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Chapter 3

Exploring the Determinants of High-Cost Mortgages to Homeowners in Low- and Moderate-Income Neighborhoods

Michael S. Barr, Jane K. Dokko, and Benjamin J. Keys

In spite of the recent impetus to reform home mortgage markets, particularly as they affect low- and moderate-income (LMI) households, little systematic evidence is available about how potential abuses in mortgage lending manifest in the mortgages held by those households. While racial discrimination in mortgage markets has a long history in the United States, the role of mortgage brokers in lending has only recently increased and become controversial.[1] In this chapter, we uncover two mechanisms through which differential mortgage pricing occurs among LMI homeowners: black borrowers and borrowers who use mortgage brokers pay more for mortgage loans than other borrowers, after controlling for a wide variety of factors.

To the best of our knowledge, this is the first robust household-level survey to report data on different dimensions of high-cost mortgage pricing, such as balloon payments, up-front points and fees, "teaser" rates, and prepayment penalties, along with whether a household uses a mortgage broker.[2] We exploit a new micro-dataset, the Detroit Area Household Financial Services study, which we designed and implemented with the Survey Research Center of the University of Michigan. The dataset links household and mortgage characteristics to describe mortgage pricing among LMI house-

holds, their creditworthiness and attitudes about borrowing, and their use of mortgage brokers. Especially noteworthy is that the survey was conducted at the height of the subprime lending boom in 2005 and 2006 and in a state—Michigan—where anti-predatory lending statutes were relatively weak.

We establish a profile of the demographic characteristics of homeowners in LMI neighborhoods in the Detroit metropolitan area.[3] We then estimate differences in mortgage pricing arising between these homeowners and include as much available information about the borrower as possible to account for the demand-driven explanations that are correlated with race or using a mortgage broker for the high costs some homeowners pay. We focus on the intensive margin of differences in pricing rather than on how lenders may limit access to credit, ration credit, or require prohibitively high down payments. The characteristics of mortgages may differ across borrowers because of their incomes, the size of their down payments, their taste for risk, their creditworthiness, and their willingness to shop around for the best terms. While our approach cannot completely rule out these demand-driven explanations, our descriptive results are most consistent with supply-driven origins for differences in loan terms.

We find that within similar low-income neighborhoods, black homeowners pay higher interest rates—110 basis points, on average—than similar non-black homeowners, and are more than twice as likely to have prepayment penalties or balloon payments attached to their mortgages than non-black homeowners, even after we control for age, income, gender, creditworthiness, and a proxy for default risk. In addition, we observe that borrowers who used a mortgage broker are over 60 percent more likely to pay points or fees than those who did not use a broker.

The heterogeneity in pricing that we observe across racial groups and across transaction types (broker versus non-broker) is unexplained after accounting for many demand-driven explanations that we present in greater detail later in the chapter. However, there may be other potentially important sources of heterogeneity that are unobservable to us but may be observed by the lender, such as more precise measures of income volatility or earlier documentation of income and assets (see Edelberg 2007 for a discussion of these issues). Our approach cannot distinguish between racial differences in pricing and the presence of omitted financial characteristics that are correlated with race but are not included in our data. Nonetheless, a well-functioning mortgage market should eliminate the disparate treatment of minority borrowers and of borrowers who use mortgage brokers.

Our analysis sheds light on the average homeowner's experience in Detroit's LMI neighborhoods, which are similar to many rust belt communities such as Cleveland, Ohio, or Gary, Indiana.[4] The differences in loan terms by race, particularly in the up-front costs, which are not formally collected by fair lending enforcement mechanisms such as the Home Mortgage Disclosure Act (HMDA), suggest that collecting and scrutinizing a broader set of loan terms might be a way to extend our analysis to other types of communities.[5] The prevalence of brokers in this market and the finding that so many borrowers are presented with just a single mortgage option (and therefore know little about alternatives) potentially provide empirical support for models of predatory lending in which lenders use an informational advantage to their benefit (e.g., Bond, Musto, and Yilmaz 2009). These results provide new insights into the ways in which brokers operated in LMI communities and help researchers to understand the full costs of homeownership to LMI borrowers.

Data and Summary Statistics

The Detroit Area Household Financial Services Study

We use a unique dataset to analyze homeownership in LMI neighborhoods. We created the Detroit Area Household Financial Services (DAHFS) study to gain a richer understanding of low- and moderate-income households' finances and housing costs and their financial services behavior and attitudes. The DAHFS study is the first survey to use a random, stratified sample to explore the full range of financial services used by low- and moderate-income households, along with systematic measures of household preference parameters and financial services supply. The survey data also contain a detailed set of demographic and socioeconomic variables, including employment, sources of income, household savings behavior and asset levels, and a wide range of financial services behaviors and attitudes.

No other randomized survey contains such a rich set of information pertaining to LMI household experiences regarding financial services and homeownership, including measures of creditworthiness and mortgage default risk (see Barr, Dokko, and Keys 2009 for a more detailed description of the data and sample). Unlike other datasets that do not directly observe up-front costs such as points and fees (e.g., Haughwout, Mayer, and Tracy

2009), the DAHFS study has the unique advantage of providing information to obtain a more detailed picture of the total costs of a mortgage. The survey questions about housing, homeownership, and mortgage finance make up a portion of the overall survey. All information from the survey is based on respondents' self-reports of their mortgages and experiences and therefore is not validated by administrative data; however, interviewers encouraged respondents to consult their mortgage and tax documents when answering more financially detailed questions. Consistent with Bucks and Pence (2008), not all homeowners knew all aspects of their mortgage contracts. These responses are treated as "missing" and were excluded from the analysis.[6]

The Survey Research Center (SRC) at the University of Michigan interviewed households from July 2005 through March 2006. All interviews were computer-assisted and conducted in person, usually at the respondent's home. The average interview length was 76 minutes. SRC completed 1,003 interviews and achieved a response rate of 65 percent. The sample members were selected to form a stratified random sample of the Detroit metropolitan area (Wayne, Oakland, and Macomb Counties).[7] We drew sample members from census tracts with median incomes that are 0 to 60 percent ("low"), 61 to 80 percent ("moderate"), and 81 to 120 percent ("middle") of the Detroit area's median income of $49,057 (U.S. Census Bureau 2000). This chapter uses only those households in the low- and moderate-income strata, with a final sample size of 938 respondents.

