



**Credit  
Research  
Center**

**WORKING PAPER NO. 42  
Consumer Use of Mortgage Credit  
1981**

## CONSUMER USE OF MORTGAGE CREDIT

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### Abstract

This paper analyzes factors influencing consumers' use of mortgage credit for consumer purposes. It primarily concentrates on consumers' use of first mortgage funds to finance consumer durables purchased with the home.

Two alternative and conflicting hypotheses are tested. The "relative price" hypothesis predicts that consumers in markets with low consumer rate ceilings will use more consumer credit relative to mortgage credit for consumer purposes because it is relatively cheaper than mortgage credit than in states with higher rate ceilings. The "credit-rationing" hypothesis implies that high-risk consumers will find mortgage-related credit more available than consumer credit--particularly in states with low rate ceilings on consumer credit. The "relative price" hypothesis can apply either at the individual ("micro") level or for all individuals taken together (at the "macro" level). At the macro level, the credit-rationing hypothesis directly conflicts with the relative price hypothesis.

The study uses data collected in four markets which differ significantly according to applicable rate ceilings on consumer credit. It analyzes the amount of mortgage credit used to finance household durable goods expenditures relative to total first mortgage debt, total consumer debt, and total credit card debt.

In general, mortgage credit was an important source of funds for the purchase of household durables for high-risk (low income) homeowners who may have been rationed out of the consumer credit market. Thus, the credit-rationing hypothesis was supported at the "micro" level.

However, possibly because low consumer rate ceilings held down the price of consumer credit and encouraged consumer credit use by those who could still obtain it, consumer credit was used more extensively relative to mortgage credit for consumer purposes in states with low rate ceilings than in states with high rate ceilings. Holding credit risk and income constant, homeowners in markets with low rate ceilings on consumer loans used a significantly lower percentage of their first mortgage credit to finance durables than homeowners in high-rate markets. Also, compared to those in high-rate markets, homeowners in low-rate markets field less mortgage credit for consumer purposes relative to total consumer credit and significantly less mortgage credit for consumer purposes relative to unsecured credit card debt in their portfolios. Thus, on the aggregate ("macro") level the data are consistent with the relative price hypothesis.

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\* The authors are, respectively, Associate Director and Senior Research Scholar, Credit Research Center, Krannert Graduate School of Management, Purdue University. The authors wish to thank Deb Drecnik for valuable research assistance, and Robert W. Johnson for useful comments on earlier drafts. This project was supported by a grant from the National Science Foundation, DAR77-20041. Any remaining errors, and all opinions, findings, conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the Credit Research Center or the National Science Foundation.

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### I. Introduction

Credit is fungible. Consumers typically use mortgage credit to finance their purchases of real property. However, they may use any of several sources of credit when they wish to finance consumer expenditures on durables. To the extent that mortgage credit is used extensively to finance the purchase of consumer durables, a greater volume of mortgage credit would have to be originated to finance the same volume of real property acquisition.

Previous investigators have examined whether first and second mortgage credit was used entirely to finance new home construction or whether some was used for other purposes, such as relocation costs.<sup>1</sup> However, no one specifically addressed the issue of whether mortgage credit was directly substituted for consumer credit in financing specific consumer expenditures.

In this paper we analyze the extent to which mortgage credit may be substituted for consumer credit to finance household durable goods. We are particularly concerned with analyzing whether consumer credit rate ceilings affect the ability and willingness of differently situated consumers to use mortgage credit in lieu of consumer credit to finance such purchases.

The paper develops two major conflicting hypothesis in section II. The first, the relative price hypothesis, suggests that consumers will use more consumer credit relative to mortgage credit when the price of consumer credit is held down by consumer loan rate ceilings. The second, the credit rationing hypothesis, has both "micro" and "macro" implications. On the individual or "micro" level it implies that low-income (high-risk) consumers will substitute mortgage credit for consumer credit where possible. On the "macro" level, it predicts that consumers in total will use more mortgage credit relative to consumer credit to finance durable expenditures in states with low rate ceilings. On the "macro" level, the relative price and credit rationing hypotheses are in direct conflict.

The data used to test the alternative theories of consumer and mortgage credit use are described in section III. The alternative theories of credit use are tested empirically in section IV. Finally, section V summarizes the major findings of the paper and presents our conclusions.

On the aggregate ("macro") level, the empirical findings support the relative price hypothesis. Consumers use more consumer credit relative to mortgage credit to finance household goods acquisitions in states with low consumer credit rate ceilings than in states with higher rate ceilings for consumer credit. However, the credit-rationing hypothesis was supported on the "micro" or individual level. High-risk, low-income people used more mortgage credit relative to other forms of credit to finance durable goods acquisitions than more affluent consumers.

