CONSUMER CREDIT IN CANADA*

by

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I

INTRODUCTION

The past thirty years have witnessed enormous growth of consumer credit. As can be seen from Table 1, total consumer debt increased from about 1.2 billion dollars in 1950 to about 45 billion dollars in 1980, an average growth rate of about 12 per cent per annum. This growth rate is significantly greater than the growth rate of consumers' personal income during the period, which was about 9 per cent. Thus, the ratio of consumer debt to income increased significantly over time. This tendency has shown some deceleration in recent years with consumer credit rising at about 13.4 per cent per annum, relative to consumer income, which rose at about 12 per cent per annum between 1970 and 1980. However, consumer debt to income ratio is still rising. As well, there appears to be an increase in the proportion of consumers who held consumer debt.[1] For example, 53.2 per cent of all family units in Canada held consumer debt in 1977 relative to 50.5 per cent in 1970. Thus, the importance of consumer debt in the economy, as a source for consumer durables spending and in the allocation of consumption over time for individual consumers is clearly rising.

This increased burden of debt lead to increased concern about the operation of the market for consumer credit and potential problems due to overindebtedness of consumers both at the micro and macro level. As well, there have been changes in the legal conditions in recent years. Interest rate ceilings were generally removed and the regulation of lenders has changed. In particular, the removal of restrictions on chartered banks participation in the market has changed the nature of the market considerably during the 70's.

Table 1

CONSUMER CREDIT BALANCES OUTSTANDING:

SELECTED HOLDERS 1950-1980

(billions of $)

Year	Low Cost Creditors	Higher Cost Creditors	Total
1950	.47	.75	1.22
1960	1.64	2.38	2
1970	6.94	4.74	11.68
1980	38.66	6.34	45.00

Low Cost Creditors: Banks, Credit Unions, Trust and Mortgage Companies, Quebec Savings Banks and Life Insurance Companies.

High Cost Creditors: Sales Finance and Consumer Loan Companies, Department Stores, other retailers, other credit card issuers and Public Utility Companies.

Source: Table 5, Consumer Credit, Statistics Canada, 61-004 and Bank of Canada Review.

There have also been major changes in the field of consumer protection. Of major significance are the disclosure rules instituted provincially during the 70's and federally for banks in 1980. Recently, the Department of Consumer and Corporate Affairs drafted the borrowers' and depositors' protection bill to deal with many issues of consumer and depositor protection. Similarly, Ontario and more recently, Saskatchewan Law Reform Commissions have reported on proposed consumer protection legislation in the consumer credit field. Thus, there is clearly concern regarding the efficiency of operations of the market and particularly, problems of consumer protection. These are likely to become more serious as the extremely high interest rates prevailing recently, coupled with the severe recession, caused significant increases in

number of repossessions and personal bankruptcy.

The picture in the homeowners' mortgage market is similar. A significant growth in the proportion of families who own their homes has occurred over time. For example, this proportion has increased from 55 per cent in 1970 to 59.6 per cent in 1977.[2] Moreover, this increase was accompanied by a significant change in the age composition of homeowners. The percentage of families with heads aged less than 45 years, who owned their homes, increased from 39.2 per cent in 1970 to 45.1 per cent in 1977, while the proportion of those with heads aged over 45 years who owned their own homes, fell from 60.8 to 54.9 per cent during the corresponding period.[3] As younger families are likely to have lower net asset to income ratios, the proportion of homeowners having mortgages has increased during the period by about 15 per cent.

The very large increase in the value of housing over the past decade has also caused mortgage debt to increase in relation to income of owners with mortgages, from 79.1 per cent in 1970 to 81.7 per cent in 1977.[4] These trends have accelerated recently with the very large increase in the price of housing during 1980-81. As well, enormous increases in mortgage rates occurred in the past 2 years, from about 10 1/2 per cent in early 1978 to over 20 per cent in the latter part of 1981.[5]

The combined growth of the interest rate and the value of mortgages relative to income, increased enormously the ratio of interest and debt repayments relative to income, causing a severe cash flow problem to consumers, known as the tilt problem and increasing the number of defaults. Thus, while in the long run homeownership has been very profitable in recent years, due to the interaction of the tax system with inflation, the erratic pace of house price inflation, which appears to be negatively correlated with erratic

nominal interest rate movements, has caused severe short run problems in the aftermath of house price explosions in 1973-74 and 1981-82. Owner-occupied houses are one of the main assets of Canadian families, particularly those in the middle income and low age groups. In inflationary times, owner-occupied homes have been a major vehicle of protection against inflation for those who own them. Thus, accessibility to homeownership via mortgage financing is of prime importance. At the same time, we must bear in mind that risk and leverage considerations are important. Thus, policies to increase accessibility must be evaluated with care in order not to cause difficulties, should economic conditions change, as was the case for the AHOP program.

The purpose of this study is to analyze some aspects of the consumer credit market in Canada, in order to assess the adequacy of access to credit for consumers in general, and special groups (low income, young, etc.) in particular. To the extent that our state of knowledge permits, we shall assess government regulation and programs in the field. Alternatively, we shall point out the gaps in our knowledge and suggest further research necessary to close these gaps. Our analysis concentrates on risk and informational aspects of consumer credit markets, in order to evaluate their effects on market efficiency and credit availability.

In Chapter 2, we examine the role of consumer credit in the context of consumption, investment and portfolio decisions. In particular, we evaluate the problems which arise due to interdependence between consumption and portfolio considerations due to the interaction of the tax system and inflation and due to market imperfections, which limit rental markets and prevent individual diversification. These tax and market imperfections are shown to have profound influences on consumer welfare, distorting intertemporal consumption

and investment decisions and imposing significant risks on borrowers and lenders alike. We distinguish between mortgages and other consumer credit. In principle, the analysis of both follows the same line of reasoning and should yield similar conclusions. However, indivisibilities, the length of the loan period and the size of mortgage borrowing relative to income and other assets, necessitate separate analysis for mortgages. Chapter 3 analyzes risk and informational problems on the supply side of the market. It attempts to evaluate the role of such informational problems in explaining two phenomena which appear to be prevalent in credit markets: credit rationing and market segmentation. As well, we examine the evidence on the quantitative importance of these phenomena in Canadian credit markets and the degree to which the evidence supports the theoretical explanations. This evidence is based mostly on studies by CROP (1977, 1978) conducted for the Department of Consumer and Corporate affairs. Chapter 4 evaluates the informational problems on the consumer's side. The degree of consumer knowledge about credit is evaluated in the light of evidence from Canada and the U.S. The role of consumer ignorance as an explanation for market segmentation is investigated and suggestions for further research are made.

II

THE ROLE OF CREDIT IN CONSUMER FINANCE

2.1 Lifecycle Income and Consumption Requirements

It is well known, both in the literature of economics and the consumers affairs,[6] that income and consumption requirements do not necessarily coincide at all times. In particular, age affects the income profile. Young individuals spend varied amounts of time in education prior to work. This education, while conferring consumption benefits on the individual in question, mainly constitutes an investment in human capital, which enables individuals to increase their future income from work due to better qualifications. While such investment in human capital may occur at different times throughout the individual's life, the main accumulation occurs in the early years. This is because the cost of education, in the form of foregone income, are lowest for untrained and inexperienced younger individuals, while the benefits, in the form of higher income in the future, extend over a longer period than if education were undertaken in mid-life. During these years of investment in education, consumption must be supported by parents, by the government or by borrowing. Note that while such borrowing is for the purposes of investment, it is generally classified as consumer loans. This type of misclassification is quite common in general, as many consumer loans are made for the purpose of investment.

Upon entry into the labour force, the individual may be burdened by some debt and possess a major asset in the form of human capital. Typically, earnings profiles show gradual increases to middle age, then a flattening until retirement and significant reduction after retirement.[7] While the precise

nature of this cycle varies considerably among professions and individuals, the same general pattern is widely followed. In addition to life cycle patterns of income over time, individual incomes tend to vary from time to time due to changes in economic conditions, health and marital status changes, employment changes, etc.

It is clear that consumption expenditures do not vary over time to the same extent as income variations. This is because individuals take advantage of the capital market to smooth out their pattern of consumption. Economic theory suggests that consumers attempt to maximize their expected utility over their whole lifetime. Such maximization implies that the marginal utility of a dollar spent on consumption today should be equal to the marginal utility of a dollar spent on consumption tomorrow, discounted by the relevant interest rate. The pattern of implied consumption is thus completely independent of the timing of income between today and tomorrow and must depend only on the discounted present value of the relevant stream of income. If one assumes no changes in tastes or requirements over time, this leads to a consumption pattern which depends on permanent income or lifetime income only,[8] and disregards its timing.

Discrepancies between consumption and income thus generate savings (dissavings), which lead to asset accumulation (borrowing) to maintain the desired pattern of consumption. This, of course, requires perfect capital markets, i.e. the ability to lend or borrow indefinitely at a given rate of interest. Although capital markets are clearly imperfect, the general pattern of consumption and asset accumulation roughly conforms to the model. Consumption is relatively smooth over lifetime and assets, except for human capital, are negative during early working years with subsequent accumulation of assets in

later years.

This simplified picture must be complicated by two important factors. First, consumption requirements are uneven over the lifetime and exhibit specific cycles associated with age and family size and structure, and second, capital markets are far from perfect, forcing closer correspondence between income, assets and consumption.

The typical consumption lifecycle consists of several stages. Following Stampfl (1978) we may divide it into six categories. First, single adult, during which consumption patterns involve rented accomodation and high consumption of current services. Durable good demand is mostly confined to car, basic home furnishings and electronic equipment. Some saving or debt repayment may take place during this period. A second stage involves newly married couples without children. Here, typically, both partners work and consequently have a high level of income. Accumulation of assets begins to take place, possibly through investment in housing, furnishing and some appliances. The arrival of children is likely to increase drastically consumption requirements, particularly for the services of housing, furnishings and consumer applicances, while frequently reducing the couples' income, because of the departure of the wife from the labour force. During the beginning of this period, the demand for consumer durables may rise significantly, particularly for families who have purchased houses. Repayment of mortgage and thus accumulation of equity in a house is likely to take place during this period. As children grow, frequently wives return to the labour force increasing the family income to keep pace with increased expenditure for education, housing and durable services. Once children have left home, consumption requirements for space and consumer durables fall drastically. As well, assets are likely to

be relatively high and therefore credit needs are likely to be low. Finally, upon retirement, income drops, possibly with a concomitant decrease in consumption. Owners of housing are likely to have very low, if any, mortgages and therefore the ratio of housing services and assets is high relative to consumption needs and other income.

2.2 Assets and Liability Structure

From the previous discussion it is obvious that when the net value of assets is negative, that is in the early years of the life cycle, consumers must borrow in order to finance the excess of consumption over income. This is clearly the case, as average consumer debt tends to fall significantly with age for any given level of income.[9] However, this relation appears to persist past the point at which the net value of assets becomes positive. It is therefore clear that credit is used as part of an individual's portfolio, even when his net worth is positive.[10]

If capital and rental markets were perfect, economic theory suggests that the composition of assets is independent of consumption. Asset structure is determined by consideration of return and risk, with investors trading higher expected returns against higher risk. Thus, borrowing must be viewed as a decision involving tradeoff between increased risk and return via the leverage provided by using borrowed funds for investment purposes. However, capital markets are imperfect, leading to interdependence between the structure of most holdings and consumption and hence, between current income, credit and consumption.

There are three important reasons for the imperfection of capital and rental markets. First, human capital is the main asset of most people, particularly at younger ages. Because of the nature of human capital, the young are forced to invest most of their resources in it to the exclusion of other investments. Thus, the young are forced to assume a high degree of risk, which they are unable to reduce by diversification, because human capital is not tradeable except in conjunction with labour services. Moreover, because of the non-saleability of human capital, it generally makes a poor colateral. This is reinforced by legal limitations on creditor remedies with respect to income from human capital. Thus, the central position of human capital in the consumer's portfolio, particularly for young consumers, causes additional difficulties in the credit market raising the cost of borrowing or limiting the amount borrowed or both.

A second problem, which causes an interdependence between consumption and asset composition, arises due to imperfect rental markets. Rental housing is generally limited to relatively large complexes, such as apartments and townhouses, which are not always appropriate for the consumers' requirements, particularly in the case of families with children. Single family homes are rarely available on the rental market. Similarly, for many consumer durables rental markets are very imperfect or non-existent. Where rentals for consumer durables such as cars, appliances and home furnishings are available, the long run costs of rental far exceed those of ownership. The reason for this market imperfection is due to the common informational problems of moral hazard and adverse selection. Moral hazard arises in these situations because of the inability of owners to monitor the degree of use or abuse of the relevant items. Thus, for example, in housing where units are clustered together in a small geographical area and where common facilities can be maintained by a

caretaker, such as in apartment houses, this problem is not too severe. Moreover, serious abuse is likely to be noticed by neighbours and brought to the attention of the owner because such abuse usually imposes costs on the neighbours. Therefore, in these situations, rental markets appear prevalent. However, in the case of single family homes, in which maintenance must be carried out by the occupants and monitoring by neighbours less likely because of greater geographical and physical separation, which reduce the externalities inflicted on neighbours due to abuse by the occupier, rental markets are uncommon. Similarly, for consumer appliances and furnishing, it is not always easy to distinguish hard use from abuse and, in any case, assigning liability once an appliance has passed though several users is extremely difficult. Because of these difficulties in monitoring, the incentive of users to maintain rented items properly and to avoid abusing them is severely reduced, creating a moral hazard problem.

