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Commercial banking: competition and the personal loan market

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Commercial banking: Competition and the personal

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Thomas Michael Hoenig

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CHAPTER I. INTRODUCTION

Commercial Banks and Nonbanking Institutions:
The Question of Competition

The banking structure of the United States is one of the more dynamic components of the financial sector of the economy. Laws are changing to allow banks and bank holding companies to expand their influence across markets and product lines. From 1960 to 1973, for example, the number of states permitting commercial banks to engage in some kind of branch banking increased from thirty to forty-three (23). As a result, there has been a consistently high volume of bank merger activity during this period, larger banks merging with smaller banks and the smaller banks then being converted to branches. Table 1.1 shows that bank consolidations ran at a rate of over one hundred per year from 1960 to 1972. Most of these mergers involved the conversion of the acquired bank to a branch.

At the same time, the growth of the bank holding company has become a significant factor changing the banking and financial structure in the United States. The bank holding company is a corporation set up for the purpose of owning or controlling one or more commercial banks or related nonbank companies.[1]

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[1] In 1956 the Bank Holding Company Act was passed and bank holding companies owning two or more banks were put under the jurisdiction of the Federal Reserve Board. In 1970 the Act was amended placing holding companies with one or more banks under the jurisdiction of the Board. Also, Section 4(c)(8) was expanded which permits the Board to specify acceptable related

Table 1.1   Number and changes in the number of commercial banks in operation in the United States, 1960 to 1971.[a]

| Year | Beginning Operation | | |
	Banks in Operation at Beginning of Year	New Banks	Other
1960	13,486	132	–
1961	13,484	113	–
1962	13,444	183	–
1963	13,439	300	–
1964	13,582	335	2
1965	13,775	198	2
1966	13,818	122	1
1967	13,785	107	2
1968	13,741	86	4
1969	13,698	130	5
1970	13,681	185	0
1971	13,705	201	2

[a]Source: (13)

Consolidations	Ceasing Operations Merger Absorptions Other	Net Changes during Year	Banks in Operation at End of Year
130	4	-2	13,484
147	6	-40	13,444
183	5	-5	13,439
155	2	+143	13,582
133	11	+193	13,775
149	7	+43	13,818
137	19	-33	13,785
134	19	-44	13,741
133	0	-43	13,690
147	5	-17	13,681
151	10	-24	13,705
97	7	+99	13,804

In part, the bank holding company serves as a surogate for branch banking in those states where it is prohibited. The ultimate purpose, however, is to extend the influence of the corporation across as many markets and product lines as possible. Table 1.2 shows the growth of holding companies since 1960. The most interesting aspect of this growth is that from 1960 to 1973 the percent of commercial bank deposits in the United States held by holding company banks has increased from less than 8 percent to over 61 percent.

Laws passed by congress and individual states have increased the flexibility of banking institutions to expand across markets and product lines. But legislators have also attempted to incorporate into the statutes provisions for monitoring the growth of individual banking organizations. Such monitoring is conducted for the express purpose of preventing undue concentration of resources and adverse effects on competition. In each piece of banking legislation specific reference is made insisting that no acquisition or merger be permitted if the result would be adverse to competition. For example, the Board of Governors of the Federal Reserve System in granting approval of an acquisition of bank stock by a

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nonbank activities that bank holding companies might engage in. Some activities include insurance, data processing, leasing, mortgage banking and finance companies. See (32).

Table 1.2   Banks and deposits of bank holding companies for the United States, 1960 to 1972.[a]

Year	Number of Holding Companies	Total Number of Banks
1960	47	426
1961	46	427
1962	49	442
1963	52	454
1964	54	460
1965	53	468
1966	65	561
1967	74	603
1968	80	629
1969	97	723
1970	121	895
1971	1567	2420
1972	1607	2720

[a]Source: (4)

[b]Figures reflect 1970 Amendment to Bank Holding Company Act which requires the registration on all bank holding companies previously exempt.

Deposits (Billions of Dollars)	Percent of all Commercial Banks	Percent of all Commercial Bank Deposits
18.27	3.16	7.9
19.83	3.06	8.0
21.20	3.17	8.1
22.53	3.35	8.2
24.96	3.34	8.1
27.56	3.39	8.3
41.08	4.07	11.6
49.82	4.39	12.6
57.63	4.60	13.2
62.57	5.29	14.3
78.06	6.55	16.2
297.0	17.56	55.1
393.3	19.53	61.5

holding company shall not approve

> any...proposed acquisition or merger or consolidation under this section whose effect in any section of the country may be substantially to lessen competition or tend to create a monopoly...(32).

Congress also instructed that in evaluating whether a particular nonbanking activity is permissible the Board shall consider whether the

> ...performance by an affiliate of a holding company can reasonably be expected to produce benefits to the public, such as greater convenience, increased competition, gains in efficiency, that outweigh possible adverse effects, such as undue concentration of resources, decreased or unfair competition ...(32).

In situations concerning the acquisition of the assets of one bank by another the Bank Merger Act requires the appropriate regulatory agency to consider "...the effect of the transaction on competition (including any tendency toward monopoly" (33).

Though each of these laws attach great importance to knowing the competitive consequences of a bank merger or acquisition there is no clear definition in any of the statutes, administrative regulations, or court opinions as to what ultimately determines how the structure of the market is to be analyzed. There has resulted from this lack of guidance considerable disagreement among economists (and lawyers) on just how, in fact, the analysis should be conducted. One opinion holds that banks are single product firms competing only with other banks (16). The argument is that banks emphasize relationships of complementary or interdependency among the financial services

provided by them. Individual banks, for example, encourage deposit retention by assuring customers of immediate loan accommodations and favorable terms. Such tying arrangements narrow the product to a single full service concept.

More recently, however, the majority of opinions seem to hold that commercial banks are department stores of finance producing a number of distinct services (1). It is asserted that tie-in sales are restricted to those services for which banks are the dominant or sole suppliers (i.e., business loans and demand deposits). Services that banks and nonbanking firms both supply usually can be negotiated separately. Therefore, commercial banks compete with any number of financial institutions in providing various services to the public. They may include, for example, finance companies, life insurance companies, mortgage banks, and savings and loan associations.

The courts also seem to be leaning toward the concept of banks as multiproduct firms though this has not always been the situation. In a decision involving the Philadelphia National Bank to acquire Girard Trust Corn Exchange Bank, the Supreme Court took the position that the narrow product definition was appropriate for determining competitive effects (35). It took this stand on the presumption that demand deposits were sufficiently unique and a dominant enough part of the activities of the banks to imply a single product firm. Recent cases, however, have taken a broader view of the market and generally conclude that banks are multiproduct organizations.

For example, in the Crocker-Anglo Citizens Bank case (34) which involved the fifth and seventh largest banks in California, the District Court held the opinion that savings and loan associations, commercial finance companies, credit unions, and life insurance companies provide reasonable substitutes for many of the financial services offered by banks.[1]

Where both a bank and a nonbank company can be owned by a holding company, there can be no question as to the need to examine the extent of competition between banks and other financial institutions. The mandate of congress is to examine the effects on competition that might result from any approval of an acquisition or merger of such companies into a holding company. It is essential that the regulatory authorities and the courts begin seriously to consider the question of competition between banks and other related companies if this mandate is to be properly carried out.

It is appropriate, therefore, that the question of competition and banking be examined recognizing banks as multi-product firms. The objective of this study will be to examine the competitive question within the context of just one of these product markets, personal loans. This will provide some information as to whether banks, as multiproduct firms, compete with other institutions. Also, it will help answer

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[1] A similar ruling was given in the case of the United States vs. Provident National Bank. 262 Supp. 297. 1966 (36).

the immediate question of whether competition would be adverse-
ly effected if a holding company is permitted to own both a
bank and other firms also providing personal loans to the
public.

Competition: The Personal Loan Market

Personal loans are direct cash loans made to individuals
on an installment basis. In most market areas three major
financial institutions are involved in the extension of such
loans. Commercial banks are one of these lenders. Another
lender is finance companies which principally engage in the ex-
tension of short-and intermediate-term credit to finance the
purchase of commodities and services for personal consumption
(9, p. 714). Credit unions lend a significant volume of their
loans as personal loans. Unlike banks and finance companies,
credit unions are cooperative associations, incorporated for
the purpose of creating a source of credit at a fair and reason-
able rate of interest and of providing the opportunity for
people to use and control their money for their mutual bene-
fit (31). The structure of credit unions, as compared to
banks and finance companies, does involve differences in their
market behavior. Nevertheless, they are subject to most of
the same market considerations as are banks and finance com-
panies and their inclusion in the study is essential to under-
standing the extent of competition in this market.

The size of the personal loan market has increased sub-
stantially in past years. From 1960 to the end of 1973, per-
sonal loans held by finance companies increased from 5.0 bil-
lion to 16.4 billion. Over this same period, commercial banks
increased their extensions of personal loans from $3.5 billion
to $14.2 billion. Other lenders, principally credit unions,
increased personal loans outstanding from 2.6 billion to $10.4
billion. (See Table 1.3). These figures represent average

Table 1.3a Installment credit for personal loans (billions of
dollars).

| Year	Commercial Banks	Finance Companies	Other Financial Lenders[b]
1960	3,577	5.006	2.034
1961	_c	-	-
1962	-	-	-
1963	-	-	-
1964	5,542	9.015	3.291
1965	6,357	10.058	3.822
1966	7,011	10.315	4.336
1967	7,748	10.688	4.799
1968	8,958	11.481	5.493
1969	9,780	12.485	6.387
1970	10,616	12.734	6.995
1971	11,547	13.446	7.872
1972	12,947	14.912	-9.063

[a]Source: (4).

[b]Other financial lenders consist of credit unions and mis-
cellaneous lenders. Miscellaneous lenders include savings and
loan association and mutual savings banks.

[c]Data not consistent for these years.

annual changes of 6.1 percent, 10.6 percent, and 13.5 percent, respectively. Such growth demonstrates that personal loans have become an important part of the commercial banks' loan portfolio. It also demonstrates why the question of competition in the personal loan market is of considerable interest to researchers.

If personal lending involves a homogeneous product, it follows that any institution involved in the extension of these loans competes with every other firm for available borrowers. However, a variety of factors exist which raise suspicions as to the possibility that the personal loan market is separated (differentiated) not only between individual firms but between different types of firms. Banks, for example, may be involved in the market only to the extent they choose to service both their customers deposit and borrowing needs. State laws with different legal ceilings on interest charges, or with different licensing (chartering) requirements for banks, finance companies, or credit unions may cause each to service the needs of different types of borrowers.

To demonstrate how the difference might be reflected in the market, examine Figures 1.1(a) and 1.1(b). Assume that individuals in a market can be categorized along a vector representing the degree of risk associated with their borrowing. Assume that some probability may be attached to each point along the vector showing the likelihood of an individual in the market borrowing from any of the respective lenders. If the
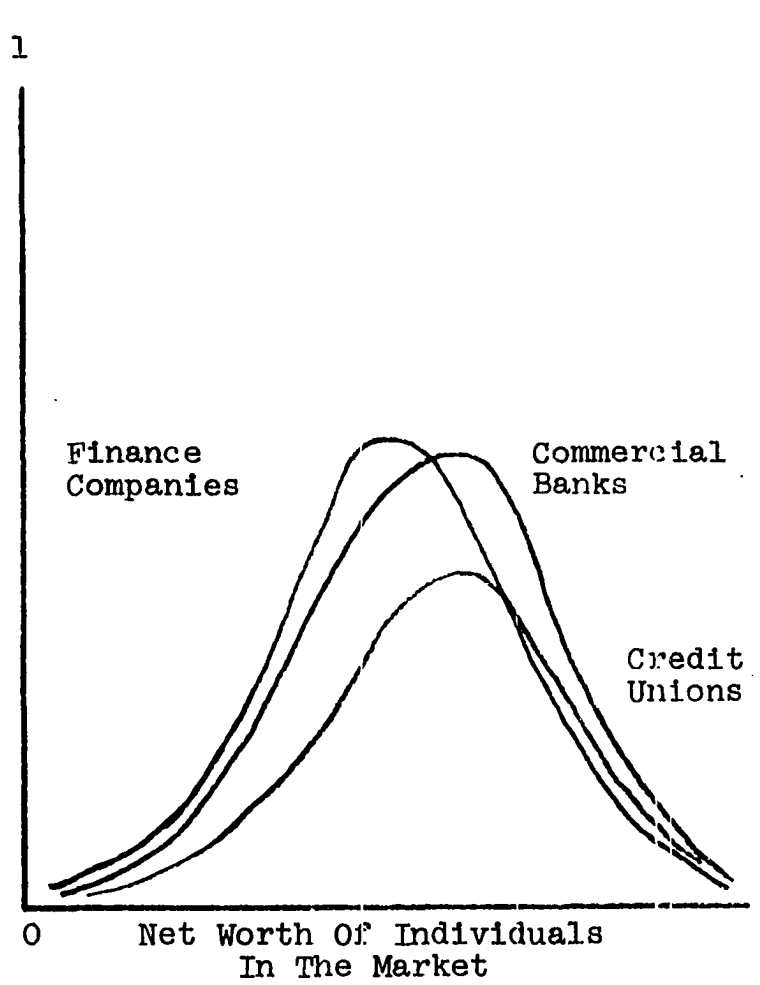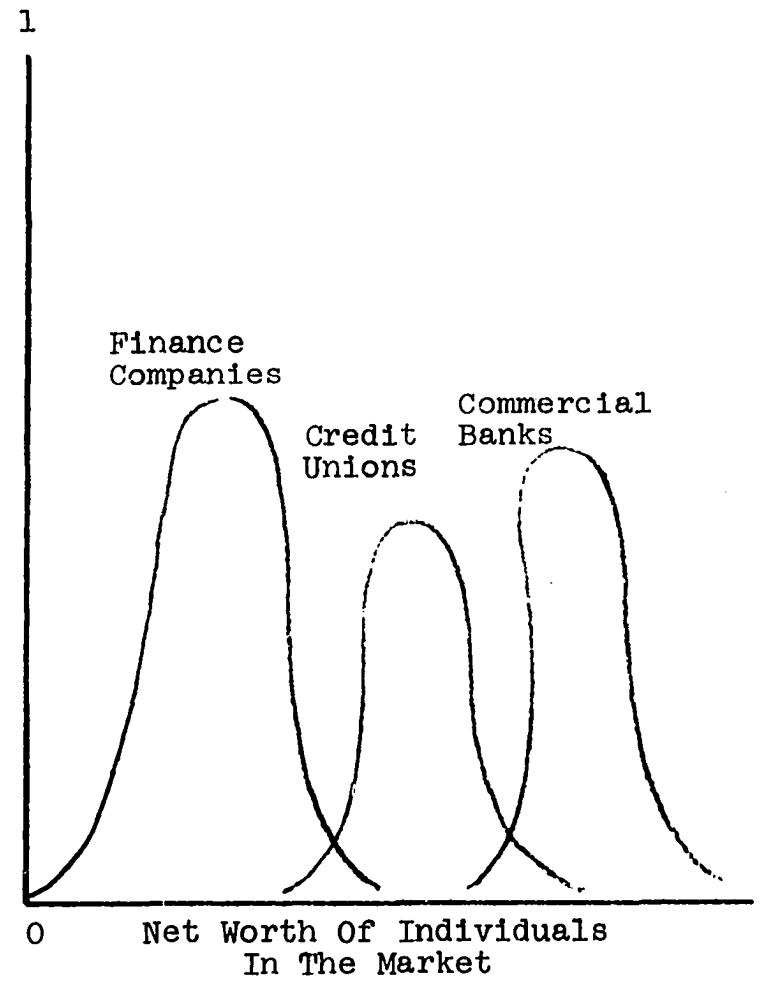
Figure 1.1   Example of alternative distribution of borrowers to lenders in the personal loan market.

market is competitive between institutions, the distribution of borrowers among lenders should resemble Figure 1.1(a). Here, the distributions are very nearly alike. Any individual would be just as likely to borrow from one institution as another and at approximately the same terms. If, however, the distribution is more like that of Figure 1.1(b), each institution caters to the borrowing needs of different groups of individuals. Competition would not be a major consideration between these different types of firms.