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<sup>1</sup> Some investigators, such as Seiders [7], have focused on consumer use of junior mortgage financing. Others, such as Gelb [2] and Sommers and Phine [9] have focused on the fact that mortgage debt grew more rapidly than housing prices in the 1960s, and concluded that first mortgage debt was expanding so rapidly that some must have gone to finance nonhousing uses.

## II. Mortgage/Consumer Credit Substitution

### The Relative Price Hypothesis

Ordinarily a consumer can elect to borrow from any of a number of different sources. While many of the sources will offer identical loan terms, others will offer loans with varying sizes, rates, repayment features, collateral requirements, or convenience attributes. The source a consumer selects to finance expenditures will depend upon all of the attributes just enumerated.

As a general rule consumer credit is readily available at the retail point-of-sale to finance expenditures on major durable goods. Consumer credit typically is of short maturity (two to five years), has little or no repayment penalty if it is repaid early, can be acquired at low transaction cost on the consumers part (often at the point of sale), and has infrequent or low downpayment and collateral requirements. In contrast, mortgage loans typically are of long maturity (25-30 years), often carry prepayment penalties, are costly to acquire, and have very substantial collateral requirements (the typical mortgage loan is secured with real property worth 125 percent of the value of the loan).

These inherent differences in consumer and mortgage debt induce consumers to pay higher rates to acquire consumer credit than to obtain mortgage credit. They are willing to pay the higher rate for consumer credit because they gain greater convenience and portfolio flexibility for lower transactions costs.

Given the relative prices of consumer and mortgage credit, consumers will select their debt portfolios so as to maximize their expected welfare. If the price rate associated with either form of credit (consumer and mortgage) increases, one would expect them to alter their portfolio structure to acquire relatively more of the cheaper form of debt. This is illustrated in Exhibit 1.

In Exhibit 1, we assume that tradeoffs exist between consumer credit and mortgage credit. These tradeoffs are given by the isocost lines. The slopes of the isocost lines reflect tradeoffs between consumer debt and mortgage debt that can be made without increasing total borrowing costs (finance charges per year). For instance, if mortgage debt carried a 12 percent finance rate and consumer debt carried a 24 percent rate, two dollars of mortgage debt could be acquired for each dollar of consumer debt given up--and total debt costs would remain the same.

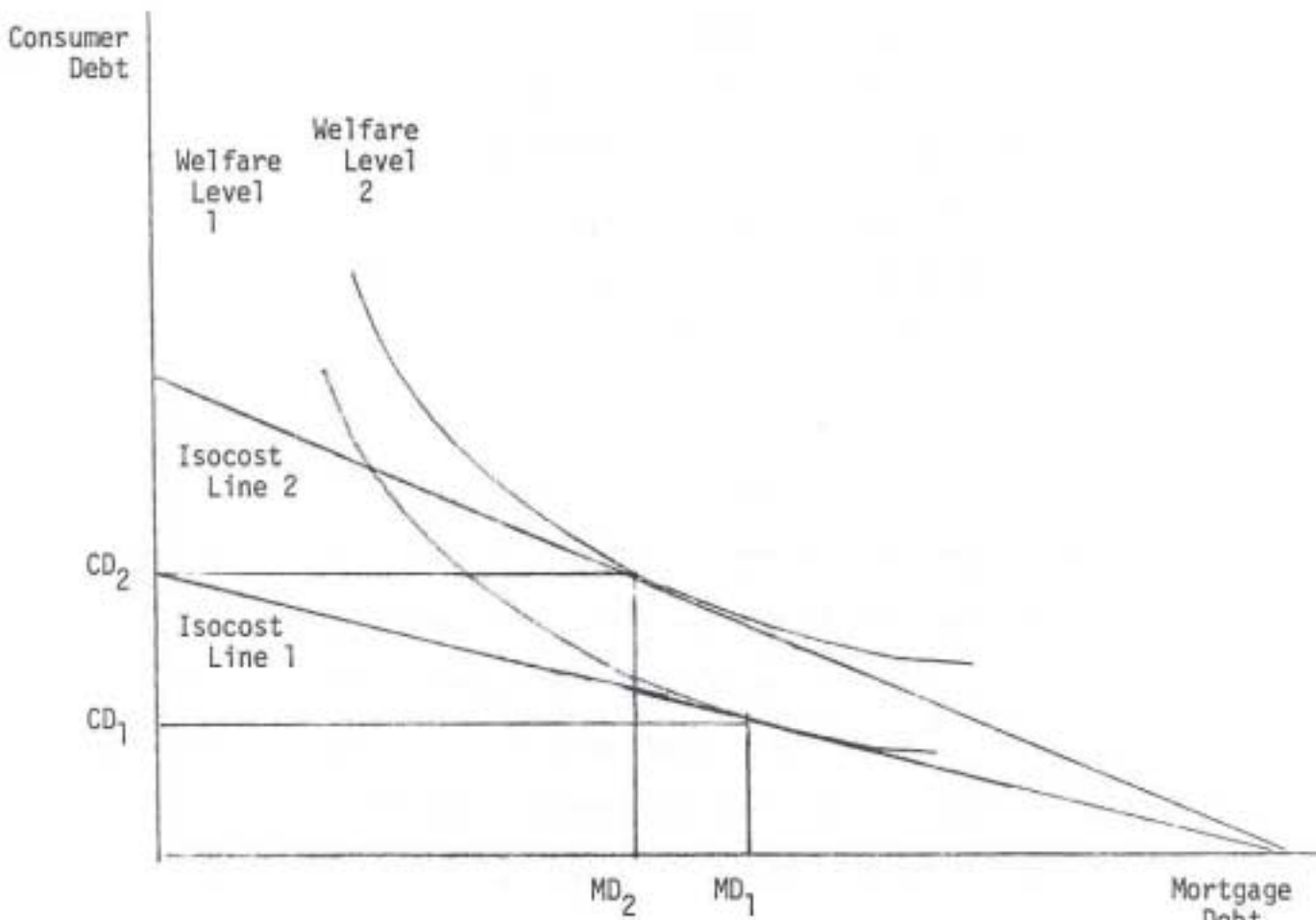
The consumer tries to adjust holdings of consumer and mortgage debt so as to achieve the highest level of welfare consistent with each level of borrowing costs. For instance, if isocost line 1 reflects relevant cost tradeoffs between consumer and mortgage debt, the consumer can obtain the maximum level of welfare consistent with those borrowing costs by holding  $MD_1$  in mortgage debt and  $CD_1$  in consumer debt.

