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The Market for High Risk Consumption Loans, Interest Rate Ceilings, and Social Welfare

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THE MARKET FOR HIGH RISK
CONSUMPTION LOANS, INTEREST RATE
CEILINGS, AND SOCIAL WELFARE

by

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Laws are typically enacted to protect the property and the physical persons of members of society. Under the pretext of protecting the property of individuals, modern societies with market economies have legislated statutes governing behavior in the marketplace. To cite one example, anti-trust laws ostensibly protect the wealth (i.e., "property") of those who, in the absence of such legislation, would not be able to purchase products on "favorable" terms from monopolistic firms.

Although laws regulating market behavior apply uniformly to all, it is noteworthy that certain laws have direct effects only on individuals in specific income brackets. Statutes regulating the sale of securities, for example, do not directly affect those who cannot afford to purchase securities. In contrast, child labor laws do not directly affect wealthy families, whose children would not be in the labor market under any set of legal circumstances.

The numerous social welfare programs which have emerged in the twentieth century are also designed to improve "property" conditions. In this sense, social welfare programs and those market regulatory statutes specifically designed to aid the poor have the same general purpose. To carry the comparison further, consider disability supplements (a social welfare program) and minimum wage legislation (a law regulating the market price of labor). The former allows a sick or injured person to receive a "wage" higher than the zero wage dictated by the market. The latter allows a non-skilled laborer to receive a wage higher than the market determined equilibrium wage for his level of skill (assuming, of course, that he is not rationed out of the market). In both cases the result is the same; the

market solution is averted. Thus insofar as certain laws regulating

market behavior have similar purposes to social welfare programs, the

desirability of such laws should be judged on the same criteria as are

welfare programs.

In this paper the set of laws regulating the market for high-

risk consumption loans are examined, with particular reference to the

statutes pertaining to the maximum price that can be charged for loaned

money - i.e., the "usury" laws. The legal specification of interest

rate ceilings has a long and varied history, going back at least to the

Code of Hammurabi.[1] Economists have discussed usury laws with much

interest (academic, that is!) from Adam Smith [1776] through Jeremy

Bentham [1786] and John Maynard Keynes [1936] to the recent spate of

articles occasioned by the introduction of the Uniform Consumer Credit

Code.[2] Almost without exception, economists have argued against the

imposition of ceiling rates.[3] As every first year student of economics

"knows", legislated price ceilings result in rationing and in black mar-

kets. In the case of interest rate ceilings, it is argued that such

legislation is harmful in that (i) the individuals who have the greatest

need for financing are rationed out of the legitimate market, and

(ii) usury legislation opens the door to a much more potentially insidious

danger, extortionate loan sharking.[4] Although this argument does not

consider the possibility of offsetting gains to some borrowers in the

form of lower interest rates, the same conclusion is usually reached when

both costs and benefits are considered. For example, the standard

consumer surplus analysis of price interference in a competitive market

indicates that for any given supply curve and effective legislated price,

the more inelastic is the demand curve, the greater is the possibility
of a net loss in consumer surplus arising from the legislation. It is
argued that borrowers in the market for high risk consumption loans have
relatively inelastic demand curves for loanable funds.[5] Hence, when
appraised in terms of standard consumer surplus analysis, rate ceilings
are believed to incur costs which outweigh the benefits, so that the
condemnation of usury legislation again obtains.

Despite the logic of these arguments, legislators have persisted
in enacting usury legislation. In this paper it is argued that
legislators are aware of the rationing effects of rate ceilings, but that
the desirability of such laws is viewed in terms of a different criterion
than that usually assumed by economists. The standard argument of the
previous paragraph assumes that if an individual is prevented from freely
entering into a legitimate contract, then the individual's own utility
must suffer. And since individual utilities comprise the arguments of
the social welfare function, the legislation must lower social welfare.
No mention is made of the possibility of externalities forthcoming as
a result of the rate legislation.[6] If, as argued above, certain market
regulatory laws should be appraised by the same criteria as are social
welfare programs, then the possibility of externalities must be explored.
If positive externalities accrue to the community as a result of interest
rate legislation, then such legislation, with its attendant rationing,
becomes a legitimate way for society to attain its welfare goals.

In order to analyze the effects of interest rate legislation, an
acceptable model of the market for high risk consumption loans must be
developed. In section II, the supply side of the market is examined.

The discussion is motivated by the need for a model which correctly
predicts the rationing effects of interest rate legislation. The
inadequacies of the Blitz and Long [1965] model are discussed, and an
alternate model is presented. The model is used to evaluate the recently
promulgated Uniform Consumer Credit Code in the United States, in an
attempt to predict the results of the acceptance of the Code by the
various states. Section III presents the demand side of the market. It
is assumed that borrowers behave according to a variant of the Lifetime
Allocation Model. Assuming that the social welfare goal is to have all
families consume at a rate equal to or above some socially acceptable
minimum, it is shown how usury legislation aids in attaining such a goal.
Furthermore, if income supplements are needed to attain the welfare goal,
then the total cost of such supplements will be less if an interest rate
ceiling is in effect. The section concludes with a discussion of the
effect of interest rate ceilings on the demand for illegal sources of
funds.

II

Blitz and Long [1965] view the lender of funds as a discriminating
monopolist[7] who "discriminates" according to the perceived degree of
riskiness of the loan. As illustrated in Figure 1(a), the lender adjusts
the marginal revenue curve (MR) of the prospective borrower by shifting
it left to a position such as that denoted by the curve MR_A. The larger
is the perceived risk factor, the greater will be the leftward shift in
MR_A. By summing the MR_A curves of all loan applicants into the single
ΣMR_A curve as depicted in Figure 1(b), the total amount loaned by the
monopolist may be determined by the profit maximization condition ΣMR_A =
MC. The interest rate for each borrower is then determined by the require-
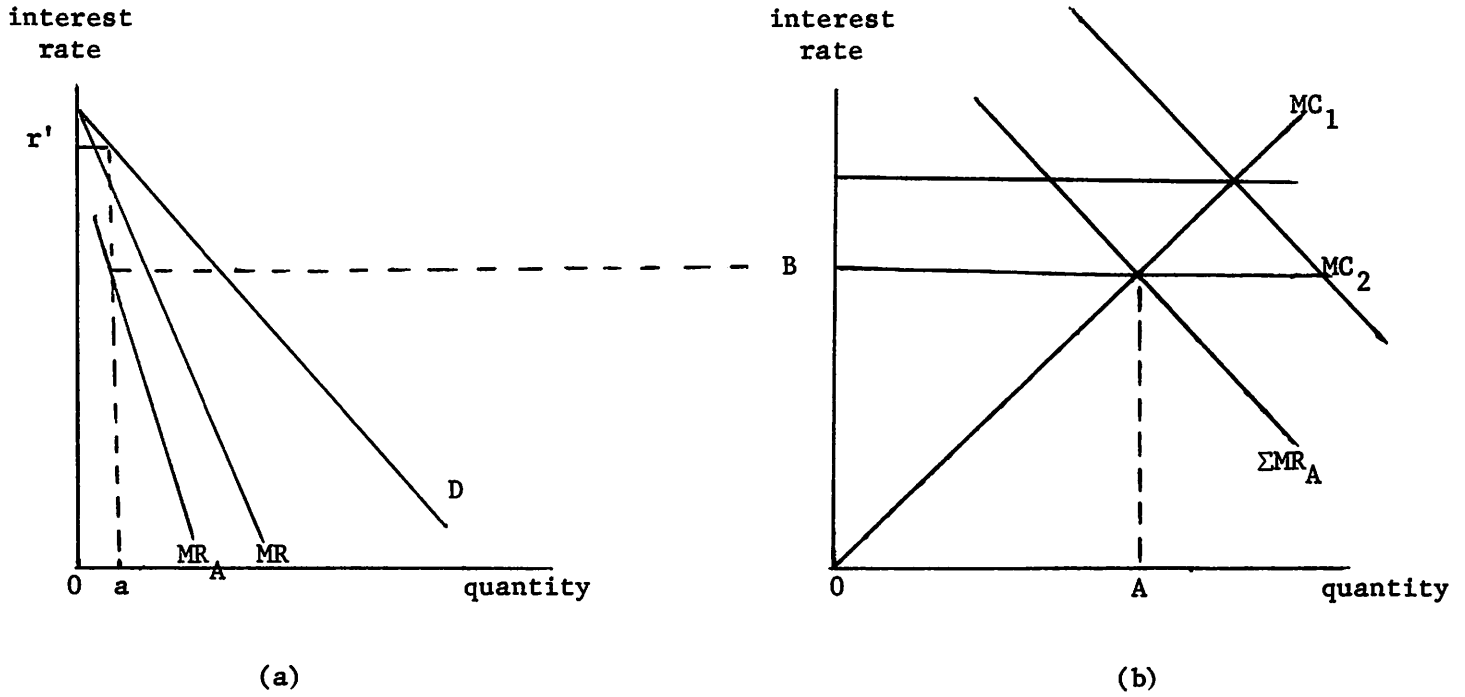ment that an adjusted marginal revenue of OB be obtained from each loan.

FIGURE 1

Blitz and Long assume that the marginal cost curve faced by the lender is positively sloped (MC_1 in Figure 1(b)). Under these conditions the borrower in Figure 1(a) receives Oa in loanable funds at the interest rate r'.