The example describes one source of segmentation and demonstrates how it might be reflected in the market. There are, however, other factors affecting the competitive framework of the personal loan market. This study, therefore, will direct itself to identifying the extent and cause of market segmentation between commercial banks, finance companies and credit unions. Is the market segmented? If segmented, what factors contribute to such segmentation? Is it supply-related, demand related, or is it dependent on some exogeneous parameter?

CHAPTER II. A SURVEY OF THE LITERATURE

The present study examines competition in the personal
loan market between commercial banks, finance companies, and
credit unions. This examination of competition within the per-
sonal loan market is a refinement of the question of banking
competition in general. Therefore, the survey of literature
should describe, at least briefly, the development of research
from this broader question to the specific topic at hand.

Commercial Banking: The Industry and Competition

Most studies examining banking competition have done so in
the framework of banking as a single product industry. For
example, Frank R. Edwards' (10) study dealing with the relation-
ship of concentration to the price of bank services concerned
only the effects of interest rates on savings deposits and
average rates on loans. His hypotheses were: (1) that highly
concentrated markets have lower average rates on time and
savings deposits, and (2) that in such markets, average loan
rates are higher. To distinguish the effects of supply and de-
mand from that of market power, Edwards estimated different
forms of the following regression model:

$$PC = constant + a_1CR + a_2C + a_3D_1 + a_4D_2 + a_5L \qquad (2.1)$$

where

PC = a performance characteristic (1) total interest paid
on time and savings deposits to total time and sav-
ings deposits; (2) total earnings from loans to
total loans outstanding.

CR = concentration (percent of bank deposits in area held by the largest two banks).

C = Proxy for bank costs (average size of bank).

D_1 = Proxy for demand (percent change in population).

D_2 = Proxy for demand (percent deposits per capita).

L = Consumer total loans

The results of the analysis indicated that (1) after accounting for differences in bank costs and regional demand, concentration has a significant negative association with rates on time and savings deposits; (2) there is a significant positive association between concentration and interest rates on loans. Hence, it seems that an increase in concentration is harmful to the bank customer by lowering the return on savings and increasing the price they must pay on loans.

However, Edwards' use of the ratio of total earnings to loans as a proxy of interest charges neglects to account for one very important consideration. The defined variable does not account for differences in portfolios outstanding between banks. If loan portfolios are significantly different between banks in the survey, then the estimated interest rate proxy may be seriously biased (29). This neglect to account for the variation of banks' portfolios hampered Edwards' ability to accurately isolate the monopoly effects.

A later study by Eric Brucker (5) does take the discussion of banking competition somewhat closer to the framework of banking as a multiproduct industry. Brucker's main hypothesis

is that a microeconomic theory of the bank as a firm can be used to generate meaningful measures of monopoly power. Under consideration of profit maximization, Brucker views the elasticity measure as an indicator of bank performance. He believes that the calculated elasticity of total loan demand is a weighted average of the underlying elasticities of the different components of the loan portfolio, the weights being given by the dollar volume of each type of loan. It follows that variations in the loan mix can affect the total loan elasticity estimate to the extent that different subelasticities are given different weights. Brucker then attempts to identify the key structural variables thought to be related systematically to the elasticity estimate.

Having set the framework, Brucker compares his elasticity measure of monopoly to that of the loan-to-asset measure of bank performance. The equations used for the comparison are:

$$\text{Loan Elasticity} = \text{constant} + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 \tag{2.2}$$

$$\text{Loan-to-Asset Ratio} = \text{constant} + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 \tag{2.3}$$

where

X_1 = number of savings and loan associations for each market

X_2 = number of banks

X_3 = percent of total banking assets held by the three largest banks

X_4 = population per bank

X_5 = average asset size within the market

Brucker concludes that to the extent the concentration ratio is a good measure of market structure, an unpredicted positive correlation in equation 2.3 tends to suggest that the loan-to-asset measure is not closely related to market structure. On the other hand, he notes that the relationship between the elasticity measure and the concentration ratio is as predicted. He concludes that based on this and other closely related information, the elasticity measure is a superior gauge of monopoly power.

Brucker's work was an attempt to demonstrate an alternative procedure for judging market competition for the commercial banking industry. Conceptually it was a move in the right direction for understanding banking competition as it relates to a host of product markets. Practically speaking, however, it is of dubious value. Though Brucker recognizes the need for distinguishing the possible differences in loan portfolios, he uses only the average revenue from the banks' total portfolios in computing the elasticities. Though he does include a ratio of loan portfolios in his regression (not in the calculated elasticity) these measures are too crude and questionable to necessarily represent an accurate portfolio allocation.

It is apparent that approaching the question of competition as it relates to commercial banking activities is not

easily accomplished within a single industry concept. Being
unable to allow for each type of banking service as it affects
the banks' overall competitive position, tends to obscure the
analysis and confound the conclusions. Furthermore, the
current expansion of banks and bank holding companies into new
product markets accents even more deliberately the shortcomings
of these types of studies. The industry approach just does
not permit an accurate evaluation of the commercial banks'
competitive position in the market place. An alternate
approach is to determine the dimensions of competition among
banks and between banks and other institutions on a product
market basis. From such an approach one cannot immediately in-
fer the overall policy implications for commercial banking,
but one may eventually learn enough about the individual pro-
duct market to be able to make an accurate evaluation of bank
competition in general.

<center>Competition: The Personal Loan Market</center>

Most observations made about competition in the personal
loan market have come about indirectly as a result of research
examining related yet different questions. The evidence from
this research has generally inferred that competition does
exist and is important between banks, finance companies and
credit unions.

David Fand and Ronald Forbes (11) examined the effects
of rate ceilings on the volume of per capita installment loans

in the small loan market. They found, somewhat to their surprise, that the most significant factor influencing the loan volume of licensed lenders was competition from banks.

The model that Fand and Forbes worked with took the functional form:

$$\frac{IL}{P}^{d} = f \text{ (finance charge, per capita income,} \quad (2.4)$$
$$\text{per capita liquid assets, and other}$$
$$\text{variables)}$$

$$\frac{IL}{P}^{s} = f \text{ (finance charge, ceiling rates, risk,} \quad (2.5)$$
$$\text{bank participation, and other variables)}$$

where $\frac{IL}{P}^{d}$ and $\frac{IL}{P}^{s}$ are, respectively, quantity of installment loans demanded and quantity of installment loans supplied. Demand and supply were assumed inelastic with respect to the finance charge. This was necessitated by a lack of available data on finance charges, which forced its absence from the regression equation. Only one demand variable, per capita income and three supply variables measuring risk, rate ceilings, and commercial bank participation were included in the final regression.

Fand and Forbes noted that the only significant relations were between the bank participation variables and quantity of loans in the supply demand equation, and between per capita income and quantity of loans in the demand equation. Not finding any clear association among ceiling rates, loan loss ratios, and amounts outstanding, they concluded that the explanatory power of ceiling rates alone are limited. Observing that the

bank participation variables are significant, they then suggest that commercial banks play an important role in the consumer credit market.

Anticipating questions of identification, Fand and Forbes acknowledge that in principle one cannot distinguish between supply- and demand-determining parameters on the basis of quantity of data alone. They contend nevertheless that there is a theoretical basis for treating the bank participation variable as a determinant of supply. What this theoretical justification is they are not completely clear about except to imply that the increased numbers of loans made by banks force finance companies to extend their loan volume.

The upshot of the Fand-Forbes study is that while it does not deal specifically with the direct competitive framework of installment credit lending, it definitely indicates that such competition exists.

In a follow-up to the Fand-Forbes study, Robert Shay (25) also finds indirect evidence that banks and licensed lenders compete for small loans. Shay contends that the Fand-Forbes conclusion stating bank participation and per capita income to be more important than rate ceilings and risks in determining installment loans oustanding is not necessarily substantiated by their results. Shay asserts that the enactment of higher rate ceilings in small loan laws might expand the amount of installment credit. He contends further that higher rate ceilings could allow licensed lenders to serve a different

segment of the market.

Using a modified version of the Fand-Forbes model, Shay
re-examines the evidence. Shay's dependent variable is the
average outstanding loans of licensed small loan outlets in
thirty states. Other variables include: for supply, gross
income divided by average end-of-year outstanding loans, loan-
size limit in dollar amounts, and number of bank offices
divided by loan offices; for demand, median family income in
dollar amounts, percent of family income less than 10,000
dollars, and number of families.

Shay found that there is, in fact, support for Fand and
Forbes' conclusions. Legal rate ceilings and risk do appear
to be less important than bank competition to the explanation
of differences in outstanding loans under state small loan laws.
But, as a final note, he cautions that there is no indication
whether borrowers who go to banks when banks are relatively
abundant, do so because of differences in rate ceilings or
because of convenience.

Paul Smith (28) examined the impact of finance companies
on banking policies. Smith's model tested the relationship of
finance charges for loans in a bank's portfolio and the dis-
tribution of that portfolio to different structural variables
in the market. These structural variables included legal
ceilings on finance charges, population, and the number of
finance company offices in the same market as the bank.

Smith found no significant relationship between the number of finance companies in the market and the interest rate on personal loans at banks. He did find, however, that the number of finance companies was related positively to the size of personal loans extended at banks. Also, there was found a negative relationship between the number of finance companies and the proportion of unsecured personal loans held by the banks. Such results, Smith concludes, do imply that competition is significant between commercial banks and finance companies.

Though Smith's inferences implying a competitive relationship between banks and finance companies are significant, the comparisons for these financial institutions remain limited. The regressions concern only the interest rates and loan distributions for banks and the influence that the number of finance companies have on bank decisions. Smith does not consider differences in the overall pricing policies between banks and finance companies as an indication of competition. Smith, in other words, does not examine just how direct competition is in the consumer loan market.

Finally, a study by William Sartoris (24), again concerned with the effects of regulation upon the consumer loan market, provides additional information on competition within this market. The model implemented by Sartoris regressed loan service (dollar amount of loans outstanding per family) on (1) the maximum ceiling rates of 100 and 300 dollar loans; (2) the reciprocal of the loan size ceiling; (3) population

factor; and (4) amount of credit union loans.

Sartoris found that bank competition was not statistically significant as an influence on the volume of loans made by licensed lenders. On the other hand, the statistical importance of coefficients for loans made by ancillary lenders and credit unions does indicate some competitive relationship between these lenders and finance companies. Sartoris observed, however, that the influence of credit unions might be a response to rather than a cause for the level of services available. Thus, the dependency relations described in the regression equations may be misleading.

The general conclusion of the studies reviewed here is that competition among commercial banks, finance companies, and credit unions is apparent in the market for installment loans. The information leading to such conclusions, however, is indirect and the result of or spin-off from other questions being asked about the nature of the market. The studies were principally concerned with the effects of different variables on the supply of credit and, particularly, with the effects of legal ceilings and bank activity on the supply of credit in the market. Direct evidence as to the competitive framework of the personal loan market is conspicuously absent from the literature.

This study, therefore, will attempt to provide a more specific insight into the nature of competition between banks

and finance companies and banks and credit **unions** in the market
for personal loans.

CHAPTER III. A SUGGESTED MODEL FOR ANALYSIS

If the market for personal loans is perfectly competitive, or "highly" competitive, one would expect to find interest rates at banks, finance companies, and credit unions to be equal. But instead, even casual observations indicate that rates at banks are consistently less than rates at finance companies and that rates at credit unions are less than rates at banks. Indeed, such rate differences or rate spreads between these institutions indicate that they are not perfect competitors. The rate spreads can provide, therefore, a useful format from which to examine the absence of competition (segmentatation) in the personal loan market. For the purpose of this study, it is assumed that the greater and more consistently that rates differ between institutions in the personal loan market, the stronger the evidence that the market is somehow segmented.

