African-Americans more so than for others (Table 9). The results are large enough to almost offset the difference between whites and African-Americans, at least for those families who borrow from consumer banks. This may reflect the fact that some forms of credit, primarily credit card debt, often require only minimal debt payments, which could result in low principle payments offsetting other, larger costs associated with these loans, such as higher interest rates.[10]

The differences by race, however, are exacerbated by the estimate on mortgage shares. The share of mortgages out of total debt was inversely related to debt payments and the share of mortgages was lower for African-Americans than for whites (Table 9).

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[9] The alternative that Hispanics moved increasingly towards loan features that required larger principle payments is not supported by the previous results and the fact that Hispanics relied more and more on ARMs and similar mortgage products that required lower initial payments.

[10] The alternative interpretation that African-Americans receive lower-cost loans from consumer banks than whites do is not supported by the data. A multivariate analysis of interest rates on installment loans shows this. Installment loans are the typical loan product from finance companies and are about four times as large credit card debt. This analysis shows that African-Americans paid the same interest rates as whites on installment loans. Details are available from the author upon request.

In comparison, additional estimates indicate show smaller differences by ethnicity. For example, the interactive terms between Hispanics and the mortgage share has an estimated statistically significant negative sign, so that the mortgage share of Hispanics lowers total costs more than it does for other groups after 1995. This may reflect a growing reliance on ARMs among Hispanics during this period (Weller, 2006). As long as the share of ARMs among Hispanics increased, the share of mortgages with lower payments should also have increased.[11]

*** INSERT TABLE 9 ABOUT HERE ****

Income was inversely related to debt payments in the earlier period, but positively related after 1995 (Table 9). One possible explanation for the positive coefficient in the latter period may be that higher-income families held less debt with variable repayment options, such as credit card debt (Weller and Douglas, 2007). This type of debt may allow lower-income families to reduce their payments by paying less principle over longer time spans. Principle payments would thus have been comparatively larger for higher-income families and total debt payments relative to debt may hence have risen with income.

Further, higher-income families had larger debt payments than their counterparts if they had loans from consumer lenders. This may indicate higher-income families were less likely than lower-income families to take advantage of longer payment periods possible for some consumer loans.

IV.   Conclusion

This paper looks at trends in credit access and the costs of credit to see if credit market discrimination has disappeared or at least declined over time.

The figures show widening gaps in credit access and costs of credit by race. African-Americans became more likely than whites to be denied loans, and they faced a greater credit cost difference relative to whites in the later years than in the earlier years.

In comparison, Hispanics saw equalizing credit access and credit costs relative to whites. To some degree, though, the improvements for Hispanics may have been offset by continued gaps in fees and other non-interest costs.

There were also signs of growing gaps in income. In particular, lower-income families seemed to have been charged higher interest rates than their counterparts.

Minorities and lower-income families seemed more likely than their counterparts to take advantage of loan features that reduced payments, such as credit cards with low required minimum principle payments and ARMs, which allowed them to shrink the cost gap.

The results indicate that taste-based discrimination and structural discrimination may have persisted and possibly increased over time.

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[11] The end of the rapid proliferation of ARMs followed after the data years.

To respond to persistent differences, public policy could make it easier, e.g. by making it less costly, for people to get information from professionals may help reduce differences in credit market outcomes by race, ethnicity and income. When families rely on professional information, e.g. from lawyers, brokers, accountants, among others, they can significantly reduce the chances of loan denials. Minorities and lower-income families, though, rely much less on professionals, when making decisions on debt. Thus, easier access to professional information may reduce credit market differences.