Similarly, inability to distinguish between heavy and light users, of most appliances leads to an adverse selection problem. As heavy users have a higher utility from the use of such items than light users, they would be prepared to pay a higher price for rental. However, the costs of maintaining and the depreciation of such items are likely to be positively related to the degree of use. If owners can not distinguish between heavy and light users, they must charge a uniform price for all. Such a price is likely to attract more heavy users than light users which tends to raise the costs for all. Light users however, would therefore find purchase of the relevant item cheaper than rental as they are able to benefit from low maintenance costs due to their low use. As the rental market attracts more heavy users and repels light users, the costs of rental must rise, accelerating the process of adverse selection. In this fashion, rental markets become confined to a small

segments of the market or vanish altogether.

The unavailability of rental markets forces consumers to purchase some forms of housing and many durable goods. In this fashion, the nature of consumption affects the composition of assets, removing the theoretical independence of consumption and portfolio decisions.

Finally, income taxes seriously distort consumption and work decisions as well as asset portfolio decisions. In particular, because monetary income from assets is taxable while the non-monetary consumption benefits of assets are not, direct ownership of assets which yield consumer services is encouraged. Thus, even if rental markets existed for many consumer durable goods and their rates were competitive, it would pay to own rather than rent them. This is the case, as long as the consumer has some equity to invest in the relevant item. Because the consumer must invest at least some of his own equity in any durable good, the return to this equity is an after tax return relative to the taxable returns from income yielding assets. The differential between these rates of return depends on the consumer's tax bracket and hence, is likely much higher for the rich than for the poor. This reinforces the income effect, which causes the rich to consume greater amounts of the services of durable goods.

The existence of inflation is likely to exacerbate the distortive effects of taxes. Because taxes are levied on nominal interest streams and capital gains due to inflation, rather than on their real component, effective tax rates on monetary income streams rise considerably with inflation. Therefore the advantage of non-monetary services of a variety of durables is increased. Moreover, the exemption of owner-occupied homes from capital gains taxes raises the real value of such gains and increases their attractiveness.

Income taxes also operate so as to favour home production of consumables relative to their production for market. Thus we observe the large increase in do-it-yourself maintenance and improvement of residential properties, which further increases the attractiveness of home-ownership. The combination of all these effects is to increase the consumption and ownership of housing and consumer durables relative to other consumer goods.

Because ownership of human capital as well as of homes and consumer durables can not generally be shared with others, consumers are forced into a risky pattern of asset ownership. Particularly in the early years, such a pattern of ownership is accompanied by very high leverage in the form of mortgage and consumer finance. It is this inability to diversify and the high degree of risk, which cause many of the problems associated with consumer finance.[11]

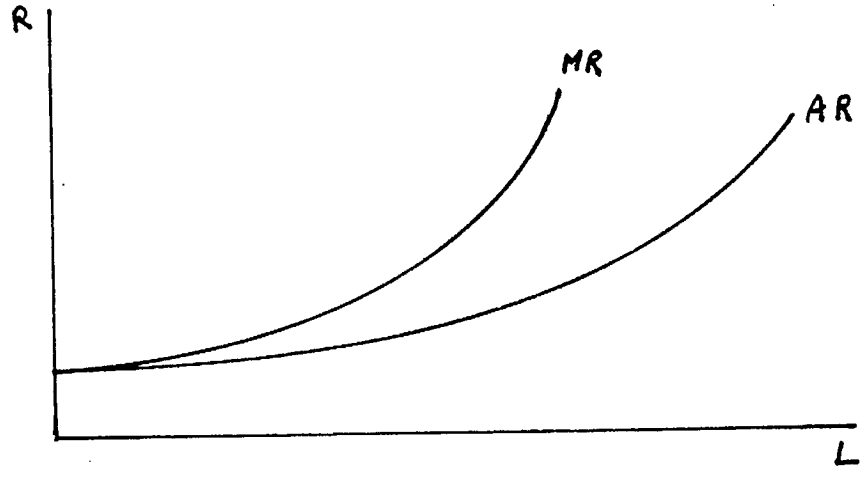
2.3 Interdependence Between Consumption and Assets

As stressed before, the value of owning housing and consumer durables depends on three elements. First, the service yield of housing and durable goods. Second, the value of net assets available to the individual. And finally, the individual's income and therefore marginal tax rate.

While the second and third of these are likely to be positively correlated with age, at least until middle age, the first depends on the lifecycle of consumption requirements which frequently indicates the highest service yields at relatively young ages during family formation and the raising of children. Thus, the demand for consumer durables and housing may reach high levels even when assets and possibly income are relatively low.

Because of the low level of assets, except for human capital during periods of high consumer demand for housing and durables, credit must be extensively used at these stages. However, because of the relatively low diversification of assets acquired and the low amount of own collateral, such lending is possibly risky for the lending institutions. As, at this stage, leverage (the ratio of assets to net worth) is very high, increases in borrowing are associated with significant increases in leverage and therefore, of risk. As a consequence, the cost of increased borrowing must rise with the degree of leverage in order to compensate the lenders for the increased risk of default. Therefore, the marginal costs of increased leverage may be considerably higher than the measured interest rate. To see this consider figure I. The curve AR is the average interest rate paid at any level of leverage. The marginal cost of additional borrowing via increased leverage is shown by the curve MR, where MR = AR (1 + 1/e) and e is the elasticity of AR with respect to leverage.

figure I.



As implicit rates of return to marginal expenditure on consumer durables is equated to marginal credit cost at the optimum, such high marginal costs may severely restrict consumption and ownership of housing and goods. Frequently, borrowing is limited by effective quantity rationing which generally

has the same effect.

Evidence on the very high rates of discount implicit in consumer durable decisions is available from the study by Hausman (1979), who derived implicit rate of return for energy saving features of air conditioners in the U.S. His analysis showed that, not only were such implicit rates far in excess of the going interest rate for consumer loans or even for credit cards, but that they were significantly negatively correlated with income, suggesting very much higher average rates for lower income individuals.[12] Similarly, Dunkelberg and Stephenson (1974), showed a rather high yield for consumer durables.[13]

It is thus clear that credit is not only used to optimize consumption over time when assets are insufficient to bridge the difference between desired consumption and temporarily low income, but is mainly used to take advantage of high yields from asset ownership during periods when net resources are insufficient to purchase the desired housing and consumer durable goods, at times which coincide with the consumption life cycle.

2.4 Credit Availability as an Impediment to Optimization

As we have seen, credit availability and/or marginal credit cost may severely limit the ability of individuals to benefit from ownership of consumer durables or housing and may force them to rely on rental markets instead. The imperfection of such rental markets puts such individuals at a considerable disadvantage relative to those who are able to benefit from ownership. This is especially so with respect to housing investment, which requires large amounts and is therefore foreclosed for a significant proportion of individuals, particularly the young and the poor. Thus, for example, while about 60 per cent of all families in 1977 owned their own home, only 45 per cent of

families whose heads were under 45 years of age, and less than 40 per cent of those whose heads were around age 35 owned their own houses.[14] Similarly, home ownership rises with income, from about 32 per cent for those earning under $3,000 in 1977, to over 90 per cent for those earning over $35,000.[15] A similar picture, though possibly not as extreme, is apparent for other consumer debts. For example, of families earning less than $5,000 a year in 1977 and whose head was aged 34 years or under, almost 60 per cent had no consumer debt at all, while the proportion of families without consumer debt declined to about 20 per cent of those with incomes above $20,000. For the next age group, between 35 and 44 years of age, the number of families without debt in every income group rises, but the proportion without debt for the lowest income groups, below $7,000 a year, remains approximately unchanged.[16] This seems to indicate some credit rationing for the lowest income young group. A significant proportion of individuals and families in the lower income groups without consumer credit is indicative of some credit rationing for these groups.

However, the evidence is inconclusive because, as can be seen from the CROP results, a signiciant proportion of consumers do not approve of consumer credit and therefore, may simply ration themselves out of the market. This attitude seems to be particularly prevalent among lower income consumers. Thus, the high proportion without consumer debt among these consumers may be a result of their reluctance to utilize consumer credit, rather than due to rationing on the part of lenders. Further support for this hypothesis may be derived from the observation that the average debt for consumers who did borrow, grows very little with income. It therefore appears, that low income young consumers were able to borrow almost as much as their more affluent counterparts. A similar pattern may be observed for the group aged between 35

and 44 years of age.[17] These conclusions are reinforced by the CROP study which suggests that most consumers do not feel severely rationed in terms of consumer credit, but feel rationed in tems of mortgage credit.[18] It therefore appears, that consumer credit facilitates the acquisition of consumer durables, except perhaps, for those consumers who have a negative attitude towards indebtedness.

However, the barriers to home acquisition appear to be much more significant. This phenomenon has important distributional effects because real assets, in particular single family homes, have appreciated markedly relative to paper assets over the past decade. Moreover, because inflation was largely unanticipated until recently, interest rates did not reflect price appreciation. The combined effect of gains to owners of real estate due to increases in real estate prices, coupled with their gain as borrowers under unanticipated inflation, significantly changed wealth distribution in favour of home owners. As home owners tend to be relatively older, this represents a significant redistribution from the young to the old.

Due to the central role of housing in the composition of consumer assets and debts, it is important to investigate the effects of mortgage forms and limitations under inflationary conditions. As suggested before, the favourable tax treatment of income from housing induces increased demand for house ownership. We shall analyze these effects in the following section.

2.5 Mortgages, Inflation and Taxes

The tax system treats owner occupied houses favourably in two respects. First, the services yielded by owner occupied houses are tax exempt. Second, capital gains on owner occupied houses are also tax exempt. The distributional effects of these tax exemptions are quite significant. Because mortgage interest payments are not tax deductible there is an incentive to minimize mortgage borrowings and maximize own equity in the house. This is because the effective exemption from taxes applies only to the equity portion of the house. It is quite obvious that this plicy favours those who are able to reduce their mortgages and invest their own resources in their own houses. Principally these are likely to be the older and richer segments of the population. The young and those whose principle equity resides in their human capital therefore benefit less from this tax break. The poor, who may be rationed out altogether from the mortgage market, may be entirely foreclosed from benefits of this tax exemption.

Moreover, the value of such tax exemption is proportional to the individual's marginal tax rate. Thus, the maximum benefits accrue to the rich and to the owners of non-human capital, who are in a position to rearrange their capital so as to maximize their benefits.

The existence of inflation does not necessarily increase the benefits from the tax break on investment in principal residences. However, because the tax system is not properly indexed with respect to other investments it increases the tax burden considerably on most other investments and therefore increases the relative attractiveness of investment in principal residences. Therefore, it increases the incentives for overinvestment in owner occupied housing. Moreover, the relative advantage of equity rather than mortgage

financing increases drastically. As well, accelerated inflation causes severe cash flow problems and hence increased rationing and reduced accessibility.

To illustrate these problems consider the demand for housing and mortgages by an individual who owns more than enough net assets to purchase 100 per cent equity in his principal residence. In the absence of inflation, the individual's demand for housing is determined by the marginal condition

$$M + C = r(1-t) \qquad (1)$$

where M is the marginal real return of the services yielded by the house; C is real rate of capital gains (in excess of inflation); r is the real interest rate; and t is the relevant marginal tax rate.

Whether or not a mortgage will be taken, depends on considerations of investment and diversification. Mortgage borrowing under these circumstances will be used to finance other investments and will be thus tax deductible. Whether a mortgage or other forms of borrowing will be used, depends on the riskiness of the other investments and the need for colateral. Thus, while mortgage demand may be related to housing demand due to collateral requirements, its purpose is quite different from ordinary mortgage demand.

The demand for housing by an individual with a limited amount of equity is determined by the marginal condition[19]

$$M + C = r \qquad (2)$$

Because the cost of funds is gross of tax at the margin, there is no marginal subsidy to home ownership. Hence, the tax subsidy on investment in owner occupied housing has only an income effect and not a substitution effect under these circumstances. While the size of the subsidy affects the individual's real income, it does not distort his consumption decisions at the margin. Hence, demand for house ownership by low equity consumers is relatively

unaffected by the tax subsidy. However, the tax subsidy still favours homeownership rather than rentals because it yields inframarginal gains due to nontaxability of the equity financed portion of housing services.