Although interest rate spreads provide evidence that the market is segmented, they do not by themselves identify those factors which cause the market segmentation. To illustrate how such factors might be identified, examine Figure 3.1. Here, supply and demand curves for commercial banks and finance companies are on two diagrams having a common vertical axis. The horizontal axes run in both directions from the origin. For commercial banks it runs from left to right and for finance companies it begins at the origin moving right to left. Supply

Interest Rate

Quantity Of Loans ($)   0   Quantity Of Loans ($)

Finance Companies   Commercial Banks
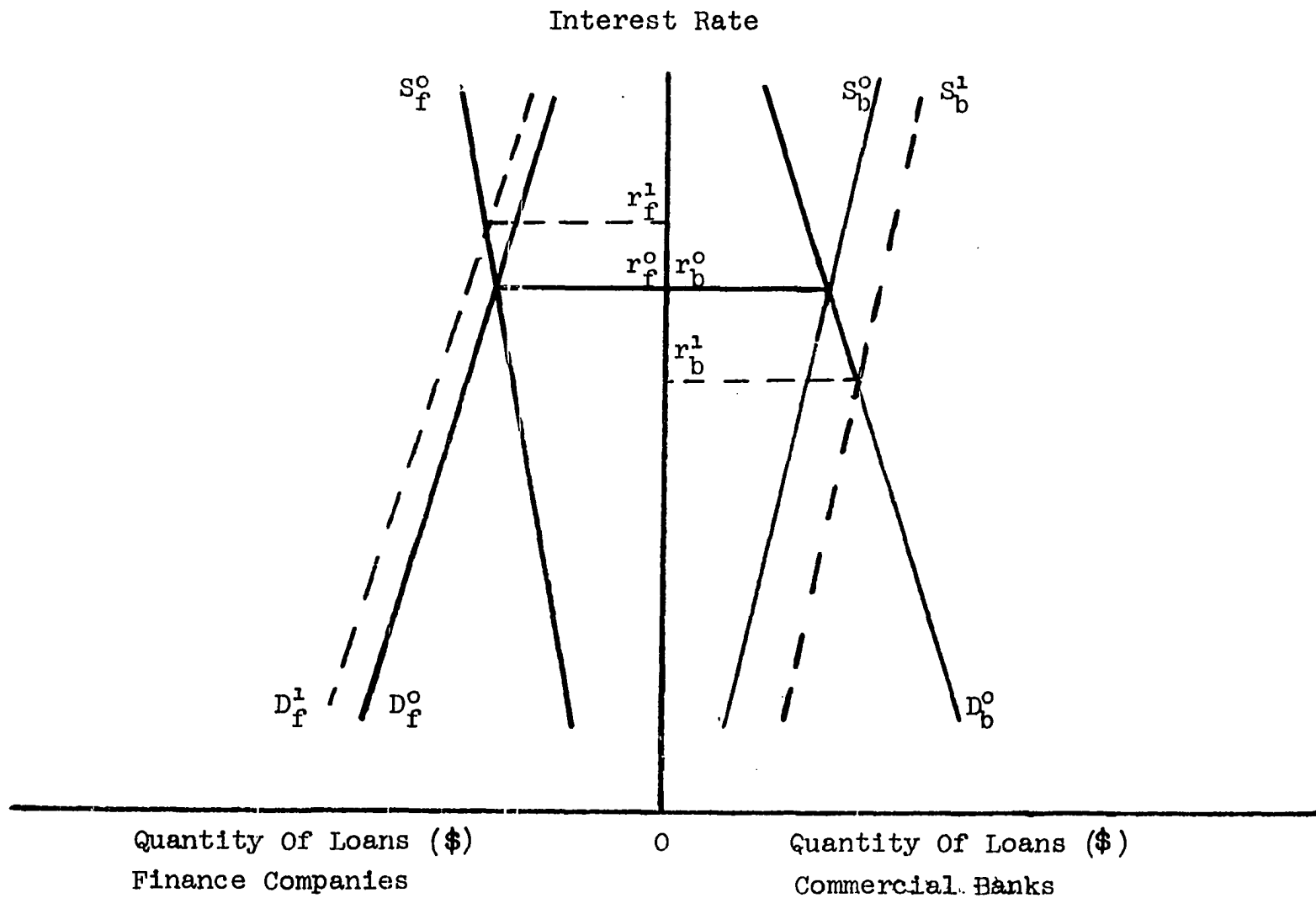
Figure 3.1   Example of effects of changes in relative supply-demand relationships
between commercial banks and finance companies.

and demand for finance companies are reversed and it must be
remembered in reading them that the origin is to the right.
Assume initially that perfect competition exists in the market
and that supply S^o and demand D^o for each institution are in-
distinguishable from one another. The rate spread equals zero,
$(r_f^o = r_b^o)$. But now, assume loans at banks become absolutely
less costly to make; supply shifts from S_b^o to S_b^1 and the rate
spread increases from zero to $(r_f^o - r_b^1)$. Further, since banks
have the cost advantage, assume that commercial banks strive
to differentiate their customers from those at banks in order
to charge a rate sufficient to maintain their normal (non-
economic) profits. Assume the demand curve at finance companies
shifts to D_f^1 and the rate spread increases to $(r_f^1 - r_b^1)$. The
rate spread $(r_f^1 - r_b^1)$ is the product of differences in supply
and demand between banks and finance companies; and, the
greater the spread, the greater must be the differences in
supply and demand for the respective institutions. Therefore,
by examining the variation of selected market variables between
institutions to changes in their rate spread, it should be
possible to identify those specific factors which must contrib-
ute to a segmented market.

The model to be developed in this chapter is based on two
premises: first, that observed rate spreads in the market are
an accurate indication that the market is segmented between
lending institutions, and second, that the rate spreads are
directly linked and may be explained by the relative supply

and demand conditions which exist in the market. It remains
to formulate appropriate estimates of relative differences in
supply and demand between institutions and to suggest their
effect on interest rate spreads. Also variations in the market
and legal structure which commercial banks, finance companies,
and credit unions operate within must be considered and allow-
ances made for their relative effects on rates.

Since the investigation is concerned principally with the
question of market differences between banks and other finan-
cial institutions, the discussion will deal first with the
relationship between banks and finance companies and second,
with the relationship between banks and credit unions. Finally,
the model will be summarized in equation form and the appropri-
ate empirical analysis will be outlined.

Market Segmentation: Commercial Banks and Finance Companies

Market demand

Most borrowers of personal cash credit earn incomes be-
tween $6,000 and $15,000 (20, p. 10). But it is generally
suspected that a qualitative difference does exist between bor-
rowers at commercial banks and borrowers at finance companies.
Consumer finance companies, because of their own preference
and expertise in small loan lending, are traditionally associ-
ated with high risk customers who have lower incomes. On the
other hand, commercial banks are generally associated with the
less risky, higher income borrower. At the same time, lower

income borrowers usually see themselves as "taking what they
can get" and, thus, are rather insensitive to interest rate
levels; whereas, the higher income borrowers are better in-
formed and are able to more easily change lenders if the terms
of trade are not to their liking (18, p. 48; 26, p. 7). Such
differences in the type of customer each institution serves
and in the different market behavior pattern that the respec-
tive customers display are strong justifications for demand
differing between banks and finance companies.

Therefore, assuming banks and finance companies respond
to different borrowing needs, the rate spread will depend on
the relative distribution of income levels of individuals in
the market. The higher the income level of borrowers in the
market, the more able they are to choose lending institutions
and the less the rate spread will be for banks and finance
companies. The lower the income level of individuals in the
market, the more likely that finance companies will provide a
high risk loan at a higher charge relative to banks. In Fig-
ure 3.2, for example, assume that some distribution of borrow-
ers according to income level is given and the rate spread is
$(r_f^0 - r_b^0)$. Assume next that this distribution changes and
that the proportion of low income borrowers in the market in-
crease. If banks specialize in serving high income borrowers
while finance companies respond to the demand of low income
individuals, then this change will cause the demand curve for
finance companies to increase relative to banks. Simultaneously,

Interest Rate

S_f^o
S_b^o

r_f^1
r_f^o

r_b^o
$r_b^{1'}$

D_f^1 D_f^o

D_b^o
D_b^1

Quantity Of Loans ($)   0   Quantity Of Loans ($)
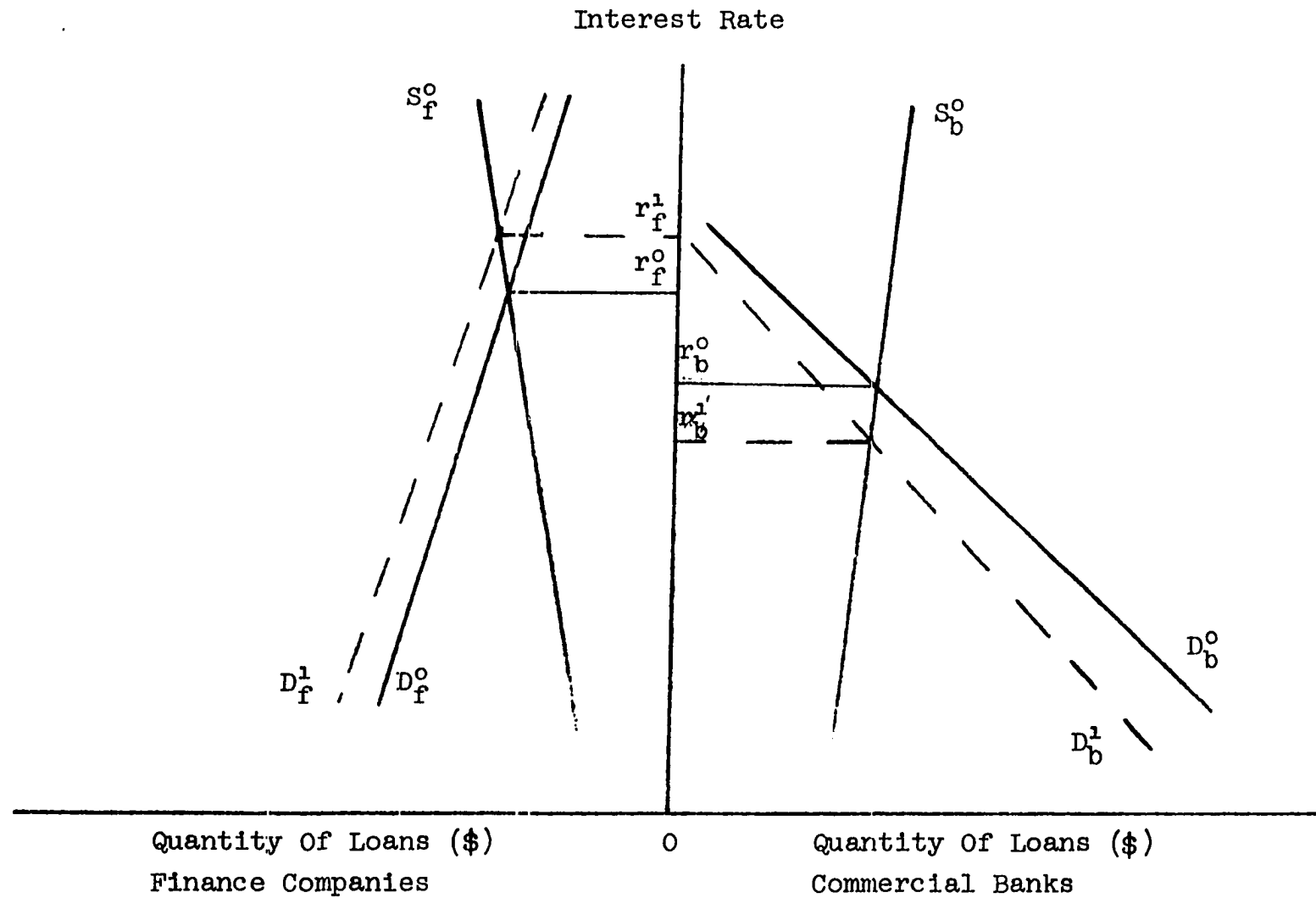Finance Companies   Commercial Banks

Figure 3.2   Example of effect of changes in relative demand relationship between commercial banks and finance companies.

it will cause the demand for banks to decrease. The rate spread will also increase from $(r_f^0 - r_b^0)$ to $(r_f^1 - r_b^1)$. Thus, the rate spread will depend importantly on the actual distribution of these borrowers within the market if, in fact, the different lenders respond to the needs of different borrowers in the market.

The variable chosen to represent demand differences is the calculated proportion of total family income in a market under \$10,000. This figure is somewhat arbitrarily chosen as the median between \$6,000 and \$15,000 (the range of income for most borrowers of personal loans). Still, the larger the proportion of income below \$10,000 in the market, the greater will be the observed rate spread if banks attract the high income borrower and finance companies attract the low income borrower.

Market supply

The ability to separate borrowers in the market is a necessary requisite to the existence of different rates between banks and finance companies. But the reason for distinguishing between different borrowers and the reason for rates differing between lenders may be importantly linked to the structural and cost differences that exist between institutions. If this is correct, then the association of supply relationships to the rate spread is essential to the explanation of market segmentation.

Consider the possibility that commercial banks may be

supplying loans in the market which are tied strictly to deposits held with the bank. The banks' operating objective may be to maximize profits by offering a low cost, good return "customer service package." Finance companies are not structured to provide this unique type of service and they may be able to offer the same loan only at higher costs and higher rates than commercial banks. Therefore, regardless of the demand or the distribution of borrowers in the market, for any single quantity of loans offered by each institution, minimum interest charges at finance companies will be greater than minimum charges at banks.

Also, market segmentation may be encouraged because banks have an advantage in obtaining and using loanable funds. Commercial banks may shift funds as needed within a broad investment portfolio while finance companies, by comparison, have a much more restricted portfolio. For example, banks may move loanable funds from commercial loans to installment loans while finance companies can choose only between installment loans of one kind or another. If the opportunity cost of extending personal loans decreases for banks (i.e., the rate spread between personal loans and commercial loans increase), then, as with any cost decrease, banks will offer more personal loans at the same rate. Since this particular flexibility is unique for banks, there is good reason to expect significant variation in relative quantity differences between institutions. But more importantly, if these or other cost considerations imply

that banks and finance companires are unable to compete with
one another, then difference in supply would be related direct-
ly to observed rate spreads between them.

