

Geographic Patterns of Mortgage Lending in Boston, 1982-1987

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Public policy has long been concerned with the possibility that banking practices that systematically deny credit in certain neighborhoods could lead to neighborhood deterioration and decline. The term "redlining" is used to describe a practice by which local lenders draw a red line around sections of a city, literally or figuratively, to delineate areas within which they will not lend. Thus, the term has been used to describe the behavior of financial institutions that allegedly provide services, including credit, in ways that discriminate unfairly among neighborhoods.¹

Financial institutions can remain in business, of course, only if they make a profit. They also have a responsibility to protect the assets of their depositors and insuring agencies. Thus, they cannot and should not be required to extend credit if sound judgment suggests undue risk.

This tension between fairness and concern with neighborhood decline on the one hand and sound banking practice on the other can be seen in the language of the Community Reinvestment Act of 1977 (CRA).² In that Act, Congress declared that every commercial bank and thrift institution has an affirmative obligation consistent with its safe and sound operation to help meet the credit needs of its entire community including low- and moderate-income neighborhoods.³

The same kind of language is contained in the regulations that instruct the agencies responsible for enforcing the Act.⁴ Those regulations set forth 12 criteria, or assessment factors, to be used in evaluating a lender's record of compliance. One of these, assessment factor (e), states that regulators are to consider "the geographic distribution of the bank's credit extensions, credit applications and credit denials."⁵

From time to time, the regulators have issued interpretive guidelines to clarify their policies in regard to CRA. The most recent guidelines refer to "unwarranted geographic differences in lending patterns,"⁶ and to "disparities in lending that do not appear to be attributable to safety and soundness considerations or to factors beyond

an institution's control,"⁷ but nothing in the law or in subsequent regulations and interpretations is specific about what constitutes an acceptable geographic pattern of lending.

Although race is not mentioned explicitly in the Act, it is clear that the term "entire community" includes areas with predominantly black residents as well as areas with predominantly white residents. Since the 1960s the controversy over redlining has focused on both race and income.

This paper will explore the geographic distribution of mortgage credit in the city of Boston. Part I will simply describe patterns of mortgage lending across 60 fairly internally homogeneous neighborhood statistical areas (NSAs) defined by the Census Bureau and grouped by income of residents and by racial composition. This section of the paper is purely descriptive; no attempt is made to analyze or to explain the observed patterns. Part II catalogues the major factors that could explain geographic patterns of mortgage credit. Part III explores the extent to which factors other than race can explain the actual patterns observed in Part I. Part IV describes which types of lenders are making mortgage loans in different neighborhoods. The final section, Part V, contains conclusions and recommendations.

The ratio of mortgage loans to housing varies by race and this pattern cannot be fully explained by economic and other non-racial factors.

The findings show that housing and mortgage credit markets are functioning in a way that hurts black neighborhoods in the city of Boston. One indication is that the ratio of mortgage loans to the potentially mortgageable housing stock is substantially lower in predominantly black neighborhoods than in white neighborhoods. This pattern persists even after taking into account economic and other non-racial characteristics that could be responsible for differences between neighborhoods. In other words,

lower incomes, less wealth, lower-valued housing units, less housing development, and other factors in black neighborhoods do not fully explain the persistent pattern by race. Adjustment for these neighborhood characteristics reduces the size of the discrepancy in mortgage lending between predominantly white and predominantly black areas, but a 24 percent difference remains.

Since a complex sequence of events lies behind any mortgage transaction, this pattern could be caused by a number of factors. In order for a mortgage application to be filed, a buyer and a seller must reach an agreement in principle to transfer property. That is, there must be a housing transaction. Thus, any factor that affects the supply of housing or the demand for housing, as well as the demand for mortgages or the supply of mortgages, will have an effect on the volume of credit flowing to a given neighborhood.

Discrimination in the housing market, whereby blacks face barriers to moving into white neighborhoods, and reluctance by whites to move into black neighborhoods, may reduce mobility among blacks and lead to fewer transactions and fewer mortgage loans. Discrimination by neighborhood on the part of mortgage lenders would have a similar effect: if potential buyers of properties in predominantly black neighborhoods are systematically denied credit or are discouraged from even applying because of perceived or actual redlining, the result will also be significantly fewer loans in black neighborhoods than in white.

From the available data it is not possible to sort out the precise role played by lenders, as opposed to buyers, sellers, developers, realtors, appraisers, insurers and others, in the complex housing and mortgage markets. What is indisputable is that the ratio of mortgage loans to housing varies by race and this pattern cannot be fully explained by economic and other non-racial factors.

A more productive exercise than assigning blame for an unsatisfactory situation is developing remedies. In this regard banks and thrifts have a unique role to play, although certainly not the only role. Unlike other lenders, commercial banks and thrifts have an affirmative obligation under the Community Reinvestment Act of 1977 to help meet the credit needs of their entire community. Thus, even if the disparities in mortgage activity were not the fault of lenders, banks and thrifts would be expected to help correct the situation. In the process, banks and thrifts can set an example for other lenders and participants in the housing market to follow.

I. Lending Patterns in Boston—The Data

This section describes the data that are used to analyze patterns of mortgage lending in Boston. It also presents some baseline tabulations of those data.

Boston's Neighborhoods—Neighborhood Statistical Areas

The first step in analyzing the spatial distribution of credit is to identify the geographic unit of analysis. Three alternatives were considered: planning districts as defined by the Boston Redevelopment Authority (BRA); census tracts, the basic unit of analysis for the decennial census; and neighborhood statistical areas (NSAs) defined by the Census Bureau in cooperation with the City of Boston and a number of neighborhood groups. The NSA was chosen as the unit of analysis for this study for a number of reasons.

The BRA has divided the city into 17 planning districts. Each is fairly large and covers a number of distinct "neighborhoods." For example, the South Dorchester planning district, which as a whole had a population that was 35 percent black in 1985, contains both the Codman Square neighborhood that was 77 percent black and the East Lower Mills neighborhood that was less than 1 percent black. Only two of the 17 planning districts had a majority black population in 1985: Roxbury and Mattapan. Thus, any analysis of lending patterns by race using planning district data would be severely limited.

The city contains 171 separate census tracts. While the number of tracts is large and each is relatively small, tract boundaries were in many cases drawn decades ago and even then were not defined with an eye to "neighborhoods" or "local communities."

Neighborhood statistical areas were defined under sponsorship of the Census Bureau through the Neighborhood Statistics Program. In that program, conducted prior to the 1980 Census, city officials and neighborhood groups were asked specifically to define meaningful neighborhood boundaries for purposes of cross-neighborhood data comparisons. The exercise was proposed in part to permit analyses such as the one presented in this paper. The program defined 62 neighborhoods that add up to the City of Boston, a number sufficiently large to permit analysis within important subgroupings. For example, among the NSAs are 14 separate neighborhoods with a majority black population, each with its own unique character. Two NSAs, "Harbor islands and crews of vessels" (#32) and "Downtown" (#21), were not

used in the analysis because they are so different from the other 60.⁸

Table 1 contains a listing of the 62 NSAs as well as 1980 racial composition and income data. Chart 1 presents a map of the city identifying the location of each NSA by number and indicating by shading the percent of the population that was black in 1980. Chart 2 presents the same map but characterizes the NSAs on the basis of median household income according to the 1980 census.

The black population of Boston is highly concentrated along the Roxbury-Mattapan corridor in the south-central part of the city. The percentage of black residents drops sharply to less than 5 percent with increasing distance from the south-central core. While the population of the city as a whole is 22 percent black, half of the city's neighborhoods have fewer than 5 percent black residents.

The distribution of neighborhoods by income shows much less concentration. Low-income neighborhoods, for example, are scattered in a number of different locations. Looking at the two maps together shows that race and income are to some extent associated. A larger percentage of predominantly black NSAs have low income than do predominantly white NSAs, but there are a number of low-income white neighborhoods.

Data on Mortgages and Real Estate Transactions by Neighborhood

Two alternative sources of data on lending were considered. First, most depository institutions are required by the Home Mortgage Disclosure Act (HMDA)⁹ to maintain records of completed mortgage loans and home improvement loans by census tract. These data are widely available and have been used in numerous earlier studies of redlining. A major disadvantage of the HMDA data is that they are not obtained from all lenders. The data do not include loans made in Boston by depository institutions located outside the Boston metropolitan area, since, under HMDA, depository institutions are required to report loans by census tract only for the metropolitan areas in which they have an office. More importantly, they do not cover loans extended by non-depository institutions, such as independent mortgage companies.¹⁰

A second source of data on mortgages originated by neighborhood is a file of individual deed transfers from the Suffolk County Registry of Deeds. These data are compiled by *Banker & Tradesman*, a weekly

Table 1
Neighborhood Statistical Areas in the City of Boston

ID No.	Name	Planning District	1980 Median Household Income (\$)	1980 Percent Population Black	1980 Population
1	Allston	Allston-Brighton	13,412	4.9	13,308
2	Brighton	Allston-Brighton	13,751	4.1	31,491
3	Commonwealth	Allston-Brighton	10,975	3.6	20,465
4	Back Bay/Beacon Hill	Back Bay/Beacon Hill	16,105	4.2	30,212
5	Medford St, The Neck	Charlestown	15,822	.2	3,770
6	Thomp. Sq, Bunker & Town Hills, Monument	Charlestown	11,744	.2	9,594
7	Chinatown/S Cove/Bay Vil	Central	11,081	4.4	4,746
8	Columbia, Savin HI, Columbia Pt	North Dorchester	13,012	9.6	12,680
9	Dudley, Brunswick King	Roxbury	9,669	67.1	12,033
10	Uphams Comer, Jones Hill	North Dorchester	10,473	24.8	11,109
11	Ashmont	South Dorchester	17,137	6.5	6,883
12	Bowdoin N, Mt. Bowdoin	South Dorchester	8,868	63.0	4,921
13	Codman Sq, E. We Can, E. Codman HI	South Dorchester	11,360	77.0	9,884
14	E Lower Mills, Cedar Grove	South Dorchester	14,303	.7	5,679
15	Fields Corner East	South Dorchester	11,238	1.4	2,111
16	Fields Corner West	South Dorchester	14,336	52.5	5,881
17	Meeting House Hill	South Dorchester	11,795	20.8	6,803
18	Neponset, Port Norfolk	South Dorchester	16,368	.7	8,317
19	St. Marks	South Dorchester	14,429	8.1	8,644
20	W. We Can, W Codman HI, W Lower Mills	Mattapan	14,621	59.4	5,951
21	Downtown/Central/West End	Central	17,739	4.9	6,257
23	Central & Maverick Sqs, Paris St Flats	East Boston	9,326	.7	7,811
24	Eagle Hill	East Boston	9,849	.2	9,305
25	Harbor View, Orient Heights	East Boston	14,098	.5	9,755
26	Jeffries Pt, Airport	East Boston	11,449	.1	5,307
27	Fenway	Fenway/Kenmore	7,451	14.0	12,895
28	Kenmore	Fenway/Kenmore	7,739	5.0	8,575
29	West Fens	Fenway/Kenmore	8,224	8.4	4,327
30	Franklin Field North	Roxbury	10,112	94.4	6,859
31	Franklin Field South	Mattapan	9,608	90.5	10,362
32	Harbor Islands and Crews of Vessels	Harbor Islands	n.a.	14.1	1,748

Note: NSA I.D. numbers 22 and 59 are unassigned, therefore there are 62 NSAs.