The situation is quie different if the consumer cannot obtain a sufficiently large mortgage to finance the desired stock of housing. This situation most likely arises in the absence of a sufficient downpayment. Under these conditions, the size and cost of the mortgage are likely to be functions of the downpayment available. Hence, the marginal cost of the mortgage is a weighted average of the gross interest rate and the alternative costs, in terms of foregone consumption, of generating the incremental downpayment required per unit of mortgage. These implicit incremental costs may be sufficiently high to elininate the income effects of the subsidy and induce these consumers to substitute rental for home-ownership.[20] Evidence about implicit rates of discount in the purchase of durables (see Hausman 1979) suggests that these implicit costs are exceedingly high. Thus the weighted borrowing costs exceed the rate of interest by a wide margin, particularly for the poor.

The existence of inflation introduces two complications. First, inflationary gains on other assets are taxed as income in the case of bonds and capital gains in the case of assets other than principle residences. Thus, alternative rates of return net of tax fall in proportion to the tax rate and the rate of inflation. Second, the cash flow pattern of alternative investment forms changes. In particular, the cash flow on bonds increases to include anticipated inflation in the nominal interest rate. Thus gross interest payments and net interest receipts rise proportionately with the rate of inflation. However, capital gains, due to inflation or otherwise, are not reflected in cash flows until the house is sold. Thus, anticipated inflation

may cause serious distortions in cash flows in addition to its real effect through the tax nonneutrality.

For a consumer with large equity, equilibrium housing demand is determined by equation 3.

$$M + C = r(1-t) - tp \qquad (3)$$

where p is the anticipated rate of inflation, assumed to be realized. As the real cost of funds falls by tp inflation will lead to increased housing demand due to the substitution effect. However, the inflation tax imposed on nonhuman capital, depresses real income and may partly counteract this effect. There is no change in the incentive to substitute mortgage borrowing for other kinds of borrowing relative to the no inflation case. However, the increased housing equity is likely to lead to a possible increase in mortgage borrowing relative to other borrowing against the increased value of the stock of housing.[21]

In contast to the case of consumers with large equity, inflation does not change the real marginal conditions of nonrationed lower equity house owners. Equation 2 still reflects the real marginal condition for housing demand. However, nominal interest costs rise by the rate of anticipated inflation while the capital gains due to inflation are not realized until the house is sold. The inflation component of nominal interest rates can be thought of as an accelerated payment of the principle because the real value of the mortgage decreases over time by the rate of inflation. If inflation was accurately forecast and incorporated in the nominal interest rate, the inflation component of the nominal interest rate would be equivalent to the rate of reduction in the real mortgage. This problem is called a tilt problem because it changes the time profile of real mortgage payments without changing the present value of the mortgage.[22]

Note, that this is not due to the rate of inflation but rather due to a change in the rate of inflation. This is because as time goes on, income rises to keep pace with inflation while the rate of interest and hence, the level of payments remains unchanged if inflationary expectations are stable. Thus, the ratio of interest payments to income jumps abruptly when inflationary expectations change and then declines gradually as income rises in line with prices. The existence of fixed interest - longer term mortgages ameliorates this problem somewhat, because not all mortgages become due for renewal at the time of such changes in the interest rate. Thus, at least some holders of existing mortgages are given time to adjust to new and higher inflation rates. However, the existence of fixed rate mortgages in the presence of changing current nominal interest rates imposes capital losses or gains on the respective parties and hence increases the risk. This is particularly true if the lenders are depository institutions which have to pay current nominal rates to obtain funds, when their incomes are determined according to long term contracts. This has clearly been a serious problem recently for trust companies and credit unions in Canada.

The tilt problem tends to exacerbate the problems of low equity prospective home owners. This is because in addition to mortgage rationing in relation to downpayments, increased inflationary expectations generate increased cash flow requirements, which impose additional constraints on the size of mortgages. In order to reduce payments to income ratios to acceptable levels, drastic increases in the size of downpayments are necessary. Thus, increases in anticipated inflation seriously reduce access of new first time buyers to homeownership.

The problems enumerated above arose because mortgage contracts have been established during periods of relatively stable prices and therefore have been slow to adjust to an inflationary environment. Thus, until very recently, most contracts were made for periods of five years or more, with level payments plans which involve a blend of higher interest payments and lower rates of repayment in the early years and lower interest payments with higher debt retirement in the latter years of the contract.

In principle, the solution to the tilt problem, at least for mortgage renewals, is straightforward. Separate the real and the nominal components of interest rates with the nominal component added to the principal so as to keep the real value of the debt constant. The repayment schedule can then be arranged to lead to the desired rate of real debt repayment. This will involve increasing nominal payments over time. However, as incomes rise at the rate of inflation, the ratio of such payments to income need not increase. This can be achieved by adopting a real basis for the mortgage contract, or by separate arrangements for increased borrowing by the mortgagor to finance the accelerated repayment due to nominal interest rate increases. Alternatively, the mortgagee can automatically arrange to reduce interest payments and add the differential to the mortgage balance. It is clear that some adjustments along these lines have in fact occurred in recent years. As nominal interest rates and the value of housing equity have increased in recent years, some homeowners have increased the face value of their mortgages upon renewal, in order to prevent forced savings due to inflation. While there is little quantitative evidence of the extent and magnitude of such changes in Canada, there is some evidence that such increased borrowing has occurred in the United States.[23]

On the lenders side, the Royal Bank of Canada has recently offered to its mortgagors, whose mortgages come up for renewal, before September 1982, a moderate reduction in interest payment to 16%, with the differential between the current rates and the payments added to the principal. Similarly, the Canadian Imperial Bank of Commerce and Canada Trust are offering fixed payment mortgages, with the difference between the agreed upon nominal interest rates and the rates prevailing during the mortgage period added to the principal. However, as the agreed interest rates are high relative to those of past years, the tilt problem is only partially mitigated.

As the order of magnitude of the problem in the past year has clearly been quite severe, at least for those households who have purchased houses in the past few years and whose debt repayment burden was fairly heavy, even before the recent spectacular increase in interest rates, it is surprising that the market has not rapidly adjusted to these changes. The apparent reasons are probably due to risk and uncertainty considerations and tax problems.

Consider first the uncertainty problem. The increased rate of inflation during the 1970s has been accompanied by a much greater variability in the inflation rate relative to the previous 20 years. As well, monetary and fiscal policies in attempting to control inflation have shown greater variability as well. The combined effect of these has caused large fluctuations not only in nominal interest rates but in real rates as well. Gyrations of interest rates during the past year amply illustrate this phenomenon. It is the volatility of expected and actual nominal and real interest rates which create the problem of adjustment and design of mortgage instruments. It is this volatility which creates serious risks to borrowers and lenders alike, which cause difficulties in adjusting mortgage contract forms to inflation.

2.6 The Nature of Mortgage Risk

We must distinguish between the nature of the risk to mortgage borrowers and that of lenders. While the two are interrelated, in that a deterioration in the position of borrowers increases the risks to lenders, there are some risks to lenders which arise from regulations limiting their ability to diversify assets or liabilities.

The main risks to borrowers arise from fluctuations in the value of their house relative to the value of the debt, and from fluctuations in the payment to income ratios. Both of these are affected by the rate of inflation and its variability as well as by variations of the real interest rate. As houses are a real asset, their value tends to go up in line with the rate of inflation. In fact, due to the inherent tax subsidy for owner occupied homes, such homes may rise in price at a rate faster than inflation. However, the tax subsidy effect affects housing prices at the time of changes in the expectations of inflation, rather than concurrently with the actual inflation rate. This is because the anticipation of higher inflation rates induces immediate increases in the demand for owner occupied homes and thus generates a price increase as a function of anticipated changes in the inflation rate. As we have seen, this effect is strongest for people with higher equity, so it is likely to affect the prices of relatively expensive housing more than that of cheaper housing. However, the tilt problem affects all mortgage holders, particularly those at the low end of the market and new potential buyers. Therefore, an increase in anticipated inflation exerts a downward pressure on housing prices due to the tilt effects. As suggested, this is likely to affect the low end of the market, as well as that part of the higher end purchased by the young who are low on physical capital and high on human capital.

The effects of increases in the anticipated rate of inflation on the prices of housing are thus difficult to forecast. However, they are likely to exert stronger downward pressure on those properties which tend to be highly mortgaged. The timing of these effects is complicated by the existence of long term level payments mortgages, which introduce a lag in the tilt and therefore mitigate the downward pressure on house prices, due to changes in the anticipated inflation rate. If inflationary expectations are in fact realized, the increases in nominal income generated by inflation gradually mitigate the tilt effect and eventually reverse it. Thus, actual inflation reverses the tilt effect leading to further increases in the price of housing. The combined effects of all these factors lead to a very irregular pattern in the rate of change of housing prices. The correlation between the rate of inflation in housing prices and the general rate of inflation is reduced, causing fluctuations in the debt equity ratio of mortgagors. To the extent that the tilt effect is important, particularly at the low end the market characterized by high mortgage to equity ratios, increased inflationary expectations may lead to a double risk of increased payments and reduced equity. This increases the burden of carrying the mortgage, while simultaneously increasing the probability of default.

Variations in real interest rates are more serious. Increases in the real interest rate do not generate a positive tax effect. They operate to increase the real costs of housing as well as the cash flow requirements. Thus changes in the real rate of interest lead to opposite changes in the value of equity. Increases in the real rate of interest are therefore likely to increase probabilities of default more heavily than increases in the anticipated inflation rate. The severity of the problems due to recent rapid increases in nominal interest rates, is at least partly a result of the

increase in the real interest component of these rates.

These considerations must be taken into account in the design of government policies to mitigate the tilt problem and to increase accessibility for first time buyers. Thus, for example, programs such as AHOP which subsidize interest rates for a prespecified period and allow low equity, increase considerably the difficulties arising from the tilt problem. In order to prevent wholesale abandonment of properties, as has recently occurred, such programs must be more flexible in the duration of subsidies (perhaps by converting conventional mortgages into indexed mortgages) and require somewhat more substantial equity.

As suggested before, the risks to lenders are mainly a result of changes in the default risk, due to changes in the equity and cash flow positions of the mortgagors. The probability of default rises as the real value of equity in housing falls and as cash flow problems are exacerbated, when the ratio of debt payments to income rises. Default, which leads to foreclosure, involves actual foreclosure costs, which are not always recoverable and significant costs in terms of loss of goodwill. Moreover, if the net equity becomes negative, an absolute loss is imposed on the mortgagee. Because of the erratic pattern of increases in the prices of houses, it does not pay lenders to allow borrowers to increase their debt in order to reduce their cash flow problems, where the value of equity is sufficiently low. This is because, if inflationary anticipations fail to materialize or housing prices fail to increase, the cash flow problem is not relieved, but the real equity is further reduced, increasing the probability of default and consequent loss. Moreover, the current tax treatment may exacerbate the problem. Unless mortgagees are allowed to defer the tax on the deferred interest payments, the net receipts

are reduced, reducing the cash flow further. As we have seen, increases in the real rate of interest have similar but more pronounced effects on all mortgages. Given the fact that recent changes in interest rates reflected, at least partly, changes in the real rate of interest, it is clear why mortgagees have generally been reluctant to allow debt postponement.

These problems are compounded by the inability of many depository institutions to match the terms of their liabilities and assets, due to government regulations. In particular, this problem affected trust companies whose investments are limited to mortgages, which have tended to involve fixed rates and term, while the structure of their liabilities was much more heavily weighted toward short term variable rate contracts. These problems affect credit unions in a similar way and, to a lesser extent, banks. Because of the increasing trend of interest rates over the past few years, trust companies and credit unions have had to increase their interest rates on their current liabilities, while maintaining a stock of long term mortgage and consumer loan portfolios at lower interest rates, creating financial difficulties. As the probability of interest rate fluctuations increases, there is a tendency to attempt to match the term structure of assets and liabilities, by raising more long term finance and, mainly, by shortening the mortgage period. Thus, while up to the early sixties long term mortgages of up to 25 or 30 years had been fairly common, these have all but vanished by the early seventies, during which the five year mortgage became standard. In recent years, much shorter mortgages, with 1, 2 or 3 year duration, have become common, and these processes appear to be accelerating. Note however, that shortening of the mortgage period increases the tilt problem because it eliminates the lag due to fixed rates on longer mortgage maturity.

So far, we have concentrated on the risk associated with upside risk, that is with the risk due to increased inflationary expectations. However, the risk associated with possible decreases in the rate of inflation cannot be ignored. Long term mortgage contracts at high anticipated inflation rates can frequently be renegotiated by borrowers at a penalty. Thus, financial institutions' capital gains due to reductions in nominal interest rates are limited. As well, if house prices fall in response to a fall in the expected rate of inflation, problems of default may arise.