Reflecting the demographics of the Detroit area, 69 percent of those surveyed in the LMI subsample of the DAHFS study are African American, 20 percent are white, and 2 percent identify themselves as Arab American (Table 3.1). The remaining 9 percent are Asian, Hispanic, or respondents in other racial categories. Because of this nearly bimodal distribution of race, we focus on black and non-black comparisons of mortgage pricing terms later in the chapter. The respondents, like many Detroit residents, are long-term residents; over 90 percent have lived in the Detroit area for more than 10 years. The Detroit area has a sizable low-income population. Over one third of respondents live on an income that is considered to be below the federal poverty line, and 30 percent of the sample never completed high school. The demographics of the DAHFS study reflect the national demographics of LMI households: largely African American female-headed households, living close to the federal poverty line. Also, the DAHFS sample looks similar to households in LMI census tracts in the Detroit area (see Barr, Dokko, and Keys 2009 for a table with this comparison).

Table 3.1. Demographic Characteristics of DAHFS Study Sample

				Own	
	All	*Rent*	*Own*	*Outright*	*Mortgage*
Age					
18–24	11.9	66.9	33.2	29.0	71.0
25–60	71.8	57.3	42.7	26.1	73.9
61 and up	16.3	31.4	68.7	66.2	33.8
Race					
African American	68.6	58.3	41.7	38.7	61.3
White	20.3	41.0	59.0	33.7	66.3
Asian	2.1	69.2	30.8	34.7	65.3
Hispanic	3.5	56.7	43.3	41.7	58.3
Arab	1.9	32.0	68.0	0.0	100.0
Other	3.6	60.1	39.9	28.8	71.2
Educational Attainment					
Less than high school diploma	29.6	61.5	38.5	47.9	52.1
High school diploma or equivalent	23.0	58.9	41.2	37.9	62.1
More than high school diploma	47.4	48.1	51.9	30.4	69.7
Gender					
Male	35.8	48.1	51.9	36.8	63.2
Female	64.2	58.1	41.9	35.8	64.2
Time in Detroit					
<2 years	1.8	80.3	19.7	0.0	100.0
2–5 years	3.3	71.1	28.9	0.0	100.0
5–10 years	4.1	59.9	40.1	16.7	83.3
10+ years	31.3	49.0	51.0	42.1	57.9
Whole life	59.5	55.5	44.5	35.7	64.3
Marital Status					
Married	19.7	27.7	72.3	24.6	75.4
Cohabiting	4.1	61.0	39.0	19.8	80.2
Divorced/separated	21.6	57.8	42.2	34.1	65.9
Widowed	9.0	36.2	63.8	67.3	32.7
Never Married	45.6	68.1	31.9	39.7	60.3
Homeownership Status					
Rent	54.6				
Own	45.4				

Table 3.1 (Continued)

				Own	
	All	*Rent*	*Own*	*Outright*	*Mortgage*
Homeowners: Mortgage Status					
Own outright	35.2				
Have mortgage	62.1				
Have land contract	2.7				
Annual Household Income					
Mean	$28,163	$19,399	$39,530	$33,006	$45,506
Median	$20,000	$12,500	$30,000	$23,000	$38,000
Average Monthly Mortgage/Rent Payment					
Mean		$497	$660		
Median		$500	$650		
Annual Home Payment (*calculated based on above*)					
Mean		$5,958	$7,920		
Median		$6,000	$7,800		
Annual Payment to Annual Income Ratio					
Mean		0.80	0.29		
Median		0.36	0.19		
Sample Size	938	503	419	237	135

Note: This paper uses only the low- and moderate-income households interviewed by the DAHFS. Sample weights are used throughout to make the sample representative of the Detroit area LMI population. Payment-to-income ratio calculated by using annual household income and annual rent/mortgage payment. 922 respondents answered the own/rent question.

Characteristics of Homeowners

In the DAHFS study, 922 out of 938 respondents answered questions about their housing situation. Nearly half of the sample, 45 percent, owned their homes. This proportion is well below the national average of 69 percent and the Midwest average of 73 percent (Joint Center for Housing Studies 2006) but is roughly consistent with the nationwide homeownership rate

for blacks (49 percent) as well as for LMI households (see Bucks, Kennickell, Mach, and Moore 2009). The relatively low rates of homeownership in the sample reflect the difficulty LMI households in general, and minorities in particular, have in accumulating assets.

As shown in Table 3.1, older households were much more likely to own their homes. Respondents who were over age sixty were twice as likely to own their homes than eighteen- to twenty-four-year-olds, with an ownership rate of 69 percent compared to just 33 percent for the younger cohort. White respondents in the DAHFS were 20 percent more likely to own their homes than blacks. The degree of homeownership among whites in LMI areas, 59 percent, is still well below nationwide homeownership rates. More educated and married households were also much more likely to own their homes relative to their less educated and unmarried counterparts. Female-headed households owned their homes only 42 percent of the time in the sample. Importantly, homeowners also had significantly larger annual incomes than renters; owners' average income was nearly double that of renter households.