To clarify this, examine Figure 3.3. Assume initially
that cost and other supply conditions are identical to both
banks and finance companies, $S_b^o = S_f^o$. Each group of firms, for
whatever reasons, choose to serve different borrower needs and
this is reflected in the rate spread, $(r_f^o - r_b^o)$. But now
assume that it is absolutely more costly for finance companies
than for banks to offer a given quantity of loans. Supply
schedules shift to S_b^1 and S_f^1, and for any quantity of loans
each might offer, different rates are charged. Demand given,
the rate spread increases further to $(r_f^1 - r_b^1)$. Thus, to the
extent the market is segmented because of different supply
conditions for banks and finance companies, this segmentation
will be reflected in the rate spread between each group of
firms.

The supply of credit for banks and finance companies is
obviously dependent on a number of structural and cost con-
siderations. Each consideration may have a specific effect
on relative supply conditions and on the ability of each in-
stitution to compete in the market. However, it is virtually
impossible to obtain direct measures for these variables at
the microeconomic level and, therefore, an alternative approach
concerned only with examining the relationship of relative
quantitites to rate spreads is suggested here. It assumes that

Interest Rate

S_f^o S_f^1 S_b^o S_b^1

r_f^1

r_f^o

r_b^o

r_b^1

D_f^o D_b^o

Quantity Of Loans ($)   0   Quantity Of Loans ($)
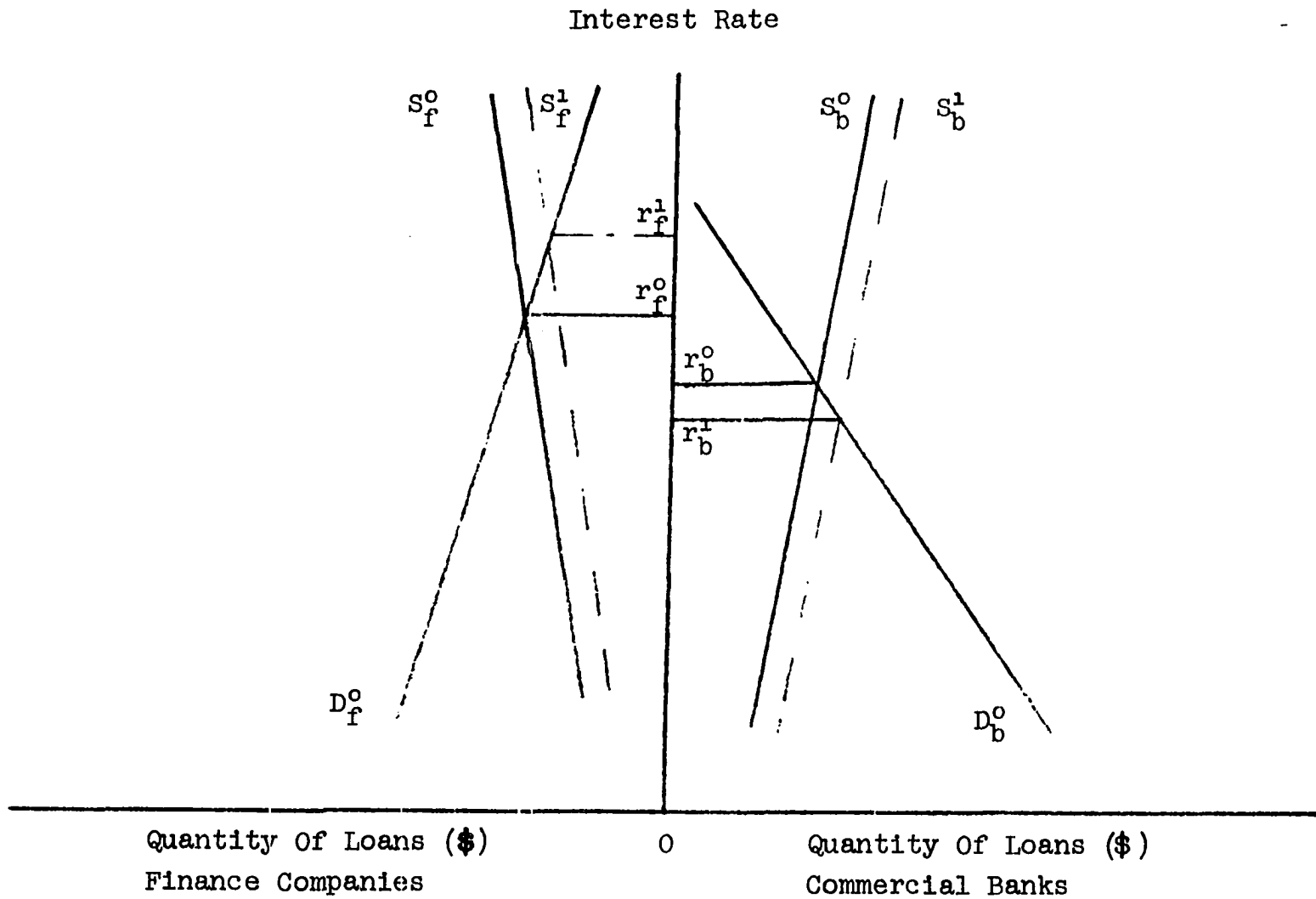Finance Companies   Commercial Banks

Figure 3.3   Example of effects of changes in relative demand relationship between commercial banks and finance companies.

quantity supplied in the market by each institution is unresponsive to direct price changes. In this way the quantity of loans extended in the market is solely a supply phenomenon, which implicitly reflects the existing cost and nonprice decision factors in the market. As support for this approach one may point to the controlled nature of most financial markets. Price competition and the quantity of loanable funds are directly controlled by the regulatory authorities. Interest rates allowed to be paid on deposits held with commercial banks are subject to ceiling constraints, while interest rates in the open market are subject most importantly to government intervention. Since the quantity of loanable funds is restricted in its ability to respond to the price signals, market supply is price inelastic. If supply were perfectly inelastic, the quantity of loans extended would depend only on the supply curve. Though perfect inelasticity is not likely, it is reasonable to assume that supply is sufficiently inelastic to allow differences in quantity extended to primarily represent differences in supply conditions between banks and finance companies.

Accordingly, relative supply conditions are estimated as the ratio of quantity of loans extended by banks to loans extended by finance companies. Demand given, the greater this ratio, the greater the volume of bank loans compared to finance company loans and the lower the rates at banks compared to finance company rates; conversely, the smaller the ratio,

the lower the rates will be at finance companies compared
to banks. The quantity variables does not explicitly
measure each cost factor affecting supply; nevertheless,
gauging the relationship of relative quantity differences to
the rate spread provides a useful vehicle to judge the extent
of market segmentation associated with different supply con-
ditions for banks and finance companies. Further, by compar-
ing the importance of the quantity variable to other variables
in the model, some insight can be gained into determining
from which side of the market the impetus for the rate spread
comes.

Market structure

Concentration   Structural imperfections may dramat-
ically effect the price actions of different institutions in
the market for personal loans. Unless perfect competition
exists, there is always the possibility that the firms in the
market can and will strive to control the terms of trade. A
question to be dealt with then is to what extent observed rates
in the market reflect the influence of monopolistic price
actions.

To demonstrate how monopolistic price action might effect
the rate spread, examine Figure 3.4. Maximum funds to be
loaned out are Q_f and Q_b and marginal cost (MC) sharply in-
creases at these quantity levels. Assume that banks and fi-
nance companies operate in a segmented market neither competing

Interest Rate

S_f

MC

r_f

r_b^1

r_b

D_f

D_b

MR

Q_f O Q_b

Quantity of Loans ($)   Quantity Of Loans ($)
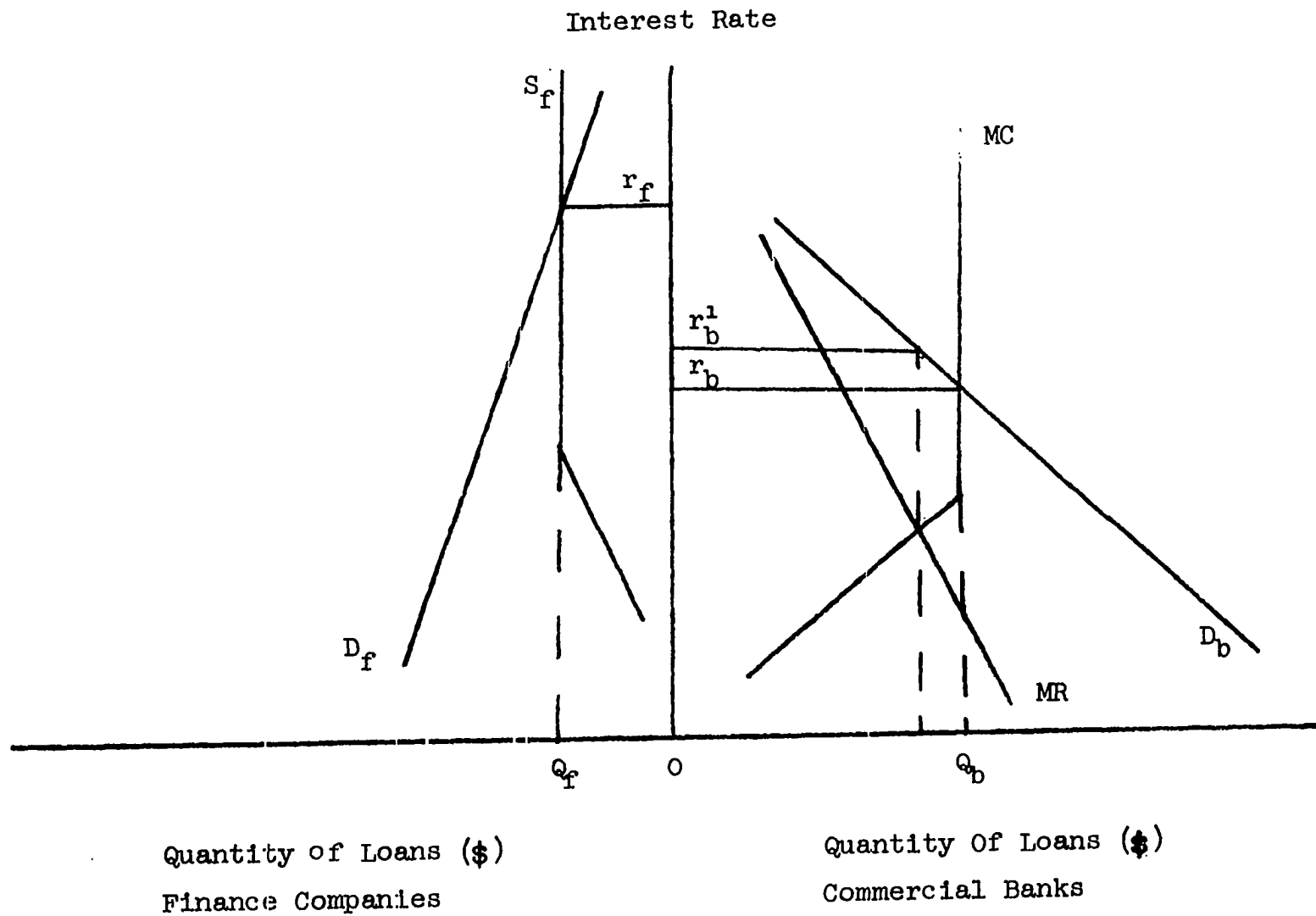
Finance Companies   Commercial Banks

Figure 3.4   Example of effects of monopoly versus competitive market conditions on rates for personal loans.

38

with the other. Assume, also, that finance companies operate as perfect competitors. The interest rate at finance companies is r_f and each firm must offer all its available quantity if it wishes to maximize profits. For commercial banks, it is assumed that the market structure is monopolistic. Because the banks have some degree of control over price and output, quantity offered is less than funds available and the interest rate is r_b^1 (which is greater than the competitive rate r_b). The effect of banks having the monopoly power has been to decrease the rate spread from $(r_f - r_b)$ to $(r_f - r_b^1)$.

The above example demonstrates not only how a monopolist market structure might work, but also why it is important to identify its influence on rate spreads. By identifying this particular influence, one avoids the possibility of misinterpreting some movements in rate spreads as being associated with changes in relative market supply and demand conditions between institutions, when they are more correctly the result of changes in relative market structures within which the institutions operate. As Figure 3.4 shows, a decline in the spread may represent more accurately an increase in monopolistic behavior among banks, then a decrease in supply and demand differences between banks and finance companies thought to be associated with increased competition.

The above example also reflects the hypothesis that banks are generally in the best position to act as monopolist in the

market. Entry into the market place is considerably less diffi-
cult for finance companies than it is for commercial banks.
Though most state laws require finance companies to be licensed
and many of the laws have a "needs and convenience" clause
which restricts entry, it is still much easier to acquire a
consumer finance license than to acquire a bank charter (20,
p. 31). Moreover, as compared to finance companies, commercial
banks are commonly larger and have greater control of finan-
cial resources on which to base a monopolistic market position.
Thus, if monopoly power in the market does play an important
role in determining rate levels, it is expected that commercial
banks will be in the best position to increase its rates rela-
tive to finance companies.

The variable designed to measure monopoly power available
to firms in a market is the concentration ratio. This ratio
reflects the relative share of total output of the leading
firms in the market; and, it is usually computed as the market
share of the four largest firms. The greater the ratio, the
greater the likelihood that monopoly price behavior will occur
in the market. For purposes of this study, it is assumed that
the greater the level of concentration in the market, the more
likely that commercial bank rates will increase relative to
rates at finance companies.

Branch banking   In markets where banks may branch
there is generally an increased emphasis in retail banking
which may include a stronger emphasis in personal lending (15).

This in turn may imply an increased awareness by banks and finance companies of each other's actions in the personal loan market. If so, for any income distribution of borrowers or relative quantity of loans extended by lenders, the rate spread will be less in markets where branching is permitted as compared to nonbranching markets.

The effect of branch banking on rate spreads may be noted in the analysis by the introduction of a dummy variable. A "1" is entered as an observation in those markets where branch banking is permitted and an "0" is entered as an observation in those markets where it is not permitted. If branch banking is importantly associated with a decrease in the rate spread, then its estimated coefficient will be significantly less than zero (i.e., significantly less than rate spreads in nonbranching markets).