The imposition of an interest rate ceiling $\bar{r}$ results in a kinked demand curve and in a discontinuous adjusted marginal revenue curve (MR_A') as illustrated in Figure 2. Under the assumption that the new $\Sigma MR_A'$ intersects MC_1 at the same point as did ΣMR_A, so that the total amount loaned does not change, the effect of the ceiling on an individual borrower can be determined. If the pre-legislation interest rate paid is below $\bar{r}$, then as can be seen in Figure 2, since $MR_A = MR_A'$ for quantities corresponding to rates of interest below $\bar{r}$, there is no change in the borrower's situation. On the other hand, if the pre-legislation equilibrium rate is above $\bar{r}$, then depending upon the original equilibrium, the possibilities are (i) a decrease in the interest rate paid and an

interest
rate

$\bar{r}$
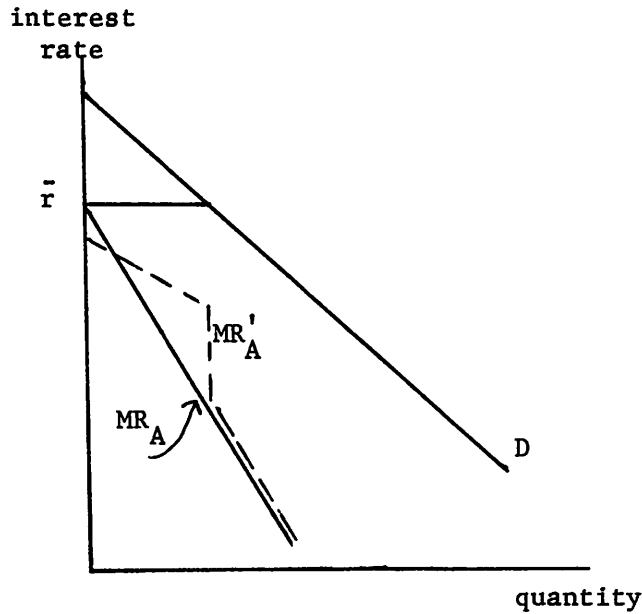
MR'_A

MR_A

D

quantity

FIGURE 2

increase in the amount borrowed for those who were originally slightly

above the ceiling, (ii) a decrease in the interest rate paid and a

decrease in the amount borrowed for those who were moderately above the

ceiling, and (iii) complete rationing for those borrowers who were

previously borrowing at rates considerably in excess of the ceiling.

Since it was assumed that the total amount loaned does not change, and

those below the ceiling are unaffected, there must be a redistribution

of loans away from the riskiest borrowers in favor of the moderately

high risk borrowers slightly above the ceiling.

If the imposition of a particular ceiling rate results in no change

in the total amount loaned, then presumably if the ceiling were set above

that particular rate, the total amount of loans would increase (the

intersection of the new $\Sigma MR'_A$ with MC_1 would occur to the right of the

original intersection), or if set below, the total amount of loans would

decrease. In the event that the loan total changes, Table 1 lists the possible

effects on borrowers on both sides of the ceiling. In Table 1, "more" and

"less" refer to the comparative equilibrium solutions in the pre and post

TABLE 1: The Blitz And Long Model

Total Amount Loaned	Pre-legislation Interest Rates	Effects
Increases $\longrightarrow$	above the ceiling $\longrightarrow$	rationed out / borrow less at lower rates / borrow more at lower rates
	below the ceiling $\longrightarrow$	borrow less at higher rates
Decreases $\longrightarrow$	above the ceiling $\longrightarrow$	rationed out / borrow less at lower rates / borrow more at lower rates
	below the ceiling $\longrightarrow$	borrow more at lower rates

ceiling situations. It can be seen that if the ceiling is set relatively

low (total loans decrease), then all who are able to borrow will do so at

lower rates. If the ceiling is set relatively high, then the pricing results

are mixed; those below the ceiling now pay higher rates. Distribution effects

are also indicated by Table 1. If the total amount of loans increases (resp.

decreases), then there will be an increase (resp. decrease) in the proportion

of total loans going to relatively risky borrowers, and the actual amount of

credit extended to relatively safe borrowers will decrease (resp. increase).

The reason for the change in the absolute amount of funds advanced

to the relatively riskless borrowers is due to the assumption of an increasing

marginal cost curve in Figure 1(b). If marginal costs are postulated as con-

stant (MC_2 in Figure 1(b)), then barring a shift in the cost function, the

prediction statements of Table 1 would be revised as indicated by Table 1'.

All those below the ceiling are not affected by its imposition.

TABLE 1': Perfectly Elastic MC, No Shift In MC Curve.

Pre-legislation Interest Rates	Effects
above the ceiling ⟶	⎰ rationed out ⎱ borrow less at lower rates borrow more at lower rates
below the ceiling ⟶	{no change

The two assumptions leading to Table 1' (perfectly elastic MC curve, no shift in the function) should be examined. Although the evidence is dated, statistical cost functions for lenders of consumer credit indicate constant costs over a wide range of output.[8] Insofar as the marginal cost curve reflects primarily the cost of capital, then a positively sloped marginal cost curve is hard to justify. The numerically few (but relatively important in terms of volume) national lenders in the high risk markets have at least two sources of non-equity capital; they borrow from financial institutions and sell commercial paper. The greater are the financing options, the more elastic is the supply of capital function. To the extent that high risk lenders borrow from banks, lines of credit are the primary lending media. Because of the extremely volatile nature of the demand for high risk loans, lines of credit are typically set up so that, on the average, the unused portion is relatively large. Hence the supply curve of capital is highly elastic over a wide range of credit volume.[9]

Whether or not the horizontal marginal cost curve of the individual high risk lender shifts due to the ceiling imposition depends upon the situation in the capital market at the time the ceiling is imposed. Finance companies and other lenders in high risk markets compete with industrial and commercial firms for funds. In the event that the ceiling results in an increase in the demand for credit by the suppliers of high risk loans to the extent that the

aggregate demand curve for (low-risk) capital shifts to the right, there may

be a shift in the cost of capital curve for all low risk borrowers, including

finance companies. The amount of the increase, if any, depends upon the

proportion of total credit that is directly affected by the ceiling rate

imposition, and the elasticity of the (low-risk) supply of capital curve.[10]

Although this latter function may be quite elastic in the long run, its elasticity

in the short run depends upon existing market conditions. If the curve were

sufficiently inelastic (and the demand curve shift sufficiently large) to

occasion a significant increase in the cost of capital, then the marginal cost

curves of all low risk borrowers would shift upwards. In particular the

cost curves of finance companies and other suppliers of consumer credit would

rise, and Table 1 would contain the relevant set of prediction statements.

(This situation is illustrated in Figure 1(b) by the upward shift in the

horizontal MC_2.)

What appears to be an alternative model is presented by Goudzwaard

[1968A, pp. 178-179]. Rather than adjusting the marginal revenue curves of bor-

rowers to account for differences in cost, he specifies separate marginal

cost curves for borrowers of each risk category. The greater the risk factor

involved, the higher is the marginal cost curve for that particular risk category.

Although the Goudzwaard model is extremely sketchy, it appears that its prediction

statements are the same as those of the Blitz and Long model. Indeed, as

Goudzwaard states [1968 A, p. 178], the specification of separate marginal

cost curves is simply an alternative to adjusting marginal revenue curves;

his model does not represent a theoretical departure from the Blitz and Long

model.[11] In what follows, the models will be considered equivalent, and re-

ferred to as the BLG (Blitz, Long and Goudzwaard) model.

In appraising the BLG model, it appears that insufficient attention

is paid to the technology of the lender. In particular, the BLG model fails

to consider the technological relationships between loan categories. In this

respect the problem facing the lender in high risk markets is similar to that

of the investor formulating an optimum portfolio. That is, in investing the marginal dollar, account must be taken of the current proportions of the portfolio invested in assets of varying risk categories. As will be seen, the failure of the BLG model to adequately represent the technology of high risk lenders has resulted in improper prediction statements, which could lead to sub-optimal policy decisions.

Rather than viewing the lender as a "producer" of the homogeneous good "loanable funds", it is more realistic to view the lender in the market for high risk consumption loans as a seller of "services", where each service is qualitatively distinguished by the perceived risk factor involved in repayment of principal and interest. That is, the lending organization is a multi-service firm, where cost functions differ for each service. The technology of the lender is embodied in the service transformation curve

$$(1) \qquad\qquad K = f(q_1, \ldots, q_n) \ ,$$

where f shows the possibilities of transforming a certain amount of capital K into quantities loaned in n categories differing in riskiness. (For notation purposes, assume that the loan categories are listed in terms of decreasing risk; i.e., for $i < k$, market i has a relatively greater perceived risk factor than market k.) f possesses the derivative $f_i > 0$ for all i; an increase of loans in category i, holding loans in all other categories constant, requires an increase in capital.

The transformation function is not represented by a hyperplane in n dimensional space. The curvature of f arises because loans of different risk classifications involve different costs of credit information, costs of servicing (including collection costs), reserves for bad debts, etc.. It is assumed that the lender's attitudes toward risk are embodied in the management of his bad debt reserve account. To center attention on this important account, the transformation function f is assumed to be of the form

(2) $\quad f(q_1,\ldots,q_n) = \sum_{i=1}^{n} q_i + R(q_1,\ldots,q_n) + S(q_1,\ldots,q_n)$,

where R represents the provision for losses and S represents capital absorbed in all other operating expenses, including salaries, occupancy costs, supplies, etc.

As the typical lender in the market for high risk consumption loans increases his outstanding loans in any particular category, his bad debt reserve also increases $(R_i > 0)$. Furthermore, such lenders value diversification - they do not care to put all their eggs in one basket. Hence as loans of any particular category increase (holding other loans constant) bad debt reserves increase at an increasing rate $(R_{ii} > 0)$. On the other hand, diversification provides benefits to the lender in that it allows for a reduction, on the margin, in reserves attributable to loan category j as a result of an increase in loans in category i (i.e., $R_{ij} < 0$) . The "marginal cost" (in terms of capital usage) of loans of category j is reduced as a result of diversification.

It is further assumed that the curvature of f is dominated by R. That is, if a change in q_i produces changes in R and S (or their derivatives) that are of opposite signs, then it is assumed that the effect transmitted through R is larger (in absolute value), than that transmitted through S.[12] If the changes are in the same direction, then the effect on S simply reinforces the effect transmitted through R.