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Table 1: Share of discouraged and denied loan applications, 1989 to 2004

Year	1989	1992	1995	1998	2001	2004	1989 to 2001	2001 to 2004	1989 to 2004
Did not apply because of fear of being turned down									
Total	5.5	5.3	8.3	6.7	7.0	6.9	1.5	-0.1	1.4
White	3.4	3.7	5.7	4.4	4.1	4.9	0.7	0.7	1.5
African-American	13.5	8.6	21.3	15.2	16.6	14.9	3.2	-1.8	1.4
Hispanic	10.5	14.6	13.8	17.3	16.5	11.9	6.0	-4.6	1.4
Bottom quintile	10.8	8.8	15.2	12.5	13.6	11.9	2.8	-1.7	1.2
Second quintile	5.9	5.9	8.7	8.3	9.7	10.2	3.9	0.5	4.4
Middle quintile	3.6	4.9	8.3	4.6	5.8	6.6	2.2	0.8	3.0
Fourth quintile	2.7	3.4	3.4	3.4	3.3	2.6	0.7	-0.7	0.0
Top quintile	2.8	2.0	2.3	2.1	1.5	2.9	-1.3	1.3	0.1
Applied, denied, and could not get full amount elsewhere									
Total	11.6	14.8	12.1	12.6	12.3	13.0	0.7	0.7	1.4
White	10.1	12.4	10.3	11.5	10.8	10.8	0.8	0.0	0.7
African-American	13.0	25.4	20.2	20.0	18.3	22.0	5.3	3.7	9.0
Hispanic	20.6	21.6	17.0	13.9	16.1	18.1	-4.5	2.0	-2.5
Bottom quintile	11.9	17.2	13.0	12.7	12.2	13.2	0.3	1.0	1.3
Second quintile	17.1	17.8	15.1	15.4	17.0	19.4	-0.1	2.4	2.3
Middle quintile	11.3	16.8	13.0	16.7	15.0	15.7	3.6	0.7	4.4
Fourth quintile	12.2	12.6	12.0	10.4	11.0	12.7	-1.2	1.7	0.5
Top quintile	4.8	8.1	6.1	7.0	5.8	4.5	1.0	-1.3	-0.3

Notes: All figures in percent. Source is Weller (2008).

Table 2: Median debt payments relative to debt, 1989 to 2004

Year	1989	1992	1995	1998	2001	2004	1989 to 2001	2001 to 2004	1989 to 2004
Total	28.2	24.9	23.7	21.6	20.8	16.8	-7.4	-4.0	-11.4
White	25.5	23.0	22.0	20.4	19.6	15.7	-5.9	-3.8	-9.7
African-American	36.0	30.0	30.0	29.4	28.6	22.1	-7.5	-6.4	-13.9
Hispanic	29.9	30.0	25.0	29.7	25.9	19.7	-4.0	-6.2	-10.2
Bottom quintile	36.6	30.0	30.0	30.0	30.0	27.7	-6.6	-2.3	-8.9
Second quintile	30.0	30.0	30.0	30.0	30.0	23.2	0.0	-6.8	-6.8
Middle quintile	30.0	27.3	25.7	24.0	24.6	17.4	-5.4	-7.1	-12.6
Fourth quintile	23.1	22.0	20.0	17.8	18.7	16.0	-4.5	-2.7	-7.2
Top quintile	20.3	17.6	17.1	16.7	15.9	13.3	-4.3	-2.6	-7.0

Notes: Only households with any debt payments are included. All figures in percent. Source is Weller (2008).