On the basis of the DAHFS survey data, we calculate a measure of home equity, which is defined by the self-reported "hypothetical selling price" minus any outstanding amount remaining on all mortgages, including second liens.[8] The median level of home equity is $45,000, a substantial amount of money for families with moderate income and few or no alternative sources of wealth. The median purchase price of housing is $38,000, while the median stated selling price is $88,900, significantly below the Midwest average but consistent with actual sales prices in Detroit.[9] The median amount remaining on a mortgage is $54,000.

By one measure, annual housing costs are much less burdensome for homeowners than for renters. While the median mortgage payment is higher than median rent in our sample ($650/month versus $500/month), this comparison does not capture the fact that homeowners earn significantly more income each year. Defining housing outlays as the annual payments toward housing (either mortgage payments or rent) divided by annual income, median housing outlays for homeowners are only 20 percent of annual income, and this figure does not include homeowners who own their homes outright and so have only maintenance, insurance, and property tax costs. In contrast, median housing outlays for renters are double this amount; renters in the DAHFS pay on average 35 percent of their

annual income toward housing. This juxtaposition actually may understate the value of homeownership for some households, since the mortgage payments are reported without considering the increase to after-tax income from the mortgage interest deduction or the fact that the payments include the payment of principal, which increases the homeowner's net worth.

An alternative way to view the relationship between payments and income is to compute annual payment to income ratios. Homeowners earn twice as much as renters, yet mortgage payments are roughly 1.3 times greater than monthly rent. Consequently, the annual payment to annual income ratio is much lower for homeowners than for renters, whose housing payments make up a larger portion of their household income. In this respect, homeownership seems advantageous in the sense that a higher percentage of income can be distributed towards non-housing expenses.

Reasons for Delaying Payment and Measuring the Risk of Default

In addition to household demographics, the DAHFS survey collected information on the creditworthiness of homeowners. Specifically, measures of creditworthiness include whether the household has a bank account, whether the household has ever been denied a loan during the three years before the survey interview, whether the household typically pays less than the minimum amount on a credit card bill, whether the household has ever filed for bankruptcy, whether the household has ever had a bank account closed because of poor credit, and whether the household is behind on any vehicle loans.[10] These are some of the measures that credit bureaus use to create summary indices of creditworthiness, such as the FICO score.[11] However, our measures are taken at the time of the survey rather than when the mortgage was approved, so it is possible that the survey measures do not fully capture the borrower's creditworthiness observed by the lender when the mortgage was originated.

In our sample of homeowners, 84 percent of households had a bank account. Non-black households were 5.5 percent more likely to have an account. Six percent of the sample had been denied a loan in the past three years. Fewer than 1 percent reported that they paid less than the minimum on their credit cards, and only 1 percent said that they had had a bank account closed because of poor credit. Of homeowners in the DAHFS

report, 15 percent reported that they had filed for bankruptcy at some point; 3 percent were behind on their vehicle loans.

We use borrowers' self-reports of whether they have had problems paying their mortgage as a measure of (ex post) default risk. In the survey, we ask whether households have delayed their mortgage payment for one month or longer, or are past due on their mortgage at the time of the survey interview. We combine these two reasons into one indicator variable that is intended to capture the likelihood of delinquency and default, in addition to our measures of creditworthiness. Ex post default risk serves as a proxy for a more complete model of ex ante risk used in lenders' risk-based pricing models and matrices. If lenders possessed all information about the determinants of default, this variable would be, on average, little different from one measuring ex ante default risk, such as a credit score.

There are two caveats to using self-reports of problems paying the mortgage as a measure of ex ante default risk. First, if lenders charge higher prices to blacks based on race, and this leads more black homeowners to default, then ex post default risk would be positively correlated with the likelihood of being black (Apgar, Duda, and Gorey 2005). In this case, controlling for ex post default would lead us to understate the differences in pricing between blacks and non-blacks. Second, most missed payments do not lead to foreclosure, as borrowers cure. While the self-reported measures might overstate the level of default risk, we do not expect the degree of overstatement to be systematically different for blacks and whites, leaving the difference in self-reported default risk little different from the true difference. All told, the inclusion of this variable is a conservative approach to control for unobservable risk characteristics of the household, which may be available to the lender at the time of mortgage origination.

It is fairly common for homeowners in the DAHFS to have problems paying their mortgages between the time of loan origination and the survey interview. Roughly one third of homeowners who were still paying their mortgages said that they had delayed payment for a month or more (Table 3.2). Forty percent of those who had ever delayed paying their mortgage cited a job loss or unemployment as the reason for falling behind, while 24 percent said that they had too many other bills to pay, 8 percent cited unexpected medical expenses, and 12 percent cited emergencies. Those who had delayed payment also were more likely to be black; 34 percent of black homeowners had fallen behind at some point compared to 25 percent of non-black homeowners.

Table 3.2. Mortgage Characteristics in the DAHFS

	All Owners	*Black*	*Non-Black*	*Difference*	*Adjusted Difference*
Number of mortgages currently outstanding					
0	2.2	1.6	3.1	−1.5	
1	89.5	88.4	91.1	−2.7	
2	8.3	10.0	5.8	4.2	
Loan obtained through a mortgage broker	58.4	57.4	60.0	−2.7	−2.9
Broker offered loans from more than one lender	32.6	34.6	29.9	4.7	−5.5
Points or fees paid up front	28.5	29.5	27.0	2.5	0.0
Amount paid	$2,255	$2,829	$1,488	$1,341*	$1,112
Amount currently owed	$56,024	$54,964	$57,575	−$2,611	−$1,394
Current annual rate of interest (APR) on mortgage	7.4	7.8	6.7	1.1†	1.1†
Adjustable-rate mortgage (ARM)	29.3	32.1	25.1	7.0	3.8
Amount of most recent payment	$660	$654	$668	−$14	−$14
Payment includes property taxes and insurance	59.8	56.4	64.7	−8.3	−6.6
Payment record					
Ahead of schedule	13.1	11.2	15.9	−4.7	
Behind schedule	5.4	5.8	5.0	0.8	
On schedule	81.5	83.1	79.1	4.0	
Mortgage has prepayment penalty	23.3	28.6	15.3	13.3†	15.8†
Mortgage has balloon payment	11.1	14.8	5.7	9.1†	9.3†
Ever delayed paying the mortgage for a month or more	30.4	33.8	25.4	8.4	6.5
Refinanced the original mortgage	49.2	47.3	51.9	−4.6	−7.2