Source: U.S. Bureau of the Census in collaboration with the City of Boston and the Boston Redevelopment Authority, "Boston Population and Housing by Neighborhood Areas, 1980," September 1983.

newspaper published in Boston devoted to real estate and banking matters, and were obtained in machine-readable form from Abt Books, Inc.¹¹ The deed transfer data were chosen for this analysis for several reasons. Their major advantage is that they include all real estate transactions regardless of financing. That is, they include sales financed by depository institutions and their nonbank affiliates, by independent mortgage bankers, by other institutional lenders, and by sellers of property, as well as transactions not financed by a mortgage at all. A further advantage

of the deed transfer data is that they are obtained from an independent third party not involved in the lending process.

One disadvantage of using the deed transfer data file for analyzing the market for residential mortgages is that it contains commercial and industrial transactions as well as data on sales of owner-occupied homes and residential buildings containing rental units. An adjustment is made in the statistical analysis presented in Part III to compensate for this problem.

ID No.	Name	Planning District	1980 Median Household Income (\$)	1980 Percent Population Black	1980 Population
33	Fairmount Hills	Hyde Park	17,492	.7	5,614
34	Georgetown	Hyde Park	20,726	6.0	2,402
35	Readville	Hyde Park	17,475	.2	3,829
36	Stony Brook, Cleary Sq	Hyde Park	14,780	.5	4,762
37	West St, River St	Hyde Park	16,772	26.8	13,616
38	Eggleston Sq	Roxbury	9,690	31.0	6,505
39	Forest Hls, Woodbourne	Roslindale	14,872	1.9	4,895
40	Hyde Sq	Jamaica Plain	10,531	29.6	9,174
41	Jam. Cent., Sumner Hl, Jamaica S., Stony Hl	Jamaica Plain	13,096	7.5	11,194
42	Jamaica Hills	Jamaica Plain	18,993	3.7	7,779
43	Southern Mattapan	Mattapan	16,183	76.1	12,008
44	Wellington Hill	Mattapan	12,849	91.8	7,506
45	Mission Hill/Medical Area	Fenway/Kenmore	11,955	8.7	5,045
46	Mission Hill Projects	Jamaica Plain	7,756	54.7	3,135
47	Top & Back of Mission Hill, Rox. Tenants Hvd., Dell Av. Terr.	Jamaica Plain	10,358	24.6	7,928
48	North End/Waterfront	Central	13,808	1.2	10,859
49	Centre-South	Roslindale	19,065	.1	5,774
50	Lower Wash., Mt. Hope	Roslindale	11,958	8.0	7,522
51	Metro. Hill, Beech	Roslindale	15,511	3.7	14,515
52	Highland Park	Roxbury	8,965	76.0	3,252
53	Lower Roxbury	Roxbury	6,401	84.7	4,494
54	Savin-Moreland	Roxbury	10,625	85.0	6,099
55	Washington Park	Roxbury	9,582	91.1	18,550
56	City Point	South Boston	14,903	0	8,658
57	Columbus Pk, Andrew Sq	South Boston	6,303	0	6,736
58	D St, W Broadway, Northern Sect	South Boston	7,635	.1	6,319
60	Telegraph Hill	South Boston	12,217	.1	8,683
61	South End	South End	10,845	40.8	27,125
62	Bellevue Hill	West Roxbury	25,983	.3	3,397
63	Brook Farm Parkway	West Roxbury	20,952	.4	14,209
64	Upper Wash., Spring	West Roxbury	15,607	.9	13,727

Adjusting for Neighborhood Scale

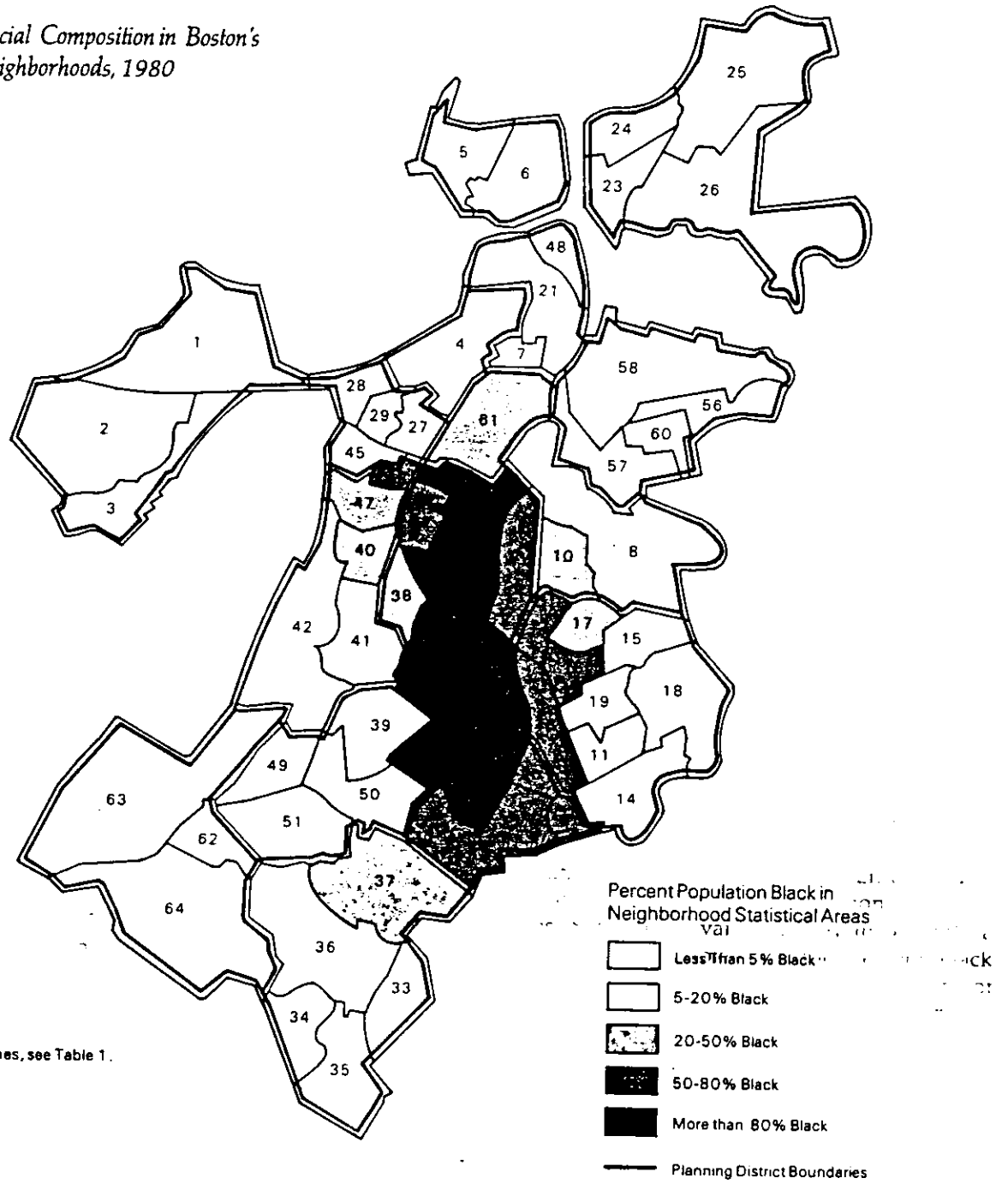
Describing simply the number of mortgages in each neighborhood would tell us little, since not all neighborhoods are the same size. Several methods of adjusting for the scale of the neighborhoods are possible. One option is to look at the number of mortgages per household. But one would expect a larger number of mortgages per household in neighborhoods in which most households lived in single-family units than in neighborhoods in which most households rented apartments in large multi-unit buildings.

Another option might be to compare the number of mortgages with the number of transactions taking place in the neighborhood. However, as will be discussed in considerable detail, the availability of financing is critical to completing most transactions; focusing on the ratio of mortgages to transactions ignores transactions that do not occur because financing is, or is perceived to be, unavailable.

The approach taken in this study is to relate the number of mortgages to a measure of the housing stock: the number of structures or units that are

Chart 1

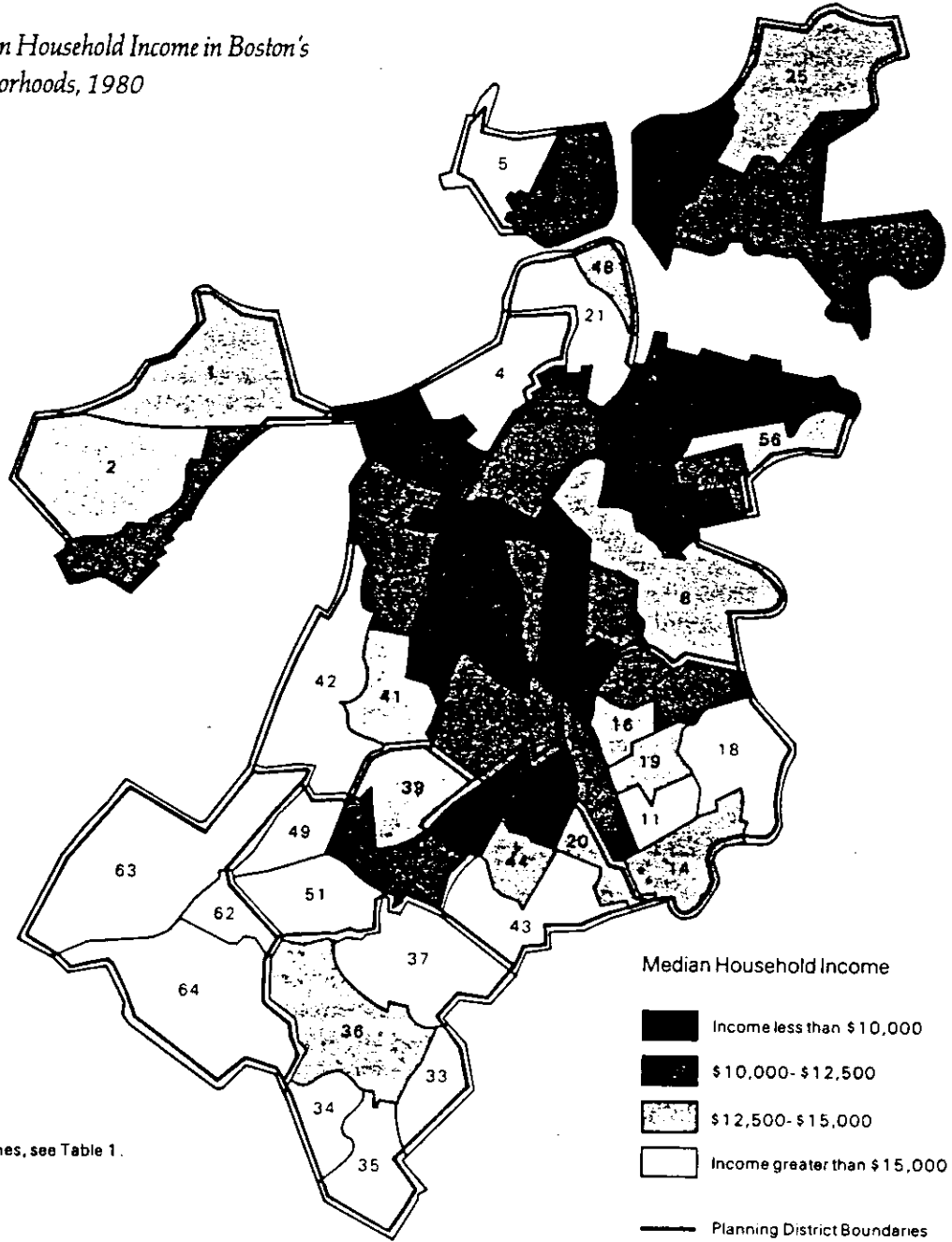
Racial Composition in Boston's Neighborhoods, 1980



For NSA names, see Table 1.