Table 3: Logit regression of discouraged loan applications

Personal charactstcs.	Before 1998		After 1995		After 1995, extra variables	
	Coeff.	Std. dev.	Coeff.	Std. dev.	Coeff.	Std. dev.
HH head has less than high school degree	0.564***	0.177	0.723***	0.161	0.721***	0.161
HH head has high school degree	0.259*	0.147	0.391***	0.129	0.383***	0.130
HH head has some college	0.271	0.169	0.275*	0.143	0.269*	0.144
Age	0.079***	0.021	0.071***	0.018	0.068***	0.019
Age^2	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000
Family size	-0.003	0.037	0.058**	0.029	0.057*	0.029
Married	0.191	0.177	0.067	0.138	0.057	0.138
Single women	0.309**	0.157	0.231*	0.132	0.221*	0.132
African-American	0.638***	0.133	0.664***	0.111	0.660***	0.112
Hispanic	0.405**	0.173	0.289**	0.141	0.275*	0.142
Other race or ethnicity	0.303	3.317	0.325	3.317	0.331	3.317
Credit history						
HH has been delinquent on payments	0.314*	0.184	0.409***	0.140	0.380***	0.142
HH has declared bankruptcy in the past					0.275*	0.163
Payments relative to income	-0.012	0.056	-0.006	0.011	-0.006	0.011
Number of financial institutions	-0.146***	0.037	-0.222***	0.036	-0.221***	0.036
HH self-identifies as saver	-0.183	0.123	-0.177*	0.098	-0.167*	0.098
HH collects debt information itself					0.111	0.110
HH relies on professional advice					-0.147	0.099
HH relies on advertisements					0.034	0.117
Financial characterstics						
Income (1,000s of 2004 dollars)	-0.008***	0.003	-0.005**	0.002	-0.005**	0.002
Net worth (10,000s of 2004 dollars)	0.000	0.001	-0.005	0.004	-0.004	0.004
HH is home owner	-0.414***	0.136	-0.735***	0.114	-0.723***	0.114
Constant	-3.518***	0.483	-3.236***	0.414	-3.230***	0.419
N	11279		13171		13171	
F-Statistic	98.17		189.63		155.62	
P-Value	0.000		0.000		0.000	

Notes: Dependent variable is equal to one if household was discouraged from applying and zero otherwise. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.

Table 4: Logit Regression of Loan Denial Rates

Explanatory variable	Before 1998		After 1995		After 1995, extra variables	
Personal characteristics	Coeff.	Std. dev.	Coeff.	Std. dev.	Coeff.	Std. dev.
HH head has less than high school degree	0.021	0.148	0.210	0.132	0.211	0.133
HH head has high school degree	0.078	0.112	0.267***	0.095	0.245**	0.096
HH head has some college	0.279**	0.117	0.499***	0.098	0.472***	0.099
Age	0.058***	0.018	0.039**	0.015	0.027*	0.016
Age^2	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000
Family size	0.054*	0.032	0.062**	0.028	0.052*	0.028
Married	-0.096	0.134	0.127	0.118	0.116	0.118
Single women	-0.085	0.128	0.222**	0.111	0.213*	0.112
African-American	0.402***	0.112	0.348***	0.095	0.319***	0.095
Hispanic	0.223	0.154	-0.066	0.123	-0.059	0.125
Other race or ethnicity	0.184	3.317	-0.155	3.317	-0.134	3.317
Credit history						
HH has been delinquent on payments	1.332***	0.144	1.356***	0.103	1.288***	0.105
HH has declared bankruptcy in the past					0.935***	0.135
Payments relative to income	0.003	0.011	-0.006	0.006	-0.005	0.006
Number of financial institutions	0.073***	0.024	0.093***	0.022	0.091***	0.022
HH self-identifies as saver	-0.479***	0.087	-0.505***	0.076	-0.481***	0.076
HH collects debt information itself					0.086	0.091
HH relies on professionals					-0.190***	0.074
HH relies on advertisements					0.325***	0.083
Financial characteristics						
Income (1,000s of 2004 dollars)	-0.004**	0.002	-0.002	0.001	-0.002	0.001
Net worth (10,000s of 2004 dollars)	-0.001	0.001	-0.002*	0.001	-0.002	0.001
HH is home owner	-0.481***	0.096	-0.535***	0.086	-0.513***	0.087
Constant	-2.172***	0.375	-2.128***	0.331	-1.992***	0.342
N	11279		13177		13177	
F-Statistic	156.34		235.78		208.44	
P-Value	0.000		0.000		0.000	

Notes: Dependent variable is equal to one if household was denied a loan application and zero otherwise. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.