Legal restrictions and consumer lending

The National Commission on Consumer Finance noted recently

...when the ceiling applicable to a given type of credit for one class of lender is substantially below that for another class of lender, the former class will be forced to serve mainly low risk borrowers; the latter, high ceiling class will tend to serve relatively high risk borrowers. This artificial segmentation of the market obviously restricts interinstitutional rivalry (20, p. 50).

Indeed, state laws limiting the maximum rate of charge on loans can segment the personal loan market. However, the mere imposition of different ceiling rates on banks and finance companies does not necessarily imply a segmented market, not

unless the ceiling rates are imposed below the free market rates that would otherwise exist. Thus, it is intuitively apparent that rate ceilings can play a role in segmenting the market but whether this factor is actually important remains to be determined.

The impact that legal ceiling may have on market rates is demonstrated in Figure 3.5. Simply, if both banks and finance companies are restricted in their price actions by legal ceilings and these ceilings are below market equilibrium interest rates that would otherwise exist, then the differences in observed rates in the market will be the same as permissible rates. In Figure 3.5 $(r_{f_{max}} - r_{b_{max}})$ would be the observed rate spread. Had the market been left to its own determination, the spread would have been $(r_f - r_b)$. A similar situation exists if finance companies are restricted in their price actions but commercial banks are not. In Figure 3.5, the difference in the observed market rate would be seen as $(r_{f_{max}} - r_b)$ rather than $(r_f - r_b)$. Once again the effect of legal restrictions on interest rates would vary with actual rates charged in the market.

Of course it is possible that the legal ceilings for different institutions coincide rather closely with rates of interest that would otherwise exist in the absence of such ceilings. In this situation the variable representing the influence of legal ceilings would appear to be significant even though its actual importance is doubtful. It is, however,

Interest Rate

$$S_f^o \qquad\qquad\qquad\qquad S_b^o$$

r_f

$r_{f_{max}}$ r_b

$r_{b_{max}}$

$D_f^o \qquad\qquad\qquad\qquad D_b^o$

Quantity Of Loans ($)   0   Quantity Of Loans ($)

Finance Companies   Commercial Banks
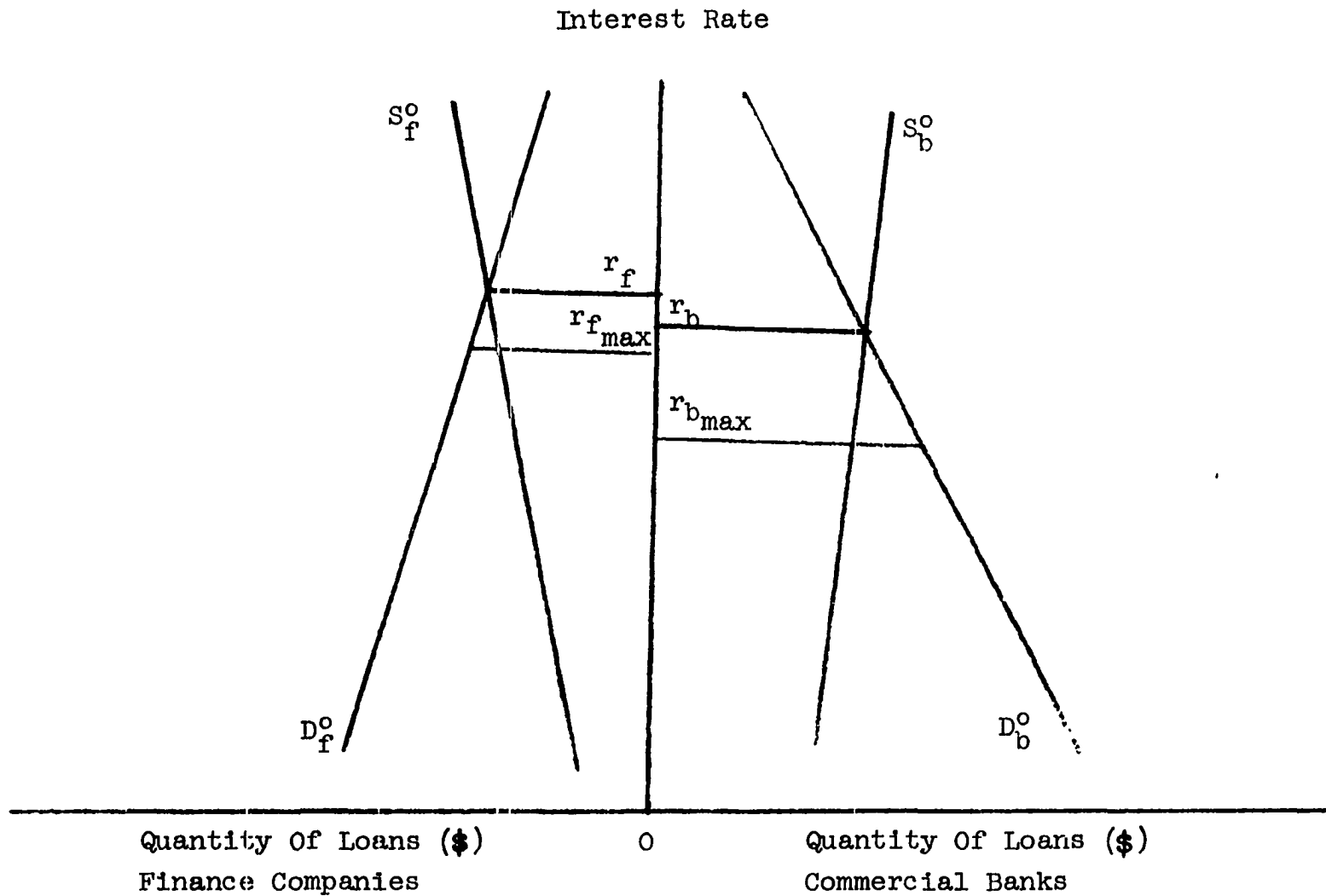
Figure 3.5 Example of effects of maximum allowable interest rates on personal loans.

unlikely that for a large number of market situations such a phenomenon would be consistently apparent in the analysis. It is assumed, therefore, that a significant relationship between market rates and legal rate. ceilings implies that such ceilings have an important role in separating the personal loan market between commercial banks and finance companies.

Market Segmentation: Commercial Banks and Credit Unions

Much of the discussion to follow is analogous to that just considered for finance companies and banks. Consequently, it will be simplified and omit the graphical enumerations and examples.

Market demand

One major prerequisite for borrowing money from a credit union is that the customer be a member of the association. As the very ability to belong to the union is based on a common bond - usually employment - the risk of a credit union loan is probably no greater than that associated with a loan granted by a commercial bank. Unlike the bank-finance company relationship, risk is not a differentiating factor for banks and credit unions and differences in relative income levels in the market will not serve to identify differences in demand between these institutions. Still, because credit unions are mutual organizations with membership restrictions, borrowers are not going to be perfectly mobile between banks and credit unions. Rate variations between these two institutions based on differences

in relative demand may still exist.[1]

Under perfect competition the market demand curve is derived by summing horizontally all individuals' demand curves. Once market supply and demand is derived, then price is determined and each firm accepts the market price as the only applicable price to be used in making its various operating decisions. Because borrowers are assumed to be perfectly mobile between lenders this conclusion follows whether banks service 50 percent or 80 percent of total market demand. If, on the other hand, borrowers are not perfectly mobile between commercial banks and credit unions, then the price may vary as differences occur in each group of firms' relative demand curve. That is, differences in the horizontal summation of demand curves of individuals confined to each type of institution may exist. Accordingly, interest rates may differ between these institutions.

The difference in the location of the demand curve of commercial banks relative to credit unions may be approximated by the ratio of the number of bank facilities to the number of credit unions in a market. The greater the number of banks as compared to credit unions, then the higher the likelihood

---

[1]See Gary G. Gilbert and W. A. Longbrake (15). In this study it was pointed out that some demand relationships depend on the type of customer (as with banks and finance companies) while others depend more on the relative number of customers (more likely the appropriate relationship between banks and credit unions).

that the market demand curve for banks will be greater relative to the demand at credit unions. Assuming borrowers are not perfectly mobile between banks and credit unions, the larger this ratio, the higher that the rates charged by commercial banks may be relative to credit unions; the smaller the ratio, the lower the rate at credit unions relative to banks.

Market supply

As with the bank-finance company relationship, supply is assumed to be unresponsive to price changes and the quantity of loans extended by credit unions is assumed to be a direct reflection of their market supply curve. If the market is segmented according to differences in the supply structure for banks and credit unions, then such differences will be reflected in the observed rate spreads between them. Therefore, it is assumed that the greater the ratio of loans by banks relative to loans by credit unions the lower the rate at banks relative to rates at credit unions and likewise, the smaller the ratio the greater the rates at banks as compared to credit unions.

Market structure and legal constraints

The effects of monopoly behavior in the market will again be measured by the concentration ratio. Being nonprofit organizations by definition, however, credit unions will not be associated with monopoly price behavior. Rational behavior does not bind them to marginal cost equal marginal revenue

actions. Despite market entry barriers or relative market shares of the largest firms, credit unions will not act to collect "pure" (economic) profit. Under this interpretation monopoly behavior will only be observed in the actions of banks as compared to credit unions. Therefore, assuming that credit unions charge a lower interest rate than banks, an increase in the concentration ratio will be associated with an increase in the rate spread, as commercial banks raise their interest rates relative to credit unions.

Next, if the introduction of branching into a market has the unique effect of increasing the awareness of banks and credit unions to each other's actions in the market, then consistently smaller rate spreads will be observed in these markets than in markets where branching is not prevalent. To allow for this possible effect, a dummy variable is again introduced into the model; a "1" representing those markets where branching is permitted and an "0" where it is not permitted.

Finally, credit unions as well as finance companies and banks are subject to rate ceilings. The ceilings imposed on credit unions tend to be lower than comparable ceilings for for banks. Here again the effect on observed spreads between credit unions and banks is analogous to that for finance companies and banks. If credit unions and banks are charging the maximum rates allowed by law, then the difference in rates allowed by law and observed rates in the market should be

directly associated with one another. The stronger the relationship, the greater the evidence the legal constraints are major factors segmenting the market.

The Testable Model

For a given loan size, the performance variables measuring the degree of market segmentation between commercial banks and finance companies and commercial banks and credit unions are, respectively:

$$S_1 = r_f - r_b$$
$$S_2 = r_b - r_u$$

.3.1

where r_f = interest rate on personal loans made by finance companies

r_b = interest rates on personal loans made by commercial banks

r_u = interest rates on personal loans made by credit unions

Note that for S_1, interest rates at commercial banks are subtracted from rates at finance companies and for S_2, credit union rates are subtracted from bank rates. This is done to keep the sign of the performance variable positive under the general observation that finance companies charge higher rates than banks and banks charge higher rates than credit unions. In accordance with these assumptions the analysis first tests the hypotheses that:

$$S_1 = 0 \text{ versus } S_1 > 0$$
$$S_2 = 0 \text{ versus } S_2 > 0$$

Assuming that both null hypotheses are rejected, then the discussion of this chapter is designed to explain the nature of the observed segmentation and can be explained in the following two equations. They are:

$$S_{1i} = a_o + a_1 B_{1i} + a_2 Y_i + a_3 Q_{1i} + a_4 M_{1i} + a_5 L_{1i} \qquad 3.2$$

$$S_{2i} = b_0 + b_1 B_{2i} + b_2 D_i + b_3 Q_{2i} + b_4 M_{2i} + b_5 L_{2i} \qquad 3.3$$

where $i = i^{th}$ market

Y = proportion of total family income in the market below \$10,000

D = ratio of commercial banks relative to credit unions

Q_1 = ratio of personal loans extended by commercial banks and finance companies

Q_2 = ratio of personal loans extended by commercial banks and credit unions

M_1 = concentration ratio: market share of four largest commercial banks and/or finance companies in the market

M_2 = concentration ratio: market share of four largest commercial banks

B_1 = dummy variable: equal to 1 when branch banking is permitted in a market area; 0 otherwise. Estimates effect of branch banking on the finance company- commercial bank price spread

B_2 = dummy variable: equal to 1 when branch banking is permitted in a market area; 0 otherwise. Estimates effect of branch banking on the credit union-commercial bank price spread

L_1 = difference in legal rate ceilings between commercial banks and finance companies

L_2 = difference in legal rate ceilings between commercial banks and credit unions

Assuming that the <u>rates</u> <u>at</u> <u>finance</u> <u>companies</u> <u>are</u> <u>greater</u>

than rates at banks, the following signs are hypothesized for

those variables in equation 3.2 thought to be influencing the

spread:

$a_1 < 0$ If branch banking has the effect of decreasing
market segmentation, the branching coefficient
will be associated with consistently smaller
rate spreads.

$a_2 > 0$ The greater the percentage of low income families
in the market, the greater the demand for high
risk loans and the greater the possible special-
ization by type of borrower for banks and finance
companies and the greater the rate spread.

$a_3 > 0$ The greater the ratio of loans made by banks
relative to finance companies, the lower the
rates of banks as compared to finance companies
and the greater the rate spread.

$a_4 < 0$ The greater market concentration dominated by
banks, the higher bank rates will be relative to
finance companies and the smaller will be the
rate spread.

$a_5 > 0$ Assuming rate ceilings are set below free market
rates, the greater that ceiling differences are
then the greater observed rate differences will
be.

Assuming that the rates at credit unions are less than

rates at banks, the following signs are hypothesized for those

variables in equation 3.3 thought to be effecting the spread.

$b_1 < 0$ If branch banking has the effect of decreasing
market segmentation then the branch banking
coefficient will be associated with consistently
smaller rate spreads.

$b_2 > 0$ If borrowers are not perfectly mobile among
lenders, then the greater the ratio of banks to
credit unions the greater the possible demand at
banks relative to credit unions and the greater
the price spread

$b_3 < 0$ The less the ratio of loans made by banks relative to credit unions the greater the rate spread.

$b_4 > 0$ The greater the concentration ratio for banks, the greater their rates will be relative to credit unions and the greater the rate spread.

$b_5 > 0$ Assuming rate ceilings are set below free market rates, the greater ceiling differences are then the greater observed rate differences will be.