(continued on next page)

Table 3.2 (Continued)

	All Owners	*Black*	*Non-Black*	*Difference*	*Adjusted Difference*
Reasons for refinancing					
Get better terms	36.4	37.7	34.7	3.0	
Borrow additional money on your home equity	17.5	17.2	17.9	−0.7	
Both	46.2	45.2	47.5	−2.3	
Refinance because a broker or lender recommended it	20.2	18.9	21.9	−3.0	0.0
Number of observations	419	263	156		

Source: DAHFS.

*Significant at the 10 percent level; †significant at the 5 percent level. Significance is noted if, controlling for age, gender, income, creditworthiness, and loan performance, the difference between black and non-black owners is significant at the 10 percent level. Creditworthiness is measured by indicators for whether the homeowner has a bank account, has been denied a loan, has filed for bankruptcy, has had a bank account closed due to poor credit, pays less than the minimum due on a credit card, or is behind on a vehicle loan. Loan performance measures are whether the owner has ever delayed a mortgage payment and whether the owner is currently behind on the mortgage payment. Significance is qualitatively unchanged if the difference between black and non-black owners is estimated.

Mortgage Pricing

In the DAHFS, many homeowners held mortgages that had the characteristics of a subprime loan. Over 10 percent of the homeowners in our sample had interest rates above 10 percent, which is the HUD-Treasury definition of "D" class subprime lending (4 percentage points above prime) (U.S. Department of Housing and Urban Development and U.S. Department of the Treasury 2000).[12] In contrast, on July 1, 2005, when we began collecting survey responses, the prime offer rate was 5.5 percent, according to the Federal Home Loan Mortgage Corporation. More than half the sample paid above prime interest rates; the median reported annual percentage rate (APR) was 6.9 percent.[13] On average, the current annual interest being charged on a mortgage for all respondents was 7.4 percent.

Sixty percent of homeowners with a mortgage used a mortgage broker. Although one of the financial functions of a mortgage broker is to provide

buyers and sellers with opportunities to find the best fit in mortgage product and price, only one third of those who used a mortgage broker were offered a loan from more than one lender. Put another way, two thirds of those who used a mortgage broker likely received little benefit from the shopping services brokers provide, despite their high costs. However, it might be that had these households not used a broker, they would not have been able to obtain any loan. We explore this possibility in more detail later in this chapter.

The costs of obtaining a mortgage are seemingly high. Approximately 29 percent of mortgage-holding respondents paid points or fees to acquire the loan; it does not appear that these points resulted in a reduction in interest rate. Median amounts are 2 points or $2,000 in fees, significant costs for access to the credit market. Over one fourth of the homeowners in our sample had adjustable-rate mortgages (ARMs). At the time of the survey, the median APR was 6.9 percent, with a mean of 7.4 percent. In the region, one-year ARMs were 4.8 percent in July 2005, while five-year ARMs were at 5.5 percent. Our finding of rates well above those posted suggests that homeowners, on average, are paying more than average market rates for mortgage borrowing.

Nearly one fourth (23 percent) of the LMI homeowner sample had prepayment penalties written into their mortgages, which results in an additional fee if these borrowers decide to repay their mortgage (by either paying off the balance or refinancing) within, typically, the first two to three years after origination of the loan. In comparison, at the national level, only 2 percent of prime loans include a prepayment penalty, whereas an estimated 80 percent of subprime loans include this surcharge (Farris and Richardson 2004; Goldstein and Son 2003). In our study, 11 percent of homeowners have a balance payable, or balloon payment, when their loans are due. While the inclusion of balloon payments in mortgage contracts is controversial, one benefit is that they allow borrowers to pay less each month at the expense of a large future payment. However, balloon payments may mask the true costs of homeownership to the extent that borrowers take out larger loan balances or pay higher rates or fees for the same monthly payment as a mortgage without a balloon payment. Balloon payments may prove difficult to make or refinance at the time they are due.

Among those who reported being behind on their payments at the time of the survey interview, 31 percent had a prepayment penalty, and 20 percent faced a balloon balance at the end of their mortgage contract. Consis-

tent with these correlations, Quercia, Stegman, and Davis (2005) report that mortgages with prepayment penalties attached are 20 percent more likely to be foreclosed than those mortgages without, and the effect for balloon payments is even larger; such loans are 50 percent more likely to foreclose. The relationship between these high-cost mortgage features and the likelihood of default is an equilibrium outcome when lenders tailor mortgages to borrowers based on their risk characteristics.