Table 5: Regression for mortgage interest rates

Personal characteristics	Coeff.	Std. dev.	Coeff.	Std. dev.	Coeff.	Std. dev.
HH head has less than high school degree	63.926***	16.363	87.188***	15.708	85.727***	15.932
HH head has high school degree	37.244***	9.253	61.844***	7.964	60.599***	7.8677
HH head has some college	35.147***	10.420	50.488***	8.492	48.691***	8.4118
Age	-0.594	2.300	2.838*	1.565	2.9314*	1.5859
age^2	-0.006	0.024	-0.034**	0.016	-0.036**	0.0160
family size	7.880**	3.286	-1.025	2.764	-1.533	2.7710
Married	-35.207**	16.900	9.194	11.527	10.671	11.429
single women	-20.671	19.119	12.929	14.383	14.837	14.292
African-American	14.626	17.203	59.938***	13.752	54.486***	13.760
Hispanic	49.121***	18.843	-10.301	14.883	-11.24	14.867
Other race or ethnicity	32.427***	8.171	-30.009***	9.901	-29.43***	9.8059
Credit history						
HH self-identifies as saver	-20.022**	7.844	-34.733***	6.443	-32.85***	6.3357
No. of financial institutions	-3.050	1.861	5.050***	1.936	5.1214***	1.9127
HH collects debt information itself					28.235***	8.1910
HH relies on professionals					-12.48**	6.3624
HH relies on advertisements					-23.54**	9.6966
Financial characteristics						
Income (1,000s of 2004 dollars)	0.001	0.006	-0.020**	0.009	-0.019**	0.0085
Constant	948.697***	55.040	646.048***	38.865	665.97***	39.403
N	5473		6340		6340	
R-Squared	0.037		0.052		0.058	
F-statistic	42.43		65.79		57.68	
p-value	0.000		0.000		0.000	

Notes: Dependent variable is mortgage rate times 1,000. Only households with mortgage rates greater than zero are included. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.

Table 6: Logit regression of households having credit from traditional banks

Explanatory variable	Before 1998		After 1995		After 1995, extra variables	
Personal characteristics	Coefficient	Standard deviation	Coefficient	Standard deviation	Coefficient	Standard deviation
Household head has less than high school degree	-0.588***	0.092	-0.806***	0.106	-0.727***	0.107
Household head has high school degree	-0.385***	0.071	-0.376***	0.075	-0.332***	0.076
Household head has some college	-0.065	0.079	-0.211**	0.083	-0.195**	0.083
Age	0.1538***	0.011	0.1497***	0.012	0.1438***	0.012
Age^2	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000
Family size	0.0947***	0.022	0.0887***	0.025	0.0917***	0.026
Married	0.3305***	0.109	0.1926*	0.115	0.1872	0.115
Single women	0.1401	0.098	-0.318***	0.101	-0.313***	0.102
African-American	-0.570***	0.090	-0.379***	0.099	-0.359***	0.099
Hispanic	-0.752***	0.119	-0.531***	0.120	-0.488***	0.120
Other race or ethnicity	-0.302***	0.066	-0.677***	0.074	-0.669***	0.073
Credit history						
HH has been delinquent on payments					0.0092	0.132
HH has declared bankruptcy in the past					-0.172	0.149
Saver	0.1757***	0.056	0.2368***	0.060	0.2006***	0.062
HH collects information itself					0.3023***	0.073
HH relies on professionals advice					0.3453***	0.060
Household relies on advertisements					0.1333*	0.077
Financial characteristics						
Income (1,000s of 2004 dollars)	0.0015***	0.001	0.0004**	0.000	0.0004**	0.000
Employment	0.5096	3.317	0.4337	3.317	0.4163	3.317
Constant	-4.096***	0.273	-3.833***	0.307	-4.127***	0.313
N	11348		8747		8747	
F-Statistic	372.2		291.31		227.69	
P-Value	0.000		0.000		0.000	

Notes: Dependent variable is equal to one if household has any debt and zero otherwise. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.