The tradeoffs embodied in isocost line 1 of Exhibit 1 assume that consumer debt is expensive relative to mortgage debt. Thus, consumers will probably hold a larger proportion of mortgage debt relative to consumer debt. If consumer debt were to become cheaper while the cost of mortgage debt remained unchanged isocost line 1 would rotate upward to become isocost line 2. In that case, the consumer could obtain the maximum level of welfare for a given level of borrowing costs by holding  $MD_2$  in mortgage debt and  $CD_2$  in consumer debt. Because of the lower relative price of consumer debt the consumer would substitute some consumer debt for mortgage debt in the debt, portfolio.

There are two key points that should be derived from this exercise. First, because of the convenience, flexibility, short maturity and low collateral requirements of consumer debt, consumers ordinarily will achieve

their highest welfare when they hold some consumer debt in addition to mortgage debt. They generally will do so even if the consumer debt is priced higher than mortgage debt. Second, as the price of consumer debt falls relative to the price of mortgage debt, consumers generally will expand their holdings of consumer debt relative to their holdings of mortgage debt. This gives us our relative price hypothesis--which is-- consumers will hold more consumer debt relative to mortgage debt when the cost of consumer debt is relatively low.

EXHIBIT 1  
CONSUMER AND MORTGAGE DEBT HOLDINGS



## The Credit Rationing Hypothesis

One mechanism by which apparent consumer credit costs can be reduced is through the imposition of restrictive loan rate ceilings. Theoretically, most investigators agree that, unless some way can be found to "evade" the effects of the ceilings, low loan rate ceilings will reduce the supply of consumer credit--as illustrated in Exhibit 2.<sup>2</sup>

In Exhibit 2, in the absence of rate ceilings, the amount of credit creditors would be willing to supply would equal the amount that consumers demanded at the market clearing rate. If the rate ceiling were set below the market-clearing rate, suppliers would be willing to supply less credit than consumers would demand. This excess demand would have to be "rationed" out of the market. Typically, credit suppliers ration demand by denying credit to the highest risk, highest-cost potential borrowers. Such borrowers often have low incomes or other signs of limited ability to repay debt. Thus, credit rationing is likely to fall hardest on those customers who are of highest risk or lowest income. However, if such borrowers were able to obtain mortgage credit by pledging their homes as collateral, one might expect them to substitute mortgage debt for consumer debt to finance needed purchases.

Thus, we have our "credit rationing" hypothesis--which is--consumers who are rationed out of the consumer credit market will be more likely than other consumers to use mortgage debt as a substitute for consumer debt. At the individual ("micro") level, we would expect high-risk, low income consumers, who have the most trouble obtaining credit at any rate, to be most likely to substitute mortgage credit for consumer credit out of necessity. At the aggregate ("macro") level we would expect more consumers to substitute mortgage credit for consumer credit in states where rate ceilings are low and credit rationing is most prevalent.