Heterogeneity in Mortgage Pricing

Differences in race and the use of a mortgage broker are two channels by which differences in mortgage pricing arise among LMI homeowners. Our approach compares observably similar borrowers who differ along one of these characteristics. We compare differences in prices paid by black and non-black borrowers as well as those paid by borrowers using and not using a mortgage broker, and we assess whether these differences are attributable to differences in demographic characteristics, employment, income, creditworthiness, and default risk. These comparisons provide unbiased estimates of the differences in mortgage pricing if these groups are also, on average, unobservably similar (such as in terms of their default risk or the moral stigma they associate with not repaying their debt).[14] But if, for example, blacks are more (or less) likely to default on their mortgages, a simple comparison of interest rates between blacks and non-blacks would overstate (or understate) the true difference in pricing. However, in the DAHFS study's cross-sectional sample of borrowers, as in any cross section, we do not observe all information about the borrower, particularly the information that lenders use to price loans. Instead, in the discussion below, we describe the variables available in the DAHFS study and discuss how including these variables addresses the biases that are likely to arise.

Racial Dispersion

Overall, our results support the view that observably similar blacks and whites receive different loan terms along most, though not all, dimensions of their mortgage contracts. First, we find that black homeowners have

interest rates that are 1.1 percentage points greater than those of whites (see Table 3.2). Because blacks and whites differ in many observable dimensions, in Tables 3.3a and 3.3b we present regression-adjusted differences in mortgage pricing between these two groups of homeowners.[15] Since we are simply interested in characterizing the average differences in pricing between blacks and non-blacks, we use ordinary least squares to estimate these differences. In Table 3.3a, we show how the interest rate difference seen in Table 3.2 is unaffected by adjusting for income, loan size, home value, origination date, creditworthiness, and default risk.[16] In other words, this point estimate of 110 basis points does not vary with the inclusion of the borrower characteristics that a lender would observe to gauge default risk. The magnitude of this result upon controlling for default risk is particularly striking, since blacks are more likely to delay their mortgage payment or be behind on their mortgage, and the point estimate does not decrease once we include this variable. This result suggests that blacks obtain loans with higher interest rates, on average, and the disparity is not explained by the observable creditworthiness or default risk of the borrower.[17]

This sizable black-white difference in interest rates is larger than previous estimates that control for default risk (Courchane 2007), or those found in studies of HMDA data, which contain data on both high-priced mortgages and race. The APRs for high-priced originations in the 2005 and 2006 HMDA data differ between blacks and whites by 49 to 56 basis points (see table 12 of Avery, Brevoort, and Canner 2007). However, this disparity accounts only for the intensive margin of the difference in high-cost loans, as loans with APRs below the high-price threshold need not report their APR. The black-white difference of the likelihood of appearing in the high-cost sample (i.e., the extensive margin) is 29.8 percent, since 47 percent of blacks receive loans classified as higher-priced, as opposed to only 17.2 percent of whites (see table 11 of Avery et al. 2007). Our sample is of all mortgages, not just high-priced mortgages, so it is plausible that the combination of both the intensive margin and the extensive margin would lead to estimated black-white differences in interest rates that are much larger than the difference that was observed on the intensive margin alone.

Next, we examine points and fees, balloon payments, and prepayment penalties, since, in principle, the inclusion of these mortgage terms may result in lower interest rates. Overall, we do not find this to be the case. Inclusion of these terms does not lower interest rates and black households

Table 3.3a. Regression Version of Mortgage Characteristics Table: Amount of Fees and APR

	Amount of Fees			*APR*		
	(4)	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Black	1001	781.8	736.1	1.165‡	1.126‡	1.009‡
	(750.4)	(879.5)	(1007)	(0.399)	(0.353)	(0.352)
Female	195.9	53.87	1942	−0.350	−0.124	−0.127
	(968.3)	(894.4)	(1423)	(0.396)	(0.454)	(0.471)
Age 25–60	−1472	−1658	−2877	0.450	0.600	0.315
	(1099)	(1543)	(2398)	(0.569)	(0.557)	(0.572)
Age 61+				−0.347	−0.145	−0.369
				(0.930)	(1.062)	(1.054)
Married	−772.2	−1505	−2103	−0.213	−0.288	−0.323
	(910.3)	(1054)	(1286)	(0.414)	(0.452)	(0.438)
Income		−0.0762	0.0527		−8.64e-05	−9.63e-05*
		(0.104)	(0.0908)		(5.22e-05)	(5.09e-05)
Income^2		1.52e-06	−1.56e-07		1.38e-09	1.58e-09*
		(1.72e-06)	(1.39e-06)		(8.62e-10)	(8.55e-10)
Income^3		−0	0		−0	−0*
		(0)	(0)		(0)	(0)
Delayed paying mortgage			49.79			0.915†
			(739.3)			(0.417)
Banked			−2692			−0.0645
			(3610)			(0.787)
Denied a loan			5755			0.691
			(4148)			(0.672)
Pay less than minimum on credit card						1.727
						(2.841)
Ever bankrupt			756.1			0.567
			(2101)			(0.412)
Ever account closed because of poor credit			−1592			−1.787‡
			(2423)			(0.679)
Behind on vehicle loan			−567.1			0.689
			(2245)			(1.006)
Purchase price	0.0428	0.0371	0.0491	−6.18e-06	−7.01e-06	−8.70e-06
	(0.0375)	(0.0291)	(0.0345)	(5.50e-06)	(5.61e-06)	(5.69e-06)

Table 3.3a (Continued)

	Amount of Fees			*APR*		
	(4)	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Value if sold today	−0.0137	−0.0152	−0.00529	2.99e-06	1.31e-06	4.84e-06
	(0.0136)	(0.0154)	(0.0166)	(4.37e-06)	(4.94e-06)	(5.31e-06)
Loan remaining	−0.0167	−0.0184	−0.0492	−9.03e-06	−5.61e-06	−8.01e-06
	(0.0240)	(0.0246)	(0.0302)	(6.82e-06)	(7.06e-06)	(7.28e-06)
Refinance	961.8	1014	2774*	−0.687†	−0.761†	−0.660*
	(639.9)	(729.2)	(1385)	(0.344)	(0.357)	(0.365)
Date of purchase controls?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	39	37	37	173	163	163
R^2	0.295	0.406	0.573	0.174	0.217	0.264

Robust standard errors in parentheses. DAHFS sample weights used in all regressions.
*Significant at the 10 percent level; †significant at the 5 percent level. ‡significant at the 1 percent level.

pay higher fees and are more likely to have balloon payments and prepayment penalties than non-black borrowers.