Table 7: Logit regression of households having credit from consumer banks

Explanatory variable	Before 1998		After 1995		After 1995, extra variables	
Personal characteristics	Coefficient	Standard deviation	Coefficient	Standard deviation	Coefficient	Standard deviation
Household head has less than high school degree	-0.380***	0.0856	-0.501***	0.0952	-0.435***	0.0973
Household head has high school degree	-0.005	0.0665	-0.114	0.0725	-0.080	0.0740
Household head has some college	0.2307***	0.0771	0.2376***	0.0805	0.2505***	0.0814
Age	0.0834***	0.0101	0.0880***	0.0104	0.0799***	0.0105
Age^2	-0.001***	0.0001	-0.001***	0.0001	-0.001***	0.0001
Family size	0.0663***	0.0213	0.0646***	0.0248	0.0552**	0.0249
Married	0.1606	0.1012	0.0778	0.1080	0.0846	0.1093
Single women	0.1961**	0.0879	0.2508***	0.0916	0.2674***	0.0928
African-American	-0.013	0.0856	0.1083	0.0874	0.0593	0.0887
Hispanic	-0.150	0.1128	-0.126	0.1113	-0.111	0.1140
Other race or ethnicity	-0.201***	0.0629	-0.362***	0.0700	-0.402***	0.0704
Credit history						
HH has been delinquent on payments					0.9232***	0.1493
HH has declared bankruptcy in the past					0.0888	0.1525
Saver	-0.009	0.0539	-0.164***	0.0572	-0.143**	0.0585
HH collects information itself					0.3831***	0.0670
HH relies on professionals advice					0.1154**	0.0579
Household relies on advertisements					0.4271***	0.0757
Financial characteristics						
Income (1,000s of 2004 dollars)	-0.000**	0.0004	-0.001***	0.0002	-0.001***	0.0002
Employment	0.5404	3.3166	0.5263	3.3166	0.5238	3.3166
Constant	-2.165***	0.2506	-1.875***	0.2669	-2.261***	0.2737
N	11348		8747		8747	
F-Statistic	231.09		217.67		182.26	
P-Value	0.000		0.000		0.000	

Notes: Dependent variable is equal to one if household has any debt and zero otherwise. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.

Table 8: Regression for mortgage share out of total debt

Personal characteristics	Coeff.	Std. dev.	Coeff.	Std. dev.	Coeff.	Std. dev.
HH head has less than high school degree	-0.043***	0.0162	-0.024*	0.0138	-0.026*	0.0138
HH head has high school degree	-0.054***	0.0099	-0.027***	0.0078	-0.028***	0.0078
HH head has some college	-0.027***	0.0105	-0.030***	0.0086	-0.030***	0.0086
Age	-0.005**	0.0023	-0.003**	0.0015	-0.003**	0.0015
age^2	0.0000**	0.0000	0.0000**	0.0000	0.0000**	0.0000
family size	0.0032	0.0028	0.0024	0.0025	0.0027	0.0025
Married	-0.044***	0.0151	-0.039***	0.0109	-0.040***	0.0109
single women	0.0080	0.0165	0.0013	0.0120	-0.000	0.0119
African-American	-0.082***	0.0184	-0.031**	0.0128	-0.031**	0.0128
Hispanic	0.0172	0.0181	0.0083	0.0130	0.0060	0.0129
Other race or ethnicity	0.0037	3.3166	0.0191	3.3166	0.0171	3.3166
Credit history						
HH self-identifies as saver	0.0054	0.0081	0.0119*	0.0065	0.0136**	0.0065
No. of financial institutions	-0.013***	0.0024	-0.011***	0.0019	-0.011***	0.0019
HH collects debt information itself					0.0045	0.0083
HH relies on professionals					-0.018***	0.0062
HH relies on advertisements					-0.012*	0.0077
Financial characteristics						
Income (1,000s of 2004 dollars)	-0.000**	0.0000	-0.000	0.0000	-0.000	0.0000
Constant	1.0572***	0.0539	0.9821***	0.0385	0.9847***	0.0388
N	4935		5976		5976	
R-Squared	0.042		0.023		0.026	
F-statistic	46.44		37.71		35.52	
p-value	0.000		0.000		0.000	

Notes: Dependent variable is mortgage rate times 1,000. Only households with mortgage rates greater than zero are included. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.