Since the objective of equations 3.2 and 3.3 is to identify those variables most associated with the rate spread, each coefficient will be tested as to its relative significance in the analyses. The testable hypotheses are:

$$a_i = 0 \quad \text{versus} \quad a_i > 0, \quad i = 2, 3, 4, 5$$

$$a_i = 0 \quad \text{versus} \quad a_i < 0, \quad i = 1, 4$$

$$b_i = 0 \quad \text{versus} \quad b_i > 0, \quad i = 2, 4, 5$$

$$b_i = 0 \quad \text{versus} \quad b_i < 0, \quad i = 1, 3$$

Having set the framework of analysis, it remains to examine the model empirically. Hopefully, some specific insight into the degree and meaning of frequently observed rate differences for the product personal loans can be obtained.

CHAPTER IV. THE EMPIRICAL ANALYSIS

Nature of the Data

The personal loan market is local by nature, usually involving the boundaries of a city or town. Because of the need to keep the data consistent and because of the limited sources of data, it was necessary to define the market and collect the data with respect to state boundaries. Though state boundaries are political and not economic entities, they are the smallest unit for which consistent data was available.

Information was collected from all fifty states for 1971. Interest rate data (**r**) (in annual percentage rates), quantity of loan data (Q), and concentration data (M) were obtained from a 1971 survey study by the National Commission on Consumer Finance (21). Population and income data (Y) were obtained from census information (30). Branch banking data (B), number of banks and number of credit unions (D) were obtained from F.D.I. C. reports and the National Credit Union Association (13, 8). Maximum allowable rates (L) (in annual percentage rates) were obtained from information provided by the Financial Publishing Company of Boston (14). From commercial banks, interest rate data was available and loans assumed to average $500 and $1000. No stratified data was available for finance companies and credit unions.

The average size of loans extended by each institution was calculated for each state. If the banks in a state had an average loan size of $750 or less, then the average interest rate for the $500 loan category was assigned as the representative market rate. On loans over $750, the average market rate for the $1000 loan category was assigned as the representative market rate. For finance companies and credit unions only one observation was available and it was assigned as the appropriate interest rate for the observed average loan size.

Finally, in calculating the maximum allowable rates on personal loans (L) an average repayment period of 18 months was assumed. In annual percentage rate terms the difference in maximum permissible rates for 12, 18, and 24 month periods is not great (e.g., the difference involves less than .25 of a percentage point). Since these are the most common repayment schedules on personal loans, the 18 month rates are assumed to accurately represent maximum permissible rates.

Market Segmentation: Commercial Banks and Finance Companies

The first concern of the model described in Chapter III is the significance of the rate spreads between banks and finance companies. Accordingly, in Table 4.1 the average spread in interest rates between banks and finance companies for the fifty state observations is listed and it is equal to 12.9 percentage points. Employing a paired comparison analysis this figure was concluded to be significantly different from zero

at the 1 percent level. Given that interest rates are measured in hundredths (.00) of a percentage point, the spread of over 12 points is impressive evidence that banks and finance companies are not direct competitors. Moreover, it was observed that the quantity of personal loans extended by finance companies was greater than quantities extended by banks in 39 of 50 **states**; and in 50 of 50 states, the interest rate at finance companies was greater than the rate at banks. It follows that where both the quantity and price of loans extended by finance companies are greater than those of commercial banks, these two institutions must operate to a large extent independently of one another.

Table 4.1 Average rate spread for banks and finance companies in percentage points

	S_1
Average rate spread for all fifty state observations	12.92*[a] (.633)

[a]The value in parentheses is the standard deviation. The superscript (*) indicates the spread S_1 to be significantly different from zero at the 1 percent level.

To examine the relationship of rate spreads to changes in selected market variables, the model defined under equation 3.2 was fitted to the data for all fifty states. The results are presented in Table 4.2, row 1.

Table 4.2 Interest rate spreads for banks and finance companies regressed on selected market variables

Row	Dependent Variable S_1	Constant	B_1	Y
1	Rate spread for all fifty state observations	7.2706^{*a} (3.4410)	-.4622 (1.0430)	2.5614 (4.9627)
2	Rate spread for the twenty-five states with the smallest loan size	13.6912^{**a} (7.6270)	.5394 (1.5930)	-3.314 (10.0238)
3	Rate spread for the twenty-five states with the largest loan size	-.7048 (5.2711)	-.2460 (1.5807)	15.5437^{**a} (9.7044)

[a]The values in parentheses are standard deviations. The superscript (*) indicates the coefficient to be significantly different from zero at the 5 percent level while (**) indicates the coefficient to be significant at the 10 percent level.

Q_1	M_1	L_1	R^2
-1.1086 (.9137)	-.0943**[a] (.0643)	.6016 **[a] (.0952)	.5756
-2.1844**[a] (1.4744)	-.1728*[a] (.1062)	.5280 *[a] (.1366)	.6264
.4280 (1.1939)	-.0878 (.0878)	.6113 *[a] (.1756)	.5682

Legal rate ceilings clearly explain the majority of vari-
ation in rate spreads and is significant at the 1 percent level.
The quantity variable, Q_1, carries a negative rather than pre-
dicted positive coefficient. This implies that as banks in-
crease quantity relative to finance companies, markets tend
to become less segmented. This might suggest further that as
commercial banks become more involved in the personal loan
market the supply structure is changing, actually becoming
more like that of finance companies. Thus, the rate spread
would decline. The negative coefficient is not significant
but the "t" value is greater than one and the implication for
decreased segmentation in the market should not be ignored.

The concentration ratio is negative and significant at
the 10 percent level. This negative coefficient suggests
that part of the decrease in spread does not imply a decrease
in segmentation but, rather, implies some degree of monopolis-
tic price action on the part of banks.

The regression results for the 50 state observations do
provide some useful information into the nature of observed
market segmentation. But it neglects one important aspect of
the loan product, which is the different costs associated with
loans of different sizes. It is known that the smaller the
average size of the loan, the greater the cost of processing
the loan (19, 2). The size of the loan, therefore, may
differentiate the product for both borrowers and lenders. If
this is correct, the legal and market variables might affect

the rate spread quite differently as the size of the loan changes.

To examine the influence that loan size might have on rate spreads and their relationship to selected market variables, the fifty observations were divided in half according to the average size of personal loans made by commercial banks. Of course, for individual states the average size of loans for banks, finance companies and credit unions are not identical. But in states where loans are small for banks they tended also to be small for other institutions. For example, in the 25 states with the smallest sized loans, the average personal loan for banks was $716 and for finance companies and credit unions it was $761 and $866. In the 25 states with the largest loans these figures were $1,091, $860 and $914, respectively.

The average rate spread for the 25 states with the smallest loans is 13.91 points and for the 25 states with larger sized loans it is 11.93 points. These spreads are significantly different from zero at the 1 percent level. (See Table 4.3 below). Further, the difference between the mean spreads for large states versus small states is equal to 1.98 points (13.91-11.93) and is significantly different from zero at the 10 percent level.[1] Thus, the initial conclusion is that the loan size does differentiate the product.

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[1]See Appendix II for analysis of variance tables and comparison tests between mean rate spreads for different loan sizes.

Table 4.3 Average rate spread for banks and finance companies for selected loan sizes

Row		S_1
1	Average rate spread for the twenty-five states with the smallest loan sizes	$13.91*^a$ (.9921)
2	Average spread for the twenty-five states with the largest loan sizes	$11.93*^a$ (.7518)

[a] The values in parentheses are standard deviations. The superscript (*) indicates the spread S_1 to be significantly different from zero at the 1 percent level.

Next, the spread for each of the loan size categories were fitted to the selected market variables in equation 3.2 and the results are presented in Table 4.2, rows 2 and 3. Before inferences were made based on these results, however, the data for the fifty states were again divided, this time into quartiles. This was done to check the consistency of the results under a finer breakdown of loan sizes. The mean rate spreads for each of four loan categories are listed in Table 4.4. The regression results are presented in Table 4.5.

It may be generally stated that the regression results are consistent for each grouping of data. But more specifically in Table 4.2, row 2 and Table 4.5, rows 1 and 2, where loan sizes are smaller, the income variable Y is not significant. It is not apparent that each institution specializes in making

Table 4.4   Average rate spread for banks and finance companies
for selected loan sizes in percentage points

Row		S_1
1	Average spread for first quarter of states with the smallest loan size	$14.740*^a$ (1.637)
2	Average spread for second quarter of states with next smallest loan size	$13.017*^a$ (1.049)
3	Average spread for third quarter of states with next largest loan size	$13.162*^a$ (1.205)
4	Average spread for last quarter of states with largest loan size	$10.796*^a$ (.8543)

[a] The values in parenthesis are standard deviations. The superscript (*) indicates the spread S_1 to be significantly different from zero at the 1 percent level.

loans to different types of borrowers in this smaller loan
category. Also, for this category of loans, the quantity vari-
able q_1 carries a negative sign and it is significant at the 10
percent level in Table 4.2, row 2. Thus, as the quantity of
loans extended by commercial banks increase relative to finance
companies, the rate spread decreases rather than increases as
predicted. On the other hand, in those states considered to
have the largest loan sizes (Table 4.2, row 3 and Table 4.5,
rows 3 and 4) the quantity variable has the predicted positive

Table 4.5 Interest rate spreads for banks and finance compan-
ies regressed on selected market variables

Row	Dependent Variable S_1	Constant	B_1	Y
1	Rate spread for first quarter of states with smallest loan size	8.8395 (18.6358)	2.793 (30.2868)	-5.0152 (4.7417)
2	Rate spread for second quarter of states with next smallest loan size	23.2767** [a] (13.1950)	1.0807 (3.1244)	16.2939 (16.1195)
3	Rate spread for third quarter of states with next largest loan size	-4.2662 (11.3727)	1.8619 (2.7182)	14.6325 (16.8970)
4	Rate spread for last quarter of states with largest loan size	-1.849 (9.4547)	-1.744 (2.5514)	26.9985 ** [a] (17.3854)

[a] The values in parentheses are standard deviations. The superscript (*) indicates the coefficient to be significantly different from zero at the 5 percent level while (**) indicates the coefficient to be significant at the 10 percent level.

Q_1	M_1	L_1	R^2
-5.0152 (4.7417)	-.0407 (.1822)	.6019*[a] (.1951)	.7739
-1.6418 (1.9794)	-.4410**[a] (.3102)	.6367**[a] (.4292)	.4405
.8014 (4.2209)	-.0507 (.1321)	.7852*[a] (.3078)	.7475
1.2066 (1.4658)	-.1881 (.1516)	.4211 (.3313)	.5463

sign. The income variable carries the sign predicted under the assumption that each institution serves a different type of borrower. Also, the income variable is significant at the 10 percent level for the largest 25 loan size states in Table 4.2 and the largest quarter of states in Table 4.5. In states where loans are large, it appears that banks specialize in serving the needs of the higher-income, better-risk customers and that finance companies remain with the high-risk borrowers.

In smaller loan size states supply and demand variables do not contribute much to the explanation of variation in observed rate spreads; whereas, in states with larger loans, these same variables carry the hypothesized signs and are clearly more significant in explaining observed rate differences. One might conclude, therefore, that market segmentation between institutions is of less concern in states where loans are smaller than where they are larger. But it is essential that the coefficients not be construed in this manner. Recall that where the data was divided into the 25 smallest and 25 largest loan size states, the average spread between banks and finance companies for small loans is 13.9 percentage points, while for larger loans, the spread is 11.9 points. The difference between these mean spreads of 1.98 percentage points is significant at the 10 percent level. Further, where the data were divided into quartiles by loan size the spreads also declined as loan size increased. Though in this latter instance the difference between spread means were not significant, they

were, in fact, nearly significant at the 10 percent level. (See Appendix II, Table A2.2). Thus, market segmentation is more evident in small loan-size states than in large loan-size states.

In both types of markets, but more so in the smaller loan-size markets, it is the difference in ceilings that explains the greatest amount of variation in rate spreads. It is suggested that in larger loan markets, banks can operate profitably under low interest rate constraints because costs tend to be less. As barriers to entry into the market are lower, the degree of market segmentation between banks and finance companies for a broader range of borrowers is less. Therefore, the rate spreads, in general, are less in these markets than in markets where loan size is smaller. Still, as the significance of the income variable for states with larger loans indicates, the effects of the legal ceilings and preferences of the lenders involved continue to encourage each institution to confine their lending activities to different groups of borrowers.

In states where loans tend to be smaller the quantity variable does carry a negative sign and is significant at the 10 percent level. But this is probably because the effects of rate ceilings combined with the smaller loan sizes have a more restrictive effect in these markets. Indeed, the legal variable is consistently more significant for the smaller loan-size states. The higher costs associated with smaller loans require a higher rate of charge to attract lenders. Banks,

with lower rate ceilings than finance companies, tend to remain on the perimeter of this market segment. Where they do enter, it is likely that at least part of the decision to enter is because higher gross earnings are possible under relatively higher rate ceilings. The rate spread decreases because banks may charge higher rates. Also, higher income borrowers usually do not have a demand for a small, high-cost loan. Increased activities by banks in these markets are most likely directed to a lower income borrower. Therefore, the increased activities by banks stimulate interinstitutional competition and the rate spread declines.

Finally, it should be emphasized that in both large and small states references made to decreases in the rate spread must be viewed only marginally. Though the effect of increased loan size or the effect of increased bank activity in small loan markets may tend to decrease rate spreads, this does not imply that the market suddenly becomes competitive between banks and finance companies. The rate ceiling differences are far too dominant and far too great for the market to be generally categorized as competitive. For example, in Table 4.4, even in the quarter of states with the largest loan sizes a spread of 10 points implies a considerable absence of competition between different borrowers and different lenders in the market.

The monopoly variable also explains some of the variation in rate spreads. As hypothesized, the negative sign of the

coefficient for M in Table 4.2 and 4.5 would indicate that as concentration increases, banks raise interest charges toward the ceiling rates. But notice further in Table 4.2, rows 2 and 3, that as the size of the loan increases, encouraging increased participation by all institutions capable of making personal loans, the monopoly variable becomes insignificant. The inference is, therefore, that artificial price barriers encourage monopolistic pricing behavior and as the size of the loan increases reducing the importance of the barriers, such monopolistic activities decrease.