These risks increase the incentive of financial intermediaries to move to a system of variable rate mortgages, where the mortgage rate is adjusted at short intervals to conform to the short term fluctuations in the nominal rate. As indicated before, the Canadian Imperial Bank of Commerce and Canada Trust mortgage plans involve variable rates, although actual payments are based on a fixed rate.

However, as we have seen, variable rate mortgages, while reducing lender uncertainty do not solve the tilt problem or reduce the accessibility of house ownership to young buyers with low non human capital. It is therefore likely that some mortgage forms will be developed to accomodate these problems. As some of these involve greater lender risk, it is likely that lenders will demand a risk premium for reducing consumer risk.

2.7 New Mortgage Forms

In addition to the variable rate mortgage, three additional mortgage forms have been proposed. These are: graduated payments mortgage, the price level adjusted mortgage and the shared appreciation mortgage. We shall analyze each in turn.

Graduated payments mortgages attempt to match payments of principal and interest to borrowers income and expenditure. This can take account of changes in life cycle income, expenditure and expected inflation in both long and short term contracts. Adjustment to income involves recognition that income is generally expected to rise with age and experience. Thus graduated payments mortgages may be designed to maintain a constant payments to income ratio. This involves increasing payments over time and therefore, a larger interest and smaller debt repayment component in the early years of a contract, relative to a level payments mortgage, with higher debt repayment component in the later years. If expenditure pattern is also taken into account, this simple relation does not necessarily follow, because expenditure requirements may not be independent of age. So a constant payments to income ratio is not necessarily desirable from the borrowers point of view.

This is particularly the case where home buyers are childless adults who are both working. The arrival of children is likely to reduce family income by reducing outside work of the wife, as well as increase the expenditure required to maintain a given standard of living. Therefore, the optimal payment pattern for borrowers would involve high initial payments, with lower payments subsequent to the arrival of children. In principle, it is possible to design a specific package to suit individual borrowers. But the costs of such design and the uncertainty associated with the individual prospects of

specific borrowers, particularly with respect to marital and parental status, is likely to prevent such individually designed packages. In general, such mortgages would tend to involve standard assumptions about income growth (e.g. average wage growth) and ignore individual circumstances regarding income and expenditure.

However, some individual tailoring of the pattern of payments is possible through the use of second mortgages, which are of shorter duration than first mortgages, and hence, involve high payments of interest and principal in the early years of ownership. Thus, a combination of standard graduated payments scheme and a second mortgage of appropriate size and duration, may fulfil the requirements of individual borrowers. This arrangement also has the advantage that the interest rate on the second mortgage can be adjusted to reflect the increasing risk in the early years due to low rate of equity accumulation with the graduated mortgage.

The graduated payments mortgage may also be designed so as to allow for for expected inflation in the income calculations and hence, to relieve the 'tilt' problem. However, it does not solve the problem of variability in the rate of actual relative to expected inflation or in the fortunes of individual borrowers relative to inflation.

Thus, the problem of forecasting long run inflation and the likely errors in such forecasts, is not alleviated by the graduated payments mortgage. Moreover the mortgage has some unattractive features from the lenders' point of view. First, it involves very high risk to lenders in the early years of the mortgage because of the very slow rate of accumulation of equity. If inflation accelerates relative to its forecast, payments may be insufficient to reduce the real mortgage, and therefore increase the risk of default

due to reduced equity. Even if the inflation forecast embodied in the mortgage turns out to be accurate, there is a distinct risk that house prices will fail to follow the inflation rate, at least in the short run. This again reduces the real equity of the borrower and hence, leads to increased risk of default. A second problem with the graduated payments mortgage is the mismatch of the term structure of assets and liabilities. To the extent that lenders' liabilities are in the form of level payments long term obligations, the flow of their payments will fall short of the cash receipts during the early days of the mortgage. Because of these increased risks, it is likely that a significant risk premium would be demanded by lenders for such graduated mortgages, or that these would be awarded only for people with a relatively large equity.[24] It is therefore not likely that such mortgages will be commonly used.

It is clear that the problems of a large and variable rate of inflation cannot be solved satisfactorily by means which ignore the distinction between real and nominal changes. The only solution, which may at least partly resolve this question, must be an indexed or price level adjusted mortgage. Under such a mortgage, a real interest rate and a real rate of reduction of the oustanding principle is determined, which is independent of the rate of inflation. Thus, for example, if a real rate of interest of 5 per cent and a real rate of mortgage reduction of 5 per cent are determined in any year, payments will amount to 10 per cent of the mortgage value. If the inflation rate were 0, the mortgage is reduced by five per cent. If inflation were 20 per cent in the year, the same payments will still be made in that year, however, at the end of the year the rate of inflation will be added to the nominal mortgage balance of 95%. Thus, the nominal value of the balance of the mortgage will rise to 115 per cent of the original mortgage. New interest and

principal payments will be calculated on the basis of this revised mortgage for the following year and the process repeated in subsequent years.

As can be seen from this example, the real rate of decline in the real value of the mortgage falls somewhat short of 5 per cent under the 20 per cent inflation assumption. This is because the adjustment to the rate of inflation in our example lags actual inflation by one year. Repayment of the debt is based on the assumption of zero inflation, while in fact, inflation in our example was 20 per cent. Of course, the problem will be reversed in the unlikely event that inflation happens to be negative. While this is not a serious problem over a short period, a long period of higher than expected or accelerating inflation may lead to a significantly lower rate of debt reduction than envisaged. This can be solved in two ways. First, shortening the period over which these revisions are made will significantly reduce the effects due to this lag. Second, expectations of inflation can be brought into the calculation. For example, if the correct expectation of inflation were made at the outset, repayment would be adjusted according to the expected rate of inflation. In our 20 per cent inflation example, repayment in the first year would be 6 per cent of the original loan, rather than the 5 per cent determined under zero inflation expectation. This will lead to a revised nominal debt of 114 per cent of the original debt at the end of the period and thus, maintain the 5 per cent of reduction in the real value of the mortgage. If calculations of repayment were revised periodically on the basis of recent inflation, the real rate of reduction in the real value of the mortgage can be kept reasonably close to the theoretical value. In this fashion, the risks to the lender due to variations in the rate of inflation are almost eliminated.

From the point of view of the borrower, the advantage of indexed mortgages is also obvious. The tilt problem is eliminated and, if the borrower's income keeps pace with inflation, both the ratio of mortgage payments to income and the ratio of the mortgage to his income remains virtually unaffected by inflation. To see this, assume for example, that the borrower's income was initially equal to the mortgage. In the absence of inflation, his payments would constitute 10 per cent of his income, and the value of the mortgage at the end of the period will constitute 95 per cent of his income. At a 20 per cent rate of inflation which was correctly expected, his payments would still constitute 10 per cent of his average annual income and the mortgage would constitute 95 per cent of his income at the end of the period.

Indexed mortgages would thus eliminate the risks due to inflation to both borrowers and lenders <u>provided</u> that the real position of borrowers or lenders is otherwise unaffected by inflation. However, this proviso is not likely to hold for either party, but in particular the lenders. The cash flow problems which arise due to inability of lenders to match their real assets by real obligations, may lead to significant difficulties for lenders. Unless lenders are able to borrow on similar terms, nominal interest payments, which they have to make, increase with inflation but interest income, based on real rates, increases at a much slower rate. Therefore, lending institutions would have to increase their borrowing with inflation in order to match the automatic increase in their lending. In the absence of taxes, this difficulty would not be too serious. Depositors and other lenders to financial institutions would realize that increased nominal interest paments due to inflation present a decrease in the real value of their deposits or bonds.[25] Consequently, it is likely that they would reinvest at least some of this nominal increase in interest payments, so as to keep the real value of their assets at

the desired level. However, because nominal interest payments are taxable, depositors receive only some of the increased cash payments paid out by depository institutions. This leakage is likely to reduce funds available for increased borrowing by other financial institutions.

It is clear that from the lenders point of view, it would be desirable to develop indexed borrowing and lending instruments simultaneously. This will ensure that the cash flow problem associated with one-sided indexing does not arise. However, there are serious difficulties associated with the tax treatment of such indexing. Currently, nominal interest earnings, including the inflation premium, are taxed as income. If the nominal increase in the value of mortgages and deposits due to inflation is treated as income at the time of revaluation, indexing would be most unattractive. Individuals and institutions would be taxed on money which they do not currently receive, creating a cash drain which would reduce and possibly eliminate interest income. If taxes are deferred, this would give indexed assets a tax advantage, because the tax deferral will shelter these nominal gains from tax, for the period during which they are not realized. During that period they may earn additional interest. Allowing indexed debt instruments with deferred tax liability, is thus equivalent to a reduction in the effective tax rates on nominal inflation induced gains. While this may be desirable from the point of view of reducing the distortions which the tax system causes in investment priorities, it does amount to a major change in tax policy and possibly, a significant loss of tax revenue. In any case, unless such changes in the tax treatment of nominal gains are allowed, it is unlikely that indexed debt instruments will gain a significant hold in the market.

Note however, that the problem is not as severe on the mortgage side as on the liabilities side of financial institutions. This is because, even if the nominal increases in mortgage values are considered as current income for the financial institution, nominal interest payments on unindexed debt instruments are allowed as expenses. Therefore, only the nominal net income of financial intermediaries is taxed, rather than the gross interest income. Thus, the development of indexed mortgage instruments may still be desirable, even if financial intermediaries are unable to develop corresponding indexed liabilities.

A tax problem may arise on the borrowers' side. Where interest payments are deductible from rental income, the tax treatment of the nominal increases in the value of mortgages will make a significant difference to mortgagors if increases in the mortgage value are not allowed as deductions for tax purposes in the year of accrual. A significant tax loss will result, reducing significantly the desirability of indexed mortgages under such circumstances. Most owners of single family homes would be unaffected by differences in the tax treatment, because interest payments are not deductible to them. However, a significant number of mortgagors who rent accomodation in their principal residences or who own duplexes and the like, will be affected. As well, mortgagors who use the mortgage loan as an instrument to raise capital for investment purposes would be adversely affected.

A final problem with indexed mortgages arises from the possible inflation-induced variability in real prices. As indexing is likely to be linked to a general price level index such as the CPI, it is not likely to be sensitive to local conditions and to variations in the relative prices of assets. From the point of view of stability of payments relative to income,

the CPI appears to be an appropriate index, as wages generally respond to changes in it. However, from the point of view of the lenders it is important that indexing should not affect the real equity position of the borrowers. The relevant price from this point of view is clearly the price of the mortgaged property, which depends on the general price of houses, as well as on special local conditions. As we have seen from previous discussion, in the short run there appear to be significant variations between the prices of houses and the general price level. Such volatility in the relative price of houses relative to the general price level appears to be related to unanticipated variations in the inflation rate. Thus, if a rise in the expected rate of inflation leads to a temporary fall in the price of houses relative to the general price level, indexing to the general price level reduces real equity and hence increases lenders' risk. In this sense, indexing shifts some of the risk from the borrower to the lender and consequently it is likely that a risk premium will be demanded by lenders for issuing indexed mortgages. To the extent that variability of inflation tends to exacerbate local variability in housing prices, this problem is further compounded.

In spite of these difficulties, it is clear that indexed mortgages reduce considerably some of the risk due to inflation to both borrowers and lenders. Although relative to level payments mortgages, the increase in equity over time is smaller with indexed mortgages, which increases default risk, elimination of the tilt problem may more than counteract such default risk. As the share of income devoted to mortgage payments remains unaffected by changes in the rate of inflation, the incentive to default is significantly decreased. Default carries significant costs in terms of reputation, moving costs, loss of prospective possible capital gains and legal costs. Thus, even if equity shrinks or even becomes negative, default may not occur if payments

do not constitute hardship. Moreover, adoption of indexed mortgages on a wide scale is likely to reduce significantly the tilt problem and therefore, to increase the correlation between house prices and the rate of inflation. Thus, the risk which is valid from the point of view of any individual lender, due to low correlation between housing prices and the general price level may be considerably reduced if all lenders institute indexed mortgages.

The mortgage forms discussed so far were designed to protect one or both parties from the risk due to changes in the rate of inflation. In all of these forms, the main risks and rewards from changes in the nominal or real value of the property accrue to the owner, with the mortgage essentially a means of leverage. Thus owners of real property and in particular, owner-occupied homes are forced to invest in a relatively risky portfolio. Because of the connection between housing requirements and investment in housing, the size of investment in housing relative to other sources is usually quite large, particularly for young consumers, who have high human capital and therefore high incomes but do not have non-human capital.

Part of the problem which arises due to the tilt or due to variability in the real price of housing and the real rate of interest, arises because of the high degree of risk which these consumers must carry, if they wish to own their houses. While the mortgage forms discussed above, particularly the indexed mortgage reduce significantly some of the risk associated with changes in the rate of inflation, they do not reduce the risk due to changes in real asset prices or real interest rates. This is because there do not exist mortgage forms which would enable home owners to reduce the size of leverage in investing in their own homes.