Blacks pay roughly twice the amount in fees or points that whites pay (see Table 3.2). Black respondents paid roughly $2,829 up front in fees, whereas non-black respondents paid roughly $1,488. Owing to very small sample sizes, this difference is not statistically significant after controlling for demographics, income, and creditworthiness. However, the magnitude of the adjusted difference is very similar to the unadjusted difference and remains economically large at over $1,100.

The presence of prepayment penalties also varies considerably by race. Nearly 29 percent of blacks have prepayment penalties compared to roughly 13 percent of white respondents, a statistically significant difference (see Table 3.2). This difference remains statistically meaningful even after controlling for income, age, gender, and various measures of creditworthiness (regression results are reported in Table 3.3b). Also, as shown in Table 3.2, a higher fraction of black homeowners (15 percent) have balloon payments written into their mortgage contracts, compared to white homeowners (6 percent). This difference is also statistically significant after controlling for

Table 3.3b. Regression Version of Mortgage Characteristics Table: Prepayment Penalty and Balloon Payment

	Prepayment Penalty			*Balloon Payment*		
	(13)	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*
Black	0.112*	0.151†	0.133*	0.0821*	0.0920*	0.0951*
	(0.0666)	(0.0742)	(0.0732)	(0.0458)	(0.0514)	(0.0493)
Female	−0.0443	−0.0813	−0.0828	0.0586	0.00679	0.00670
	(0.0704)	(0.0751)	(0.0776)	(0.0482)	(0.0525)	(0.0521)
Age 25–60	−0.149	−0.107	−0.158	−0.111	−0.0855	−0.0890
	(0.131)	(0.137)	(0.144)	(0.123)	(0.122)	(0.114)
Age 61+	−0.372†	−0.386†	−0.440‡	−0.0442	−0.0347	−0.0699
	(0.152)	(0.161)	(0.165)	(0.145)	(0.155)	(0.139)
Married	0.0701	0.101	0.0994	0.0331	0.0711	0.0737
	(0.0696)	(0.0781)	(0.0801)	(0.0484)	(0.0552)	(0.0547)
Income		−1.91e-06	−.16e-06		−2.26e-06	−4.25e-06
		(5.66e-06)	(5.80e-06)		(4.92e-06)	(4.68e-06)
Income^2		−0	0		−0	−0
		(9.34e-11)	(9.28e-11)		(7.15e-11)	(6.75e-11)
Income^3		0	0		0	0
		(0)	(0)		(0)	(0)
Delayed paying mortgage			0.0469			0.166‡
			(0.0804)			(0.0636)
Banked			0.0351			0.0343
			(0.119)			(0.103)
Denied a loan			−0.203*			−0.0904
			(0.103)			(0.0592)
Pay less than minimum on credit card			0.417			0.737‡
			(0.496)			(0.113)
Ever bankrupt			0.151			−0.0777
			(2101)			(0.412)
Ever account closed because of poor credit			0.000386			−0.126
			(0.444)			(0.127)
Behind on vehicle loan			0.0827			−0.173†
			(0.186)			(0.0669)

Table 3.3b (Continued)

	Prepayment Penalty			*Balloon Payment*		
	(13)	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*
Purchase price	−1.55e-06† (7.64e-07)	−1.40e-06 (8.76e-07)	−1.61e-06* (8.96e-07)	5.59e-07 (5.45e-07)	6.89e-07 (5.64e-07)	5.06e-07 (5.36e-07)
Value if sold today	−1.39e-06* (7.73e-07)	−1.31e-06 (7.98e-07)	−1.20e-06 (8.24e-07)	−1.01e-06† (4.97e-07)	−7.95e-07 (4.99e-07)	−5.63e-07 (4.94e-07)
Loan remaining	2.70e-06‡ (9.28e-07)	2.47e-06† (1.00e-06)	2.25e-06† (1.04e-06)	3.14e-07 (7.07e-07)	2.55e-07 (7.90e-07)	2.98e-07 (8.43e-07)
Refinance	0.0617 (0.0705)	0.0473 (0.0764)	0.0481 (0.0782)	−0.118† (0.0510)	−0.0990* (0.0519)	−0.0900* (0.0526)
Date of purchase controls?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	188	174	174	197	183	183
R^2	0.136	0.149	0.187	0.100	0.115	0.224

Robust standard errors in parentheses. DAHFS sample weights used in all regressions.
*Significant at the 10 percent level; †significant at the 5 percent level. ‡significant at the 1 percent level.

other demographic characteristics, loan size, house value, income, and creditworthiness (full regression results are reported in Table 3.3b).