Direct empirical justification for the "dominance" (as interpreted above) of the bad debt account on f is not available, as individual firms do not earmark bad debt provisions for loans of specific risk categories. However, to see the importance of risk degree on the bad debt reserve vis-à-vis the importance of risk on all other operating expenses, a comparison can be made of these items between lenders who serve customers in different ranges of the risk spectrum. In Smith's study, the sample of commercial banks held a bad debt reserve of 28 cents for each \$100 of credit outstanding, whereas the sample

of consumer finance companies held a reserve of $1.98 for each $100 of credit outstanding[13], the difference being a multiplicative factor of 7! All other operating expenses showed smaller factor differences. Salaries, for example, although comprising a larger total of costs than bad debt reserves, showed a multiplicative factor of less than 3. This indicates that the bad debt reserve account is relatively more sensitive to risk than are other operating expenses, lending support to the contention that R dominates the curvature of f.

These assumptions on R imply that the technology of the lender exhibits technical complementarity among loan categories; i.e., $f_{ij} < 0$. (The assumptions also imply $f_{ii} > 0$.) The BLG model implicitly assumes $f_{ij} = 0$, technical neutrality. For this latter technology, an increase in loans of category j has no effect on the marginal cost of a loan in category i.[14] The lender's bad debt reserves (on the margin) attributable to loans of category i will be the same regardless whether a new dollar of capital is loaned to the President of General Motors or to an unemployed Edsel salesman!

The problem facing the lender in the market for high risk consumption loans is to choose the loan portfolio which maximizes profits; i.e., to choose the vector $(q_1, \ldots, q_n)$ that maximizes the profit function

$$(3) \qquad \pi = \sum_{i=1}^{n} p_i(q_i) q_i - z f(q_1, \ldots, q_n)$$

where p_i is the per unit charge for providing the lending service, $p_i(q_i)$ is the (inverse) aggregate demand function of borrowers of risk category i, and z is the per unit cost of capital. If the lender owns his own capital, then z may be interpreted as the return per dollar on riskless investment--the opportunity cost of borrowed capital. However, most lenders in high risk markets finance their operations with borrowed capital, so that z is the per unit cost of borrowing. In order to dispense with capital structure problems, it will be assumed here that all capital is borrowed. Furthermore, as discussed above, it

will be assumed that the individual lender faces a perfectly elastic supply curve of capital.

Since the demand curves of borrowers in the high risk market are independent (i.e., borrowers have access to only one risk category), the first order conditions for maximizing (3) may be written as

$$(4) \qquad zf_i = p_i(1-\frac{1}{\eta_i}) \; ; \; i=1,\ldots,n,$$

where η_i is the price elasticity of demand in the ith loan category. Noting that $1/f_i = \frac{\partial q_i}{\partial K}$, the marginal product of a dollar's worth of capital in the ith category, (4) yields the familiar relation

$$(5) \qquad z = MR_i \cdot MP_i; \; i=1,\ldots,n.$$

That is, value marginal product is equated in all sub-markets, and is equal to the per unit cost of input.

The second order conditions on (3) are that the principal minors of the full hessian alternate in sign. For the case of two sub-markets, the second order conditions become

$$(6) \qquad 2p_1' - zf_{11} < 0 \; ,$$

$$(7) \qquad 2p_2' - zf_{22} < 0 \; , \quad \text{and}$$

$$(8) \qquad (2p_1' - zf_{11})(2p_2' - zf_{22}) - z^2f_{12}^2 > 0 \; .$$

Negatively sloped demand curves and $f_{ii} > 0$ imply (6) and (7). Given (6) and (7), a sufficient condition for (8) is $f_{11}f_{22} > (f_{12})^2$. There is no a priori reason why this relationship should not hold. In fact, it is probable that the sufficient conditions $|f_{ii}| > |f_{ij}|$ (for all i,j) hold; the interpretation being that the increase in marginal capital usage attributable to an extra dollar of specialization is greater than the decrease in marginal capital usage attributable to an extra dollar of diversification.

As illustrated in Figure 3[15], the technology $f_{12} = f_{21} < 0$ implies that

for loan category "1" (resp. "2"), a different marginal cost curve must be

constructed for each value of q_2 (resp. q_1). In Figure 3(a) $q_2^i < q_2^j$ for all

$i < j$. Furthermore, the market with the greater risk will display higher

marginal cost for any given level of loans in the other market. That is, assuming a
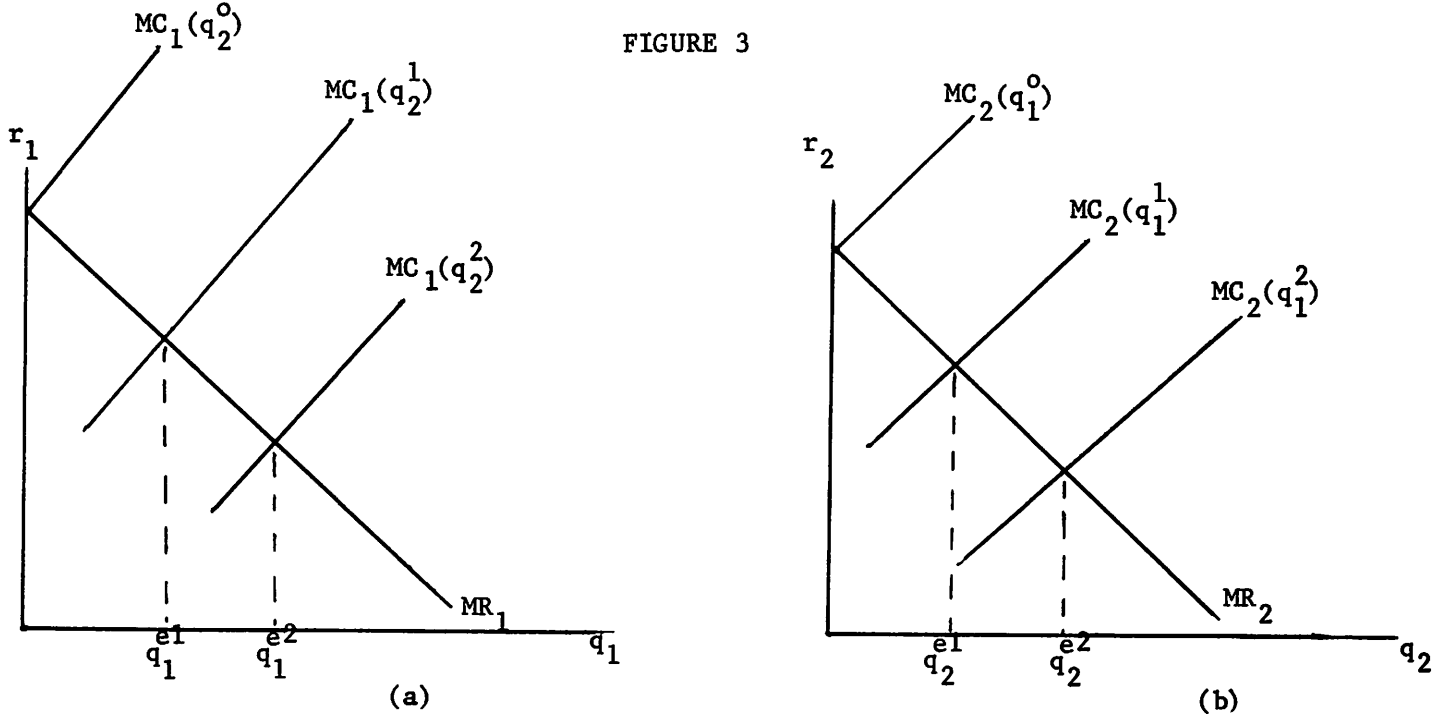
FIGURE 3

(a)

(b)

loan in market"1" has greater risk than a loan in market "2", $MC_1(x) > MC_2(x)$

for all values of $q_1 = q_2$.

In order to determine the profit maximizing loan output of the lender,

the interaction between the two markets must be explicitly considered. Referring

to Figure 3(a), for each value of q_2, say q_2^i, there corresponds a profit

maximizing amount of loans in risk category 1, q_1^{ei}. Similar relationships can

be found in the other market. These correspondences are described by the

functions

(9) $q_1^e = \phi_1(q_2)$

and

(10) $q_2^e = \phi_2(q_1)$

where $f_{12} = f_{21} < 0$ implies that $\phi_1' > 0$ and $\phi_2' > 0$. As depicted in Figure 4,

it is also assumed that $\phi_1'' < 0$ and $\phi_2'' < 0$. $\phi_1''(q_2) < 0$ says that as q_2 increases by constant increments, the increments of q_1^e necessary to maximize profits in market "1" must decrease. If, for example, the demand curve is linear, then a
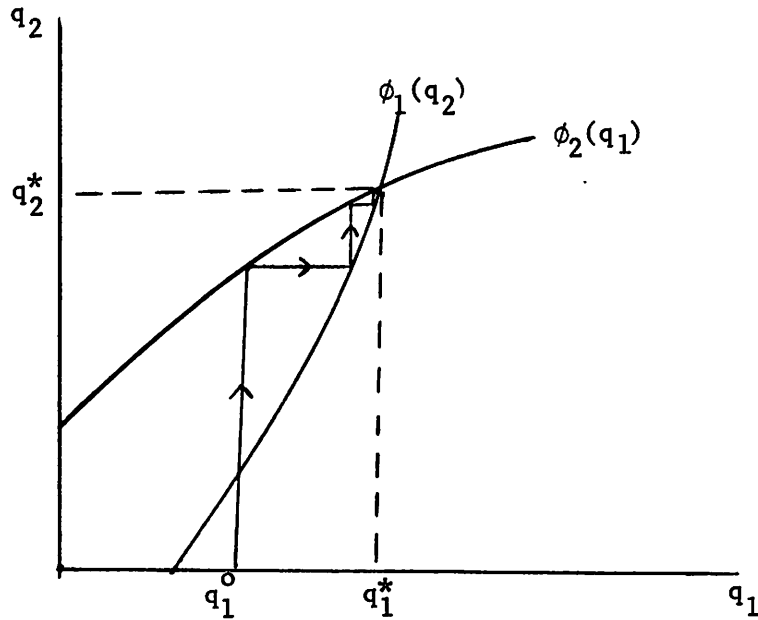