## Implications of these Hypotheses

There are several implications of these hypotheses that are of considerable interest. First, the relative price hypothesis suggests that, insofar as rate ceilings on consumer credit are restrictive, consumer credit usage will be higher relative to mortgage credit usage in states with low rate ceilings than in states with high rate ceilings.<sup>3</sup> Second, the credit rationing hypothesis suggests that, insofar as consumer loan rate ceilings cannot be easily "evaded," on the "macro" level, more consumers will be rationed out of the consumer credit markets in states with effective low rate ceilings than in states with high rate ceilings. Such consumers will be likely to substitute mortgage credit in their portfolio to supply their credit needs. Third, on the "micro" level, the credit rationing hypothesis suggests that, insofar as low-income, high-risk customers are most likely to experience credit rationing in the consumer credit markets, they are the most likely to substitute mortgage credit for consumer credit to meet their credit needs.

It is pertinent to note that the first and second "implications" described above are diametrically opposed. The relative price hypothesis suggests that consumers will use more consumer credit relative to mortgage credit

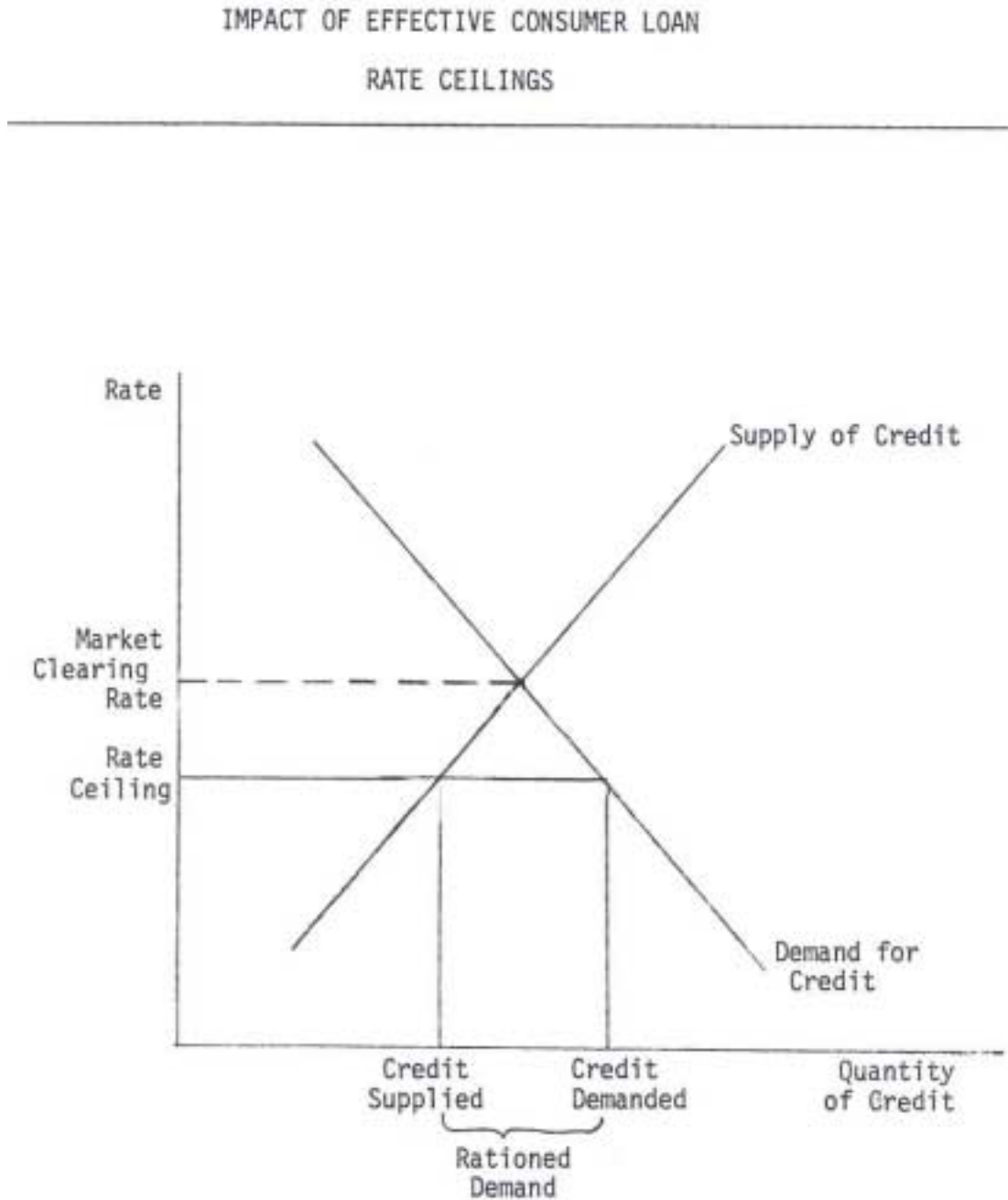
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<sup>2</sup> See, for instance, the reports of the National Commission on Consumer Finance [4], [5], and Jadow [3].