Chart 2

Median Household Income in Boston's Neighborhoods, 1980



For NSA names, see Table 1.

owned separately and hence might potentially turn over and obtain a mortgage. Such a number is not readily available for each NSA, so it had to be constructed. The number of housing units in 1980 was directly available from the 1980 Census,¹² but each unit is not separately owned; aside from condominiums, multi-family structures are owned by a single landlord and do not turn over unit by unit. What is needed, therefore, is a count of non-condominium structures (net of public housing, the ownership of which does not turn over in the private market) plus the number of condominium units. Each structure or condominium in such a count can be separately owned, turned over individually, and potentially mortgaged.

The number of structures in 1980 was estimated from the Census data by summing the number of single-family units, units in two-family structures divided by 2, units in three-to-four-family structures divided by 3.3, and the number of non-condominium non-public housing units in structures with five or more units divided, somewhat arbitrarily, by 15.¹³ To this was added the number of condominium units in 1980 in each NSA. To get a current measure for each year 1982-87, data on condo conversions and new construction during the 1980-87 period, provided by the Boston Redevelopment Authority, were coded to NSAs.¹⁴ The numbers of units appearing on the master deeds of condominiums each year were added to the "structures and condos" count for 1980, and the numbers of structures from which they were created were netted out.

Sources of Financing for Real Estate Transactions, 1982-87

In addition to the address of the property and sales price, the deed transfer data contain information on the amount of mortgage financing and the name of the lender. Through an extensive process, each transaction was assigned to an NSA by address,¹⁵ and over 48,000 transactions were assigned a code based on the type of institution making the loan.

Table 2 presents a breakdown of transactions that occurred over the period 1982 through 1987 by type of financing institution. Commercial banks include bank subsidiaries of bank holding companies and independent commercial banks. The term "thrifts" refers to both savings banks and savings and loan associations. (State-chartered savings and loan associations in Massachusetts are known as "cooper-

Table 2
Lending Institutions and Real Estate Transactions in Boston, 1982-87

Type of Lender	Number of Institutions	Percent of Transactions
Commercial banks and thrifts	329	46.3
Commercial banks	134	15.4
Savings banks	128	20.9
Savings and loan institutions and cooperative banks	67	10.0
Mortgage companies	185	27.9
Affiliates of banks and thrifts	31	12.4
Independent	18	11.4
Affiliation unknown	136	4.0
Total Institutions	514	
Loans from sellers, credit unions, governments, private lenders, other		6.5
Transactions without mortgages		19.4
Total		100.0
Addendum: Number of transactions		48,253

Note: Downtown and Harbor Islands neighborhoods have been excluded. Detail may not add to totals because of rounding.
Source: Abt Books, Inc. and Banker & Tradesman, "Real Estate Transfer Database for Suffolk County, 1982-87" and Federal Reserve Bank of Boston.

ative banks" and are included in this category.) Together banks and thrifts and their affiliated mortgage companies financed nearly 60 percent of all transactions in Boston between 1982 and 1987. Mortgage companies not affiliated with commercial banks or thrifts financed 15 percent of all sales in the city. A residual category that includes sellers, credit unions, governments, universities, business lenders, real estate trusts, pension funds, other private lenders, and others accounted for 6.5 percent of the total. A total of 19 percent of all recorded transactions in the deed transfer data indicated no mortgage financing.

Each institution subject to CRA must prepare a CRA statement which, among other things, describes the community served by the institution and lists the types of credit offered to the community.¹⁶ The regulations present several alternative methods for developing a "CRA area;" all options require that the CRA area include areas around each branch and not arbitrarily exclude any low-income area. For pur-

poses of this study, CRA statements were requested from all banks and thrifts that made more than one mortgage loan in Boston between 1982 and 1987. From those statements, each institution was assigned to one of three groups: (1) institutions whose CRA areas include none of Boston; (2) institutions whose CRA areas include only part of Boston; and (3) institutions whose CRA areas include all or most of Boston. In a small percentage of cases the information could not be obtained or the area was unclear. These institutions were classified as "CRA area unknown."

The category of institutions whose CRA areas

include "none" of Boston comprises mostly banks and thrifts and mortgage company subsidiaries from outside the region. Institutions whose CRA areas include "part" of Boston are for the most part "neighborhood banks," many of which have only one office or a small number of branches. Their responsibilities under the CRA are limited to the specific neighborhoods of their defined CRA areas. Independent mortgage companies are not covered by the CRA, but the lending of mortgage company affiliates of depository institutions does contribute to their parent company's CRA lending record.

Table 3 shows the distribution of banks and thrifts by CRA area. For purposes of these tabulations, transactions financed by mortgage company, bank, and thrift subsidiaries of Boston-based holding companies were consolidated. Just under half (49.4 percent) of all transactions financed with a mortgage during the period were originated by banks and thrifts (including their mortgage company affiliates) whose CRA areas include all or most of Boston.

Table 3
Mortgage Loans, by CRA Responsibilities of Lender, 1982-87

Type of Institution	Percent of Total Mortgages
CRA lenders* whose CRA area includes:	
All or most of Boston	49.4
Part of Boston	5.8
None of Boston	10.3
Unknown	2.8
Non-CRA lenders (independent and unknown mortgage companies, seller, etc.)	31.7
Total	100.0

*Including mortgage company affiliates of banks and thrifts.
Source: See table 2.

The Housing Market in Boston, 1982-87

The years that are examined in this study were marked by extraordinary changes in the Boston housing market.¹⁷ Even after adjusting for inflation, the increase in single-family home prices was dramatic. In 1982, the median price of an existing single-family home in the Boston metropolitan area was \$80,200 (table 4). By 1987, the figure was \$147,600 in 1982 dollars. Sales in the city of Boston more than doubled, from 5,463 in 1982 to 12,327 in 1986, before falling back in 1987.

Table 4
The Boston Housing Market, 1982-87

Year	(1) Median Home Price in Boston Metropolitan Area (1982 dollars)	(2) Total Sales in City of Boston	(3) Condo Sales in City of Boston	(4) Housing Starts in Suffolk County
1982	\$ 80,200	5,463	2,472	555
1983	80,000	8,406	3,965	803
1984	92,500	9,646	4,590	1,586
1985	119,300	11,584	5,794	1,453
1986	138,500	12,327	6,505	2,778
1987	147,600	9,958	5,743	2,956

Sources: (1) National Association of Realtors, *Home Sales*, May 1985 and November 1988 adjusted for changes in the Consumer Price Index. Column (1) is the median sales price of existing single-family homes in the Boston metropolitan area. (2) and (3) are tabulations from Abt Books, Inc. and Banker & Tradesman, "Real Estate Transfer Base for Suffolk County, 1982-87" prior to geo-coding. (4) Data supplied by F.W. Dodge, Lexington, MA. (Suffolk County includes the city of Boston and the three smaller municipalities of Chelsea, Winthrop, and Revere.)

Chart 3

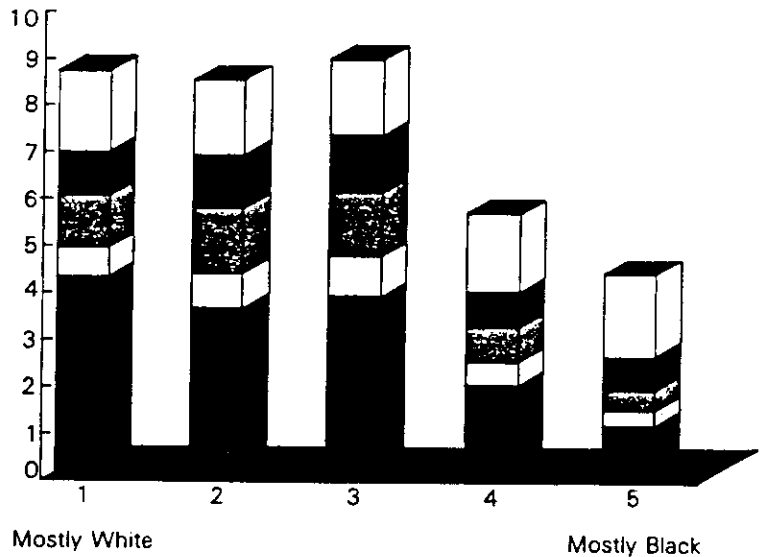
Transactions Volume by Type of Lender and by Neighborhood Racial Mix, 1982-87

- Transactions without Mortgages
- Other and Seller-Financed Mortgages
- ▨ Independent Mortgage Companies and Affiliation Unknown
- Mortgage Affiliates of Banks and Thrifts
- Banks and Thrifts

NSAs grouped by percent population black. See Chart 1 for groups.

Note: 'Downtown' and 'Harbor Islands' neighborhoods are excluded.

Number of Transactions and Mortgages per 100 Separately Owned Structures and Condominiums



Developers moved rapidly into the Boston market. The number of housing starts in Suffolk County (encompassing Boston and three much smaller municipalities) jumped from 555 in 1982 to 2,956 in 1987.¹⁸

Thus the 1982-87 period covered by this study was a period in which the mortgage origination climate was euphoric. Interest rates were dropping, prices were rising, and the demand for credit was strong. While aggregate figures are difficult to come by, the information available makes clear that the number of real estate transactions and the total volume of credit extended in the Boston real estate market during the period were extraordinary by historical standards.

Transactions and Mortgages by Neighborhood Racial Mix, 1982-87

Chart 3 presents the number of real estate transactions and mortgages originated per year relative to the housing stock (defined as separately owned structures and condominiums) for the years 1982 through

1987 by racial characteristics of the neighborhood.¹⁹ (Note that transaction and mortgage data cover both residential and nonresidential real estate, but the housing stock measure includes only the number of separately owned residential structures and condominium units. To the extent that nonresidential transactions vary across the five racial categories, they could potentially distort the picture of residential real estate lending. One reassuring fact is that the percentage of property parcels classified as commercial and industrial is relatively constant among the NSA groupings.)

Three of the five neighborhood groups presented contain NSAs with a majority white population (less than 5 percent black, between 5 and 20 percent black and between 20 and 50 percent black). These three groups are subsequently referred to as majority white neighborhoods; for these purposes Asians and other minorities were included with whites. Two neighborhood groups contain NSAs with a majority black population (50 to 80 percent black and more than 80 percent black). The number of neighborhoods in each

category varies significantly; group 1 (less than 5 percent black) contains 30 neighborhoods, group 2 contains nine, group 3 contains seven, group 4 contains eight, and group 5 (more than 80 percent black) contains six neighborhoods.

The pattern of transactions and mortgage lending is very different in the majority white neighborhoods from the pattern in the majority black neighborhoods. About 8.6 percent of all properties in neighborhoods with a majority white population were sold in an average year between 1982 and 1987. The corresponding figure for majority black neighborhoods was 5.2 percent. Mortgages were originated on 6.9 percent of properties in majority white neighborhoods during an average year, but on only 3.5 percent of properties in majority black neighborhoods.

The difference between ratios of mortgages originated is even greater for neighborhoods that are virtually all white and neighborhoods that are virtually all black. In neighborhoods with populations that were less than 5 percent black, mortgages were originated on an average of 6.8 percent of structures

in an average year. In neighborhoods with populations that were more than 80 percent black, mortgages were originated on only 2.7 percent of structures in an average year.

Transactions and Mortgages by Neighborhood Household Income, 1982-87

Both transactions and mortgage originations were more evenly distributed across neighborhoods grouped by neighborhood income. Chart 4 presents tabulations based on the groupings in chart 2. Each of the four groups contains either 15 or 16 neighborhoods. The ratio of mortgage originations to the housing stock was relatively constant across income groups, but actually somewhat lower in the group of neighborhoods with the highest median income (5.7 percent) than in the group with the lowest median income (6.1 percent). As will be shown later, this negative relationship between income and mortgage lending persists even after other economic and demographic neighborhood characteristics are introduced into the analysis.