Overall, these high-cost loan practices differ substantially along racial lines. These disparities are consistent with the findings of Avery, Brevoort, and Canner (2006), who analyze HMDA data on mortgages originated in 2005 and find that African Americans disproportionately obtained high-cost mortgages relative to their share of mortgages received. Our results also support the finding of race-based disparities in audit-based studies, which focus on a different dimension of the mortgage process: the loan approval stage (e.g., Ross and Yinger 2002 or Bocian, Ernst, and Li 2006). Charles and Hurst (2002) find that black households are less likely to apply for mortgages and, conditional on applying, are less likely to be approved. That we find racial differences in loan terms in a cross section of homeowners who have successfully received a mortgage loan suggests that race-based disparities persist even after differential treatment during the approval pro-

cess. Also note that in a cross section of homeowners, such as this one, riskier borrowers are not as likely to be observed as in samples drawn from loan originations, since, conditional on having taken a mortgage at some point, they might have already defaulted, are no longer homeowners, and therefore are not observed in the data. As a result, if blacks have, on average, greater default risk than whites, then a comparison by race of those remaining in the sample will understate the differences in pricing arising at origination.[18]

Mortgage Broker Use

We next explore differences in loan pricing based on the usage of mortgage brokers. While brokers are criticized for aggressively selling high-cost mortgages with potentially predatory loan terms (see Jackson and Burlingame 2006), in theory, one function of a broker is to match borrowers with competitively priced mortgage offers from lenders. Indeed, El Anshasy, Elliehausen, and Shimazaki (2006) estimate that subprime borrowers using a broker obtain APRs that are 15 to 190 basis points *lower* than those that were obtained by using a retail lender. However, in our data, we observe that borrowers who use a mortgage broker are 60 percent more likely to pay points or fees than are those who do not use a broker. As Table 3.4 shows, 36 percent of homeowners who purchased through a broker paid points and fees, whereas only 21 percent of homeowners who did not use a broker did so. The average difference in the size of these fees is over $800. We also observe interest rates that are 40 basis points higher as well as a greater prevalence of balloon payments among those who used a mortgage broker; owing to sample size limitations, the differences in interest rate and balloon payment are not statistically different from zero. That is, despite being more likely to pay points and fees, borrowers using a mortgage broker do not seem to obtain lower interest rates.

Our findings are consistent with the work of Jackson and Burlingame (2007), who find that average yield spread premiums were on the order of $1,500 to $1,800 in additional costs to the borrower and that these costs were not offset by lower upfront fees. In addition, over two thirds of homeowners who used a broker were offered only one mortgage product (see Table 3.2), which undermines the view that brokers provide borrowers with a diverse range of loan options.

Table 3.4. Mortgage Characteristics: The Role of Brokers

	Broker	*Non-Broker*	*Difference*	*Adjusted Difference*
Fraction of homeowners	58.4	41.6	16.8	
Paid points/fees	35.5	21.3	14.2†	13.6†
Mean fee amount	$2,356	$2,032	$324	$827
Adjustable rate	31.7	25.7	6.0	8.4
Mean interest rate	7.6	7	0.7†	0.4
Mean purchase price	$68,613	$55,264	$13,348	$11,492†
Mean year of purchase	1993.3	1993.3	0.0	0.8
Prepayment penalty	24.4	22.5	1.9	0.1
Balloon payment	14.6	6.7	7.9†	5.1
Ever delayed payment	33.3	27.4	5.9	4.7

Sample consists of DAHFS respondents who have a mortgage.

†Significant at the 5 percent level. Significance is noted if the difference between broker and non-broker loans is significant at the 10 percent level. Controls: age, race, gender, income, marital status, creditworthiness indicators. Creditworthiness is measured by indicators for whether the homeowner has a bank account, has been denied a loan, has filed for bankruptcy, has had a bank account closed due to poor credit, pays less than the minimum due on a credit card, or is behind on a vehicle loan. Loan performance measures are whether the owner has ever delayed a mortgage payment and whether the owner is currently behind on the mortgage payment

Furthermore, we find that there is no difference in the likelihood of using a broker based on age, race, or income in our sample of homeowners, which suggests that there is no support for differential demand-driven use of brokers across demographic groups.[19] Indeed, the estimated coefficients on the demographic variables are small in magnitude (as well as statistically insignificant). The borrowers who used a broker do not differ statistically in terms of creditworthiness measures. Thus it seems unlikely that brokers helped marginal borrowers to obtain access to credit they otherwise would have been unable to acquire. Because blacks and whites are equally likely to use brokers, it is unlikely that the racial differences in pricing arise in our sample through the broker channel. Specifically, the coefficient on being black remains significant in regressions, including the interaction of race and broker usage, while the coefficient on the interaction term is statistically insignificant (result not shown). These results present new puzzles about how LMI borrowers use mortgage bro-

kers and about the mechanisms by which LMI borrowers incur the costs of a mortgage.

Conclusion

This chapter has made use of a unique survey dataset of LMI households to identify two mechanisms through which high-cost mortgages can arise: racial differences in pricing and the role of mortgage brokers. We find that within similar low-income neighborhoods, black homeowners pay higher interest rates than similar non-blacks do—110 basis points on average—and are more than twice as likely to have prepayment penalties or balloon payments attached to their mortgages as non-black homeowners are, even after controlling for age, income, gender, creditworthiness, and a proxy for default risk. In addition, we observe that borrowers who used a mortgage broker are over 60 percent more likely to pay points or fees than those who did not use a broker. Overall, the results suggest that across some dimensions of pricing, similar borrowers are treated differently by mortgage lenders and brokers.

Observing differential treatment in the mortgage market is puzzling for at least three reasons. First, advances in mortgage underwriting technology have standardized the mortgage origination process for many lenders (Collins, Belsky, and Case 2004). The underwriting software does not include race as an input in either mortgage approval rates or pricing. Second, information on pricing has become less costly to obtain since the supply of mortgage brokers has increased dramatically over the last 15 years. Furthermore, the Internet has made interest rate comparisons and price quotes readily available. Together, these developments ought to have enhanced competition and standardized contracts across borrowers with similar risk profiles. Finally, fair lending laws prohibit discriminatory practices and have been in place for decades (see, for example, Ross and Yinger 2002 or Barr 2005). However, while differences in pricing may have decreased over time, they nonetheless persist among LMI households (Apgar and Calder 2005), including those we surveyed in Detroit in 2005 and 2006.