FIGURE 4

sufficient condition for $\phi_1'' < 0$ is that the marginal cost curve of market "1" fall by decreasing increments as q_2 increases; or in terms of the service possibility function, $\frac{\partial}{\partial q_2} (f_{12}) < 0$. This is illustrated in Figure 5, where $\alpha_1 > \alpha_2 > \alpha_3$. The interpretation is that unit increases in q_j produce
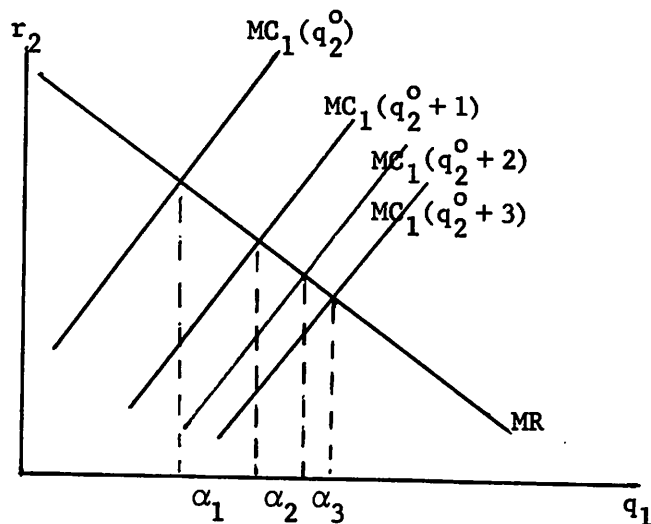

FIGURE 5

increasingly smaller cost advantages for category i (i.e., downward shifts in category i's marginal cost curve) as loans outstanding in category j increase.

Returning to Figure 4, a unique equilibrium is depicted at the point (q_1^*, q_2^*). By locating the points on the demand curves for markets "1" and "2" that correspond to q_1^* and q_2^* respectively, equilibrium interest rates for each market can be found. To investigate the stability of the system shown in Figure 4, behavioral assumptions must be made about the time path of decisions made by the lender. Postulating a lagged adjustment where one loan category is alternately adjusted to maximize profits in that particular market subject to a given amount of outstanding loans in the other category, it can be seen that the markets in Figure 4 are globally stable. For suppose that the equilibrium (q_1^*, q_2^*) is disturbed to (q_1^o, q_2^*). In the next period, loans in market "2" will be adjusted to $\phi_2(q_1^o)$. In the following period, loans in market "1" will be adjusted, and so on until (q_1^*, q_2^*) is restored. Under this scheme, the ϕ functions are true "reaction" functions. This lagged adjustment mechanism implicitly assumes that loans of any particular risk category mature simultaneously, and that the maturity dates for different loan categories are staggered. While the latter assumption is plausible, the former appears to stretch reality somewhat. If instead, the lender were free to adjust all loans simultaneously, then the market would return to its unique equilibrium in one period.

From Figure 4 it can be seen that if ϕ_1 intersects the q_1 axis and ϕ_2 the q_2 axis, then the previous assumptions on the ϕ functions are sufficient to ensure the existence of a unique and stable equilibrium. However, it may be the case that both ϕ_1 and ϕ_2 touch the same axis.[16] For ϕ_1 (the high risk market) to lie partially along the q_2 axis means that the marginal cost curve of market "1" does not intersect (in the positive orthant) the marginal revenue curve of market "1" when $q_2 = 0$. Hence no loans would be advanced in market "1" until some positive amount had first been loaned in market "2" ($\bar{q}_2$ in Figure 6(a)).

This could conceivably occur if either (i) the demand curves of the two markets are radically different and/or (ii) the risk differential between the two markets is so great that the height of the marginal cost curves are radically dissimilar. If the disparity in either case were to such an extent that ϕ_1 intersected the q_2 axis above the ϕ_2 intersection with the q_2 axis then there would exist either three equilibria, one unstable and two stable, or one stable equilibrium occurring on the q_2 axis, as pictured in Figure 6(b).
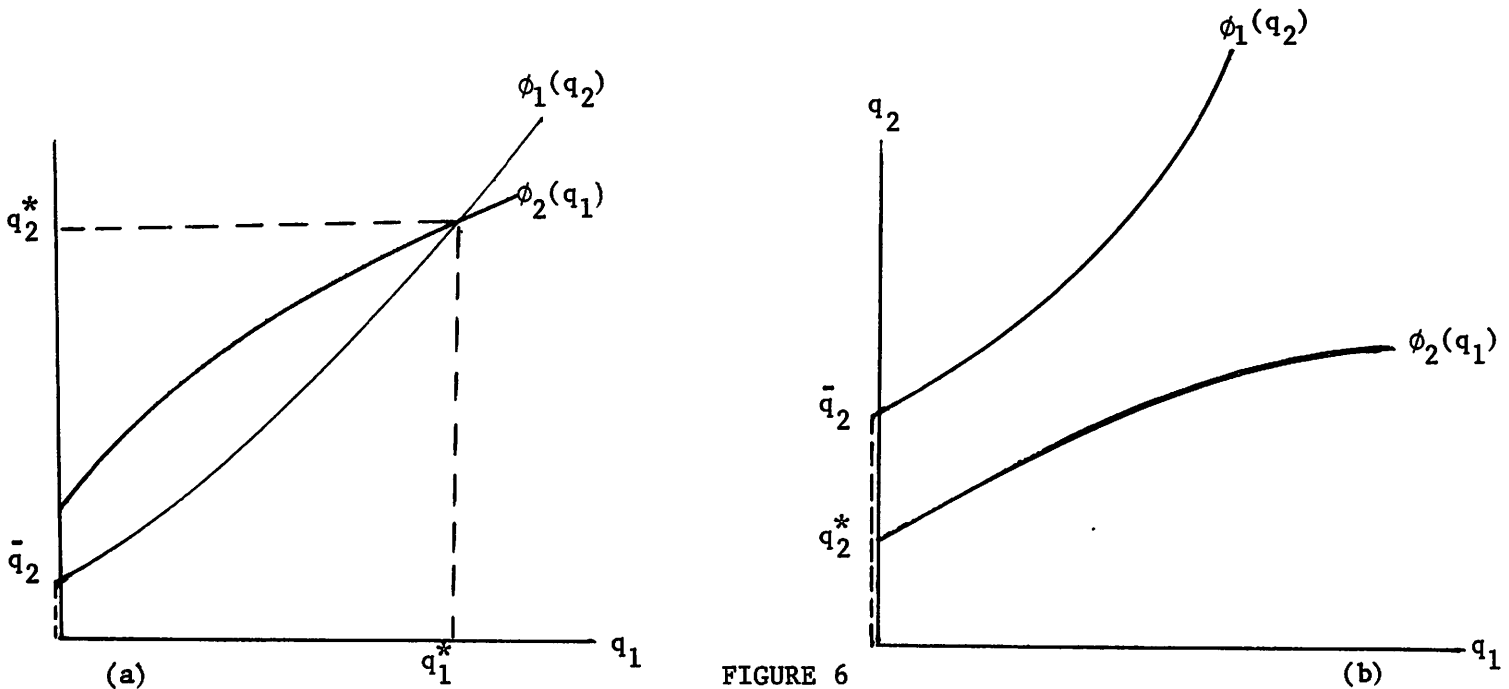

FIGURE 6

Suppose, for example, that Figure 6(b) depicts the stiuation in which the demand curves for the two markets are similar, but loans in market "1" are considerably riskier than loans in market "2". The profit maximizing equilibrium $(q_1, q_2) = (0, q_2^*)$ dictates that no loans be advanced in the riskier market.[17] Such behavior partially explains why we do not observe the local neighborhood high risk lender competing with commercial banks for low risk customers. If risk categories of loans were arranged on a spectrum ranging from safest to riskiest, the model presented here predicts that lenders would deal in only one continuous interval along the spectrum.[18] It should

be noted that such behavior is predicted by the model in spite of assumptions

imposed upon the lender's technology that favor diversification.

The imposition of an interest rate ceiling will affect the ϕ functions,

and hence, the equilibrium amounts loaned in both markets and the interest rates

charged. Figure 7 shows the effects of interest rate ceilings of different

levels on ϕ_1 and ϕ_2 . The functions ϕ_1^* and ϕ_2^* assume the absence of a ceiling.

The ceilings $\bar{r}^1 > \bar{r}^2 > \bar{r}^3$ result in the new ϕ functions as illustrated. The