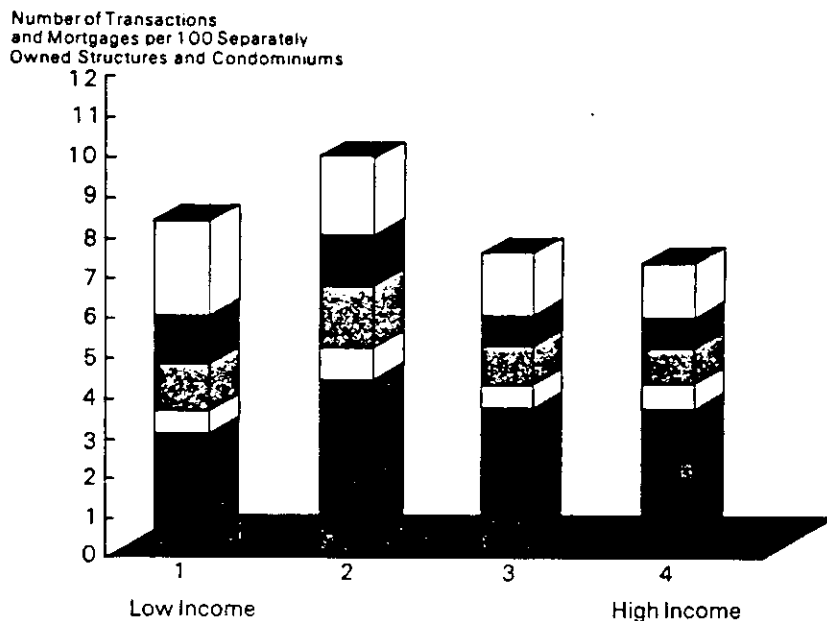
Chart 4

Transactions Volume by Type of Lender and by Neighborhood Median Income, 1982-87

- Transactions without Mortgages
- Other and Seller-Financed Mortgages
- ▨ Independent Mortgage Companies and Affiliation Unknown
- Mortgage Affiliates of Banks and Thrifts
- Banks and Thrifts

NSAs grouped by median household income. See Chart 2 for groups.

Note: 'Downtown' and 'Harbor Islands' neighborhoods are excluded.



II. The Determinants of Mortgage Lending Patterns: Theory

Among the patterns of mortgage lending described above, one stands out: more mortgages were originated relative to the housing stock in predominantly white neighborhoods than in predominantly black neighborhoods in Boston during the 1982-87 period. The question is how to interpret this result.

One possible explanation is redlining by lenders. If lending institutions systematically make loans less available in predominantly black neighborhoods, fewer mortgages will be approved and potential buyers may even be discouraged from applying. But other explanations are possible. Obtaining a mortgage is the final step in a long process that begins in the housing market. Thus, for example, the observed differences might be explained by income and wealth differences between black and white neighborhoods or by differences in legitimate risk factors that banks must consider to preserve "safety and soundness."

More mortgages were originated relative to the housing stock in predominantly white neighborhoods than in predominantly black neighborhoods in Boston during the 1982-87 period.

They might also be explained by the reluctance of some white homebuyers to move into black neighborhoods or by housing market discrimination in white areas that limits blacks' ability to move out of black neighborhoods. Both factors could reduce turnover in predominantly black neighborhoods and, thus, the number of mortgages originated. To guide the empirical analysis in the remainder of the paper, this section identifies some of the factors that, in addition to lender bias, could explain geographic patterns of mortgage lending.

Chart 5 presents schematically the factors likely to influence the final number of mortgages written in an area. First, of course, in any given neighborhood,

the final number of mortgages depends on both the demand for mortgage credit and the supply of mortgage credit. The demand for credit depends in turn on events in the housing market.

In order for an application for a mortgage to be filed, the buyer and the seller of a property must reach an agreement in principle. That is, there must be a housing market transaction. Thus, any factor that affects the supply of housing or the demand for housing will have an effect on the demand for credit and can influence the final volume of credit originated.

In thinking about each of these factors it is important to understand that this study focuses on the *number* of mortgages and on the number of completed transactions, rather than dollar value. Thus, "housing demand" refers to the *number of units* that households desire to purchase in a neighborhood in a given period. Similarly the supply of housing is the *number of units* offered for sale. This focus on number of units contrasts with the more common housing demand and supply concepts that measure the "quantity" or "quality" of housing. That is, usually when a family "demands" more housing, it buys or rents a bigger or better housing unit of higher dollar value. In this study, however, the focus is on the number of real estate transactions relative to the housing stock.

As chart 5 shows, anything that influences the demand for housing or the supply of housing can affect the demand for credit and, thus, the final geographic pattern of mortgage lending. The discussion that follows begins with the housing market and then turns to the credit market.

The Housing Market

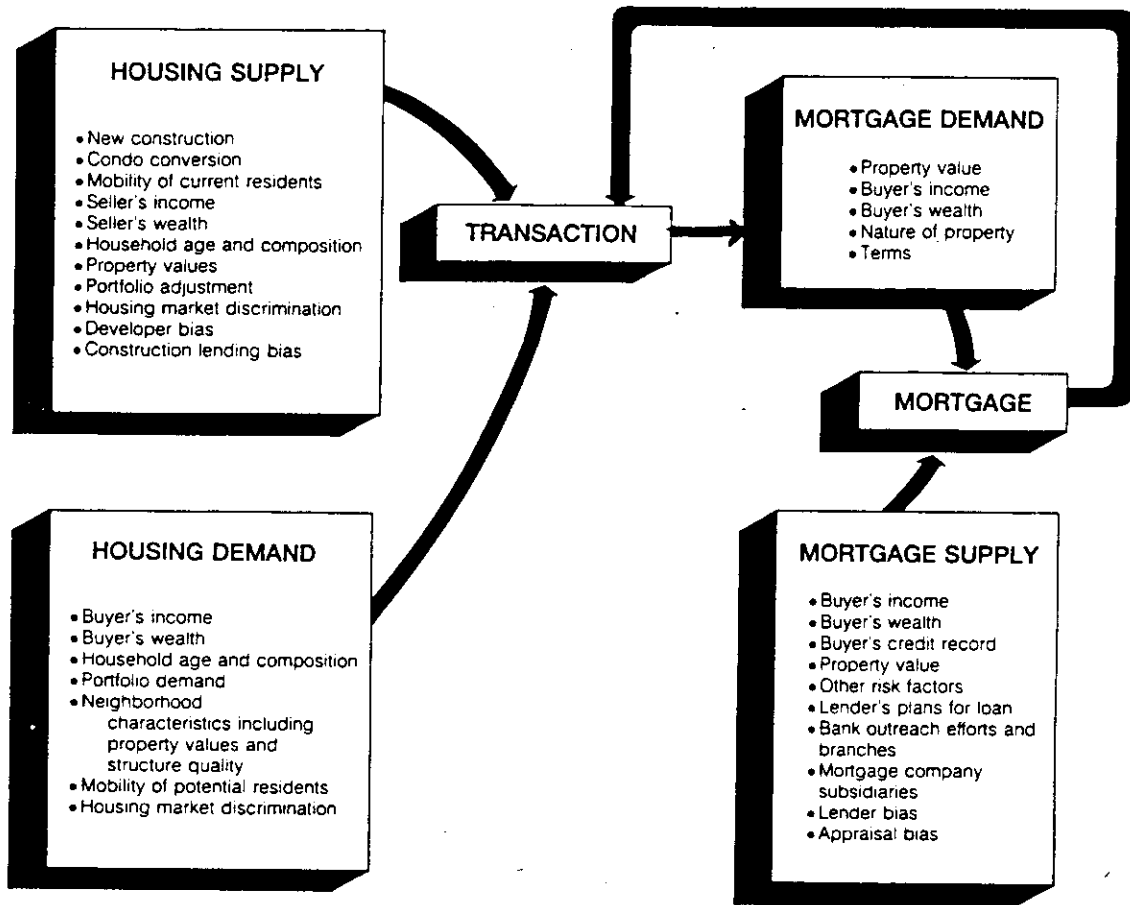
For a housing sale to be completed in a given neighborhood, an interested buyer with credit or cash available must strike a deal with a "supplier" who has a unit for sale.

Housing supply. A separately owned housing structure or condominium becomes available for sale in a neighborhood when it is newly built or converted or when its current owner decides to sell it. For an owner-occupant, the decision to sell usually results from a decision to move. A landlord, on the other hand, may decide to sell simply to alter his or her property "portfolio."

The decision of a household to move is likely to depend on a number of household characteristics including household income, wealth, age, and com-

Chart 5

Factors That Potentially Determine the Number of Mortgages in a Neighborhood



position (number of children and so forth). Race may also play a role. In particular, discrimination against blacks in the housing market may limit their housing options, reducing their mobility and, thus, the number of properties offered for sale in black neighborhoods. Literally hundreds of studies, ranging from sophisticated statistical analyses to experimental government-sponsored research projects using matched pairs of black and white homebuyers, have found that race plays a role in the housing market.²⁰

The best known and most often cited study of race and the housing market was published by John Yinger in 1986; it was based on Boston.²¹ The Yinger study was based on "fair housing audits" conducted in Boston's neighborhoods during 1981. In an audit, an individual from the white majority and an individual from a minority group, matched according to their family and economic characteristics, each visit the same landlord or real estate broker. By comparing treatment, discrimination can be isolated. The study

found "extensive discrimination; black housing seekers were told about 30 percent fewer available units than were whites."²²

If the choices of black potential homebuyers are effectively limited to certain areas or submarkets, the result is likely to be a lower rate of mobility and fewer transactions. Even if financial institutions were unbi-

If the choices of black potential homebuyers are effectively limited to certain areas or submarkets, the result is likely to be a lower rate of mobility and fewer transactions even if financial institutions were unbiased in their lending practices.

ased in their lending practices, the result would be a lower volume of actual mortgage lending in black areas.

In addition to existing housing offered for sale, new construction and condominium conversions play an important role in the supply of housing units. A newly converted condominium or newly constructed structure is much more likely to change hands (and hence obtain a mortgage) in the year it is completed than is an existing housing structure in any year. Hence neighborhoods where development raises turnover rates will appear to be favored by lenders, other things equal, compared with more stable neighborhoods.

Decisions by developers or those who finance development can also affect the number of transactions in an area. Condominium conversions and new construction were concentrated in a few Boston neighborhoods in the first half of the 1980s, with very little such activity in predominantly black neighborhoods until recently.²³ Even with no bias in mortgage lending, the white areas where development activity was focused would have many more loans relative to the number of separately owned structures and condos.

Housing demand. Many of the factors affecting the supply of housing are likely also to determine the

potential demand for housing in a neighborhood. In particular, since two households must decide to move before an owner-occupied unit can change hands, mobility is an important determinant of the volume of transactions. Empirical studies show that mobility depends on a number of factors. Most important in this context, evidence indicates that when earnings, family size and composition, age, and other characteristics are controlled for, black households are less mobile than white households.²⁴

An additional consideration is the willingness, or lack thereof, of white homebuyers or investors to purchase property in black neighborhoods. Since the white population in Boston is much larger than the black, a reluctance by whites to purchase property in black neighborhoods would greatly reduce the pool of potential buyers in black areas. As a result, properties would remain on the market longer than in white neighborhoods and the number of transactions and mortgages would be correspondingly reduced.

Characteristics of the neighborhood, apart from race, clearly influence whether a property is attractive to many or few potential buyers as a place to live or as an investment. The price of housing and expected price appreciation in the neighborhood are likely to influence demand as well.

Since the ability of a potential buyer to obtain a mortgage feeds back into the likelihood that a transaction will be completed, credit market factors associated with race will also lower housing demand, mobility and, thus, the number of transactions in predominantly black neighborhoods. For example, discrimination by lenders against otherwise creditworthy loan applicants buying property in black neighborhoods would reduce the number of transactions as well as the number of loans.