In principle, it is easy to devise mortgages in which lenders would participate in the risks of ownership. These are called shared appreciation mortgages. Essentially, they involve joint ownership of the property by the owner and the mortgagee with appropriate payment by the mortgagor for the services yielded by the portion of the house attributed to the mortgagee. Effectively this can take the form of a payment of low interest in exchange for participation by the mortgagee in any capital gains or losses. A variety of such arrangements is possible with varying interest rates and equity participation schemes and with varying rules regarding realizations.[26]

However, it is clear that very serious problems of decision and monitoring exist for such arrangements. What are the rights of the individual homeowner or the mortgagee regarding renovations, alterations, or maintenance? Who is to decide when and whether to sell the property? How is the property to be valued at the mortgage term, if it were not sold? It is clear that individual partnerships of this nature are very difficult to maintain and that institutions would be at a considerable disadvantage relative to the mortgagor, in terms of the day to day management of the property. It is therefore, not likely that such arrangements become prevalent for the ordinary owner-occupied property.

However, such arrangements are possible for the case of cooperative housing and possibly, some forms of condominiums. This is because cooperatives or condominiums are managed and maintained by professional managers, who may then act to safeguard the interest of the mortgagee in the same way that managers of rental housing safeguard the interest of owners. This form of home-ownership financing may be particularly beneficial for younger and poorer segments of the population, as it may form a bridge between rental accomoda-

tion and exclusive homeownership. In a sense, the scheme is similar to allowing an individual to purchase shares in the company, which owns the apartment in which he lives. The advantage to the purchaser is that he may adjust his portfolio holdings without the necessity of acquiring a large unique and risky asset, to the exclusion of other assets. The ownership share of the consumer may be arranged so as to increase over time in relation to his assets and desired diversification. From the lenders' point of view, this arrangement is advantageous, because it converts tenants to part owners and therefore increases their incentives to maintain and improve the property.

2.8 Summary

This chapter investigates the role of consumer credit in the context of consumption investment and portfolio decisions, with particular emphasis on mortgage markets in order to evaluate the welfare implications of rigidities and market imperfections. In particular, we investigate the difficulties which arise due to the fact that consumers are unable to diversify across assets in the early stages of their lives. Because hman capital is accumulated early in life, and because it is not marketable as an asset, individuals are forced into concentrating most of their assets in this form. This increases the risk of their portfolio considerably in early working life.

Imperfections of rental markets for consumer durables and housing (particularly single family homes) force consumers into further specialization in the form of their asset holdings. This tendency is reinforced by the interaction of the income tax and inflation, which increases the net after tax returns to consumer durables and housing. Because there are no markets for risk sharing of investment in homes, young consumers are forced to carry a

non-diversified portfolio, composed mostly of human capital, homes and consumer durables, financed by consumer borrowing. This lack of diversification and high leverage imply a very high degree of risk assumed by younger consumers. Consequently, such risks must be, at leat partly, borne by lenders, who protect themselves by spreading the risk, lending to many customers and thus assuming the role of insurers or by rationing out the higher risk consumers. Thus, consumers must either pay higher rates of interest to include insurance against default, or forego home and durable ownership when their risk is too high.

Because of the size of mortgage borrowing relative to income, this problem is most acute in the mortgage field. As monetary policy has become more erratic in recent years, leading to large interest rate fluctuations, these risks to borrowers and lenders have increased markedly, leading lenders to shorten mortgage terms and to institute variable rate and inflation adjusted mortgages. The study analyzes these forms of mortgage financing and points out that reduction in risk due to inflation for both borrowers and lenders, which may be achieved by indexed mortgages, requires modification of current regulations to allow inflation adjusted deposits and changes in the tax treatment of inputed nominal interest. However, these will have important revenue implications and may increase the tax advantage of homes relative to other productive assets further. It is shown that government programs to increase access to mortgages and hence to homeownership, such as AHOP cannot be instituted without increases in risk for consumers, lenders, or the government. It is recommended that shared appreciation mortgage forms be encouraged for condominium and co-operative housing, as a means of encouraging investors to share in portfolio risk of consumers. In particular, CMHC should investigate the use of shared appreciation mortgages to encourage first time

homeownership. A considerable amount of additional research about these new mortgage forms is required in order to find the best ways for their implementation.

III

RISK AND INFORMATIONAL PROBLEMS ON THE SUPPLY SIDE

3.1 Introduction

There are two generally accepted facts in consumer credit markets which, it has been argued, lead to market inefficiences and which must be explained, in order to understand and evaluate the operation of the consumer and other credit markets.

These are: credit rationing and market segmentation.

While there is no uniquely accepted definition of credit rationing, we may loosely define it as refusal to lend at the market rate of interest or the setting of additional conditions (loan quality) on the loan to different customers, rather than varying the interest rate to clear the market. There is ample evidence for both types of rationing, either in the form of outright refusal to lend or in the form of limits on the size, collateral or other conditions of the loan.[27]

Similarly, there is a significant difference in the rates of interest and other loan terms among sources of loans; with credit unions, trust companies, and banks on the low side and retail credit and finance companies on the high side. We shall evaluate the evidence on the extent and importance of rationing and segmentation later in this chapter. However, their existence clearly calls for explanation.

The main reasons given in the literature for both phenomena arise from the nature of risk and the limitation of information available to both lenders and borrowers, possibly coupled with other market imperfections due to monopoly and regulation. In this chapter we shall evaluate the risk and information problems from the supply side and attempt to assess the degree to which they explain the occurrence and extent of rationing and market segmentation. In the next chapter, we shall evaluate the evidence on consumer information and attempt to assess its relative role in any imperfections in the operation of consumer markets.

3.2 Problems in the Evaluation of Consumer Risk

The main risks to lenders in extending consumer credit arise due to possibilities of temporary delinquency, which involves the lender in some collection costs or outright default, which may involve costs of collection, security enforcement and possibly legal expenses, and finally bankruptcy. We shall evaluate these specific risks in some detail later.

The probabilities of these events depend on the objective position of the borrowers and on possible unforeseen contingencies. While lenders may not be able to protect themselves from such unforeseen contingencies, they may be able to protect themselves from loss by acquiring information about the objective circumstances and attitudes of potential borrowers. Because the costs of collecting such information are not negligible, it clearly does not pay lendrs to remove all uncertainty by collecting sufficient information. Even if it were possible to obtain all the relevant information about potential borrowers, the marginal costs of collecting additional information will clearly increase and the value decrease as more information is accumulated. There-

fore, the personal element of the relevant risk will not be generally eliminated.

The degree of ignorance and hence of risk, must therefore depend on the costs of collecting the relevant personal information. These costs may be particularly high relative to potential loss in the consumer credit area, where loans are relatively small. Moreover, while supply of information is generally a condition of the granting of credit, verification of such information may be difficult. The search for such information, particularly information about personal life styles and attitudes, conflicts with the rights to privacy, which individuals value under our system and therefore, such information may not be collected, even when potentially valuable in evaluating credit risk.

Information has the characteristics of a public good, that is, its use by one person does not necessarily reduce its value to others. It is clear that centralization in information collection and dissemination will reduce informational costs. As a consequence, credit information is generally collected in relatively centralized organizations. Small scale credit granting institutions, such as retailers, small finance companies, etc. usually pool their information in credit bureaus or associations, which operate as clearing houses for credit information for their members or subscribers.

Alternatively, the larger banks may be able to rely on their own sources of information via the client relationship. As consumers generally conduct most of their financial transactions through the same bank, each bank has a great deal of information about its clients. While the bank may derive additional information from credit associations or bureaus, it would have to share its own information with them, were it to join. The possession of exclusive

information, which is not available to others, is of potential competitive advantage to the banks. They therefore generally do not join such associations and rely mainly on their own records for informational purposes. While giving up some information which they might obtain by joining, they gain competitive advantage relative to other credit grantors by keeping their own information to themselves. To the extent that this enables banks to evaluate customer risk more accurately than other credit grantors, the banks are better able to tailor their loan policies to individual customers' risk more accurately. This is important because it is likely to lead to some market segmentation. We shall return to this point later.

3.3 The Nature of Lenders' Risk

As indicated before, the major reasons for lenders' risk are due to the possibility of delinquency, default or bankruptcy. The distinction between delinquency and default is not very clear and essentially depends on the policy of the lender about the length of the grace period before delinquency becomes default. While delinquency imposes some administrative and possibly collection expenses, it does not constitute a major risk element, so long as it is resolved and does not become default. Default may lead to significant costs to lenders in the form of collection costs, security enforcement, or court costs to recover the debt or the deficiency. If the value of consumer assets is insufficient to cover the debt, the default may lead to bankruptcy or to an agreement between the debtor and creditors for partial negotiated settlements. In either case, some or all of the debt may be written off.

The extent of the loss to lenders depends on the nature of their security and on the limitations on creditor remedies. These limitations may be voluntary on the part of lenders, who may avoid unduly harsh treatment of debtors in order not to lose goodwill of potential borrowers, or legal. The greater are the limits on creditor remedies, the larger are the losses due to default or bankruptcy, and the more likely are default or bankruptcy. Limits on creditor remedies therefore raise the costs of granting credit, while potentially protecting consumers from over-harsh treatment in case of default. Similarly, the ease of the bankruptcy procedure increases the probability of bankruptcy.

It is important to note that the nature of the risks associated with consumer credit are somewhat different than those which are associated with business credit, because of differences in the purpose and nature of the credit. First, business credit is generally granted for investment in income producing assets. The probability of default depends on the success or failure of the specific business venture undertaken. In the case of consumer credit however, credit is extended for the purpose of increased consumption rather than investment.[28] The stream of income generated in the future is generally independent of the loan or the specific purpose for which it was taken. For example, in the case of a consumer durable, the loan simply enables the consumer to change his pattern of consumption by consuming the services of the consumer durable, rather than renting it or consuming substitute services. However, while possibly increasing the consumption opportunity available to the individual in the future, due to greater efficiency in consumption, the individual's income is unaffected by the investment. An exception is perhaps the case of a consumer's car, which may increase the individual's mobility and hence enable him to obtain a better paying job.

Repayment of the loan must generally depend on reduction of other consumption by the individual, rather than on the success of the investment in question. This increases the discretionary element in debt repayment, relative to the objective elements involved in the quality of the investment. The relevant information from the point of view of the lender, is therefore the income generating capacity of the individual and his likely attitude, rather than the wisdom of the particular investment in question, which may be central in the business loan case.

This difference in the relative importance of the specific investment is reinforced by the fact that the monetary value of most consumer durables drops drastically with purchase. The mere fact that the consumer durable has been preowned, reduces its value drastically relative to the same good when new. This is because of the lemon phenomenon.[29] Consumer durables, in particular cars, which appear on the second hand market, are much more likely to be of inferior quality than those retained by consumers. While other reasons for sale of used consumer durables and cars may exist, disappointment with the performance of the good in question is likely to be a major reason. Potential buyers are likely to know this and therefore, will discount preowned durables heavily. This discounting is likely to aggravate the problem, because for consumers who are only mildly disappointed, the value is use will exceed the market value of the durable. This would increase the proportion of poor quality durables on the second hand market, further depressing their price. This price differential is limited by the costs of verifying actual quality, but as these are relatively high for many consumer durables, depreciation is likely to be high. In addition, non-negligible transactions costs add to the monetary net depreciation of consumer durables. Thus the value of assets purchased with consumer loans drops drastically and possibly rapidly, relative to

the value of the loan, making it a rather poor collateral. Services purchased through consumer loans are, of course, an extreme example of the above.

An exception to the previous discussion is the case of real estate. The value of houses does not generally fall due to preownership, presumably because quality can be just as easily ascertained for a used as for a new home. The reduction in the value of houses for the purpose of collateral is mainly due to transaction costs. The costs of repossession and sale are not negligible, but are considerably lower than those for consumer durables. Here the value of the purchased property is of as much importance as the personal circumstances of the borrower.

Finally, the term structure of consumer loans is generally different from that of business loans. In the case of business loans, a significant proportion is in the form of trade credit and short term bank capital. These are generally callable at short notice and may thus trigger default, if the business is unable to borrow elsewhere. In contrast, most consumer loans are for specified fixed term, except for credit card and short term trade credit. Thus creditors do not have the option of calling in their loans at their discretion and thus triggering a default, except where the debtor is delinquent.

These differences are important, because in the case of consumer borrowing, except for mortgages, the borrowers financial position is relatively independent of the loan or of its purpose. The circumstances and attitudes of the borrowers are most important. This is not so for the case of loans which are made for investment purposes, where the nature of the investment is as important as the nature of the investor. It will be shown later, that this difference leads to a different incidence of credit rationing in the case of business than in the case of consumer loans. Similarly, the difference in the

term structure of consumer and business loans may lead to different risks to secured and unsecured creditors, in particular, increasing the risk to unsecured creditors of businesses.