<sup>3</sup> If all consumers paid rates exactly commensurate with their risk, the imposition of rate ceiling would not reduce rates for consumers who paid below ceiling rates--it would merely cause higher-risk customers to be denied credit. However, due to high costs of evaluating risk accurately and the fact that transactions costs can deter individual consumers from shopping for the best possible rate, the imposition of a rate ceiling can reduce credit costs to low-risk borrowers.

If as a result of the ceiling, moderate risk borrowers are denied credit both finance rates and creditor loss rates will go down and low-risk borrowers will pay a rate more nearly commensurate with their risk. Previously, low-risk borrowers may have paid higher rates (in lieu of shopping for cheaper credit) and, thereby, partially subsidized losses on credit extended to moderate risk borrowers.

in states with low consumer loan rate ceilings, while, on the "macro" level, the credit-rationing hypothesis implies just the opposite. The appropriateness of each hypothesis then can only be settled through empirical tests.



### Testable Hypotheses

The relative price and credit rationing hypotheses can be tested by analyzing the debt portfolios of similarly situated consumers located in states with different rate ceilings. Buying consumer goods in or with their home provides an important way that consumers can directly use mortgage debt to finance consumer expenditures. If the credit-rationing hypothesis holds at the micro level one would expect the portion of first mortgage credit used to finance purchases of consumer goods to increase as credit risk increases. Further, holding other things constant, if consumers finance more expenditures with mortgage debt, we expect them to use less consumer debt, including credit card debt, to finance the purchase of consumer goods. Thus, if many

consumers are rationed out of the credit markets by low rate ceilings, at the "macro" level we expect people to use more mortgage debt relative to consumer debt to finance their acquisition of consumer goods.

Conversely, if the relative price hypothesis applies to the macro level, we would expect consumers to use less mortgage credit relative to consumer credit, including credit card credit, to finance their consumer expenditures in states where consumer loan rate ceilings are low. To test these hypotheses, we developed several measures of the relative extent to which consumers used mortgage credit and consumer credit to finance their expenditures.

### III. Nature of the Data

The data used in this analysis were collected in personal interviews conducted in the first six months of 1979 with 3,572 heads of household in four markets. The markets were selected to be maximally different with respect to rate ceilings on consumer loans but minimally different with respect to such factors as industrial base, blue collar/ white-collar mix and economic environment. The cities where interviews were conducted, the number of interviews completed, and applicable rate ceilings in each market are shown in Exhibit 3. Respondents to the survey provided data concerning their assets, liabilities, durable goods owned, the means by which various durables had been obtained, and extensive demographic information.

Consumers may obtain mortgage credit for consumer purposes through a second mortgage or by refinancing a first mortgage. Data regarding the incidence, size, and purpose of first mortgage refinancings and second mortgage loans were collected. However, less than three percent of our sample (five percent of the homeowners) had a second mortgage and less than three percent had refinanced a first mortgage. The small number of cases limited our ability to evaluate factors affecting consumers' use of these sources of mortgage funds to finance consumer purchases.

#### EXHIBIT 3

##### APPLICABLE RATE CEILINGS IN EARLY 1979

Market Studied	Little Rock/ North Little Rock, Arkansas	Waukegan/ North Chicago Illinois	Lake Charles Louisiana	Racine/Kenosha Wisconsin
Number of Households Interviewed	787	1,030	749	1,006
First Mortgage Rate Ceiling	10%	11%	12%	12%
Consumer Loan Rate Ceilings	Low	Generally High	High	Generally Low
Bank Credit Cards	10%	18%	18%	18% to \$500 12% over \$500
New Auto (36 mo.)	10%	14.55%	15%	12.83%
Installment Sales (1,000 for 24 mon.)	10%	25.91%	24%	16.29%
Personal Loans (\$1,000 for 24 mo.)	10%	Small Loans 25.56%	35.43%	Wisconsin Consumer Act 16.29%
		Installment Loan Law 12.91%		Discount Loan Act 20.40%

Source of rate ceiling information: Gushee, Charles, Ed. Cost of Personal Borrowing in the United States, Financial Publishing Company, Boston, 1978.

Another more common means by which consumers use mortgage credit to finance consumer purchases is to acquire home appliances and household goods with a house. In order to evaluate this activity each respondent who owned a home was asked to indicate the major household goods they owned and which of those items were obtained with their home.<sup>4</sup> From these data, we calculated a value for each respondent of "implied consumer credit (ICC)." The total dollar value of durables purchased with the home was called implied consumer credit (ICC). If mortgage credit had been used to finance the housing purchase, ICC represents the amount of credit that was used to finance the acquisition of consumer goods.