It is not surprising to find the dummy variable for branch banking to be unimportant in the regression results. The extent of market segmentation and the dominance of rate ceilings implies that interinstitutional competition is small. Additional bank facilities in a market may imply greater intrainstitutional competition but it does not imply a significantly greater likelihood of price competition being carried on between banks and finance companies.

Briefly stated, rate differences between finance companies and banks are large and the market is clearly segmented between them. This segmentation is due principally to the different pricing constraints under which each institution is forced to operate. There is some small evidence that regardless of the pricing constraint, segmentation would remain as each institution chooses to serve a different type of borrower. Weighing against this observation is evidence from the supply side

suggesting that as banks increase their activities in the personal loan market, segmentation does become less severe. Nevertheless, under present ceiling constraints, the mechanics of market interaction cannot eliminate observed segmentation in the sense that the rate spread becomes zero.

Market Segmentation: Commercial Banks and Credit Unions

The method of analysis for banks and credit unions was conducted nearly identically to that for banks and finance companies. Average interest rate spreads were computed for all fifty states, for the 25 smallest and 25 largest loan size states, and for the states divided into quarters based on loan size. These calculations are presented in Tables 4.6 through 4.8 below. It is most important that one keep in mind when considering the relationships between banks and credit unions that the rate spread is defined as the interest rate at banks minus the interest rate at credit unions. This is exactly the reverse of the defined term for banks and finance companies and the interpretation of some of the reactions of rate spreads to changes in market variable will be effected accordingly.

The interest rate spread for commercial banks and credit unions are significantly different from zero. This suggests the market to be segmented, but the evidence is far less impressive for banks and credit unions than it was for banks and finance companies. For example, in Tables 4.6 through 4.8 the absolute rate spread for banks and credit unions average

Table 4.6 Average rate spread for banks and credit unions in percentage points

	S_2
Average rate spread for all fifty state observations	1.58 *[a] (.3259)

The value in parentheses is the standard deviation. The superscript (*) indicates S_2 to be significantly different from zero at the 1 percent level

Table 4.7 Average rate spreads for banks and credit unions for selected loan sizes in percentage points

Row		S_2
1	Average rate spread for the twenty-five states with the smallest loan sizes	1.85 *[a] (.5688)
2	Average rate spread for the twenty-five states with the largest loan sizes	1.31 *[a] (.3118)

[a] The values in parentheses are the standard deviations. The superscript (*) indicates the rate spread S_2 to be significantly different from zero at the 1 percent level

Table 4.8 Average rate spread for banks and credit unions for selected loan sizes in percentage points

Row		S_2
1	Average spread for first quarter of states with the smallest loan size	$1.376 *^a$ (.5792)
2	Average spread for second quarter of states with the next smallest loan size	$2.363 *^a$ (1.020)
3	Average spread for third quarter of states with next largest loan size	$1.064 *^a$ (.5230)
4	Average spread for last quarter of states with largest loan size	$1.543 *^a$ (.3674)

[a] The values in parentheses are the standard deviations. The superscript (*) indicates the rate spread S_2 to be significantly different from zero at the 1 percent level

less than 2 percentage points rather than the 10 to 14 found for banks and finance companies. Also, while banks are generally subject to higher ceilings than credit unions, both banks and credit unions are subject to much lower ceilings than finance companies. Such common restrictions on banks and credit unions tend to pressure these lenders to vie for a lower risk borrower. These circumstances naturally put pressure on the market to become less segmented as measured by rate spreads.

In accordance with equation 3.3, regressions were run fitting the rate spreads to selected market variables; the results are presented in Table 4.9 and 4.10. Where regressions

Table 4.9 Interest rate spreads for banks and credit unions regressed on selected market variables

Row	Dependent Variable S_2	Constant	B_2	D
1	Rate spread for all fifty state observations	.7171 (1.0769)	.0381 (.7681)	.0305 (.5005)
2	Rate spread for the twenty-five states with the smallest loan size	-.9633 (2.1157)	-.5162 (1.8461)	-8.3698 (8.9676)
3	Rate spread for the twenty-five states with the largest loan size	.6691 (.8338)	-.6766 (.5561)	5.0383 (4.1736)

[a] The values in parentheses are standard deviations. The superscript (*) indicates the coefficient to be significantly different from zero at the 5 percent level while (**) indicates the coefficient to be significant at the 10 percent level.

Q_2	M_2	L_2	R_2
.0102 (.2630)	.0054 (.0143)	.2553**[a] (.0967)	.1452
1.400**[a] (.7535)	.0496 (.0491)	.3049*[a] (.1773)	.2538
-.2940**[a] (.1756)	.0058 (.0088)	.2684 (.0822)	.5262

Table 4.10 Interest rate spread for banks and credit unions
regressed on selected market variables

Row	Dependent Variable S_2	Constant	B_2	D
1	Rate spread for first quarter of states with smallest loan size	-1.0155 (3.389)	-1.0378 (3.0366)	-.2589 (1.0085)
2	Rate spread for second quarter of states with next smallest loan size	1.0802 (4.3124)	2.2696 (3.4832)	-2.4559 (2.9315)
3	Rate spread for third quarter of states with next largest loan size	.0046 (1.409)	-.9538 (.8093)	1.0717**[a] (.6127)
4	Rate spread for last quarter of states with largest loan size	1.6138**[a] (.9944)	.3841 (.8090)	-.9448 (1.1442)

[a] The values in parentheses are standard deviations. The superscript (*) indicates the coefficient to be significantly different from zero at the 5 percent level while (**) indicates the coefficient to be significant at the 10 percent level.

Q_2	M_2	L_2	R^2
.7300 (1.4913)	.0539 (.0832)	.2571**[a] (.2045)	.1872
1.4169 (1.2755)	.0100 (.0904)	.8059**[a] (.6118)	.4536
-.3652 (.3271)	-.0128 (.0142)	.5521*[a] (.2347)	.4841
-.1511 (.2496)	.0143**[a] (.0099)	.1898*[a] (.0771)	.7501

were run on the data divided into halves and quarters, the co-
efficients for the different loan sizes were consistent for
each set of regressions.

Though the ceiling differentials are comparatively smaller
for banks and credit unions than for banks and finance com-
panies, this variable still accounts for the greatest amount
of variation in the rate spread. Therefore, ceiling differen-
tials again appear to be the principal cause for the observed
market segmentation.

There is again a contradiction in signs when comparing
the effects of supply (Q_2) on markets where loans tend to be
small as opposed to markets where they tend to be larger. For
smaller loan states, Q_2 carries a positive sign (Table 4.9,
row 2 and Table 4.10, rows 1 and 2). As the quantity of loans
extended by banks increase relative to credit unions, the rate
spread increases. This is not surprising, however. Recall
for banks and finance companies that in states with smaller
loans, an increase in the quantity of loans extended by banks
was associated with a decrease in the rate spread. It was
suggested that this increase might be associated to some extent
with the ability of banks to charge higher rates under higher
rate ceilings. Consider, then, that credit unions are general-
ly subject to even more severe ceiling restraints than banks.
Accordingly, in those states emphasizing smaller sized loans,
an increase in the quantity of loans extended by banks relative
to credit unions are associated with an increase in the rate

spread, as banks serve a customer willing to pay a higher price.

For states where average loans tend to be large, the rate spread varies in accordance with increases or decreases in quantity differences between banks and credit unions. As hypothesized, this implies that structural and cost differences between these institutions support observed differences in rates. This relationship is significant at the 10 percent level for the 25 states with the largest loan size (Table 4.9, row 3). It is not significant when the data is divided into quarters but the "t" statistic for the third quarter is greater than one (Table 4.10) and the evidence is certainly consistent with the stated hypothesis.

Rate ceiling and quantity differentials contribute most to explaining variations of rate spreads in the market. But, in general, market segmentation is far less apparent between banks and credit unions than for banks and finance companies. Indeed, the small difference in rate spreads between banks and credit unions and the comparatively low ceilings each is subject to would suggest the strong possibility of the existence of some degree of direct competition between them. As already suggested, low rate ceilings encourage banks and credit unions to vie for a common class of borrowers, which necessitates some interinstitutional rivalry. This observation is supported by the fact that except for one occasion (Table 4.10, row 3) differences in demand D are not significantly related to rate spreads, though observations vary widely among states. Thus,

restrictions on the mobility of borrowers do not seem to be a major factor contributing to the observed segmentation.

Also, the evidence in Tables 4.6 through 4.8 indicate that though the rate spread tends to decline as the loan size increases, the decline is far less significant for banks and credit unions than it was for banks and finance companies.[1] No statistically significant increase or decrease in market segmentation is apparent for banks and credit unions among markets with different sized loans. This, perhaps, implies that some competition is already of consistent importance for each group of markets.

Branch banking displays some very small evidence of being associated with a decline in interest rate spreads. In Table 4.9 where the data was divided between the smallest 25 states and the largest 25 states based on size of loans, the sign is consistently negative, implying an increase in interinstitutional competition. For neither loan category is the variable significant at the 10 percent level; however, when loan size is larger, the t statistic is greater than one. In Table 4.10 where the data is divided into quartiles, the sign alternates between positive and negative, none being significant. Thus, the possible association of decreased segmentation and branching can be pointed out, but the evidence cannot be construed to

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[1] See Appendix II for the analysis of variance tables and comparison tests between mean rate spreads for different loan sizes.

any definite conclusion.

Measures of concentration are not significantly related to rate difference variations. This occurs despite the fact that concentration ratios vary widely across states. This result is consistent with much of the evidence found thus far pointing to the conclusion that banks and credit unions are competitors.

The evidence concerning banks and credit unions indicates that differences in interest rate ceilings is the principal force causing observed market segmentation. At the same time, rate ceilings for both institutions, though different, are low and encourage banks and credit unions to serve a common type of borrower. It is a fair conclusion to state, therefore, that banks and credit unions under present market structure are considerably more competitive with one another than are banks and finance companies.

Credit Unions: Their General Competitive Impact

It has been concluded that commercial banks compete more directly with credit unions than with finance companies. Yet it was also noted that commercial banks are generally under somewhat less severe rate ceiling constraints and have a greater flexibility than credit unions in broadening their spectrum of borrowers. It, therefore, occurs to ask whether a sharpening of competition between banks and credit unions further encouraged banks to broaden their range of borrowers and to

compete more directly with finance companies. Indeed, it has been argued elsewhere that credit unions are ancillary lenders and where their presence in a market increases, it tends to unify the market between all other lenders (24).

Assuming then that the presence of credit unions in a market tends to increase the degree of competition between all firms, one would expect to find that the increased presence of credit unions forces the rate spreads between banks and finance companies to decline.

The influence of credit unions is introduced into the analysis as the number of credit unions per person (CU) in a market. Placing this variable into the model examining the rate spread between banks and finance companies, the results are presented in Tables 4.11 and 4.12.

The findings are consistent with the hypothesis that credit unions act to bridge the competitive gap between financial institutions in the personal loan market. For all fifty state observations, the sign for CU is negative though not quite significant at the 10 percent level (Table 4.11, row 1). When the data were divided in half the coefficients for CU carried the correct negative sign but only for the smaller loan size category was it significant. When the data were divided into quartiles the coefficient of CU for the first three categories carried a negative sign and two of the four coefficients were significantly negative (Table 4.12). It is suspected that the role of credit unions in unifying the market becomes less.

Table 4.11 Interest rate spreads between banks and finance companies with the effect of credit unions present

Row	Dependent Variable S_1	Constant	B_1	Y
1	Rate spread for all fifty state observations	$8.034*$ [a] (3.5395)	-.4589 (1.0447)	2.8300 (4.9772)
2	Rate spread for the twenty-five states with smallest loan size	$12.7881*$ [a] (7.4660)	.5398 (1.5541)	1.9865 (10.478)
3	Rate spread for the twenty-five states with the largest loan size	-.3928 (5.4164)	-.2571 (1.6133)	$16.0958**$ [a] (9.9668)

[a] The values in parentheses are standard deviations. The superscript (*) indicates the coefficient to be significantly different from zero at the 5 percent level while (**) indicates the coefficient to be significant at the 10 percent level.

Q_1	M_1	L_1	CU	R^2
-.9694 (.9628)	-.0871**[a] (.0648)	.6057*[a] (.0954)	-1.4488 (1.5374)	.5841
-2.4971**[a] (1.4551)	-.1419**[a] (.1059)	.5446*[a] (.1338)	-3.6299*[a] (2.582)	.6634
.6980 (1.335)	-.0850 (.0898)	.6131*[a] (.1794)	-1.0425 (2.1147)	.5739

Table 4.12 Interest rate spreads for banks and finance companies with the possible effects of credit unions present

Dependent Variable S_1	Constant	B_1	Y
Rate spread for first quarter of states with smallest loan size	-12.1241 (27.3565)	1.6610 (3.0178)	44.1408 (49.8265)
Rate spread for second quarter of states with next smallest loan size	31.2748 *[a] (9.919)	-.4640 (2.3978)	-15.1137 (11.5282)
Rate spread for third quarter of states with next largest loan size	5.1954 (12.2044)	.8852 (2.5701)	6.3022 (16.4358)
Rate spread for last quarter of states with largest loan size	-.6345 (11.4007)	-1.630 (2.785)	23.9329 (22.7790)

[a]The values in parentheses are standard deviations. The superscript (*) indicates the coefficient to be significantly different from zero at the 5 percent level while (**) indicates the coefficient to be significant at the 10 percent level.

Q_1	M_1	L_1	CU	R^2
-8.454	.0464	.5748 *[a]	-6.114	.8082
(5.7549)	(.1995)	(.1957)	(5.871)	
-2.313 **[a]	-.4068 *[a]	.7731 *[a]	-11.6621 *[a]	.7819
(1.4379)	(.2220)	(.3112)	(4.4890)	
1.4735	-.0655	.7828 *[a]	-4.400 **[a]	.8243
(3.8836)	(.1211)	(.2813)	(2.9764)	
.3972	-.1953	.3767	2.021	.5510
(3.7815)	(.1659)	(.4030)	(8.585)	

apparent when loan sizes increase because market segmentation between banks and finance companies is decreasing independently of credit unions. Therefore, the statistical significance of the variable for credit union does not show up in the regressions.