In analyzing the probabilities of default and bankruptcy, it is useful to utilize the classification of Caplowitz (1974) of the reasons for default. Caplowitz distinguishes between default due to inability to pay and that which arises from unwillingness to pay. Inability to pay may arise due to unforeseen loss of income or from increases in expenditure. These may be voluntary such as due to the overacquisition of indebtedness or due to changes in tastes or alternatively, involuntary, due to sickness, changes in family status or changes in income and expenditure or dependents.

Unwillingness to pay may arise because of a dispute with the creditor, usually associated with the quality or service on goods bought from the creditor or because the debtor feels that he has not been treated fairly by the creditor. Unwillingness to pay may also arise due to irresponsibility of the debtor.

These different categories are, of course, not mutually exclusive and frequently are closely associated. For example, sickness may lead to increased expenditure as well as a reduction in income, due to inability to work. The arrival of children, which raises expenditure, is frequently accompanied by withdrawal of the mother from the labour force, which may also reduce income.

An additional reason, associated with mortgage default, may be that the value of the asset falls short of the value of the debt, even though no unforeseen change in the pattern of income or expenditure has occurred.

Caplowitz's findings indicate that the most important reason for default was loss of income, usually associated with unemployment. The second most important reason was voluntary over-extension. The third arose due to complaints by debtors, who felt they were not fairly treated by the creditor and the fourth was unexpected increases in expenditure. Similarly, in a survey of banks, finance companies and the retail trade, conducted by the National Commission on Consumer Finance in the U.S,[30] the reasons given for debtor failure to meet contractual terms were very similar for all three institutions. Unemployment and over-extension of the debtor were the most important ones, with illness, separation, divorce and family relocation less important. Lack of intention to repay just debt "deadbeat" was generally unimportant.

In Canada, a majority of the clients of credit counselling agencies[31] in 1979 had family incomes below the national average and were in the age group 25-40 years. Most were employed or only seasonally unemployed and had one or more children, with a significant minority of single parent families. While this picture is somewhat at variance with the findings of Caplowitz and the NCCS, suggesting that perhaps overcommitment is more important, it is clear that unemployment or at least temporary unemployment, is still quite important. Several agencies in the survey indicated that a majority of clients are only seasonally employed or unemployed or possibly not in the labour force, that is, on social assistance.

It is quite clear that personal characteristics, such as the ability to financially plan and avoid over-extension, are an important determinant of the risk characteristic of individual consumers, and that low income individuals, with relatively low assets and high probabilities of unemployment are also high risk individuals.

3.4 The Nature of Contracts and Potential Rationing

The nature of contracts may have an important effect on the probability of default due to subjective elements, as imitations on borrowers' loss may act as inducement to default (moral hazard). However, even in the absence of these, the existence of uncertainty about the future of each individual borrower imposes a risk on the lender. Even if lenders were able to identify precisely and costlessly default probabilities for each borrower, actual default on a particular loan cannot be known in advance. Thus, an unavoidable element of risk is associated with credit.

To avoid losses, creditors protect themsevles in three ways. First, they attempt to reduce the loss due to default by obtaining security and setting repayment conditions and penalties. If these are effective in reducing or eliniating loss due to default, they also reduce the probability of default due to moral hazard. Second, they screen applicants so as to estimate their probability of default most accurately. Third, they take these probabilities into account in setting credit charges. As most creditors lend to many borrowers of various risk classes, they are able to spread their risk to so that their earnings net of default losses are unaffected by indidividual outcomes. In this sense, lenders are similar to insurance companies and may be generally assumed to operate as if they were risk neutral, even though this is not necessarily the case.

It is clear that under most circumstances creditors are unable to eliminate losses due to default, because most consumers do not possess sufficient marketable assets to guarantee the security of loans. Given the beneficial tax treatment of imputed consumption of consumer durables and housing, a strong incentive exists to use ones own funds for purchases of these items.

Consequently, if consumers possess sufficient marketable assets to guarantee full security of their loans, they would be unlikely to demand such loans in the first place. Thus, most contracts attempt to reduce, rather than eliminate such loss, where possible. This is particularly the case for loans taken for the purpose of purchasing a marketable good,such as housing and consumer durables, where mortgages, chattel mortgages and conditional sales agreements are used as security.

Ignoring moral hazard problems and assuming for the present that creditors are able to screen potential borrowers perfectly, so that their individual objective probability of default is known, the lender may calculate the precise risk associated with any downpayment and repayment scheme and set the interest rate accordingly. If he behaves as if he were risk neutral, he will disregard the variance of the specific outcomes of each contract, and will attempt to set rates so as to achieve the same expected rate of return from all borrowers, regardless of the specific scheme or the borrowers risk class. The rate of interest charged each class of borrowers would then reflect the probability of expected losses from the class as a whole and incorporate it in the interest rate, so as to obtain the required average rate of return.

Consider first the case where a durable good is purchased on credit, either in the form of a conditional sales contract or with a chattel mortgage against the durable good. If the creditor wishes to protect himself fully against default, he must charge a downpayment which is sufficiently large to cover the difference between the wholesale value less repossession expenses of the good immediately upon sale, and the purchase price. As suggested before, this is likely to be quite substantial, because of the rapid depreciation due to preownership. The balance of payments on the debt must then be geared to

the real rate of depreciation of the wholsesale value of the good. Thus, if default occurs, the seller is fully protected by repossession. Moreover, under these circumstances the probability of default due to bad faith on the part of the debtor is drastically reduced because of the financial loss to the defaulter. Default is most likely to occur when objective circumstances affecting adversely the individual's income or expenditure requirements force him into default or where the value in use of the durable is reduced to below its wholesale value less expenses. The latter is unlikely to occur in the normal course of events, unless extreme dissatisfaction or disappointment in the performance of the good in question occurs.

While such a completely safe arrangement from the creditors' point of view is possible, it is unlikely, because it may ration out a large number of potential customers who are unable to meet the downpayment and steep repayment schedules. As well, it leaves the buyer to absorb all the risk associated with poor performance of the good in question, possibly due to negligence or other deficiencies of service by seller. Moreover, many borrowers may wish the loan contract to include some elemet of insurance against involuntary adverse events which may force them to default. This is particularly true if consumers are risk averse and the creditors are risk nuetral or are able to spread their risk sufficiently over many loans, as is likely to be the case.

In order to cover the costs of such insurance, the creditor must raise the price of the item or the interest rate charged, in exchange for allowing a smaller downpayment and a less rapid repayment scheme.

In the case of credit for the purchase of services or other non-secured personal credit (e.g. credit cards, bank loans, etc.) the situation is similar. Each borrower may have specific risk expectation associated with the size of his indebtedness relative to his income and assets. Consequently, an appropriate breakeven interest rate may be calculated for each risk class, which will make the expected return to the lender equal to the market rate. We should thus expect to see a variety of interest charges to different risk class customers, with interest rates rising with the size of the loan and declining with the size of the downpayment, speed of repayment or income and asset position of borrowers.

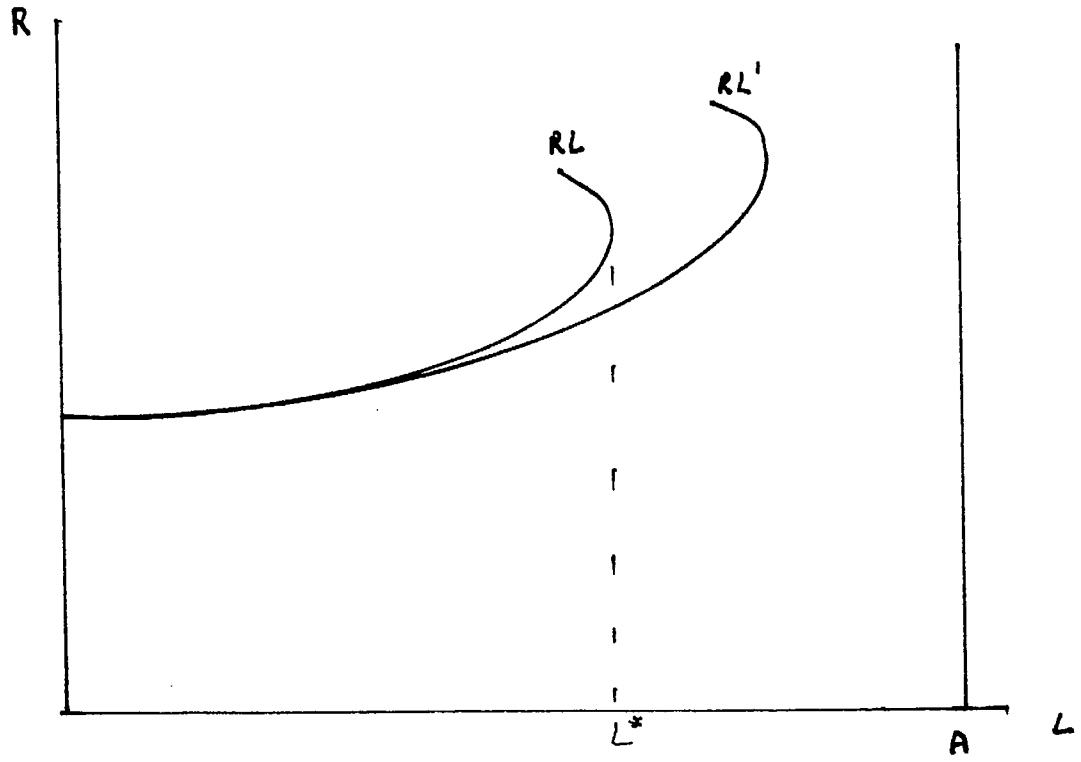
However, it has been frequently observed that such is not generally the case. Frequently, interest rates are the same for many types of consumer loans issued by a given institution, but restrictions are imposed on the other terms of the loan, in the form of downpayment requirements, repayment schedules and limits on the size of the loan, or an outright refusal.[32]

It has been argued that such non-price rationing is inconsistent with profit maximization by lenders.[33] If borrowers are willing to pay the higher rate of interest required to yield the expected market rate of return to the lender, it is not rational for the lender to refuse this loan. However, several authors[34] have shown that this is not the case, if the borrower's financial position is independent of the size of the loan. As we have shown previously, this independence is more likely to be characteristic of consumer loand than for business borrowings, though in the case of mortgage loans and, to a lesser extent, consumer durable loans, the value of assets is not independent of the size of the loan.

If borrowers' financial position is independent of the size of the loan, the probability of default rises as the loan increases. Moreover, the size of the potential damages also increases with the size of the loan. To maintain expected return to lender, net of damages due to default, a higher rate of interest is required as loan size increases. But a higher rate of interest involves higher payments. As income is independent of the size of the loan, higher payments lead to higher default probability, which requires further increases in the rate of interest to compensate for the additional losses. Thus, the interaction between loan size and the rate of interest on the loan, leads to rapidly increasing marginal cost of borrowing. It can be shown that there exists a maximum size of loan beyond which no increases in the rate of interest can increase expected lender's return, because the increased probability of default, due to increases in interest payment, more than offsets the income generated by the higher interest rate paid by those who do not default.

This is illustrated in Figure 2.

figure 2.



The curve RL illustrates the rate of interest necessary to obtain a given expected rate of return for the lender, as a function of the size of the loan. As the size of the loan increases, the curve becomes steeper, because higher and higher increments of the rate of interest are necessary to offset the expected loss due to default associated with larger loans and higher interest. At L* the curve becomes vertical and then turns back because, at sufficiently high rates of interest, the increased probability of default leads lenders to cut the size of the loan in order to reduce damages due to default, so as to keep the expected rate of return at the same level. Thus, L* represents an absolute limit on the size of the loan available to specific borrower class and purpose.

If the loan in unsecured, this sets an absolute limit on loan size. Such absolute limits are commonly observed for credit card purchases, personal unsecured loans, etc. If the loan is for the purpose of a consumer durable and is secured by chattel mortgage or conditional sales contract, this maximum loan size may fall short of the required loan, leading to rejection of the application, or to specification of sufficient minimum downpayment which will bring the loan to a level below L*.

The specification of minimum downpayment is equivalent to a decrease in the size of the loan relative to the value of the assets purchased, and hence, reduces the default risk as well as the damage due to default associated with any size loan. To see this, we represent the size of the asset purchased by the vertical line A in Figure 2. The horizontal distance between A and the RL curve, represents the downpayment required in order to obtain a given size loan and the corresponding rate of interest. However, the existence of the downpayment and therefore, the security of the asset, will flatten the RL

curve, relative to the case of the unsecured loan or where no downpayment is offered. This curve is illustrated by the curve RL' in Figure 2.