The Mortgage Market

A potential real estate transaction will obtain mortgage financing only if the buyer seeks out financing and a lender decides both that the buyer is creditworthy and that the property is of sufficient collateral value. The set of blocks on the right side of chart 5 describes the critical determinants of mortgage demand and supply.

Mortgage demand. Most transactions require a mortgage. Thus, all the factors that influence the demand and supply of housing can and do have an impact on the demand for credit. Because a few buyers have sufficient wealth to purchase the property outright and because some transactions are not

conducive to a mortgage, a buyer's income and wealth, the sales price of the property, and the type of transaction also have an independent effect on the demand for credit.

Mortgage demand might be lower in a neighborhood if potential buyers perceive that credit is not available. If the availability of credit is not marketed in the neighborhood, if lenders historically discriminated or were perceived to have discriminated against black neighborhoods, or if, for whatever reason, misinformation on credit availability has not been corrected by lenders, institutions may make fewer loans in some areas even if they currently treat all applications that reach them in an evenhanded manner. Thus the demand for mortgages may depend on past and current patterns of mortgage supply.

Mortgage supply. In deciding whether to approve a mortgage application, a lender considers the applicant's income, wealth, and credit record to evaluate his or her ability to carry the loan. The lender also compares the mortgage amount with the appraised value of the property to ensure that the property is sufficient collateral for the loan. In this regard, the characteristics of the neighborhood, including resale prospects, may be important.

Blacks have lower income and wealth, on average, than whites, which reduces their ability to carry a loan of a given value. A recent study finds that "On average, young black families hold only 18 percent of the wealth of young white families. . . . Even after controlling for racial differences in income and other demographic factors, as much as three-quarters of the wealth gap remains unexplained."²⁵ Hence, in areas where lower-cost housing is scarce, a racial lending pattern could result from application of strict lending criteria.

Judgments about creditworthiness depend in part on a lender's plans for disposition of the loan in question. Some lenders hold most mortgages they have originated in their asset portfolios, while others, especially non-depository institutions, sell virtually all of the mortgages they originate in the secondary market. Lenders often cite secondary market screens as a reason for disapproving loans.

The way a lender treats applications is important in determining mortgage supply, but equally important are other decisions the institution makes that affect the applications they receive. Foremost are outreach and marketing efforts, including the location of bank branches and the use of mortgage company subsidiaries, if any.

Interpreting Racial Loan Patterns

The foregoing discussion makes clear that a long process, involving decisions by realtors, homebuyers and sellers, developers, appraisers, and lenders, determines where and to whom mortgage loans are made. The nature of that process, summarized in chart 5, implies that any analysis of mortgage lending patterns must consider a variety of factors likely to affect housing supply and demand and mortgage supply and demand. Racial considerations can distort the process at a number of points along the way. For example, one expects more transactions in areas where a lot of development has occurred. Thus, in order to examine the effect of lender bias on the distribution of mortgage activity, one would like to remove the effects of different rates of development. However, the pattern of development may itself reflect racial considerations as well as such legitimate concerns as land prices and availability and neighborhood amenities.

Chart 5 also exposes another difficulty the study faces. Various attributes of the potential buyer or borrower play a role in both housing demand and mortgage supply and demand. The potential buyer or borrower may not have the same characteristics as neighborhood residents. Because potential buyers include landlords as well as owner-occupants, because some potential owner-occupants may not yet reside in the neighborhood, and because many

*Racial considerations can distort
the mortgage lending process at a
number of points.*

neighborhood residents are renters or long-standing owners not currently seeking a mortgage, the characteristics of a neighborhood's residents are not always representative of the characteristics of potential buyers of property in the neighborhood, and hence loan applicants.

The foregoing discussion and examples indicate that the racial patterns of mortgage volume displayed in Part I may be, but are not necessarily, evidence that lenders are avoiding black neighborhoods. The patterns might result from discriminatory behavior by lenders, but they could also reflect other factors

associated with neighborhood racial mix that would not be remedied by changing the lending decisions of mortgage originators.

III. The Market for Mortgage Loans: Analysis of Credit Volume

This part of the study uses multiple regression analysis to isolate the separate effects of a number of specific factors on mortgage lending patterns. The analysis attempts to explain variation in the ratio of mortgages to the number of separately owned structures and condominiums across the NSAs over the years 1982 through 1987; a pooled cross-section times-series regression is used.

Neighborhood Characteristics That Affect Credit Volume

Table 5 presents a list of the factors that were included in the analysis to help explain lending patterns. The table indicates both the source of the data for each variable and the reason for including it in the analysis. Table 6 presents the regression relating the ratio of mortgage loans to housing stock to the various demographic and economic factors.

Income and wealth. The analysis of income and wealth illustrates the difficulties involved in sorting out the effects of any variable in an equation that combines all the stages in a process as complicated as that outlined in chart 5. (See appendix A for a description of how wealth estimates were generated.) The estimated effect of average household wealth is

Table 5
Measured Neighborhood Characteristics Used in the Regression Analyses

Characteristic	Description and Source of Data	Effect on Mortgages Through:			
		Housing Market		Mortgage Market	
		Demand	Supply	Demand	Supply
Percent black	Percent of resident population that was black, 1980*	X	X	X	X
Percent other minority	Percent of resident population not black or white, 1980*	X	X	X	X
Income	Median household income, 1980*	X	X	X	X
Wealth	Average household wealth based on 1983 Survey of Consumer Finances and 1980 Census income distribution (appendix A)	X	X	X	X
Value	Median value of single-family owner-occupied housing, 1980*	X	X	X	X
Rent	Median gross rent paid on rental units, 1980*	X	X	X	X
Vacancy rate	Percent of housing units vacant, 1980*	X	X		X
Commercial and industrial property	Percent of properties in each NSA's ward that are classified as commercial and industrial; Boston Assessors			X	X
Mobility	Percent of 1980 owner-occupant households that moved between 1975 and 1980*	X	X		
Age	Percent of residents aged 25-34 in 1980*	X	X		
Housing development	The fraction of separately owned structures and condos that were newly constructed or converted units each year, Boston Redevelopment Authority		X		
Depository institution offices	Number of offices per 1000 population, Decision Research Sciences, Inc., machine-readable <i>Branch Directory</i> (for each year)			X	X
Economic conditions over time	Separate year effects for each year between 1982 and 1987	X	X	X	X

*NSA data from the 1980 Census of Population and Housing.

positive, while the estimated effect of median household income is negative. In the context of mortgage supply, both these variables would be expected to have a positive effect on mortgage loans if potential borrowers had characteristics similar to those of neighborhood residents. Lenders are presumably likely to qualify better-off borrowers, and such borrowers would be less likely to be squeezed by standard down-payment percentages. While the wealth result in table 6 is consistent with this interpretation, the income result is not—higher neighborhood household income is associated with less mortgage activity, holding constant other factors.

Several explanations are possible. The most likely, in our view, is that the relatively large number of mortgages relative to the housing stock in low-income neighborhoods reflects a process of "gentrification." As noted previously, this was an extraordinary period for the Boston housing market. Prices skyrocketed. Some neighborhoods experienced intense housing development. In such an environment it would not have been surprising for relatively well-to-do homebuyers and investors to purchase property in lower-income areas. In support of the view that gentrification may account for the negative relationship between income and mortgage activity is the fact that the measure of housing additions used in the regression was considerably higher in lower-income neighborhoods.

Another explanation for the observed negative relationship might be found in the housing market. To the extent that high-income households tend to move less often than low-income owner-occupants, high-income neighborhoods will have fewer transactions and fewer mortgages than low-income neighborhoods. In part this is taken into account by including a measure of mobility in the analysis, but the measure, the fraction of 1980 owner-occupant households in the NSA that moved between 1975 and 1980, is fairly crude. Thus, if differences in the mobility rates of residents across NSAs are not fully captured by the measure of mobility used in the regression, some of the effect may be attributed to the income variable.

Yet another possibility is that high mortgage originations in low-income areas reflect special efforts by banks and thrifts to comply with CRA regulations by helping to meet credit needs of low- and moderate-income neighborhoods in their community.

Neighborhood property characteristics. Selected characteristics of property located in a neighborhood also influence mortgage volume. Because of their opposing effects through housing demand and supply and

Table 6

Regression Results

Dependent Variable = Number of Loans per 100 Separately Owned Structures and Condominium Units

Explanatory Variables	Estimated coefficient (t-statistics are in parentheses)
Constant	4.69** (4.2)
Percent black	-.0174* (-2.2)
Percent other minority	-.000944 (-.1)
Income (\$000)	-.569** (-4.9)
Wealth (\$000)	.0505* (2.5)
Value (\$000)	-.0183** (-2.7)
Rent	.00890* (2.1)
Vacancy rate	-.0547* (-2.4)
Commercial and industrial property	.0514 (1.7)
Mobility	.0742** (5.8)
Age	.0977** (2.7)
Housing development	24.6** (6.9)
Depository institution offices	.136 (.4)
Year 1982 ^a	-2.47** (-6.2)
Year 1983 ^a	-.0600 (-.1)
Year 1984 ^a	1.02* (2.6)
Year 1985 ^a	1.32** (3.4)
Year 1986 ^a	1.57** (4.0)
Adjusted R ²	.66
Mean of dependent variable	5.8

Notes: Regressions are pooled time series and cross section using data on 60 neighborhoods over 6 years.

See table 5 for variable definitions and sources.

*Significantly different from zero at the 5% level.

**Significantly different from zero at the 1% level.

^aThe set of year dummies omits 1987, hence all coefficients on year dummies are differences from 1987.

mortgage demand and supply, neighborhood house values and rents have ambiguous effects on mortgage volume. Housing unit vacancies apparently indicate greater risk to both housing buyers and credit suppliers and therefore are negatively associated with transactions and mortgages, other things equal. The concentration of commercial and industrial property in a neighborhood augments the number of mortgages relative to housing. The inclusion of this variable attempts to correct a measurement problem: commercial and industrial real estate loans are included in mortgages, but the housing stock measure is purely residential.²⁶

Mobility and development. Housing demand and supply are important influences on mortgage volume, judging from the indicators included in the equation. The fraction of 1980 neighborhood residents in the prime homebuying ages of 25 to 34, the fraction of 1980 owner-occupants who moved into their units since 1975, and the fraction of the housing stock that was newly constructed or converted condos in a given year all have strongly positive effects on mortgage volume. The 1975-80 mobility of owner-occupants presumably reflects similar activity during the 1980s. Condominium units constructed or converted in a given year are much more likely to be sold (and to obtain a mortgage) that year than are existing units.

Bank and thrift offices. One would expect a positive association between the number of bank and thrift offices and the number of mortgage loans across neighborhoods, but the direction of causation is unclear. The presence of an office makes it easier and more convenient to borrow. At the same time, financial institutions are likely to locate branches in neighborhoods where they expect strong demand for mortgage and other banking services.

Contrary to expectations, table 6 shows that the number of depository institution offices in an NSA does not seem to exert an important independent effect on mortgage lending. While the coefficient on the office variable is positive, its effect is not significantly different from zero. One likely explanation is that the effect of offices cannot be separated from the effect of race.²⁷ Table 7 shows that a strong association exists between the number of offices located in a neighborhood and its racial composition when no other factors are considered. Predominantly white neighborhoods have nearly four times as many offices per capita as predominantly black neighborhoods. Hence, it would be misleading to conclude on the basis of the results in table 6 that additional offices

Table 7
Location of Depository Institution Offices in Boston by Racial Composition of Neighborhood

Percent of Residents in Neighborhood Who Are Black (1980)	Offices per 10,000 Neighborhood Residents*
Less than 5	5.9
5-20	3.4
20-50	2.7
50-80	1.9
Over 80	1.5

*Averages during 1982-87. Downtown and Harbor Islands NSAs excluded.