Our descriptive findings are most consistent with supply-driven origins for differences in loan terms. Our rich dataset can account for differences in the demand for mortgages across borrowers because of their incomes,

desired mortgage size, creditworthiness, and default risk. By including as much available information about the borrower as possible, we have attempted to address demand-driven explanations that are correlated with race or using a mortgage broker for the high costs some homeowners pay.

Our results suggest that enhanced fair lending enforcement and improved mortgage market regulation may be in order. One direction in which fair lending laws could be bolstered is through enhanced disclosure policies, coupled with financial education. Differences in pricing between blacks and non-blacks could potentially arise through different disclosure practices and conventions. In the DAHFS study, black borrowers were less informed on their APR and on whether their mortgage had an adjustable rate, prepayment penalty, or balloon payment. Further research is needed to understand the relationship between race and disclosure practices and whether certain types of disclosure practices lead to higher-priced loans. Improved disclosures may reduce these disparities.

Another direction is to improve the interaction between brokers and lenders with customers (see Barr, Mullainathan, and Shafir 2008). For example, a ban on yield spread premiums that vary by the terms of the loan, as recently contained in the Federal Reserve's proposed mortgage rules and in the Dodd-Frank Act, should help to reduce disparities that are produced through the broker channel. To the extent that differences in pricing arise because of decisions made by borrowers who do not understand loan terms or fee structures because of excessively opaque financial products or practices, the more that consumers are exposed to straightforward mortgages with sound underwriting, the easier it may be for them to make borrowing decisions that better meet their needs.

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Notes

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1. Until recently, 60 to 70 percent of loans were originated through the broker channel. Some economists have argued that mortgage brokers contributed to the subprime boom and bust by aggressively marketing high-cost and potentially confusing mortgages to low-income borrowers (Quigley 2008).

2. Woodward and Hall (2010) use loan-level data with mortgage pricing variables but not many household-level characteristics while Haughwout, Mayer, and Tracy (2009) merge data from LoanPerformance (LP) and HMDA to examine racial differences in subprime mortgage pricing.

3. This includes Wayne, Oakland, and Macomb Counties.

4. LMI communities in coastal cities, such as New York and Los Angeles, are quite different from Detroit in having Hispanic and immigrant populations as well as different housing markets.

5. Specifically, the reported annual percentage rate (APR) in HMDA includes upfront costs such as points and fees, but lenders are not required to disclose these separately. In addition, the APR is disclosed only for high-cost originations..

6. Specifically, 25 percent of black homeowners reported that they did not know their APR, in contrast to 18 percent of non-blacks. Nine percent of black homeowners did not know whether they had an adjustable-rate mortgage compared to 4 percent of non-blacks. For prepayment penalties, just under 20 percent of blacks and non-blacks did not know whether they had one, while just over one in ten households did not know whether they had a balloon payment. None of these differences are statistically significant.

7. Because of privacy concerns, we are not permitted to disclose the specific randomly selected census tracts from which the sample members were drawn.

8. The hypothetical selling price is a response to the question "If you were to sell your house today, how much would it be worth?," which was provided by the owner and thus is likely measured with some error (Bucks and Pence 2008). Home equity lines of credit are not included in this calculation of home equity.

9. The median sales price in July 2005 in the Midwest was $178,000, according to the *Daily Real Estate News* (2006) at Realtor.org. According to the Michigan Association of Realtors, average sales prices in Oakland and Macomb Counties were $234,000 and $175,000, respectively, in January to July 2005. The Detroit Board of Realtors reported an average sale price of $73,307 for the sales made in 2005, more in line with our reported estimates (Michigan Association of Realtors 2005).

10. Using a common factor of these creditworthiness measures derived from factor analysis as a control variable (rather than each variable individually) yields qualitatively similar results (available upon request).

11. We recognize that these variables do not fully cover all of the information used by credit bureaus, such as credit card or student loan delinquencies. However, these variables are highly correlated with the information that a credit bureau would use. We also surveyed homeowners about borrowing behaviors and attitudes that are typically unobserved by credit bureaus to gauge profligate spending habits, tendencies toward financial irresponsibility, and perceived stigma of indebtedness. Including these variables in the analysis does not qualitatively change our conclusions.

12. Among those with interest rates above 10 percent, 35 percent purchased their home after 2000 during a period with low interest rates. In our data, we are not able to discern why those with high interest rates who bought their homes before 2000 did not refinance amid widespread availability of lower interest rates.

13. We refer to the annual rate of interest reported by the borrower as the APR. However, borrowers could be reporting the note rate rather than the APR. The APR combines the note rate with other fees charged by the lender and expresses them as a yearly percentage. Our estimated "APR" differences across demographic groups are biased only if groups differentially report their note rate instead of their APR.

14. Borrowers using brokers would be unobservably similar to those not using brokers if mortgage broker usage were randomly assigned.

15. The number of observations in each column varies owing to individuals opting to report that they "don't know" certain terms of their mortgage.

16. We do not have information on the loan-to-value ratio of the loan at origination, so we use measures of the current amount outstanding and the value of the loan if sold today as comparable (albeit imperfect) controls.

17. We also included a variable measuring how much borrowers generally shopped around for financial services. The inclusion of this variable led to effectively identical results.

18. In contrast, samples drawn from loan originations, such as HMDA data, are not susceptible to this bias.

19. In contrast, El Anshasy, Elliehausen, and Shimazaki (2006) find that race, education, and income are highly predictive of broker use. Their results are based on a sample of subprime borrowers rather than both prime and subprime borrowers living in LMI neighborhoods. Still, it may be that black and white borrowers use different types of mortgage brokers. However, given the limitations of the survey questions about broker use, we are unable to investigate this issue further.