The effect of changes in the dowmpayment requirments are therefore, to reduce the rate of interest and increase the maximum loan for any specific purchase. Because the curve is very flat, where downpayment is substantial, the effects of changes in the downpayment are mainly observed at relatively high leverage. This is because, where downpayment is substantial enough, both the risk of default and the damages, should default occur, are negligible as the value of the asset is sufficient to cover the loan. Thus, at low rates of leverage (low levels of risk), variations in downpayment are not important to the determination of interest rates. However, where risk is high, variations in downpayment change significantly the rate of interest required to maintain the required expected rate of return. Thus, at high risk levels, variations in the size of the downpayment may be a more effective means of varying loan terms, than changes in the rate of interest for loans granted for the purchase of specific consumer durables or houses, because it decreases both the size of the required loan and the probability of default. Thus, for any specific size purchase and class of customer, a minimum downpayment may be required. Such minimum downpayment requirements may effectively ration out consumers, who are unable to raise the required amount of money.

The same reasoning may be used to explain the observed tendency to use non-interest aspects of comsumer loan contract to clear the loan market, when fluctuations in availability and cost of funds occur. The evidence on the relative importance of variations in interest and non-interest terms in response to excess demand for credit is not conclusive. However, there is some evidence that credit terms tend to be changed in response to credit

market tightness, particularly in mortgage markets. These changes thus lead to some smoothing in the variations of interest rates in response to changes in excess demand.

The effects of increased market interest rates is to increase correspondingly, the required expected rate of return from all borrowers. This shifts the RL curve upwards and simultaneously, increases its slope because increased interest payments increase default risk for any loan. Thus, L*, the upper limit of profitable loans for any class of borrower or investment, falls with increases in market interest rates. Therefore, limits on loan size become more severe and downpayment requirements increase. The common practice of lenders to set rules which tie maximum payments of interest and principal to borrowers income, lead directly to restrictions on the size of first mortgage loans, available for any property value and class of customer. As interest rates increase, interest and principal payments rise relative to income, necessitating a lower maximum loan tomaintain the same maximum payments to income ratio. This yields an automatic connection between interest rates and maximum mortgage loans and hence, operates to reduce risk and ration credit in periods of excess demand.

The analysis above demonstrates that risk considerations may lead to absolute rationing or to variations in non-interest dimensions of loans as rationing devices in consumer credit markets, even under condition where classifications of customers to risk classes can be costlessly and accurately done, and ignoring moral hazard problems.

However, most credit agreements involve some elements of insurance, in that lenders may voluntarily forego the use of extreme creditors' remedies in cases where objective unavoidable circumstances lead the debtor into default. Legal limits to creditor remedies and the existence of personal bankruptcy can therefore be viewed as mandatory extensions of such insurance. Whether such mandatory insurance is desirable is a rather controversial matter. We shall postpone discussion of its rationale. However, it is clear that, as in all insurance markets, problems of moral hazard and adverse selection occur. While these problems may arise even in the absence of the insurance element involved in consumer credit contracts, they are considerably exacerbated by the insurance element.

3.5 Moral Hazard and Adverse Selection

The problems of moral hazard and adverse selection arise under conditions of asymmetric information between traders in the market. In the context of consumer credit markets, consumers are assumed to possess information about their individual risk characteristics which is not readily available to creditors, except at a cost. While creditors have an incentive to acquire information and reduce the advantage of consumers, the existence of these costs would prevent them from acquiring all the relevant information.

The existence of such a discrepancy in the evaluation of risk between debtors and creditors leads to a moral hazard incentive for debtors to either supply incorrect information to the creditor prior to the contract or, at least, to avoid disclosing adverse information about their credit worthiness. As the creditor is unable to verify some types of false claims of credit worthiness, all such claims for credit worthiness will be discounted. Credit

applicants will have to be treated alike, although their true risk characteristics are different and would justify favourable treatment for the low risk individuals. This leads to adverse selection. As consumers are charged the average price necessary to cover the average risk, low risk consumers are at a disadvantage. Because they pay a price for credit including insurance, which is too high, they would tend to reduce their demand for credit. Similarly, high risk consumers, who pay a price which is too low relative to their own evaluation of their risk, would tend to increase their demand for credit. This would further increase the average costs due to default, exacerbating the process of adverse selection. Because the objective probabilities of default are relatively small, i.e. the number of risky customers is relatively small, this is not likely to be a very severe problem. Thus, if the only source of risk was due to unforeseen involuntary events, it is unlikely to cause major difficulties in consumer credit markets.

However, the moral haard and adverse selection problem, due to inequality of precontract information, is seriously reinforced by the moral hazard and consequent adverse selection problem, arising from difficulties in identifying and punishing voluntary default behaviour. The fact that the insurance inherent in the personal bankruptcy procedures is available to those debtors who defaulted due to voluntary fctors, may seriously induce some debtors to take advantage of such insurance by over-extending themselves through consumer credit, which enables them to expand their consumption, even though this may lead to excessive risk of default. While, of course, some default of this nature may be subject to criminal penalties (in cases of outright fraud), in many cases it is difficult to distinguish between voluntary and involuntary default. For example, a temporary condition of unemployment may be voluntary or involuntary.

The existence of this second moral hazard problem raises the costs of default and therfore, may aggrevate the adverse selection problem. The voluntary nature of the default associated with over-indebtedness raises special problems in consumer credit markets, which induce lenders to choose special forms of credit contract, stressing non-price terms and leading to possible credit rationing.

As in all markets affected by adverse selection, consumers may react by attempting to signal a superior risk status to creditors. Similarly, creditors may attempt to induce consumers to reveal their true risk status by their choice of specific contract forms. As Rea (1982) illustrates, low risk consumers may be more willing to accept contracts which include relatively harsh treatment upon default, because of their knowledge of the unlikelihood of such default. If such contracts offer an attractive interest rate, it may pay low risk consumers to choose them in preference to high cost--lenient treatment contracts. This is equivalent to choosing a small amount of insurance, in exchange for a better price. By their choice of such contract terms, low risk consumers signal their true risk quality and hence, benefit from a lower credit cost, albeit at the cost of lower insurance. Such a signalling device is viable, because high risk crditors, knowing that the probabilities of their default are high, would opt for the higher cost-high insurance contract, thus effectively separating themselves.

However, such a solution may not be viable, if high risk consumers are not risk averse or if they tend to overcommit themselves because they are unable to perform the correct calculus. In this case, it is likely that they will choose the low cost-low insurnce contract, eliminating the viability of the separation process. As we have seen, over-indebtedness is a major deter-

minant of default and bankruptcy and therefore, is likely to invalidate signalling equilibria. As well, current bankruptcy laws and legal limitations on harsh creditor remedies, tend to reduce the scope for such signalling separation, by including a mandatory insurance level in all credit contracts. The problems which arise from moral hazard and adverse selection therefore remain, inducing creditors to screen debtors by statistical means, on the basis of observable characteristics, which may be correlated with potential risk. In addition, contract terms are chosen so as to minimize default probabilities and loss in case of default.

3.6 Screening Devices and the Nature of Contracts

The most direct means of distinguishing low risks is by identifying borrowers according to the value of their monetary assets relative to indebtedness. Because such assets are least protected from seizure they lead to a lower probability of default and lower damages, should default occur. As creditors stand to gain little from default, because their assets will be used to compensate the creditor, the moral hazard of voluntary default vanishes. Moreover, the availability of such assets reduces the objective probability that unfavourable events would lead to default. Thus, possessors of non-human capital are likely to be favoured in credit applications. This is particularly the case where specific easily monetized security is offered.

In the same way, the relation between income and debt repayment is relevant to the determination of the risk. Default becomes more likely as the burden of interest and principal payments rises relative to income. The stability of income, as measured by length of continual employment and the nature of the employment contrct are also relevant in this case. Similarly measures

of stability of expenditure patterns are relevant. These screening devices, which classify individuals according to their degrees of risk, are now extensively used by credit granting institutions.

However, although the level of statistical sophistication in the derivation of such credit scoring methods has recently improved these methods are far from foolproof. At best, they can imporve the forecast probability of default by different customers, but they cannot remove the degree of uncertainty associated with each customer and loan. Moreover, as pointed out in the report on Access to Financial Services, experience of lenders, on which default calculations are based may be unreliable, because it is confined only to those customers to whom credit was extended. It thus measures the degree and determinants of miscalculation in classifying high risk consumers into the low risk categories. However, because information is not available on those individuals who were denied credit, it is not known whether they had in fact been correctly classified. Unless experimentation occurs, such information is not available. This may be partly overcome by pooling information for a vareity of creditors. However, such pooling is at best imperfect, as not everyone belongs to the same reporting agency. As pointed out before, banks in particular, tend to keep their information to themsevles and therefore, narrow the range of information available for the purposes of credit scoring.

While there is no precise information about the way in which specific institutions determine credit worthiness, there appears to be a general agreement about the factors which are relevant for this determination. However, there is no general agreement about the relative importance of these factors.

In an intersting experiment (Dauten and Dauten, 1978) 20 bank loan officers and 20 finance company loan officers were presented with 25 fictitious loan applicants for a used automobile loan. A large number of items of information was supplied about each fictitious applicant and the loan officers were asked whether the loan would be granted. To insure seriousness in considering these applications, loan officers were informed that their superiors will view their evaluation.

The results suggested a wide variability in the evaluation of different applications. It appears that every one of the fictitious applicants would have received a bank loan from at least two of the twenty bank loan officers. As well, over one half of the applicants would have had their loans rejected by at least one loan officer. None of the variables used in the evaluation of credit worthiness appear to have been used by more than 75 per cent of the loan officers, and the probable weight assigned to each by different loan officers appeared to vary widely. The main variables, which appear to have been used by at least 40 per cent of the loan officers in evaluating credit worthiness, were in order of importance: the number of dependents, time on job, time at address, income, and age. Interestingly, residence status and occupation did not seem to be used. It thus appears that loan officers appear to stress stability, either in terms of income or in terms of family and location. This appears to confirm our previous evaluation, that the moral hazard elements associated with voluntary over indebtedness are of particular importance. It should however, be pointed out that the applications did not supply information about net worth, which might be of great importance in reducing delinquency and minimizing losses should delinquency occur.

This information appears to be in conformity with the results of the CROP study on access to financial services. "Applicants for crdit are subject to screening. Applicants who are home owners, have lived in their present place of residence for a long period of time, those who give evidence of job stability as well as married applicants are relatively more likely to have their applications accepted."[35]

As well, the variability in loan officers judgments about credit worthiness is confirmed by the CROP report. A large percentage of those initially refused credit, eventually succeed in obtaining it.[36] Unfortunately, the CROP information is based on a very small number of refusals and does not indicate whether the loans were obtained from a high cost source after refusal by a low cost source, or by another low cost source.

It is thus clear that screening techniques used at present are not generally very accurate and are therefore likely to misclassify a proportion of debt applicants. Moreover, there is no unanimity in decision criteria used by creditors to determine credit worthiness.

This inability to classify borrowers correctly, together with the insurance elements common to most credit contracts, means that the moral hazard and adverse selection problems cannot be resolved by screening. They therefore tend to aggravate the problems caused by pure risk. In particular, the use of interest rates to equalize returns across risk classes is further limited, because increases in interest rates increase default probabilities further due to the moral hazard problem. Moreover, an adverse selection problem arises. Some low risk borrowers may be misclassified as high risk borrowers and charged high rates of interest. These borrowers are likely to withdraw from the market, raising the probability of default for the high risk

class and hence raising costs further.

These elements must increase the use of non-interest loan conditions to allocate loans. As we have seen these may lead to downpayment requirements, which may effectively ration certain consumers out of the market. It has been suggested that such consumers should be able to raise the required downpayment by an unsecured loan from a third party. However, this loan is a forteriori subject to the moral hazard and adverse selection problem. Moreover, it involves additional transaction costs on the part of both borrower and lender, which further raise the costs of such a loan. This is likely to be particularly important where the size of such a loan is relatively small, so that the screening and other transactions costs are large relative to the income from the loan. Thus, this is not generally a likely option. As pointed out by Rea (1982), limitations on deficiency payments or attorney's fees exacerbate this problem because the creditor is either limited to compensation via repossession or must incur court costs, if he wishes to try and recover his full damages. As the wheels of justice grind slowly and expensively, repossession and therefore partial loss may be the preferred option.

The situation in the case of mortgages is somewhat different. While minimum downpayments are indeed required, frequently because of legal requirements, the option of raising the downpayment or a significant portion of it, by way of a second mortgage is frequently available. Second mortgages may be used, either in cases where legal limitations force the first mortgagee to require an excessive downpayment or where the second mortgagee is less risk averse than the first mortgagee. It is important to note, that while the second mortgagees are not as well protected as first mortgagees against default, their position is not as risky as that of unsecured creditors or as

second claimants, in the case of business loans. This is because they avoid the possible moral hazard problem associated with possible foreclosure on the part of first mortgagees.