straight line segments of the ϕ functions correspond to the discontinuous portions
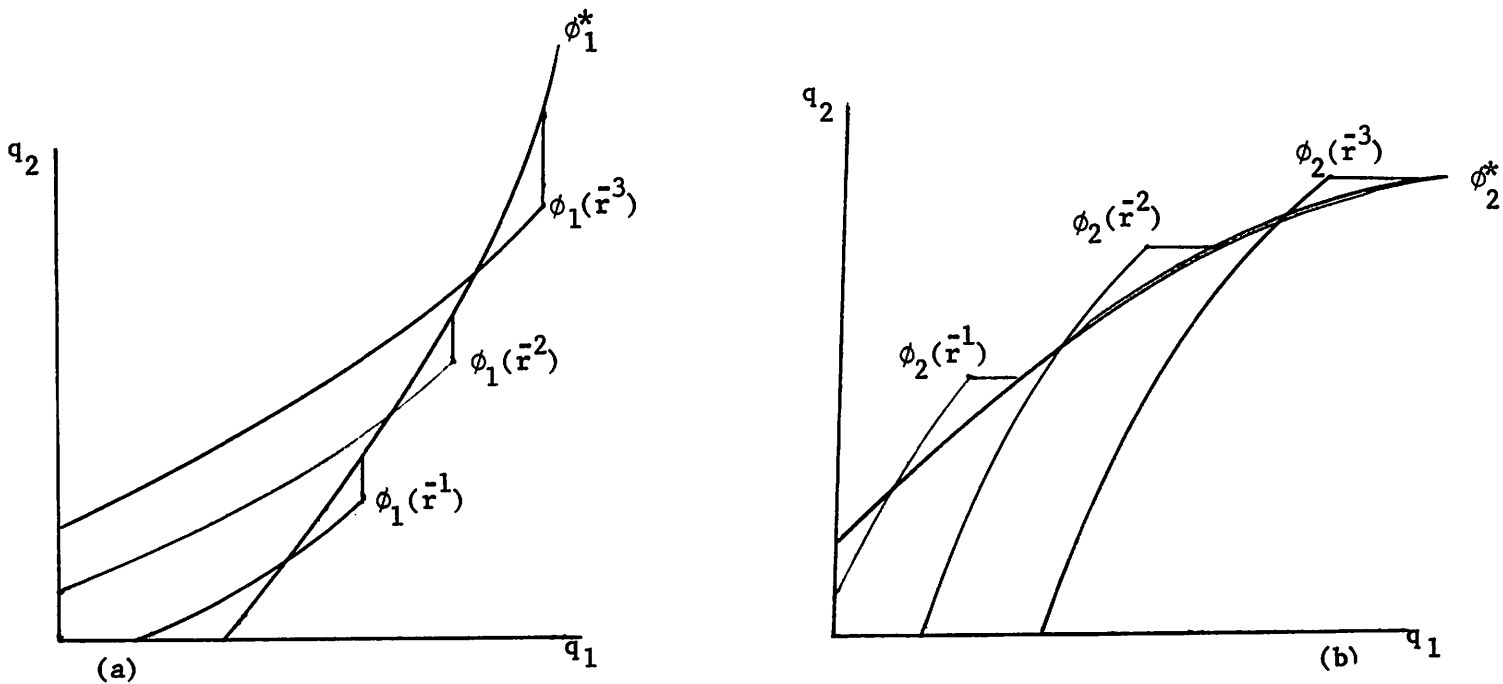
of the new marginal revenue curves.

FIGURE 7 ; $\bar{r}^1 > \bar{r}^2 > \bar{r}^3$.

In order to ascertain the effects of a ceiling, the markets must be

examined simultaneously. In Figure 8, consider the pre-legislation equilibrium

of (q_1^*, q_2^*) with corresponding interest rates (r_1^*, r_2^*), where it is assumed that

$r_1^* > r_2^*$. Imposing an interest rate ceiling of $\bar{r}$, where $r_1^* \geq \bar{r} \geq r_2^*$, will not

change the function ϕ_2 for values of q_1 as least as large as q_1^* . Hence, the new

equilibrium cannot occur in quadrants II or IV, but only in quadrants I (as in

Figure 8) or III. If the ceiling is set relatively high within the range (r_1^*, r_2^*),

then there will exist a stable equilibrium in quadrant I, and the new solution

will occur there.[19] If the ceiling is set relatively low within the range (r_1^*, r_2^*) , then all equilibria will occur in quadrant III. At the extreme, a low ceiling may result in a single new equilibrium on the q_2 axis as in Figure 6(b) ; i.e., borrowers of market "1" are completely rationed out of the market. It should be noted that a post-legislation quadrant I solution implies a decrease in interest rates in both markets: market "1" because it is subject to the ceiling, and market "2" because the increase in loans in market "1" implies a lower relevant marginal cost curve for market "2". Hence a relatively high ceiling lowers interest rates and increases loan volume in both markets, as compared with the no ceiling situation. On the other hand, a quadrant III equilibrium indicates a decrease in the amount loaned in both markets. Hence the market "2" interest rate would increase.
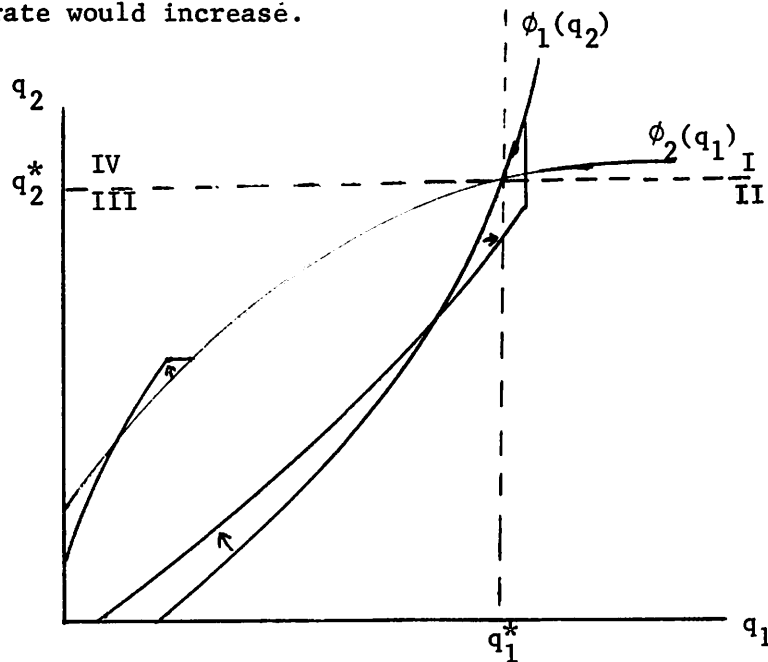

FIGURE 8

Thus, for the imposition of a ceiling between the equilibrium rates previously charged, the prediction statements of the model depend upon the heighth of the ceiling, as shown in Table 2.

Extending this model from the two loan category to the n loan category case, it can be deduced that if a relatively high ceiling is set, the majority of the relatively high risk categories (i.e., the majority of those categories for which funds would have been forthcoming at an equilibrium rate higher than the ceiling in its absence) will experience an increase in quantities supplied at the

<u>Table 2</u>: $(r_1^* \geq \bar{r} \geq r_2^*)$

Range of $\bar{r}$

$\bar{r}$ set near r_1^*	quantities loaned increase in both markets, interest rates fall
$\bar{r}$ set near r_2^*	quantities decrease in both markets, interest rate in market "2" rises, interest rate in market "1" falls to the ceiling or goes to zero (if complete rationing occurs)

pre-ceiling equilibrium levels of all other loan categories. Hence if the ceiling is set sufficiently high, even though the riskiest borrowers would be rationed out of the market, the total amount of funds advanced would increase. This increase in total funds advanced would result in a decrease in interest rates for all those relatively riskless borrowers who would have borrowed at rates below the ceiling in its absence, as the relevant marginal cost curves in the post-ceiling situation are below those in the pre-ceiling situation due to the complementarity of loan categories. If the ceiling is set relatively low, so that a large portion of the relatively risky borrowers experience rationing, then the relatively riskless borrowers will be adversely affected in both price and quantity terms.

To compare the results of this model with the BLG model, assume for simplification that the cost of capital curve faced by the lender is perfectly elastic and does not shift due to the imposition of a rate ceiling. This assumption allows comparison of the two models on the basis of different assumptions on the lender's technology.[20] Under these assumptions the BLG model (Table 1') predicts no change in the situation of the relatively riskless borrowers (i.e., those whose unfettered equilibrium rates are below the ceiling). The prediction statements of the BLG model do not depend upon the heighth of the ceiling. In contrast, the technical complements model always predicts a change in the situation of those

below the ceiling, where the "direction" of the change depends crucially upon the heighth of the ceiling.

This contrast in the prediction statements of the two models has interesting policy implications. If the amount of rationing that is socially desired requires a relatively low ceiling, then the technical complements model implies that the positive social benefits arising from the rationing of high risk borrowers will have to be compared with the negative "private" benefits which accrue to the relatively riskless borrowers. In the BLG model, only the amount of rationing socially desired need be considered in setting the ceiling as the relatively riskless borrowers are unaffected by the ceiling imposition.

Finally, the technical complements model may be used to evaluate the merits of the Uniform Consumer Credit Code (UCCC), which was adopted by the National Conference of Commissioners on Uniform State Laws in 1969, and is currently being considered by several states.[21] The UCCC was proposed with the purpose of reducing the numerous laws regulating consumer credit within each state to one standard code. Since all lenders would be subject to a single law, adoption of the UCCC should make the consumer credit market more competitive.

Article 3 of the UCCC establishes interest rate ceilings for all closed-end consumer credit transactions. The ceilings are designated as: 36% per annum for the first $300 of credit extended, 21% for the next $700, and 15% for amounts in excess of $1,000. In general, these ceilings are higher than the ceilings established under state small loan laws.[22] Since high risk lenders make virtually all of their loans at the ceiling rate under the small loan laws, it was hoped that the higher ceilings of the UCCC would allow a considerable volume of transactions to be carried out at rates below the ceiling, while the riskiest borrowers would still experience some degree of rationing. The philosophy of the ceiling was to establish only an upper bound on socially acceptable transactions, not to dictate price in the market.

Shay [1970] attempted to evaluate the impact of the higher ceilings by constructing a monopoly model of the market that would predict the effects of the new ceilings on (i) the total amount of funds advanced, and (ii) the risk composition of lenders' portfolios. His conclusions were that higher ceilings would result in the acceptance of poorer credit risks, but that it was impossible to predict the change in loanable funds outstanding [Shay, 1970, p. 513]. This raised the possibility of the lower risk categories of borrowers achieving less funds under the UCCC than under existing state small loan laws. Goudzwaard found Shay's model unacceptable "... in that it does not allow for differences in the cost of borrowers in various risk classes..." [1970, p. 528].