Source: Decision Research Sciences, Inc., machine readable *Branch Directory*, and Federal Reserve Bank of Boston.

would not be helpful to the community.

Racial composition. Even controlling for all the characteristics outlined above plus variations in economic conditions over time, table 6 shows that the percent of neighborhood residents who are black is still significantly negatively associated with the volume of mortgages originated in the neighborhood. Other things equal, lenders originate more mortgage loans relative to the housing stock in predominantly white neighborhoods than in predominantly black neighborhoods. However, the presence of other minorities is not significantly associated with the ratio of mortgages to housing stock in Boston's neighborhoods.²⁸

As discussed in the preceding sections, racial considerations may also affect the volume of mortgages in different neighborhoods through the development process, bank branching decisions and mobility rates. Since these variables may incorporate a racial effect, focusing solely on the percent black variable could lead to a conservative assessment of the impact of race on mortgage lending patterns in Boston. On the other hand, if a variable that is closely related to race and to the volume of mortgage lending by neighborhood has been left out of the equation, the size of the coefficient of the percent black variable could be misstated. For example, if the risk of default were higher in black neighborhoods than white, and this risk were not captured by neighborhood income, wealth, percent vacant, and so on, the effect of the percent black variable could be overstated.

How Much Do Factors Other Than Race Explain the Racial Pattern?

A question we set out to answer in this section is the extent to which the racial patterns observed in Part I can be explained by factors other than race. Table 8 presents a partial answer to that question by comparing actual to predicted mortgage lending for neighborhoods with different racial compositions.

The first row shows the actual values for the number of loans per 100 separately owned structures and condominium units, over the years 1982 through 1987. The first number, 5.8, is the mean for the 60 NSAs; the second is the mean for neighborhoods

Table 8
Differences in Neighborhood Mortgage Volume: Actual and Predicted According to Racial Composition

	Number of Mortgages Per Year Per 100 Separately Owned Structures and Condominium Units, 1982-87			
	Actual Mean	Racial Mix 0-5% Black	Racial Mix 80-100% Black	Percent Difference
Observed number	5.8	6.8	2.7	-60
Predicted number assuming mean values for neighborhood characteristics*	5.8	6.2	4.7	-24

*Predictions based on coefficient on neighborhood percent black from table 6; estimated coefficient is significantly different from zero at the 5 percent level. See table 5 for list of neighborhood characteristics and definitions of variables.

with fewer than 5 percent black residents; and the third number is the mean for neighborhoods where more than 80 percent of the residents are black. The last number shows the percentage difference between the ratios of mortgage lending to housing stock in the predominantly white and the predominantly black neighborhoods.

The second row of table 8 presents the ratios of mortgage lending to housing stock predicted from the regression equation in table 6. These numbers are calculated by assuming that the neighborhoods have

the city average for income, wealth, housing development, mobility and the like, and differ only with respect to race. Controlling for all the economic and other non-racial factors, the results suggest that neighborhoods with over 80 percent black residents would still have 24 percent fewer mortgage loans relative to the housing stock than neighborhoods with less than 5 percent black residents.

Transactions with No Mortgage Recorded

According to the logic of chart 5, some potential transactions do not occur because the potential buyers are unable to obtain mortgage credit. Other transactions occur without mortgage financing. Still other purchases are financed with mortgage loans to complete the transactions. Our data source, unlike many others used for such analyses, includes information on the second as well as the third type of transaction; the analysis to this point has focused on the third (transactions with mortgages). The next question is whether data on unfinanced transactions can tell us anything about the first type of transaction, those discouraged by a lack of credit.

Table 2 indicated that approximately one-fifth of Boston real estate transactions during the 1982-87 period did not involve a mortgage at the time of purchase. This percentage varies noticeably across neighborhoods of differing racial composition, as shown in chart 3. Unfinanced transactions were less than 20 percent of total transactions in the three neighborhood groups that contain a majority white population, but almost 40 percent for the two groups of neighborhoods with more than 50 percent black residents.

One reason for such a discrepancy might be lack of credit availability. That is, if banks and other financial institutions turn down applications or discourage potential borrowers who want to buy in black neighborhoods, a larger percent of sales may be recorded with no mortgage.

To better understand the nature of such transactions with no mortgage, a random sample of 100 such transactions was drawn in each of a number of lower-income neighborhoods located in Roxbury (predominantly black), East Boston and South Boston (both predominantly white). Sixty of the properties in Roxbury and 40 of the properties in East Boston and South Boston were physically inspected. In addition, a series of interviews with developers and real estate agents in these areas was conducted.

Sales recorded without a mortgage are a remark-

able mixture of transactions. Data tabulations on all the unmortgaged transactions, the physical inspections of the 100 properties and the interviews identified a variety of characteristics:

- properties that sold for less than \$10,000. Many of these were vacant lots, burned-out or boarded-up buildings, garages, closed commercial establishments, and the like. Such properties were generally bought for investment purposes, often by real estate trusts. Many times, the properties were acquired for a nominal amount plus assumption of back taxes. There were more such properties in Roxbury than in other parts of the city inspected.
- numerous pure cash deals involving developers, potential developers, governmental agencies, charitable groups and so forth. These sales represented a capital investment in the neighborhood even though a bank was not the source of the investment capital. When a real estate investment trust acquires a property for development, for example, it may buy the raw land for cash, and finance the new building or conversion with a mortgage later.
- commercial and industrial property acquisitions.

Where the character of the sale could not be determined from physical inspection, attempts were made to contact the buyer. Most buyers could not be contacted or would not discuss the sale. None of the

Neighborhood patterns of unfinanced transactions do not provide information about the pattern of "discouraged" transactions that are impossible to observe.

buyers contacted admitted to being turned down for a mortgage. Rejections occur, but few would-be buyers who are turned down by a bank or a mortgage company will have cash or access to credit from other sources. More often than not, a decision to deny credit will terminate the transaction. When financing "falls through," sellers look for another buyer.

It seems fair to conclude that the neighborhood patterns of unfinanced transactions do not provide information about the pattern of "discouraged" transactions that are impossible to observe. Rather, transactions that can be completed without a mortgage appear to have specific characteristics not typical of other transactions, whether completed or discouraged.

IV. Mortgage Lending Patterns by Type of Institution

The previous section evaluated the factors responsible for the overall pattern of mortgage lending in Boston and found neighborhood racial composition to be an important factor. Yet, this overall picture fails to reveal whether the racial pattern in mortgage lending is broadly diffused among all types of lenders or occurs only for a subset. This section examines whether there are differences in the lending patterns of various mortgage lenders. Mortgage lenders are grouped in three different ways: by institutional type, by CRA responsibility, and by the presence of offices in black neighborhoods.

Institutional Specialization

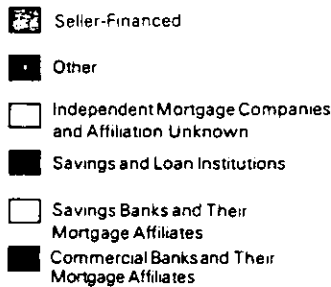
Most studies of redlining have been based on HMDA data, which contain information only on the lending of banks and thrifts (and sometimes their mortgage company affiliates). Some authors have speculated that the racial patterns in mortgage lending by banks and thrifts that are revealed by HMDA data may simply reflect the specialization by lenders in different types of mortgage instruments that predominate in different neighborhoods.

For example, banks and thrifts tend to provide conventional mortgages, but mortgage companies tend to specialize in FHA-insured and VA-guaranteed mortgages, which are made more frequently in minority neighborhoods.²⁹ Thus, the lower representation by banks and thrifts in black neighborhoods could merely reflect the greater involvement in those neighborhoods by mortgage companies, whose lending is not captured in the HMDA data. This has left open the possible interpretation that the racial patterns of mortgage lending revealed in HMDA data may be consistent with overall mortgage lending patterns that do not disadvantage any borrowers.

This interpretation, however, does not appear to be valid for Boston. The more comprehensive deeds

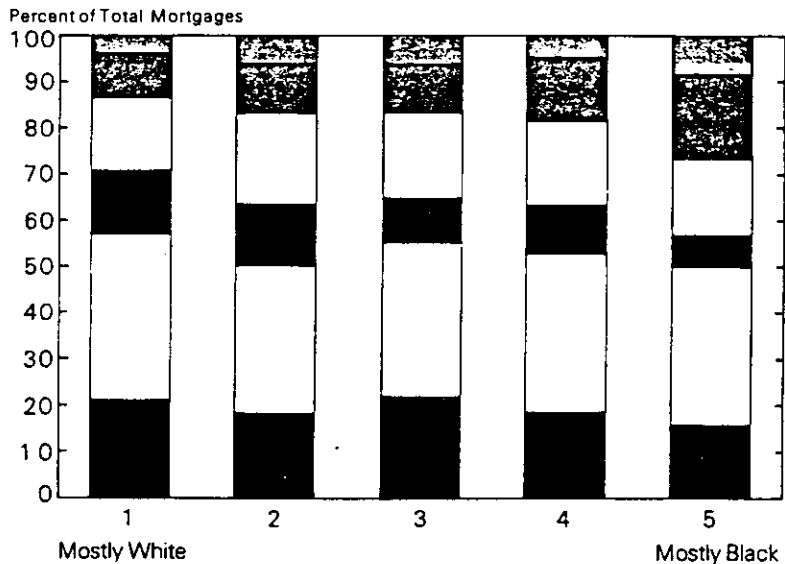
Chart 6

Mortgage Shares by Type of Lender and by Neighborhood Racial Mix, 1982-87



NSAs grouped by percent population black. See Chart 1 for groups.

Note: 'Downtown' and 'Harbor Islands' neighborhoods are excluded.



transfer data used in this study have shown that, even including mortgage companies and other lenders, overall mortgage lending in Boston is lower in black neighborhoods than in comparable white neighborhoods. The racial pattern for banking and thrift organizations alone, as shown in chart 6, is even stronger than for the overall market.³⁰ Chart 6 also shows that in Boston the lending by independent mortgage companies does not complement that of banks and thrifts.³¹ Instead, the independent mortgage companies have fairly constant shares across neighborhoods, which means that these institutions as well lend less in black neighborhoods than in comparable white neighborhoods.

Rather, seller-financing and lending by nonbanking institutions are the sources of relatively greater lending in the black neighborhoods.³² The relatively greater representation by nonfinancial institutions and sellers in black neighborhoods could reflect the greater difficulty that borrowers face in obtaining mortgage loans from financial institutions for property in black neighborhoods. Or, as was discussed in connection with nonfinanced transactions, it could reflect differences among neighborhoods in types of property, some of which entail kinds of financing different from that conventionally provided by banks and thrifts.

CRA Responsibility

While banks and thrifts have been discussed as a single group, it is important to note that not all banks and thrifts lending in Boston have a CRA responsibility within Boston. One group of banks and thrifts and their affiliates are nonlocal, and hence are under no legal obligation to lend evenhandedly among the Boston neighborhoods. Because of higher transaction and information costs involved in lending in distant locations, it is reasonable to conjecture that nonlocal lenders would concentrate on larger mortgage loans in the higher-income neighborhoods, which tend to be predominantly white.

A second group consists of local banks and thrifts that are not obligated under CRA to lend throughout Boston. Some small neighborhood banks have only one or several offices concentrated in a geographically compact portion of the city. Consequently, their CRA area covers only certain neighborhoods, and these institutions are obliged to lend evenhandedly only within that geographic area. These small banks and thrifts are much more common in white neighborhoods, so even if these institutions lend evenhandedly throughout their CRA areas, their loans will tend to be made predominantly in those white neighborhoods.