Table 9: Regression estimates for debt payments relative to total debt

Explanatory variables	Before 1998		After 1995		After 1995, extra variables	
Personal characteristics	Coeff.	Std. dev.	Coeff.	Std. dev.	Coeff.	Std. dev.
HH head has less than high school degree	0.303***	0.076	0.227***	0.078	0.227***	0.078
HH head has high school degree	0.152***	0.033	0.055**	0.027	0.055**	0.027
HH head has some college	0.056	0.043	0.008	0.032	0.008	0.033
Age	-0.006	0.009	-0.001	0.008	0.000	0.008
age^2	0.000	0.000	0.000	0.000	0.000	0.000
Family size	0.024	0.016	0.011	0.012	0.060	0.048
Married	-0.026	0.065	0.061	0.049	0.012	0.012
Single women	0.047	0.074	0.045	0.043	0.045	0.043
African-American	0.340	0.221	0.504*	0.271	0.514*	0.273
Hispanic	0.381	0.348	1.209	0.735	1.216*	0.735
Other race or ethnicity	0.033	0.050	0.003	0.039	0.004	0.038
Credit history						
HH self-identifies as saver	-0.010	0.033	0.020	0.026	0.013	0.026
HH has been delinquent on payments					-0.110**	0.054
No. of financial institutions	-0.040***	0.010	-0.030***	0.010	-0.030***	0.010
HH collects debt information itself					-0.012	0.037
HH relies on professionals for debt information					-0.007	0.026
HH relies on advertisements for debt information					0.003	0.026
HH has loan from credit union	0.022	0.078	-0.014	0.038	-0.014	0.038
HH has loan from traditional lender	-0.103**	0.045	-0.038	0.033	-0.039	0.033
HH has loan from consumer bank	-0.317***	0.057	-0.226***	0.042	-0.226***	0.042
Share of mortgages out of total debt	-0.388***	0.139	-0.445***	0.124	-0.451***	0.125
Loans from CU and African-American	-0.025	0.138	0.114	0.113	0.119	0.112
Loans from CU and Hispanic	-0.102	0.158	0.037	0.158	0.039	0.158

Explanatory variables	Before 1998		After 1995		After 1995, extra variables	
Loans from CU and income	-0.001	0.001	0.000	0.000	0.000	0.000
Loans from traditional bank and African-American	0.094	0.159	-0.022	0.116	-0.021	0.115
Loans from traditional bank and Hispanic	-0.145	0.207	-0.321	0.260	-0.320	0.260
Loans from traditional bank and income	0.0001**	0.000	0.000	0.000	0.000	0.000
Loans from consumer bank and African-American	-0.245	0.217	-0.435**	0.220	-0.437**	0.221
Loans from consumer bank and Hispanic	-0.160	0.291	-0.952	0.584	-0.963	0.585
Loans from consumer bank and income	0.000	0.000	0.000***	0.000	0.000***	0.000
Mortgage share and African-American	-0.232	3.317	-0.145	3.317	-0.153	3.317
Mortgage share and Hispanic	-0.298***	0.095	-0.403***	0.049	-0.408***	0.050
Mortgage share and low-income	-0.130	0.179	-0.067	0.225	-0.057	0.225
Mortgage share and moderate-income	-0.125***	0.036	-0.005	0.062	-0.025	0.025
Mortgage share and middle-income	-0.065	0.063	0.015	0.053	-0.003	0.061
Mortgage share and high-income	-0.038	0.042	-0.033	0.025	0.016	0.052
Income (1,000s of 2004 dollars)	-0.001**	0.000	0.0001***	0.000	0.0001***	0.000
Constant	1.069***	0.204	0.773***	0.208	0.791***	0.207
N	7990		9469		9469	
R-squared	0.027		0.061		0.061	
F-statistic	88.41		97.70		80.98	
p-value	0.000		0.000		0.000	

Notes: Dependent variable is share of debt payments to debt. Only households with debt payments greater than zero are included. * indicates significance at 10-level, ** indicates significance at 5-level, *** indicates significance at 1-level.