The questions raised by Shay may be unambiguously answered by the model presented in this section. For simplification assume that there are two risk categories of borrowers, of which the relatively riskiest receives zero loans under the state small loan laws, whereas the relatively riskless borrowers receive some positive amount at the ceiling rate. This equilibrium is depicted in Figure 9 as the point B. (In Figure 9, ϕ_1^* and ϕ_2^* represent the reaction functions in a "free" market, ϕ_1^L and ϕ_2^L represent the reaction functions under the state small loan laws, and ϕ_2^U represents the relatively riskless category's reaction function under the higher ceilings of the UCCC.) Now suppose that the UCCC is enacted such that the new ceiling rate is higher than the rate at which
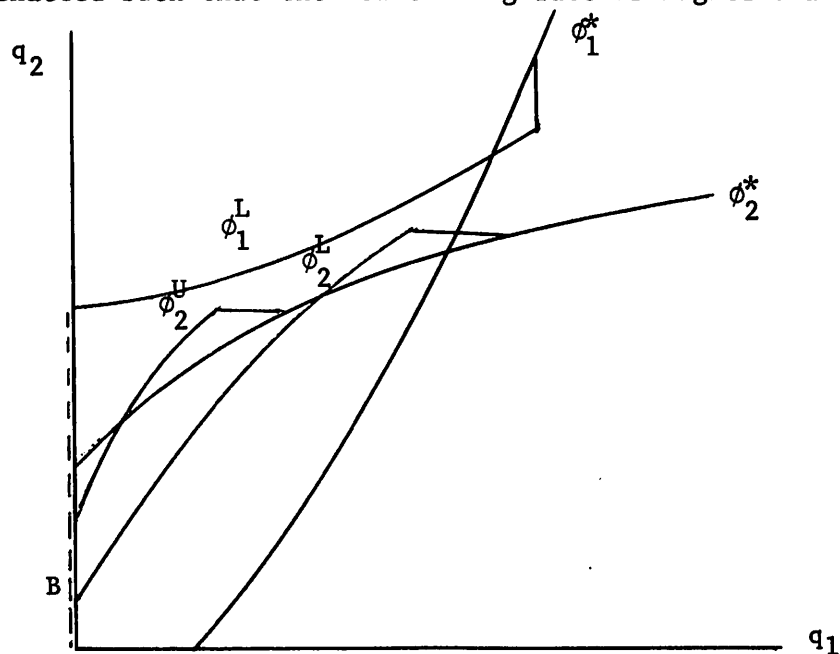

FIGURE 9

the relatively riskless borrowers could attain funds in the absence of the ceiling, but below the unfettered free market rate for the relatively risky category of borrowers. The new equilibrium must be somewhere along the curve ϕ_2^U in Figure 9, with the exact point of equilibrium depending upon the disparity in risk factors and demands in the two segments of the market. In any event, returning to the questions raised by Shay, since ϕ_2^U everywhere yields values of q_2 greater than that implied by the equilibrium at B, the model unambiguously predicts an increase in the amount of funds advanced to the low risk segment of the market, and an increase in the total amount of funds advanced. Whether or not funds are advanced to the previously excluded high risk segment of the market depends upon the effect of the ceiling on the ϕ_1 function. (The ϕ_1 function will fall but whether it will intersect ϕ_2^U at a non-zero level of q_1^* is impossible to determine without exact knowledge of the functions.) But in any case, an increase in funds advanced to the high risk segment of the market will not be at the expense of the relatively low risk borrowers. Thus as far as the ceiling rate alone is concerned, the UCCC should have beneficial effects.

III

Models of usury regulation typically assume a negatively sloped demand curve for loanable funds without investigating the origins of such a function.[23] This neglect of the demand side has resulted in policy recommendations which do not take into consideration the effect of loans on the time path of consumption. Presumably individuals borrow because they wish to obtain a consumption path which differs from their income path. Hence, the proper utility maximization model to apply to the borrower is some variant of the Lifetime Allocation Model,[24] and interest rate ceilings should be appraised in terms of their impact on the dynamic consumption paths of individuals.

When an individual applies for a consumption loan, he is required to submit a credit application which gives evidence of his ability to repay the debt.

Such an application is essentially a blueprint which details the solution to the borrower's particular "lifetime" allocation problem over a certain horizon. In the case of high risk consumption loans, the borrower typically attempts to obtain the lowest monthly payments possible for any given loan size. That is, lower monthly payments and longer maturities are preferred by the high risk borrower to higher payments and shorter maturities. Hence the horizon is in most cases determined by the lender, and depends upon the institutional norm (or legal constraint) at the time the loan is made. In what follows, it will be assumed for the sake of simplification that a two period horizon is specified. Futhermore, it is assumed that the imposition of an interest rate ceiling does not affect the choice of the time horizon.

Formally, for a two period horizon, the borrower's credit application contains the solution to the problem of choosing c_1 and c_2 to maximize

(11) $W[c_1, c_2]$

subject to the intertemporal budget constraint

(12) $c_2 = w - d(1 + r)$,

where c_i is consumption in the ith period, w is the (assumed) constant wage received by the high risk borrower in each period, d is the amount of the loan ($d = c_1 - w$) , and r is the interest rate. It is assumed that the borrower's initial net worth is approximately zero, and that the lender imposes a zero terminal net worth position upon the borrower.[25] In high risk markets, lenders protect themselves by lending small amounts to many borrowers rather than large amounts to a few. Hence, lenders will not in general finance an anticipated accumulation of net worth.

It is assumed that W takes the form

(13) $W[c_1, c_2] = U[c_1] + \frac{1}{1 + \alpha(w)} U[c_2]$

where U is taken to be strictly concave, and $(1 + \alpha)$ is the rate of discount of second period utility, where $0 < \alpha < \infty$. Following in the Fisherian tradition,

it is assumed that individuals discount future utilities at a rate dependent

upon the size of their income streams. Fisher conjectured that the smaller is

disposable income, the greater is the weight given to present consumption vis-à-vis

future consumption in the individual's plan of consumption allocation over time.[26]

He stressed that this behavior has both a rational and an irrational aspect:

> This influence of poverty is partly rational, because of the
> importance, by supplying present needs, of keeping up the
> continuity of life and thus maintaining the ability to cope
> with the future; and partly irrational, because the pressure
> of present needs blinds a person to the needs of the future.
> [Fisher, 1930, p. 72]

In effect, the poorer an individual is, the more he adopts a "trust to luck for

the future" attitude, which is evidenced by a relatively high discount of future

consumption. In terms of the discount function used here, $\alpha'(w) < 0$. In the

extreme, if a person is facing immediate starvation, he no longer gives any

weight to second period consumption; i.e., $\lim_{w \to 0} \alpha(w) \to \infty$.

For any value of r, (12) and (13) can be solved to yield the optimality

condition:

$$(14) \qquad \frac{U'[c_1]}{U'[c_2]} = \frac{1 + r}{1 + \alpha} \quad .$$

For low income levels α is positively large, so that the right hand side of

(14) may be assumed to be less than one for any feasible interest rate. Hence,

due to the strict concavity of U, optimal values of consumption must be such

that $\hat{c}_1 > \hat{c}_2$. For most utility functions, the lower is the interest rate, the

greater will be the discrepancy between first and second period consumption for

a given level of w. The demand curve of the individual is found by evaluating

the optimal level of d for each interest rate.

To examine the welfare effects of usury legislation, a specific welfare

goal must be postulated. All welfare programs share the common purpose of

attempting to improve the "property" conditions of the poor. Some programs,

such as low-income housing projects and food stamp programs, are designed to

ensure that a family will achieve a minimal level of expenditures on certain specific items in the family's budget. Other programs, such as direct income supplements, are not aimed at any particular expenditure category, but instead attempt to provide a level of consumption that is at least as large as some consumption "floor", where the floor is deemed by the government to be the lowest level of consumption that is "socially" acceptable. Legislation imposing interest rate ceilings on consumption loans falls within the "general" category of welfare "programs" in that such legislation affects the overall level of consumption in various time periods. Hence, ceiling rate legislation should be appraised on the basis of the impact that it has on the time path of an individual's aggregate consumption path.

Before considering this effect, mention should be made of the rationale of any attempts by the government to induce individuals to attain a minimal level of consumption, and of the rationale of rate legislation in particular. Two distinct arguments are usually made for welfare programs, the first of which is essentially altruistic, and the second of which is essentially based on an externality concept. The altruism argument says that in this modern day of affluence, no one should be allowed to starve, suffer inadequate housing, etc. If an individual cannot afford certain necessities, they should be provided by the state. On the other hand, the externality argument is somewhat selfish. It holds that extreme poverty, in whatever form, imposes harmful "negative" externalities upon the non-improverished members of society. These externalities include a high incidence of crime, disease and all forms of social unrest. In cases where children are involved, the externalities are compounded because family problems due to poverty may exert an influence on a youngster's attitudes toward society that will be harbored into and throughout his adult life. It may be the case that it is less costly for society to enact welfare schemes to eliminate the source of the externalities then to attempt to nullify the externalities by

increasing expenditures on law and order, epidemic disease control, etc. If such is the case, then a powerful argument can be made for welfare programs exclusive of any element of altruism.

As regards interest rate ceilings as a welfare program, an impoverished individual might, in the absence of a legislated ceiling, apply for a consumption loan to attain an optimal path such as the path $(\hat{c}_1^a, \hat{c}_2^a)$ pictured in Figure 10, where the consumption level "m" designates the minimum acceptable level of consumption based on the adverse externalities argument of the preceding paragraph. Notice that this particular optimal path violates the welfare floor
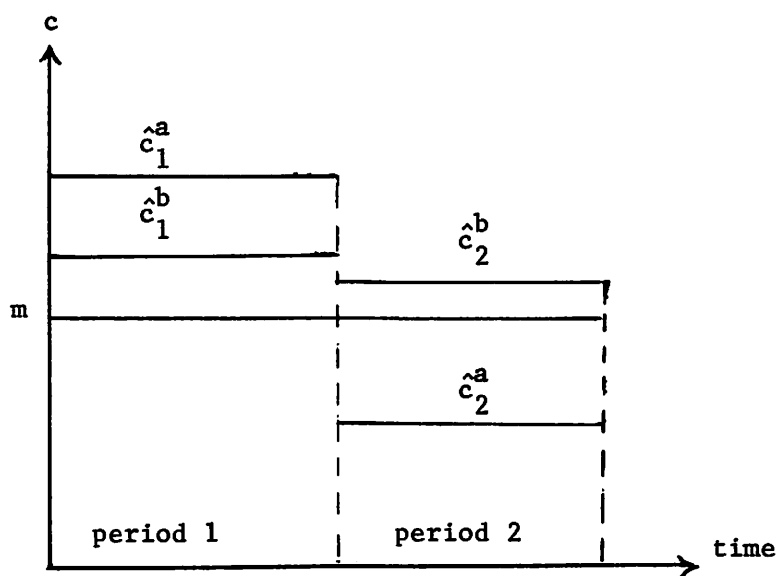

FIGURE 10

in the second period. Because of his poverty the individual has such a high rate of time preference that in making his consumption plan, he is willing to sacrifice a considerable amount of second period consumption for relatively high first period consumption. In addition to the social externalities forthcoming as a result of the actual level of consumption, externalities also occur because of the cause of low second period consumption.[27] The individual experiences a feeling of despair and frustration when he realizes that his "trust to luck for the future" attitude adopted at the beginning of the planning period has chained him to a consumption path leading him to his present (second period) dismal level of consumption. This latter cause of harmful externalities may be rooted in a difference between ex ante and ex post rates of time preference; i.e., the individual may

have weighted the utilities of each period differently if he had viewed the allocation problem at the horizon rather than at the beginning of the planning period. This does not imply, however, that a different consumption path would be chosen if the consumer faced the same identical planning problem a second time.