Implied consumer credit in a respondent's portfolio was computed by assigning values to those household goods that had been purchased with the dwelling unit and summing those values. The respondents were not asked to indicate the value of those durables purchased with the home. Therefore, to approximate a value for "implied consumer credit," each item was assigned a base value equal to the mean price listed for that item in the 1979 Sears catalogue. This particular pricing mechanism was chosen because Sears merchandise was evaluated as being representative of that owned by the "average" U.S. household. These values were then adjusted to reflect probable differences in the quantity and quality of durables owned by households in different income groups and wholesale price discounts or depreciation.

Respondents were grouped into three annual income categories: under \$7,500; \$7,500-24,999; and \$25,000 or more. The value of durables owned by high-income families was set at 150 percent of the mean Sears price. Conversely, the value of durables owned by families in the low-income bracket was set at 50 percent of the Sears price. The durables owned by families from the middle-income group were valued at the average Sears price.

Because not all durables were considered to be worth the then current retail values, the value of the durables purchased with the home was reduced by a factor of one-half. This adjustment allowed for wholesale price discounts and depreciation. In this fashion we calculated a value, as of the time of the study, for the durable goods that each consumer had acquired with their home.

In our analysis of ICC, the sample included only those respondents who had moved into their homes between 1976 and 1979. This segmentation of the sample was made because those who had moved into their home during that time period were believed to be likely to still have both the durables obtained with the home and the consumer debt used to obtain durables not purchased with the dwelling unit. Thus, we expected that the Analyses of that subgroup would be most revealing of factors which influence the consumers' use of mortgage credit rather than consumer credit to finance consumer expenditures.

A summary of the characteristics of the distribution of ICC is provided in Exhibit 4. Almost 46 percent of the sample had a zero value for ICC, indicating that none of the durables listed in footnote 4 had been purchased with the home. The mean value of ICC was \$287 and the maximum value was \$2,678.

The mean value of ICC may appear unrealistically low, given the types and expense of household durables that could have been included. However, for purposes of analysis, the absolute value of ICC was less relevant than cross-sectional and cross-state variations in consumers' holdings of ICC.

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<sup>4</sup> The list of household goods included; television, stereo equipment, stove, microwave oven, refrigerator, freezer, room air conditioner, sewing machine, washer, dryer, dishwasher, or trash compactor.

**EXHIBIT 4**  
**DISTRIBUTION OF IMPLIED CONSUMER CREDIT FOR HOMEOWNERS (dollars)**

Homeowners since year-end 1975 (N=664)	Mean value including '0' = \$287.
Distribution of ICC	Maximum value \$2,678.
0	45.8%
0 < ICC ≤ 200	5.3%
200 < ICC ≤ 300	9.8%
300 < ICC ≤ 400	11.7%
400 < ICC ≤ 500	6.9%
550 < ICC	20.5%

SOURCE: CRC 1979 Consumer Financial Survey, Credit Research Center, Purdue University.

**IV. Analysis and Results**

In section II we formulated two hypotheses concerning factors influencing consumers' use of mortgage credit for consumer purposes versus consumer credit. To test the hypotheses, a cross-sectional multiple regression analysis was performed with each of the following three measures of the relative extent to which consumers had used mortgage credit and consumer credit to finance their expenditures as the dependent variable:

- (1) Implied Consumer Credit/Total First Mortgage Credit (ICC/TMOR)
- (2) Implied Consumer Credit/Total Consumer Installment Credit (ICC/TCC)
- (3) Implied Consumer Credit/Credit Card Credit (ICC/CCC)

In each of the regression analyses the following independent variables were included;

- 1.) Income = the annual before tax family income, taken as the midpoint of one of 19 categories ranging from less than \$2,000 to greater than \$50,000. This variable controls for any income-related credit rationing.
- 2.) Credit score = a continuous variable representing the credit risk of the individual. The scoring systems used (CC1 and CC2) were based on major banks' scoring systems for credit card applicants. A low score represents a bad credit risk; a high score represents a good credit risk. The variables incorporated in the credit scores used are described in Appendix A. This variable measures the effect of credit-rationing based on general risk characteristics of the consumer.
- 3) Dependents = number of dependents (including spouse and members of household under 21 or over 65 years) in the household. This is a control variable to adjust for the fact that, everything else being equal, people with more dependents ordinarily will acquire more household durable goods.
- 4) Year of purchase of home. This variable allows for the fact that changes may occur in consumers' preferences over time.

5) Low consumer loan rate ceiling = 0-1 dummy variable taking the value of one for respondents in the Arkansas or Wisconsin markets.

The loan rate ceiling dummy variable was used to test the macro implications of our theoretical hypotheses. A positive sign on the variable would provide support for the credit-rationing hypothesis; a negative sign would support the relative price hypothesis.