The evidence suggests that credit unions not only compete with commercial banks in the market but where their presence increases they also force banks and finance companies to become more responsive to each other's presence in the market. Access to credit unions is becoming more readily available to borrowers and it seems the effect is to reduce rate differences between institutions in general and to minimize rate levels in particular.

Finally, it is re-emphasized that the effects of credit unions as described here only serve to reduce the rather large competitive gap between lending institutions in the personal loan market. Given present market structure and statutory restrictions, they in no way eliminate observed segmentation and a significant coefficient should not be interpreted as implying such a consequence.

CHAPTER V. CONCLUSION AND POLICY IMPLICATIONS

Commercial banks and finance companies are not competitors, either in the sense of perfect competition or in the sense of direct rivals. This absence of competition, this market segmentation is principally the result of differences in interest rate ceilings that these institutions are required to operate under. These rate barriers essentially force banks to service the needs of a low-risk, low-cost customer and encourage finance companies to remain in that segment of the market immune from the actions of banks. Banks and credit unions also are restricted in their ability to compete. Again the restriction is tied most obviously to the legal pricing constraints imposed on the two institutions. One may conclude, therefore, that among the several products that banks now provide as multiproduct firms, they do not compete with other institutions for the product of direct cash personal loans.

Having acknowledged this segmentation and the force behind it, other evidence can be cited which suggests that if banks were allowed to do so, they would compete along a broader spectrum of the personal loan market. In the analysis, as the cost of lending decreases, price barriers have a less severe impact on market interaction and segmentation is less apparent. Also, the overall extent of segmentation between banks and credit unions is less than banks and finance

companies. This smaller difference in rates for banks and credit unions is directly associated with the smaller ceiling differences between them. Indeed, where the activities of credit unions increase in a market, it encourages some marginal but consistent reduction of rates between banks and finance companies. Finally, the very fact that rate spreads decrease as well as increase with movements in ceiling differentials, implies that these institutions would compete with one another if allowed to do so.

The obvious implication of these findings is that the artificial wedge to market integration should be eliminated. Removing the ceilings or at least removing the inequities in the ceilings would permit the market to reflect more accurately the competitive interaction of supply and demand. Their removal would improve the mobility of both borrowers and lenders and, thereby, improve the competitive efficiency of the market. This does not mean that price levels will necessarily drop throughout the market. The artificial barriers most likely have created a misallocation of loanable funds within the market. Where prices have been artificially low (or high), they will, with the removal of the constraints, adjust upward (or downward). Increased competition would only imply that prices would become more nearly alike between all firms, reflecting the free interplay of supply and demand in the market.

In the analysis there was some evidence indicating that the market might remain segmented regardless of the rate

ceilings. The income variable for the bank-finance company relationship suggests that lenders and borrowers do have certain preferences which would continue to separate the market. The quantity variable for the bank-credit union relationship also implies that structural differences between institutions would continue to cause some segmentation. However, with the expanding and agressive nature of the financial sector of the economy in general and the banking industry in particular, continued segmentation is not expected. It is difficult theoretically to conceive of an institution neglecting any part of the spectrum of borrowers if profits can be earned. This reasoning and the evidence cited above provides a strong case for why equilization of rate ceilings would reduce or eliminate segmentation.

Instead of removing rate ceilings, the corporate holding company might be used to eliminate, at least, the effects of segmentation in the personal loan market. The holding company could control, for example, a bank and also a finance company and a credit union. It would, then, direct the flow of funds among each of its subsidiary institutions until the rate accurately reflect supply and demand conditions in the market. But such a solution is inefficient and creates its own problems. It does not eliminate the misallocation of funds since only holding companies will be in a position to adjust the movement of funds. Banks, finance companies and credit unions which are not a part of a holding company would continue to be

restricted in their market actions. Moreover, the holding
company would be afforded a competitive advantage over these
other institutions which would perpetuate other market imper-
fections. To illustrate, assume that the personal loan market
is segmented. Finance companies lend to a high-risk borrower
and charge high rates while banks lend to a low-risk borrower
and charge low rates. No rivalry is involved. Therefore, the
idea is accepted that the holding companies should be allowed
to own both banks and finance companies, thereby stimulating
competition and improving the allocation of loanable funds.
But assume that sometime later, state and federal legislators
determine that price ceiling differentials between these
institutions are a wedge inhibiting market competition. The
ceilings are removed. During the period between these two
legislative actions assume, however, that the holding company
achieves a dominant position in both market segments. It be-
comes a price discriminating monopolist. The holding company
may identify and separate demand through the vehicles of the
bank and finance company. Having the dominant position,
competition is not stimulated and the market remains, in fact,
segmented. If the objective is to broaden and improve the
entire spectrum of competition between lenders, then such
premature approval of acquisitions by holding companies would
surely offset this goal.

Competition will best be served and an efficient alloca-
tion of resources will best be achieved by the removal of the

inequities in the rate ceiling under which these institutions are presently forced to operate.

Finally, the conclusions of the analysis are qualified to the extent that the data and model may have oversimplified some of the competitive relationships. For example, the data reflect statewide averages. Personal lending is a local activity and the appropriate market boundary is the city or town within which the operating office is located. Also, the model could not identify individual cost considerations in the supply variable or structural differences in both the supply and demand variables. All that should be said about such shortcomings is, perhaps, that they are real and that the only remedy is better and more comprehensive data. The conclusions from this study are reasonable, and should be carefully considered as they relate to the relationship of commercial banks, finance companies, and credit unions and competition for personal loans.

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APPENDIX I

Ordinary Least Square: and Multicollinearity

A frequent problem in empirical research using ordinary least squares is that of intercorrelation between explanatory variables. The ordinary least squares model assumes that the explanatory variables have no dependence between them. Problems of multicollinearity occur, therefore, when some or all of the explanatory variables are highly interdependent. If the problem is serious, then for the regression equations the precision of the estimated coefficients may fall. Such lack of precision may occur because the errors are highly correlated or because the error terms are large. This in turn may lead the investigator to incorrectly dismiss variables because their coefficients are not significantly different from zero though the variable, in fact, may be important (17).

It was thought that the problem of collinearity might be of some importance in regressions for equations 3.2 and 3.3 because of the effect that variations in rate ceilings might have on the quantity variable. To consider this possibility and also to judge the extent of collinearity between all explanatory variables in the model, a test suggested by D. E. Farrar and R. Glauber (12) was implemented. The test relies on the consideration of the coefficient of multiple determination (R^2) between any one explanatory variable and all other explanatory variables in the regression equation. Using the R^2 value an F statistic is computed for each explanatory

variable. The test assumes that the more significant the F
statistic, then the greater the difficulty of intercorrelation
among the explanatory variables and the more caution one must
take in interpreting the coefficients in the regression.

The F statistic is defined as:

$$Fi = \frac{R_i^2 \;/\; k-2}{(1-R_i^2)/n-k+1}$$

where

i = the ith explanatory variable

n = the number of sample observations

k = the number of variables in the equation

The F statistic was calculated for each explanatory vari-
able described in equation 3.2 for banks and finance companies
and equation 3.3 for banks and credit unions. The statistic
was calculated where data from all fifty states were used in a
single regression and where the data were divided in the 25
smallest and 25 largest states based on size of the loan. The
results of the analysis are presented in Table A1.1 for banks
and finance companies and Table A1.2 for banks and credit unions.

For finance companies and banks only the branch banking
variable and the income variable show any evidence of signifi-
cant interdependence. The F statistic for these two variables
is significant at the 5 percent level, but they are just sig-
nificant. Also, for credit unions and banks the branch banking
variable and monopoly variables show a significant F value,

Table Al.1 Test for multicollinearity in the regression analysis for commercial banks and finance companies

Selected Observation		B_1	Y
All fifty state observations	R^2	.5842 [a]	.2469 [a]
	F	12.362 *[a]	2.8860 *[a]
Twenty-five states with smallest loan size	R^2	.2373	.2101
	F	1.182	1.0115
Twenty-five states with largest loan size	R^2	.4329	.4478
	F	2.9053 *[a]	3.0820 **[a]

[a] The R^2 term indicates the amount of variation for each explanatory variable explained with respect to all other explanatory variables. The F statistic, computed from the R^2 term, provides the statistical measure of degree of multicollinearity. A superscript (*) indicates the degree of multicollinearity to be significant at the 5 percent level.

Q_1	M_1	L_1	Degree of Freedom
.1648	.10126	.1992	4,44
1.9736	(.9916)	2.1902	
.1912	.2038	.2695	4,19
.8984	.9727	1.4036	
.0590	.1823	.2001	4,19
.2382	.8473	.9506	

Table A1.2 Test for multicollinearity in the regression analysis for commercial banks and credit unions

Selected Observation		B_2	D	Q_2
All fifty state observations	R^2	.2683	.1208	.1933
	F	3.2289 *[a]	1.2110	2.1092
Twenty-five states with smallest loan size	R^2	.6272	.1715	.3529
	F	6.3931 *[a]	.7866	2.074
Twenty-five states with largest loan size	R^2	.1353	.2200	.2927
	F	.5947	1.0731	1.5736

[a]The R^2 term indicates the amount of variation for each explanatory variable explained with respect to all other explanatory variables. The F statistic, computed from the R^2 term, provides the statistical measure of degree of multicollinearity. A superscript (*) indicates the degree of multicollinearity to be significant at the 5 percent level.

M_2	L_2	Degree of Freedom
.2865	.0394	4,44
3.5370 *[a]	.3577	
.6719 [a]	.1591	4,19
7.7818 *	.7191	
.1872	.1664	4,19
.8768	.7598	

which indicate some measure of collinearity. No other variables are significant and in particular, the quantity and ceiling variables show no significant intercorrelation.

Such results are impressive especially when it was noted by Farrar and Glauber that generally most of the F_i values would be statistically significant. That is, the hypothesis of orthogonality among the explanatory variables would be rejected. They suggested that inspection of the F_i value would show which variables were most effected by multicollinearity.

The results for the model in this analysis show only minor problems with intercorrelation and the regression results presented in Chapter IV seem quite reasonable.

APPENDIX II

Analysis of Variance and Comparisons of Rate Spreads
when Categorized by Loan Size

In Tables 4.3 and 4.4 and Tables 4.7 and 4.8, the interest
rate spread data for the fifty states were divided into differ-
ent groupings by loan size. The first grouping was between
rate differences for the first 25 states having the smallest
loan size and the next 25 states having the largest loan size.
The second grouping divided the observations for the fifty
states into quartiles, with the criterion for the division
again being the size of the loan. Here the statistical signifi-
cance of differences between mean rate spreads is examined for
each of the different grouping arrangements.

Table A2.1 provides the necessary information to test the
hypothesis that the mean rate spread for the 25 smaller loan
size states is equal to the spread for the larger 25 loan size
states versus the hypothesis that they are not equal. This
involves comparisons for both banks and finance companies and
banks and credit unions. Tables A2.2 and A2.3 are the analysis
of variance tables of rate spreads for the data divided into
quarters for banks and finance companies and banks and credit
unions, respectively. Computing the F value from information
presented in the first three columns of the tables enables
one to test the hypothesis that the mean rate spreads between
states with different loan sizes are equal versus the hypoth-
esis that they are not equal.

Table A2.1 Difference between mean rate spreads, the pooled
variance, and t statistic for the twenty-five smallest loan
size states versus the twenty-five largest loan size states

	Spread for Smallest States vs. Spread for Largest States	Pooled Variance	t^a Statistic
Banks and Finance Companies (S_1)	1.98*	1.56	1.586
Banks and Credit Unions (S_2)	.54	.84	.588

[a] The superscript (*) indicates that the difference between
spread means is significant at the 10 percent level

Table A2.2 Analysis of variance table for rate spreads grouped
into quarters by loan size for commercial banks and finance
companies

	Degrees of Freedom	Sum of Squares	Mean Square	F^a
Total	49	999.24		
Between Means	3	102.26	30.08	1.748
Error	46	896.98	19.49	

[a] The superscript (*) indicates that the difference between
spread means is significant at the 10 percent level

Table A2.3 Analysis of variance table for rate spreads grouped into quarters by loan size for commercial banks and credit unions

	Degrees of Freedom	Sum of Squares	Mean Square	F [a]
Total	49	256.04		
Between Means	3	11.11	3.70	.695
Error	46	244.93	5.32	

[a]The superscript (*) indicates that the difference between spread means is significant at the 10 percent level

Where the data were divided into quartiles, certain non-orthogonal comparisons of rate spreads were computed. The results of these comparisons are presented for banks and finance companies in Table A2.4 and for banks and credit unions in Table A2.5. Comparisons were made only where the average rate spread decreased as the size of the loans increased.

The analysis of variance results and comparison of mean differences among selected loan size groupings do not consistently indicate that the means spreads are statistically different. The observation may be made, however, that the evidence for commercial banks and finance companies is much stronger than that for banks and credit unions. The calculated F statistics for banks and finance companies, when not significant, are consistently close to the 10 percent significance level. On the other hand, the significance level for the mean

Table A2.4 Comparisons between spread means for selected loan categories for commercial banks and finance companies

	Difference in Spread Means	F [a] Statistic
States with smallest loan sizes compared to states with next smallest loan sizes	1.723	2.577
States with next to largest loan sizes compared to states with largest loan sizes	2.366	.635
States with smallest loan sizes compared to states with largest loan sizes	3.114*	5.19

[a]The superscript (*) indicates that the difference between means is significant at the 5 percent level

Table A2.5 Comparisons between spread means for selected loan categories for commercial banks and credit unions

	Differences in Spread Means	F [a] Value
States with second smallest loan sizes to states with second largest loan sizes	1.299	1.90
States with second smallest loan sizes to states with largest loan sizes	.820	2.75

[a]The superscript (*) indicates difference between means is significant at the 5 percent level

spread differences among selected loan sizes for banks and credit unions are not consistent and, in general, the F values could not be considered as near a reasonable significance level.