By imposing an interest rate ceiling, the government can alter the consumption path of borrowers in high risk markets, including those who anticipate violating the minimally acceptable standard of living, m. In general, the relatively impoverished are the greatest credit risks (i.e., are represented by the highest marginal cost curves), so that it can be assumed that those who violate the consumption floor are those who would be paying the highest rates in the unfettered market. Imposing a sufficiently low interest rate ceiling serves to reduce the amount of credit such borrowers can obtain, and hence reduces first period consumption and increases second period consumption. As illustrated in Figure 10, this change in the consumption path due to the ceiling imposition (from $(\hat{c}_1^a, \hat{c}_2^a)$ to $(\hat{c}_1^b, \hat{c}_2^b)$) may raise second period consumption by enough to satisfy the welfare goal.[28] Hence, the imposition of an interest rate ceiling is a rational and inexpensive way for society to attain its welfare objective for certain individuals.

A ceiling rate by itself cannot induce those high risk borrowers who earn a wage less than the acceptable minimum (i.e., $w < m$) to consume above the consumption floor. For such cases income supplements will have to be made. Such supplements not only provide more resources but also decrease the rate of time preference. This latter effect serves to "flatten" the consumption path and thus aid in attaining a socially acceptable standard of living. It should be noted that smaller income supplements are needed when an interest rate ceiling is in effect, because second period consumption is always greater if borrowing restraints are imposed in the first period. For example, the rationing of loanable funds reduces the number of instances where a family borrows money to incur an

expenditure (e.g., a vacation or a color TV set), and then applies for welfare

when the installment payments come due. Thus income supplement programs are less

costly if addministered in conjunction with interest rate ceiling legislation.

Finally, a word should be said about the loan-shark problem. One of

the most effective arguments raised against ceiling rates is that they force

marginal borrowers into the clutches of unscrupulous loan sharks. It is widely

believed that a large proportion of the illegal loan-sharking business is

controlled by the Cosa Nostra.[29] As such, loan-sharking provides capital which

is used to finance other illegal activities such as gambling operations, the supply

of illegal liquor and narcotics, labor racketeering, etc. Hence if it is true

that ceiling rate legislation drives some borrowers into the hands of organized

crime, then the negative externalities that result will have to be weighed

against the positive externalities that accrue due to the successful rationing

of other high risk borrowers.

In order to evaluate the merits of this argument, consider first the

situation if there were no legal ceiling. It might appear that there would then

exist a "price" in the legal market for loanable funds to borrowers of all risk

categories. However, there are two categories of loans for which there would be

no legal supply at any price. The first of these categories are loans which are

so risky that the lender will not advance funds at any rate. For example, suppose

that a lender, after reviewing a credit application, decides that there is a

99% probability that the prospective borrower will file a bankruptcy petition

before the principal and interest of the desired loan could be repaid. In such

a case, it is doubtful if the borrower could find a legal supply of funds at any

price. The second category is made up of loans which are being used for illegal

purposes (e.g., to pay a gambling debt or to cover an embezzlement). Under most

jurisdictions it is illegal for a lender to advance funds if he knows that the

money is being used for illegal purposes. Even if the prospective borrower lies about the intended use of funds, his lie will probably be discovered because it is standard practice for high risk lenders to check on the alleged use of the funds. The reason why such information is checked is because it is considered to be an important part of the information needed to evaluate the riskiness of a loan. Insofar as money used for illegal purposes presents a higher risk of default, the prospective borrower might not be able to secure a loan from a legitimate lender even if it were not illegal to lend money for illegal purposes.

To summarize the discussion of the above paragraph, even if a legal ceiling rate did not exist, there would still be a demand for loans from illegal sources. This raises the obvious question as to why illegal (i.e., non-licensed) lenders will advance funds to borrowers when legal lenders will not. Clearly the answer lies in the ability of illegal lenders to reduce the riskiness of the loan. They do so by extortion; i.e., physical punishment is threatened if interest and principal are not paid on time.[30] The legal lender, in contrast, can only rely upon threats of damaged credit ratings if the loan is unsecured. As some borrowers are impervious to such threats, the legal lender has no way of reducing the risk- iness of the loan, and as a consequence, may not lend for legal purposes to some borrowers at any price.

It was argued above that even if there did not exist a legal rate ceiling, there would still be a demand for illegal funds. But the crucial question remains: what is the effect of interest rate ceilings on the demand for illegal funds? The issue revolves upon what happens to those individuals who are rationed out of the loan market due to the imposition of the rate ceiling. Here it is important to point out that the change in the responsibilities assumed by the state for the welfare of its citizens has vitally affected the role of the illegal lender. Prior to the advent of the modern grants economy, a family with

inadequate resources to feed itself was forced to deal with a loan-shark to exist.
Today, however, the state has replaced the loan shark as the last echelon of defense
against starvation by virtue of its numerous welfare programs. No one need go
to a loan shark because of dire poverty. Even small businessmen with legitimate
business difficulties can in many instances obtain loans from a legitmate lender
with the government assuming the risk. This change in the role of government has
resulted in a reduced demand by legitimate borrowers for the services of loan
sharks. However, even though this demand has reduced over time, it must be larger
at lower levels of the ceiling at any point in time. Whether or not the graduated
ceilings specified by the UCCC are "optimal" in the sense that the excess of
positive externalities (created by the rationing effect) over the negative
externalities (created by the "loan-shark effect") is maximized at the UCCC ceilings
is a question that can only be answered by empirical research.[31] However, as
was demonstrated at the end of section II, no class of borrowers will receive
less funds under the UCCC than under the state small loan laws. Hence, even if
the UCCC does not present an "optimal" configuration, it is preferable to the
small loan laws.

<div align="center">IV</div>

The purpose of this paper is to provide a rational economic argument for
the imposition of interest rate ceilings in the market for high risk consumption
loans. Legislators, when arguing the pros and cons of interest rate ceilings,
typically refer to the "immorality" or "unconscionability" of high interest
rates. It was argued here that what legislators are really reacting to is the
problem of negative externalities arising from disparate consumption levels in
different time periods.

It should be noted that most markets which are price regulated are
monopolistic. In such cases, the economic argument for price interference is that

the market-determined price does not lead to a socially optimal level of output. Presumably, if these markets became more competitive, there would be no need for price interference.

However, in the market for high risk consumption loans, the purpose of price regulation is not to change the overall amount of credit extended, but to limit its availability to certain groups of borrowers. As was pointed out in section II, interest rate ceilings may or may not increase overall credit availability when compared with the amount forthcoming in the completely unfettered market.

It should also be noted that an increase in competition among lenders in the high risk market will not alleviate the problem. Increased competition may lower interest rates somewhat, but it will not decrease the ability of marginal credit risks to obtain consumer credit. Indeed, the opposite would probably occur. Hence it is not necessarily the case that a more competitive market for high risk consumption loans will lead to a higher level of social welfare, irregardless of the existence or heighth of a rate ceiling.

FOOTNOTES

[1]For a review of usury legislation to the present, see Benfield [1968] and the bibliography therein.

[2]For example, see Goudzwaard [1968A, 1968B, 1969], Kawaja [1967, 1969] and Shay [1970].

[3]For a recent highly sophisticated denunciation of interest rate ceilings see Kawaja [1967].

[4]A discussion of the extortion issue is deferred to section III of this paper.

[5]For evidence of this inelasticity, see Juster and Shay [1964]. Smith [1970] has provided contrary evidence, but he deals only with consumer loans extended by commercial banks.

[6]In particular see Kawaja [1967] and Johnson [1967A, 1967B] for evidence of disregard by economists of the externalities issue. It should be pointed out that the market for high risk loans is only one of many markets that the government has seen fit to "frustrate". The outlawing of prostitution, certain types of gambling, drug use and pornography are a few other examples. For all these activities, there exists a demand and supply, and buyers and sellers could willingly engage in contracts without coercion in the absence of prohibitive legislation. As in the case of interest rate ceilings such activities have been outlawed on the basis of purported externalities.

[7]Whether the market for high risk consumption loans conforms more to the monopoly model or to the perfectly competitive model is an issue of recent concern. (See the discussion in Kawaja [1967], and the references cited in his footnote 13, page 161. Also see the references referred to in Goudzwaard[1968A], footnote 6, page 179.) In this paper, as in Blitz and Long, the lender is viewed as a monopolist. Indeed, the higher is the risk category of the borrower, the more monopolistic will the market become, as low risk lenders drop out of contention for the borrower's business. For any given high risk category, the monopolistic element arises primarily from geographic considerations. Costs of credit information are greater if the lender is unfamiliar with the area that the borrower resides in, including knowledge of the borrower's employee, etc. Also, the cost of servicing a loan is higher, the greater the geographic distance between borrower and lender. This is particularly evident in the amount of time devoted to the collection of delinquent loans. Finally, there is an inherent suspicion on the part of high risk lenders of a loan applicant who resides geographically nearer to a different high risk lender. This increases the possibility that the borrower had been previously turned down for credit by the near high risk lender, and increases the amount of credit information needed by the distant lender. Hence the increased costs of servicing borrowers outside of the adjacent vicinity serves to enforce a "geographic monopoly" for the high risk lender.