### Implied Consumer Credit Relative to Total First Mortgage Credit

The ratio of implied consumer credit to total mortgage credit (ICC/TMOR) indicates the percentage of the original outstanding balance on the first mortgage which was used to finance consumer durables. This ratio should increase with credit risk as a result of credit rationing at the micro level. On average, almost two percent of total first mortgage debt was used to finance consumer durables purchased with the home (Exhibit 5).<sup>5</sup>

**EXHIBIT 5**  
**DEPENDENT VARIABLE IMPLIED CONSUMER CREDIT (ICC)**  
**TOTAL FIRST MORTGAGE CREDIT (TMOR)**

	Homeowners After 1975 N = 531
Mean of ICC/TMOR	1.7%
Income	-.0000001 (-.81)
CC1	-.00015 (-1.99)*
Dependents	-.0038 (-2.89)*
Year of Purchase	.0011 (.588)
Low rate	-.0095 (-2.67)*
Constant	-.024 (-.16)
R <sup>2</sup>	.036
F	3.96*

\*Significant at ten percent level of confidence.

1. For a complete listing of the variables used in CC1 see Appendix B.

SOURCE: CRC 1979 Consumer Financial Survey, Credit Research Center, Purdue University.

Holding the effect of income and family size on total first mortgage debt constant, we found that the proportion of first mortgage credit actually used to finance household durables increased significantly as credit risk (CCI) increased (i.e., as the credit score decreased, ICC increased). This result suggests that high-risk people were more likely to use mortgage credit to finance consumer purchases than lower risk borrowers, a phenomenon which may be attributable to credit rationing. The coefficient of the low rate dummy variable was negative and significant at the five percent level of confidence. Holding other things constant, homeowners in the low-rate markets used a significantly smaller proportion of their first mortgage to acquire household

<sup>5</sup> This figure was affected by assumptions made in the calculation of ICC. If all houses had been new, no depreciation would need to be assumed. Also, consumers may not have owned appliances comparable to those listed in the Sears catalogue.

durables than home-owners in high-rate markets. Thus, although the results are consistent with the credit-rationing hypothesis at the micro level, overall the results of this analysis indicate that the relative price hypothesis dominates at the macro level.

### **Implied Consumer Credit Relative to Total Consumer Credit**

The ratio of implied consumer credit relative to total consumer credit, including installment credit plus credit card outstandings (ICC/ TCC) measures the importance of mortgage credit as a substitute for consumer credit in the individual's debt portfolio (ignoring second mortgage credit which can also be used to finance consumer purchases).

There are several factors in this analysis that should be noted. The credit score used in this regression differed from that previously used. This credit score (CC2) was also based on a bank scoring system, but it did not include components related to monthly debt payments and credit card ownership--since those factors could have created spurious correlation between the score and TCC. However, this score was much more closely correlated with income ( $\rho = .46$ ) than CCI, the credit score used in the analysis shown in Exhibit 5, for which  $\rho = .09$ . Second, in some cases, consumers had no consumer credit but had positive amounts of ICC. Since one of our hypotheses considers the possibility that higher-risk borrowers are rationed out of the credit markets, these observations could not be ignored. Thus, whenever total consumer credit equaled zero, rather than throw the observations out we arbitrarily assigned ICC/TCC the value of 100, which slightly exceeded the maximum measured value of ICC/TCC. The results of the analysis are shown in Exhibit 6.

The ratio of ICC/TCC--was inversely related to credit risk (CC2). However the coefficient was not significantly different from zero. The coefficient for the income variable was negative and highly significant. The high degree of correlation between the income and credit risk variables resulted in the coefficients for the two variables being inefficient. Nevertheless, the coefficients are unbiased. Thus, we conclude that low-income people were significantly more likely to use mortgage credit versus consumer credit than high-income consumers. This is consistent with rationing of consumer credit to high-risk individuals. The coefficient of the low rate dummy variable was negative but insignificant. Thus, although the analysis suggests that low-income (higher-risk) consumers were significantly more likely to substitute mortgage credit for consumer credit than low risk consumers, we cannot conclude that rate ceilings have a significant effect on the substitution of one general form of credit (mortgage) for another (consumer).

Credit card credit generally is unsecured and frequently is used to finance consumer purchases of durable goods--particularly since nearly two-thirds of all consumers hold one or more credit cards.<sup>6</sup> Thus, credit card outstandings may be more appropriate than total consumer credit (which includes auto debt, educational debt, and other debt unrelated to household purchases) for measuring consumer credit used for household purposes. The ratio of implied consumer credit (ICC) to total credit card debt (CCC) was thus substituted for ICC/TCC as the dependent variable. The denominator includes the outstanding balances at the time of the survey for all credit cards held by the respondent.

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<sup>6</sup> According to [the 1977 Consumer Credit Survey](#) [1] published by the Board of Governors of the Federal Reserve System, 62.9 percent of the consumers surveyed held one or more credit cards. The most frequently held credit cards were retail credit cards, held by 54.3 percent of the respondents.