Thus, three groups of banks and thrifts can be distinguished according to their CRA responsibilities within Boston. Nonlocal institutions have no CRA obligations in Boston; some small neighborhood banks and thrifts have CRA obligations in specific neighborhoods; and larger local institutions, whose CRA areas cover all or most of Boston, are responsible for evenhanded lending throughout the city. In order to evaluate the extent to which each group is lending throughout the city, we calculated each group's share of the total number of mortgages made by all lenders in each neighborhood. Chart 7 compares these shares for neighborhoods of different racial composition.

offices, it is unlikely that any more stringent enforcement of CRA by regulatory agencies could affect these lending patterns.

The local banks and thrifts that have CRA obligations throughout Boston exhibit a markedly different pattern of mortgage lending. Their mortgage loans comprise roughly 50 percent of all the mortgages made in all neighborhoods, white or black. Yet, as discussed earlier, this fairly constant share of mortgage loans indicates that their pattern of mortgage lending parallels that of the overall market. And since the overall pattern of mortgage lending is more strongly concentrated in white areas, chart 7 indicates that the mortgage lending pattern of these local banks

Chart 7

Mortgage Shares by CRA Area of Lender and by Neighborhood Racial Mix, 1982-87

- Other and Seller-Financed
- ▨ Independent Mortgage Companies and Affiliation Unknown
- Banks and Thrifts and Their Mortgage Affiliates with CRA Area 'Unknown'
- Banks and Thrifts and Their Mortgage Affiliates with CRA Area 'None of Boston'
- Banks and Thrifts and Their Mortgage Affiliates with CRA Area 'Part of Boston'
- Banks and Thrifts and Their Mortgage Affiliates with CRA Area 'All of Boston'

NSAs grouped by percent population black. See Chart 1 for groups.

Note: 'Downtown' and 'Harbor Islands' neighborhoods are excluded.

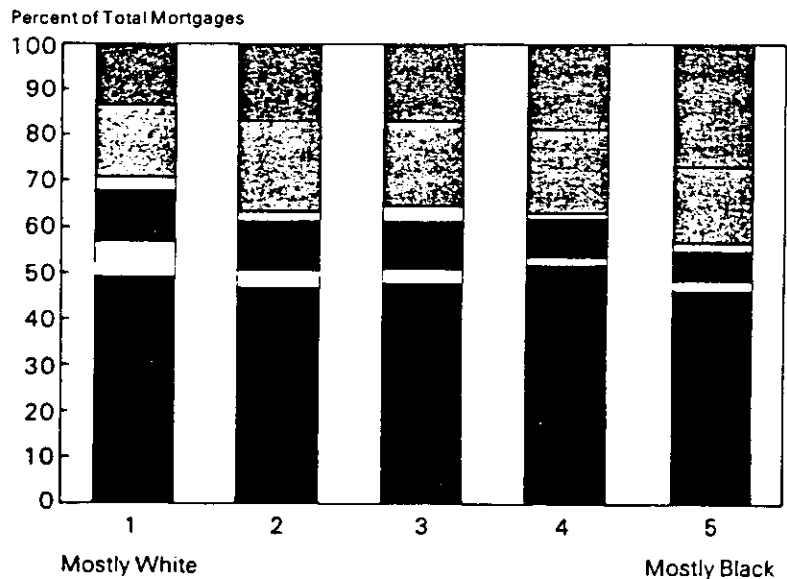


Chart 7 shows that the nonlocal banking and thrift organizations and the small neighborhood banks and thrifts do exhibit mortgage lending patterns that are more strongly concentrated in white neighborhoods. Their combined shares drop from 18 percent of all mortgage loans in "mostly white" neighborhoods to about 9 percent of all mortgage loans in "mostly black" neighborhoods. As long as CRA focuses on the lending patterns of individual banks and thrifts in the vicinity of their branch

and thrifts is similarly concentrated.

In order to verify the pattern suggested in chart 7, column (3) of appendix B contains a regression equation that applies only to the group of banking and thrift organizations with CRA areas covering all or most of Boston. These organizations show less of a racial pattern to their mortgage lending than the overall market, but one that is still negative and statistically significant.

Thus, even for this select subgroup of lenders,

the percent of neighborhood residents who are black is still significantly negatively associated with the volume of mortgages originated in the neighborhood. Other things equal, these local banks and thrifts originate more mortgage loans relative to the housing stock in predominantly white neighborhoods than in predominantly black neighborhoods. In this case, more aggressive encouragement by regulatory agen-

More aggressive encouragement by regulatory agencies under CRA—or greater voluntary efforts by these institutions to comply with CRA—could potentially improve the overall pattern of mortgage lending in Boston.

cies under CRA—or greater voluntary efforts by these institutions to comply with CRA—could potentially alter these mortgage lending patterns, and thereby improve the overall pattern of mortgage lending in Boston.

Bank and Thrift Offices in Black Neighborhoods

Some lenders are more active in black neighborhoods. As was discussed earlier, the presence of an office in a neighborhood may be an indicator of the bank or thrift's interest in serving that segment of the community. Accordingly, the lending patterns of banks and thrifts with offices in majority black neighborhoods were examined. As shown in column (4) of appendix B, the lending patterns of these institutions showed no variation by race, once other neighborhood characteristics were taken into account. In other words, the ratio of mortgages originated by these banks and thrifts to total housing structures is fairly similar across neighborhoods of differing racial composition. This does not imply that banks should be required to open or maintain branches. Rather, a physical presence by banks and thrifts in a neighborhood may be a good indicator of their outreach efforts in general, and may enable them to better serve that community.

V. Conclusions and Recommendations

This paper set out to examine geographic patterns of mortgage lending in Boston. The data show that mortgages were originated on 6.9 percent of separately owned structures and condominiums in majority white neighborhoods during an average year between 1982 and 1987. The figure drops to 3.5 percent for majority black neighborhoods and to 2.7 percent for neighborhoods with populations that were more than 80 percent black.

The statistical analysis introduced a number of neighborhood economic and demographic characteristics that could affect either the supply and demand for housing or the supply and demand for mortgages. The results, however, continue to indicate that race is an important factor. Lower mortgage originations in black neighborhoods cannot be explained away by lower levels of income and wealth, lower rates of housing development or other neighborhood differences. Even after taking these factors into account, one still finds a substantial discrepancy in mortgage originations relative to the housing stock between white and black neighborhoods.

It is, of course, always a risk with any study based on regression analysis that the omission of certain explanatory factors could distort the results. In particular, the racial effect could be misstated if factors associated with the volume of credit in a particular neighborhood were also associated with race and those factors were not included in the equation. For example, if the risk of default were higher in black neighborhoods than white, and this risk were not captured by neighborhood income, wealth, percent vacant, and so on, the effect of the percent black variable could be overstated.

On the other hand, the myriad of indirect ways in which racial considerations could affect the volume of housing transactions and mortgage lending means that focusing solely on the racial variable may well understate the severity of the problem. For example, the racial composition of neighborhoods may influence the housing development process, bank and thrift branching decisions, and the mobility of households. Thus, even the substantial discrepancy in mortgage volume between white and black neighborhoods (controlling for nonracial factors) identified by this study may understate the full effect of race on the housing and mortgage markets.

Whether the source of this racial pattern lies in the housing market or the mortgage market is impossible to tell. Lower numbers of transactions necessarily mean lower numbers of mortgage originations.

However, difficulty securing credit will frustrate transactions. At the same time, neighborhoods with low transaction volumes may not be seen by lenders as fruitful locations for marketing and other outreach efforts.

While realtors, developers, lenders, and others probably all share some responsibility for the racial pattern of mortgage activity, one group stands out as having a special role to play in correcting this situation. Not only are banks and thrift institutions central to the homeownership process, but unlike other lenders they have an affirmative obligation under the Community Reinvestment Act to help meet the credit needs of their entire community. Analysis of the lending patterns of institutions according to their

Whether the source of the racial pattern in mortgage lending lies in the housing market or the mortgage market is impossible to tell.

CRA responsibilities casts considerable doubt on whether Boston's banks and thrifts are satisfying this obligation.

In March of 1989, the agencies responsible for administration and enforcement of the Community Reinvestment Act issued a joint Statement outlining in specific language the responsibilities that CRA imposes on lending institutions and the policies and

procedures that regulatory agencies will implement to ensure compliance. The Statement provides much clearer guidance to banks and thrifts than has been available in the past. Banks are required to document the process by which they determine market opportunities (ascertain credit needs), develop and market products, and serve their communities in a business-like way. The Statement also provides examples of approaches adopted by banks and thrifts with effective CRA programs.³³ These include the following:

- instituting policies, including the use of more flexible lending criteria, consistent with safe and sound practices, to provide the types of loans and services described in the institution's CRA statement on a more widespread basis;
- creating and implementing advertising and marketing efforts through, for example, newspapers, radio, television and brochures designed to inform low- and moderate-income groups (in languages other than English, where appropriate) of available loan and deposit services;
- establishing a process involving all levels of bank or thrift management in efforts to contact governmental leaders, economic development practitioners, business and business associations, and community organizations to discuss the financial services that are needed by the community.

Most important, however, is the overall thrust of the Statement: "every financial institution has a continuing and affirmative obligation consistent with its safe and sound operation to help meet the credit needs of its entire community."³⁴ The entire community includes black neighborhoods as well as white.

Appendix A

How Neighborhood Wealth Estimates Were Generated

Average household wealth was estimated for each NSA in Boston based on two types of data: 1979 income distribution by neighborhood in Boston and 1982 average wealth by income class for central cities nationwide. The wealth estimate for each Boston NSA is a weighted average of national central city average wealth by income class, where the weights reflect the neighborhood's mix of households by type, race, and income class. It is computed in the following way:

The income distribution data are taken from the 1980 Census publication for Boston's NSAs (see footnote 12). This document reports the number of households in each of nine income classes and four household types: white families, black families, all families, and all households. The data are from the 1980 Census and refer to 1979 incomes; classes range from under \$5,000 to \$50,000 and above. From the four distributions available in the source document, we generate by subtraction the four that we use: white families (number of families in each class labeled WF1-WF9), black families (BF1-BF9), all other (nonblack, nonwhite) families (OF1-OF9), and nonfamily households (OH1-OH9).

The wealth data were drawn from the 1983 Survey of Consumer Finances (SCF) tape (Board of Governors of the Federal Reserve System) and refer to 1982 values. For households identified as living in central cities across the United States, we extracted mean net worth for each of nine income classes and four household types (36 in all). The income classes were based on the 1980 Census income categories, inflated to reflect changes in the Consumer Price

Index from 1979 to 1982. For example, wealth data to be applied to the Census money income class "under \$5,000" in 1979 were drawn from the SCF households with income below \$6,646 in 1982 (since \$6,646 in 1982 is equivalent to \$5,000 in 1979 dollars).

There is no "household type" designation in the SCF to correspond to "families" in the Census, but families are related individuals sharing a household and hence include a minimum of two members by definition. The bulk of nonfamily households in the Census are one-person households. The four household types for which wealth data were obtained are (1) white households with two or more members (mean wealth for each income class labeled (WWF1-WWF9), (2) black households with two or more members (WBF1-WBF9), (3) all other households with two or more members (WOF1-WOF9), and (4) one-person households (WOH1-WOH9).