[8]See the discussion in Kawaja [1967, pp. 162-163] and the references cited therein. Smith [1964] showed that the total cost per dollar of receivables for nine large consumer finance companies and ten large sales finance companies fell as the companies expanded during the eleven year period 1949-1959, indicating economies of scale.

[9]See Zwick [1967], Jacobs [1957] and Haberler [1942] for evidence of non-increasing costs of capital. Small single office firms face the same elastic supply of capital curve, but beyond a certain point a "kink" is reached and the supply curve becomes completely inelastic. This is because small firms are unable to tap other sources of credit such as the commercial paper market.

[10]A shift in (as contrasted with a movement along) the low risk supply of capital curve occasioned by an imposed ceiling rate is highly unlikely. The position of this curve depends upon the ease in which banks and other lenders of capital can attract funds. Unless the imposition of a ceiling increases investment opportunities elsewhere for, say, bank depositors, the supply of capital curve would not shift. One would be hard pressed to justify such an hypothesis.

[11]But on logical grounds alone, the Goudzwaard model is preferable. After all, why would the lender adjust the marginal revenue curves of borrowers unless the cost of loans in different risk categories differed? I.e., there exist separate marginal cost curves.

[12]It is highly unlikely that, at the first increment stage, a change in q_i would have effects of opposite signs on R and S. For example, an increase in q_i should not reduce the overall cost of labor. However, at the second increment stage, oppositely signed partial derivatives are feasible. Hence the crucial assumptions are that $|R_{ij}| \geq |S_{ij}|$ and $|R_{ii}| \geq |S_{ii}|$, where the subscripts denote partial differentiation.

[13]The figures used here refer to 1959, the latest year covered by the study. See Smith [1964, p. 78].

[14]The technically neutral technology also rules out the possibility of an increase in management skills (with a reduction of labor costs on the margin) as a result of dealing with borrowers of varied risk categories. Such an increase in experience should increase the productivity of a lending agent, in that he would be better able to appraise credit information.

[15]In Figure 3, r, the rate of interest, replaces p, the finance charge, in the formulation. This aids the exposition considerably. As there is a one-to-one correspondence between p and r for any given loan maturity, the formal analysis is unchanged.

[16]A third possibility is that $\phi_1 = 0$ for small values of q_2 and $\phi_2 = 0$ for small values of q_1. In such a case the equilibrium solution is $(q_1^*, q_2^*) = (0, 0)$. For the lender would not lend a dollar in market "2" until some funds had first been loaned in market "1", and he would not lend a dollar in market "1" until some funds had first been advanced in market "2".

[17]If the intersection had occurred on the q_1 axis, then loans would be advanced in the high risk market, but none in the low risk market. Such a result would occur only if the marginal revenue curves of the two markets were radically dissimilar.

[18]This behaviour is consistent with the observation that high risk lenders invest in safe assets such as government bills, for the lenders do not face a negatively sloped demand curve when dealing with the government.

[19]There may exist multiple equilibria in this case. However, if an interest rate ceiling imposition disturbs an initial stable equilibria at (q_1^*, q_2^*), the dynamics of the model indicate that the lender will gravitate to the quadrant I equilibrium if such an equilibrium exists.

[20]The interested reader can examine the case of increasing marginal capital costs. For the case of technical complementarity of loan categories, some of the advantages realized because of complementarities will be choked off. That is, prices for low risk borrowers would be slightly higher, and less funds would be advanced in all risk categories than would be the case if marginal capital costs were constant. But as discussed above, there is empirical evidence that the cost of capital curve is elastic over a wide range of credit volume. Furthermore, increasing costs of capital will give the same bias to the two models compared here, so that the contrasts in the prediction statements of the two models remain.

[21]At this writing, the UCCC has been adopted by the states of Oklahoma and Utah (1970), and Colorado, Idaho, Indiana and Wyoming (1971).

[22]In comparing the UCCC graduated (by size of loan) ceilings with the median ceilings imposed by the various states under existing state loan laws, Shay [1968] found that the UCCC rates are at least as high as the median ceilings of the states, and as the size of the loan increases, so does the difference between the UCCC ceiling and the median ceiling effective under the state loan laws.

[23]The work of Juster and Shay [1964] is an exception.

[24]See, for example, Fisher [1930] and Modigliani and Brumberg [1958].

[25]In reality, many high risk borrowers enter the market with a negative net worth, as many of the loans made by high risk lenders are for the purpose of debt consolidation. Incorporating this consideration into the analysis would not change the results.

[26]Fisher lists four characteristics that determine a person's time preference: the size, time shape, and degree of risk of the income stream, and the composition of the consumption bundle over time [Fisher, 1930, pp. 61-98]. Here emphasis is placed upon the "size" characteristic, which seems to be the most crucial variable in terms of the problem that is discussed.

[27]For an discussion of the hardships imposed due to overextension of credit to poor families, see Mrs. Dorothy McArton, pp. 89-95 in Consumer Credit In Canada. Mrs. McArton is a social worker.

[28]Recalling the prediction statements of the model presented in II, if the ceiling is set relatively high, not all high risk borrowers who would borrow at rates above the ceiling in its absence will experience rationing. Those who are slightly above the ceiling might find that they can borrow more. Hence the ceiling would have to be chosen at such a level that those who experience an increase in their ability to borrow will not violate the consumption "floor" due to their new borrowing ability.

[29]Cressey, in his monumental study of the Cosa Nostra, states that "... a large proportion of all contemporary usurers are members of Cosa Nostra or are backed by them." [1969, p. 77].

[30]Title II of the Consumer Credit Protection Act of 1968 makes extortionate credit transactions a federal crime. For discussion of this law, see Malcolm and Curtin [1968].

[31]The obstacles to acceptable empirical research in this area are staggering. For example, since borrowing from an unlicensed lender is illegal, it is doubtful if a loan-shark's customers would willingly admit their source of funds.

BIBLIOGRAPHY

Benfield, Marion. "Money, Mortgages and Migraine - The Usury Headache." Case Western Reserve Law Review, Vol. 19 (1968), 819-899.

Bentham, Jeremy. The Theory of Legislation. London, 1786.

Blitz, Rudolph C. and Long, Millard F. "The Economics of Usury Regulation." Journal of Political Economy, Vol. 73, (1965), 608-619.

Cressey, Donald R. Theft of the Nation. New York: Harper and Row, 1969.

Fisher, Irving. The Theory of Interest. New York: Macmillan Company, 1930.

Goudzwaard, Maurice B. "Price Ceilings and Credit Rationing." Journal of Finance, (March, 1968), 177-85.

_____. "Rate Ceilings, Loan Turndowns, and Credit Opportunity." Western Economic Journal, (December, 1968), 404-12.

_____. "Consumer Credit Charges and Credit Availability." Southern Economic Journal, (January, 1969), 214-23.

_____. "Discussion." [reply to Robert P. Shay] Journal of Finance. Vol. 25 (1970), 526-28.

Haberler, Gottfried. Consumer Installment Credit and Economic Fluctuations. Studies in Consumer Installment Financing, Number 9. New York: National Bureau of Economic Research, 1942.

Jacobs, Donald P. "Sources and Costs of Funds of Large Sales Finance Companies," in The Problem of Consumer Credit Regulation, Vol. 1: The Position of Consumer Credit in the Economy and Its Bearing on the Problem of Regulation. A Conference of the National Bureau of Economic Research. Washington: United States Government Printing Office, 1957.

Johnson, Robert W. "Regulation of Finance Charges on Consumer Installment Loans." Michigan Law Review, Vol. 66 (1967)-1968), 81-114.

_____. "Conclusions For Regulation." The Consumer Finance Industry: Its Costs and Regulation. Edited by Chapman and Shay. New York: Columbia University Press, 1967.

Juster, Thomas F., and Shay, Robert P. Consumer Sensitivity to Finance Rates: An Empirical and Analytical Investigation." Occasional Paper no. 88, National Bureau of Economic Research, 1964.

Kawaja, Michael. "The Economics of Statutory Ceilings on Consumer Credit Charges." Western Economic Journal, Vol. V, no. 2 (1967), 157-67.

Bibliography

_____. "The Economic Effects of Regulation." Southern Economic
   Journal, (January, 1969), 231-38.

Keynes, John Maynard. The General Theory of Employment, Interest and Money.
   New York: Harcourt, Brace and Co., 1936.

Malcolm, Walter D., and Curtin, John J. Jr. "The New Federal Attack on the Loan
   Shark Problem." Law and Contemporary Problems, Vol. 33, (Autumn, 1968),
   765-85.

Modigliani, F., and Brumberg, R. "Utility Analysis and the Consumption Function:
   An Interpretation of Cross-Section Data." Post Keynesian Economics.
   Edited by Kenneth Kurihara. New Brunswick: Rutgers University Press,
   1954.

Shay, Robert P. "The Impact of the Uniform Consumer Credit Code Upon the Market
   For Consumer Installment Loans." Law and Contemporary Problems, Vol. 33
   (Autumn, 1968), 752-64.

_____. "Factors Affecting Price, Volume and Credit Risk in the
   Consumer Finance Industry." Journal of Finance, Vol. 25 (1970), 503-15.

Smith, Adam. The Wealth of Nations. New York: The Modern Library, 1937.

Smith, Paul F. Consumer Credit Cost, 1949-1959. National Bureau of Economic
   Research, Princeton University Press, Princeton, New Jersey, 1964.

_____. "Pricing Policies on Consumer Loans at Commercial Banks."
   Journal of Finance, Vol. 25 (1970), 517-25.

Ziegel, Jacob S., and Olley, R.E. ed. Consumer Credit in Canada. The University
   of Saskatchewan, Saskatoon, Canada, 1966.

Zwick, Jack. "Factors Affecting the Cost of Borrowing by Consumer Finance Companies."
   The Consumer Finance Industry: Its Costs and Regulation. Edited by
   Chapman and Shay, Columbia University Press, 1967.