**EXHIBIT 6**  
**RELATIONSHIP OF IMPLIED CONSUMER CREDIT TO CONVENTIONAL CONSUMER CREDIT**

**Dependent Variables**

<b>Independent Variables</b>	<b>Implied Consumer Credit ICC Total Consumer Credit TCC</b>	<b>Implied Consumer Credit ICC Total Consumer Credit TCC</b>
Income	-.0003 (-2.08)*	-.06 (-3.25)*
CC2	-.054 (-1.14)	-.755 (-1.20)
Dependents	-2.73 (-2.55)*	-2.94 (-2.09)*
Year of purchase	.025 (.016)	-.185 (.089)
Low rate	-1.84 (-.65)	-9.44 (-2.49)*
Constant	23.63 (.20)	74.67 (.46)
Summary statistics		
R <sup>2</sup>	.03	.07
F	2.84*	6.83*
Homeowners after 1975 with complete data	N=513	N=477

\*Significant at the ten percent confidence level.

SOURCE: CRC 1979 Consumer Financial Survey, Credit Research Center, Purdue University.

**Implied Consumer Credit Relative to Total Credit Card Debt**

The ratio of ICC/CCC was inversely related to credit risk (CC2), reflecting the difficulty high-risk consumers experienced in obtaining credit card debt. However, the coefficient of CC2 was not significant. The coefficient for the income variable has the expected negative sign and was significant at the one percent level. Again, the high degree of correlation between the income and the credit risk variable resulted in the coefficients for the two variables being inefficient but unbiased. Thus, we conclude that the results are again consistent with credit-rationing of low-income, high-risk individuals. The coefficient on the low-rate dummy variable was negative and highly significant. This result provides further support for the relative price hypothesis which implies that, overall, consumers will use more consumer debt relative to mortgage related debt to finance their expenditures in states with low consumer credit rates.

The disparate nature of the results pose an interesting problem. Why does the relative price hypothesis seem to hold in general while the income and credit risk results support the notion that creditors engage in credit rationing? The results can possibly be explained by observing that credit rationing does not appear to be any more pervasive, overall, in the low rate states than in the high rate states. In related work, Peterson and Falls [5] found that credit was just as readily available to consumers in Arkansas (the state with the most restrictive rate ceiling), regardless of risk or income level, as it was to residents of other survey States. They explained this by noting that credit was widely available through retailers in Arkansas (who presumably could obtain necessary profits by adjusting the prices of goods). As a result of such adjustments overall credit supplies were not diminished by restrictive rate ceilings. Nonetheless, many of the very riskiest borrowers in every state may still have had trouble receiving credit (because it was not profitable or possible to raise prices or rates in general sufficiently to compensate for their high risk). Thus, cross-state evidence of credit rationing against the very

riskiest borrowers could exist at the same time that aggregate tests did not show elevated credit-rationing in low rate states. That is what we found in these tests.

## V. Conclusions

This paper analyzes the extent to which consumers use mortgage credit as a substitute for more traditional forms of consumer credit. It also attempts to determine if the substitution of mortgage credit for consumer credit is a function of the credit risk (income) of the borrower and rate ceilings on consumer loans.

Overall, it found that the amount of mortgage credit used to fund acquisition of consumer durables in conjunction with post-1975 housing acquisitions averaged approximately two percent of the value of the mortgage. That credit equaled fully one-third of the calculated value of durable goods owned by homeowners.

As credit risk and income increased, consumers used a greater proportion of their first mortgage financing for consumer purposes. In addition, as credit risk and income increased consumers used more mortgage credit for consumer purposes relative to total consumer credit and credit card debt. These results suggest that individual consumers frequently used mortgage debt to finance durable, goods expenditures if they found it difficult to obtain consumer credit. These findings were consistent with the "micro" implications of the credit-rationing hypothesis,

Overall, however, low consumer credit rate ceilings apparently encouraged the substitution of consumer credit for mortgage credit. These results held for consumer usage of mortgage credit by homeowners relative to (1) the original balance of their first mortgage, (2) their consumer credit holdings and (3) their credit card outstandings. Thus, the behavior of consumers living in states with low consumer credit rate ceilings was consistent with the "relative price" hypothesis not the "macro" implications of the credit-rationing hypothesis. Seemingly any additional shift of high-risk consumers toward mortgage credit financing of their expenditures in low-rate states, was more than offset by greater relative use of consumer installment credit by low-risk borrowers in those states.

## APPENDIX A

Variables included in calculations of credit scores:

CCI		CC2	
a)	year of birth	a)	years in residence
b)	years in residence	b)	years on job - employment status
c)	age of auto	c)	family income
d)	monthly housing expense	d)	education level of household head
e)	have checking and savings accounts	e)	home ownership
f)	finance company reference	f)	home financing; i.e., 1st or 2nd mrtg., refinance
g)	credit cards owned	g)	have a phone or not
h)	monthly auto expense		
i)	monthly debt/income (debt excluded mortgage and credit card debt)		

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