Each neighborhood is composed of different proportions of these 36 groups of varying income class and household type. For each group, in each neighborhood, we multiply the number of households by the estimated wealth for that group (for example, WF1*WWF1), to obtain a measure for the group's aggregate wealth in that neighborhood. The neighborhood's average household wealth is obtained by adding up all these group aggregate wealth values and dividing this by the total number of households in the neighborhood. For neighborhood *i*:

$$\text{WEALTH}_i = \{(\text{WF1}_i * \text{WWF1} + \text{WF2}_i * \text{WWF2} + \dots + \text{WF9}_i * \text{WWF9}) + (\text{BF1}_i * \text{WBF1} + \text{BF2}_i * \text{WBF2} + \dots + \text{BF9}_i * \text{WBF9}) + (\text{OF1}_i * \text{WOF1} + \text{OF2}_i * \text{WOF2} + \dots + \text{OF9}_i * \text{WOF9}) + (\text{OH1}_i * \text{WOH1} + \text{OH2}_i * \text{WOH2} + \dots + \text{OH9}_i * \text{WOH9})\} / (\text{WF1}_i + \text{WF2}_i + \dots + \text{WF9}_i + \text{BF1}_i + \text{BF2}_i + \dots + \text{BF9}_i + \text{OF1}_i + \text{OF2}_i + \dots + \text{OF9}_i + \text{OH1}_i + \text{OH2}_i + \dots + \text{OH9}_i)$$

Appendix B
Regression Results

Estimated coefficient, beta, t-statistic

Explanatory Variables	Dependent variable: number of loans per 100 separately owned structures and condominium units			
	All loans (1)	All bank, thrift and mortgage sub loans (2)	Loans of banks, thrifts, and mortgage subs with CRA area "all of Boston" (3)	Loans of institutions with offices in majority black neighborhoods (4)
Constant	4.69	2.58	.989	.287
	n.a.	n.a.	n.a.	n.a.
	4.2	3.1	1.5	1.2
Percent Black	-.0174	-.0208	-.0105	.00144
	-.15	-.27	-.18	.08
	-2.2	-3.7	-2.3	.9
Percent Other Minority	-.000944	-.000835	.00971	.00972
	-.003	-.004	.06	.18
	-.1	-.1	1.2	3.4
Income (\$000)	-.569	-.360	-.270	-.0685
	-.60	-.58	-.57	-.46
	-4.9	-4.2	-3.8	-2.6
Wealth (\$000)	.0505	.0331	.0304	.00847
	.33	.34	.40	.36
	2.5	2.2	2.5	1.9
Value (\$000)	-.0183	-.00929	-.0130	-.00713
	-.14	-.11	-.20	-.35
	-2.7	-1.8	-3.1	-4.8
Rent	.00890	.00747	.00493	.00147
	.12	.16	.14	.13
	2.1	2.4	1.9	1.6
Vacancy Rate	-.0547	-.0305	-.0305	-.00949
	-.11	-.10	-.13	-.13
	-2.4	-1.8	-2.2	-1.9
Mobility	.0742	.0421	.0463	.0114
	.34	.29	.42	.33
	5.8	4.4	6.0	4.1
Age	.0977	.0956	.0628	.0159
	.12	.18	.15	.12
	2.7	3.6	2.9	2.0

Notes: Regressions are pooled time series and cross section using data on 60 neighborhoods over 6 years.

See table 5 for variable definitions and sources.

*Variable includes offices of all depository institutions in column 1 and the institutions included in the dependent variable in columns 2 (banks and thrifts) and 3 (banks and thrifts with CRA area "all of Boston").

†The set of year dummies omits 1987, hence all the coefficients on year dummies are differences from 1987.

Appendix B

Regression Results (continued)

Estimated coefficient, beta, t-statistic

Explanatory Variables	Dependent variable: number of loans per 100 separately owned structures and condominium units			
	All loans (1)	All bank, thrift and mortgage sub loans (2)	Loans of banks, thrifts, and mortgage subs with CRA area "all of Boston" (3)	Loans of institutions with offices in majority black neighborhoods (4)
Housing	24.6	6.07	1.91	2.75
Development	.31	.12	.05	.22
	6.9	2.3	.88	3.4
	.0514	.0528	.0583	-.00288
Commercial and	.07	.11	.15	-.02
Industrial Property	1.7	2.3	3.1	-.4
	.136	.115	.321	
Depository Insti- tution Offices ^a	.02	.016	.05	
	.4	.4	1.1	
	-2.47	-1.87	-.928	-.0516
Year 1982 ^b	-.25	-.29	-.19	-.03
	-6.2	-6.3	-3.8	-.6
	-.0600	-.0887	.601	.257
Year 1983 ^b	-.006	-.01	.12	.17
	-.1	-.3	2.5	2.8
	1.02	.634	1.12	.452
Year 1984 ^b	.10	.10	.23	.29
	2.6	2.1	4.6	5.0
	1.32	.774	1.10	.311
Year 1985 ^b	.13	.12	.22	.20
	3.4	2.7	4.6	3.5
	1.57	.430	.791	.251
Year 1986 ^b	.16	.07	.16	.16
	4.0	1.5	3.3	2.8
Adjusted R ²	.66	.55	.50	.29
Mean of depen- dent variable	5.8	3.9	2.9	.8

¹ It is important to distinguish between discrimination among borrowers and discrimination among neighborhoods. For many years it has been illegal for banks and other financial institutions to discriminate on the basis of a number of borrower characteristics. The Federal Equal Credit Opportunity Act (As amended, March 23, 1976—Public Law 93-495, Title VII, sec. 701) states, "It shall be unlawful for any creditor to discriminate against any applicant, with respect to any aspect of a credit transaction...on the basis of race, color, religion, national origin, sex or marital status, or age (provided the applicant has the capacity to contract)." Our concern in this research is, instead, limited to discrimination among neighborhoods, or redlining.

² Title VIII of the Housing and Community Development Act of 1977, Public Law 95-128, effective November 6, 1978.

³ *Ibid.*, Section 802 (B) and Section 804.

⁴ See, for example, Federal Reserve Board, Regulation BB, Community Reinvestment, 12 CFR 228 effective November 6, 1978.

⁵ *Ibid.*, Section 228.7—Assessing the Record of Performance (e).

⁶ See Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, and Federal Home Loan Bank Board, "Statement of the Federal Financial Supervisory Agencies Regarding the Community Reinvestment Act," March 21, 1989, p. 3. (*Joint Statement*).

⁷ *Ibid.*, p. 17.

⁸ Because of its small size and the unavailability of many neighborhood characteristics, "Harbor islands and crews of vessels" (#32) was not used in the analysis. "Downtown" (#21) was also removed from the final analysis because of an unusually high number of bank branches relative to the resident population.

⁹ Public Law 94-200, Title III.

¹⁰ Mortgage companies that are subsidiaries of banks and thrifts were in fact required to report under HMDA, but mortgage companies that are subsidiaries of holding companies were not required to report.

¹¹ Abt Books, Inc. and Banker & Tradesman, "Real Estate Transfer Database for Suffolk County, 1982-87."

¹² U.S. Bureau of the Census in collaboration with the City of Boston and the Boston Redevelopment Authority, "Boston Population and Housing by Neighborhood Areas, 1980," September 1983.

¹³ This division by 15 is roughly consistent with the number of units per multi-family structure in condominium conversions in Boston between 1980 and 1987. See footnote 14.

¹⁴ Condominium data for 1980 were obtained from Rolf Goetze, "Boston's 1985 Housing Stock and Comparisons with 1980, by BRA Planning District," Boston Redevelopment Authority Research Department, December 1985. Goetze also provided machine-readable files on 1980-87 condominium conversions (master deeds) reporting the year that the master deed was filed, the address, and the number of units.

¹⁵ The "geo-coding" process was based on a GBF/Dime file purchased from the Census Bureau. We were unable to assign to NSAs about 7,600 of the 57,400 transactions. The assignment rate was fairly uniform across broad neighborhoods, lender types, and years.

¹⁶ CRA statements should also describe the efforts that the institution has made to ensure compliance with the Act. The CRA statement must be revised and reviewed annually and is available to the public.

¹⁷ See Karl E. Case, "The Market for Single-Family Homes in the Boston Area," *New England Economic Review*, May/June 1986.

¹⁸ Since 1987, the market has cooled significantly. Prices have been rising very slowly, sales have dropped and new construction has ground almost to a halt.

¹⁹ The figures are the total number of transactions during the six years divided by the total number of separately owned structures and condos (different in each year) summed across the six years. The result is equivalent to a weighted average of ratios across neighborhoods in each racial grouping and across years, weighted by the estimated number of separately owned structures and condos in each.

²⁰ See, for example, Judith D. Feins and Rachael G. Bratt, "Barred in Boston: Racial Discrimination in Housing," *APA Journal*, Summer 1983, pp. 344-55; William Holshouser, "Final Report of a Study of Racial Discrimination in Two Boston Housing Markets," Abt Associates, 1984; and Robert Schafer, "Racial Discrimination in the Boston Housing Market," *Journal of Urban Economics*, April 1979, vol. 6, pp. 176-96.

²¹ John Yinger, "Measuring Racial Discrimination with Fair Housing Audits: Caught in the Act," *The American Economic Review*, December 1986, pp. 881-93.

²² *Ibid.*, p. 881.

²³ Rolf Goetze, "Recent Condominium Development Patterns, 1986-1988," Boston Redevelopment Authority, April 1989.

²⁴ See, for example, John F. Kain and John Quigley, *Housing Markets and Racial Discrimination*, National Bureau of Economic Research, 1975.

²⁵ Francine D. Blau and John W. Graham, "Black/White Differences in Wealth and Asset Composition," National Bureau of Economic Research Working Paper No. 2898, March 1989, p.i. This study presents the best recent description and analysis of racial differences in income and wealth.

²⁶ It should be recognized, however, that commercial and industrial properties may turn over faster in some neighborhoods than others. These variations could distort the measure of mortgages to housing stock, even with the inclusion of the commercial and industrial variable.

²⁷ Evidence to support this conjecture was found in regressions that omitted the race variable. When race of neighborhood is not controlled for, the estimated coefficient on the branch variable is positive and significantly different from zero.

²⁸ Note that the analysis examines the effect of race of neighborhood residents, not the effect of the race of loan applicants.

²⁹ It is not clear why this pattern occurs. Some authors cite the lower downpayment requirements of FHA and VA mortgages, and the fact that blacks tend to have lower income and wealth on average than whites, so that they are more likely to qualify for these loans than for conventional loans. See George J. Benston, "Mortgage Redlining Research: A Review and Critical Analysis," *Journal of Bank Research*, Spring 1981, pp. 8-23. Others conjecture that banks and thrifts perceive minority neighborhoods as risky, causing them to set higher credit standards on conventional mortgage loans made in these neighborhoods. Realtors, recognizing that mortgage applications for these neighborhoods are more likely to be rejected, steer their clients to mortgage bankers, who specialize in FHA/VA mortgages, and are more likely to approve their applications. See Robert B. Avery and Thomas M. Buynack, "Mortgage Redlining: Some New Evidence," *Federal Reserve Bank of Cleveland Economic Review*, Summer 1981, pp. 18-32.

³⁰ This is corroborated in column (2) of appendix B, which shows the race effect to be even larger for banks and thrifts than for all lenders in Boston.

³¹ In Boston during the 1980s, very few FHA and VA guaranteed mortgages were made by mortgage companies or other lenders, according to data provided by the Department of Housing and Urban Development and the Veterans Administration. FHA loans represented less than 2 percent, and VA loans less than 1 percent, of all mortgage loans in Boston during the 1983-87 period. Moreover, they accounted for less than 7 percent of all mortgage company activity in the city. Accurately determining the neighborhood locations of FHA and VA guaranteed loans was not possible, but it appears that they also represented a small fraction of loans in each of Boston's planning districts. It is likely that the mortgage price caps of these federal lending programs, combined with the very high housing prices in Boston, sharply restricted the supply of these mortgages.

³² Other lenders include credit unions, business lenders, trusts, government programs, insurance companies and others.

³³ *Joint Statement*, pp. 8 and 9.

³⁴ *Joint Statement*, p. 3.