This moral hazard problem may exist under the following set of circumstances. Suppose that the price of the property falls, so that the price net of selling costs is below the combined first and second mortgage outstanding debt, while the gross price remains above the outstanding value of the debt. Under these circumstances, the debtor has no incentive to default, unless a change in his circumstances occurred, because the market value of the house to him, plus the cost of dislocation, clearly exceeds the outstanding debt. Thus, while the debtor may have no financial equity in the house, his equity in terms of use is positive. If further fluctuations in housing prices are expected, there is some probabiliy that the price of the house less selling costs will fall below the outstanding first mortgage. Thus there is some probability that default will occur, which will inflict losses on the first mortgagee. Therefore, the first mortgagee now has an incentive to foreclose the loan, if possible, in order to insure that such potential loss does not arise. If loans were callable at short notice, the first mortgagee would then force repayment of the loan or foreclosure at that time. This is clearly possible in the case of demand loans which are common in business. If the second mortgagee wishes to protect himself against this action, he has the option of repaying the first mortgagee and assuming the mortgage himself. However, this is, of course, an expensive proposition, and in any case, by doing so the second mortgagee assumes the first mortagee's risk. Thus, in the case of business loans the moral hazard of forced default and bankruptcy by the first mortgagee raises the risks to second mortgagee and hence raises the risk premium they require.

In the case of home mortgages, because the term of the loan is fixed, the first mortgagee is unable to call the loan, except at prescribed times or when actual default occurs. Because the borrower has no incentive to default under these circumstances, default is likely to occur only if unforeseen events reduce the individuals income or increase his other expenditure sufficently, to force him to default. If, however, this condition is likely to be temporary only, the second mortgagees can protect themsevles from foreclosure by the first mortgagee, by lending the debtor a sufficient amount to enable him to maintain payments to the first mortgagee and thus avoid default. Thus, second mortgagees can reduce the risk of loss due to relatively mild fluctuation in the price of the house. Consequently, one would expect that risk premium on second mortgages may not be prohibitive, so that minimum downpayments requirements will not absolutely ration out potential mortgagors, provided their income is high enough.

3.7 Equilibrium Credit Rationing and Market Segmentation

Our previous discussion revealed that risk considerations plus inability to screen effectively provide a convincing rationale for credit rationing, in the form of limitations on loan size and terms, as well as to outright refusal to lend. Thus, even though rationed consumers may be willing to pay higher rates, it is rational for lenders to restrict borrowing by quantitative means and terms rather than adjust interest rates to clear the market. Moreover, variations in the use of non-interest instruments to allocate credit according to availability is rational, due to the same reasons. Hence, the rate of interest will show greater stability over the cycle, with quantity rationing equating demand and supply.

However, while these arguments explain some rationing, they do not explain market segmentation. In particular, while this segmentation is associated with risk differentials, in that default rates are considerably higher for consumer loan companies than for banks and possibly credit unions, the order of magnitude of losses due to risk is much smaller than the interest rate differentials. There is no information on rates of default on consumer loans in Cnadian or U.S. banks, but total default rates are very low, according to figures compiled by Merrill Lynch Royal Securities from the financial statements of Canadian banks.[37] Default losses average less than .5 of a per cent of total outstanding loans. There are no figures for finance company losses in Canada, but according to the NCCF (1972) the average loss rate for consumer finance companies in the U.S. was 2 per cent of outstanding credit in 1964. While these losses may seriously underestimate the losses due to bad risks because they do not include collection costs, it is clear that their order of magnitude is insufficient to explain the large differential in interest rates between finance companies and banks. Moreover, the evidence on the nature of segmentation is unclear. While there is reason to believe that borrowers from high cost sources are riskier than borrowers from low cost sources, it is not clear whether in the absence of rate ceilings and other impediments of this nature, the risk characteristics of borrowers are sufficient to explain their distribution among lending institutions. There is no evidence on detailed risk characteristics of borrowers according to borrowing source in Canada.

However, some indication that higher risk borrowers tend to borrow from high cost lenders, is contained in the analysis of the survye of consumer finances by Statistics Canada for 1970.[38] The compoisiton of debt by type of debt and income size group shows that the proportion of debt from the highest

cost lender, that is, consumer loan companies, decreases steadily with income from about 24 per cent of debt for families with incomes under $6,000 to just under 8 per cent for families with incomes of $15,000 and over. Similarly, the proportion of debt in the form of charge accounts and installment debt, falls from about 19 per cent for the low income families to just 10 per cent for the higher income families. There is no comparable information for the 1977 survey, however, there is no reason to believe that the pattern has significantly changed. As low income consumers are likely to be riskier, this supports the contention that segmentation is risk-related. However, a similar correlation in the data exists between the level of eduction and resort to high cost lenders. As income and education are highly correlated, it is not clear which is the determining factor. In particular, it is possible that higher levels of education lead to better market information and hence, that resort to high cost borrowing is a result of deficiencies in consumer information, rather than due to rationing and market segmentation on the supply side.

As pointed out before, recent evidence from th U.S. casts some doubt on the risk segmentation hypothesis. For example, Boczar (1978) found that two-thirds of finance company personal loan customers were almost indistinguishable from bank loan customers in terms of their risk related characteristics. Other sutdies such as Johnson and Sullivan (1980) and Isenbis and Murphy (1974) found similar evidence. Sullivan (1981) found that in Louisiana, where interest rate ceilings were not binding, the proportions of high and low risk customers of banks and finance companies, while somewhat different, were not significant at the one per cent level of confidence. While the percentage of customers previously rejected for credit, an indication of riskiness, was virtually identical for banks and finance companies. Thus, while the evidence suggests that some segmentation by risk may exist, its importance and order of

magnitude are far from established.

In any case, the existence of the very large interest differential between different sources of borrowing indicates that some segmentation does exist. To the extent that such segmentation is due to risk, its existence is not explained by our rationing arguments. In particular, the question arises: If it pays banks to reject applicants, rather than raise the interest rate charged them to reflect their higher rate category, why does it pay finance companies to accept these same individuals? Particularly as they must charge a higher rate of interest to break even and therefore increase the probability of default. In fact, to the extent that screening is possible, why do banks not charge differential interest rates on consumer loans of slightly higher risk, rather than reject applicants altogether or accept them at the same interest rate as lower risk consumers? The arguments about moral hazard and adverse selection apply strongly only for relatively serious risk problems, where total rationing is justified.However, for cases where compensation for risk will require only a small increase in the rate of interest, total rationing is not justified. Banks clearly do vary their interest rates on business loans according to the borrower's risk. Why don't they do this for consumer loans?

The uniformity in rates and consequent rationing behaviour by low cost lenders must be explained in terms of institutional rigidities, externalities and possibly, some degree of monopoly of low cost lending institutions.

Rigidities which prevent credit grantors from fine tuning credit terms to the risk characteristics of potential customers, arise from economics of scale attainable from specialization in a particular risk class. If loans are small, the amount of time and effort necessary to determine the precise risk

class and the consequent price may be too great relative to the reward. Moreover, as Sullivan (1981) points out, contract enforcement efforts required for high risk consumers are likely to be substantially above those for low risk consumers. As well, these require special skills in screening and in enforcement. Therefore, one would expect some specialization according to risk class. Even if low cost institutions were to award higher risk loans, it would be rational for them to separate consumers into risk classes and assign relevant specialists to the analysis of each group. However, such internal allocation is unlikely, because of possible externalities arising from differential inteest rtes and particularly from differential enforcement policies. As the National Commission on Consumer Finance said, "Aside from the expense of providing variable rate structure attuned to cost and risk, creditors now hesitate to make adjustments, because of difficulties in explaining why one customer must pay higher rates than a friend who gets credit at the same source."[39]

Even more important are externalities which arise from the use of harsh creditor remedies. It is expected that where risks of default are relatively high, creditors will resort more readily to harsher collection and enforcement procedures in order to dissuade voluntary default and reduce involuntary default.[40] However, the use of such remedies is likely to be well publicized and therefore, deter customers who might not be subject to these from borrowing. That is, a reputation for toughness, which may be desirable for an institution specializing in high risk, is not necessarily desirable for an institution which specializes in lower risk. Therefore, it is likely that institutional specialization by risk classes will occur.

The role of competition in the process of segmentation must also be evaluated. If competition among low cost institutions is high, it will generally force a greater degree of rationing by risk, because it would pay some institution to specialize in very low risk customers and offer particularly attractive interest rates. In order to compete, other institutions would be forced to follow suit, applying very stringent risk criteria. Higher risk customers, together with lower risk customers which were refused credit in error, would have to borrow at higher rates from other specialized institutions. Whether several gradations of institutions serving consumers of different risks will develop, depend on screening costs. If, as is likely, screening costs are high, only a few, possibly two risk classes, will be determined and served. If, however, competition among low cost credit grantors is limited, either due to regulatory or other barriers to entry, as is the case in the Canadian banking industry, or due to lack of knowledge by consumers, a greater degree of slack in rationing can be expected. This is because banks may charge higher rates from low risk consumers in order to cover losses due to looser screening. Thus, where some degree of monopoly exists, banks are able to charge sufficiently high prices to cover the marginal costs arising from the addition of somewhat lower quality borrowers, without losing their higher quality customers.

The evidence suggests that the banking industry in Canada possess some degree of monopoly which yields higher profits and spread between borrowing and lending rates, relative to the U.S.[41] This is consistent with the lower interest rate differential between banks and finance companies in Canada, relative to the U.S. and with the apparently lower degree of rationing, found in the CROP studies relative to that in the U.S. However, this evidence is very shaky. Considerably more research would have to be done in order to

verify this hypothesis.

3.8 Credit Rationing and Market Segmentation, The Evidence

Two main facts in consumer credit markets require explanation. First, credit costs are very different according to the nature of credit and the granting institution. Information on these in Canada is very meager. However, the limited information available supports the voluminous evidence from the United States. For example, Brown (1981) gives information on cost of borrowing for a given customer on a loan of $1600 for two years from different sources in the same city in Canada in 1980. Trust companies and credit unions offer the lowest rates, 14.5 per cent to 15.5 per cent per annum (including life insurance premiums on the loan). Banks are a close second with rates of 15.75 per cent to 16.5 per cent (including life insurance premiums) and small loan companies are significantly higher at 24 per cent to 26 per cent (excluding life insurance premiums). During the corresponding period, interest on bank credit cards (Visa, Mster Charge) was 21 per cent per annum.

The evidence in the United States is obscured by the existence of legal rate of interest ceilings, which are different for different institutions and states. The variance of these interest ceilings is very large so that in many cases they are binding, but in other cases they are sufficiently high, so that the rates charged by most legitimate lenders fall short of these ceilings. Where these rates are low, lenders charge the maximum rates and therefore frequently restrict credit availability. However, in the many states where rate ceilings are sufficiently high, so as not to constrain lending institutions, the situation closely parallels Canada's. For example, Sullivan (1981) cites average rates of approximately 15 per cent for a 2 year unsecured loan of

$2,000 from banks in Louisiana, relative to 29 per cent for the same loan from finance companies in the same state in 1979. Both banks and finance companies in Louisiana are subject to the same rate ceilings, which are considerably higher than the interest rates charged. Similarly, the National Commission on Consumer Finance in the U.S. cites averge cost of credit for an unsecured loan of $1,000 for a period of 12 months at about 13 per cent for banks and 26 per cent for finance companies for the country as a whole, although these figures are considerably obscured by legal rate ceilings. Similar results,, though not as extreme, are shown for other types of consumer loans. For example, the average rate of interest on car loans at banks were about 2 percentage points lower than the same loans obtained through dealers, although in many cases the ultimate source of finance was the banks. Similarly, revolving credit rates, whether at banks or obtainable directly from retailers, were about 17 per cent on the average, significantly higher than personal loan rates from banks, but lower than personal loan rates from finance companies. It is thus clear that the picture is similar in the U.S. and in Canada. Personal loans from banks and credit unions are generally the cheapest source of consumer finance, while revolving credit is significantly more expensive and consumer finance companies are more expensive still.

Second, there appears to be a significant amount of credit rationing in consumer loan markets. Institutions tend to specialize by charging uniform rates for different types of consumer loans, refusing credit to some customers or setting conditions on size and nature of the loan to reflect standing of customers, rather than adjusting their interest rates to different customers to reflect their differential risk. This is in contrast to business loans, where in addition to setting non-interest terms and outright rationing, banks do charge differential rates to customers according to their risk

classification. Thus, in consumer markets, some consumers are denied credit by low cost lenders and move to higher cost ones or withdraw from the market altogether. Other consumers apparently apply directly to higher cost lenders, in the belief that they will be denied credit by lower cost lenders or through lack of knowledge.

The evidence on the extent of rationing in Canada is very meager. We have not found any published information on the extent of consumer credit refusals by different institutions. The only source of information on the question are the two reports prepared by CROP for the Department of Consumer and Corporate Affairs in 1977 and 1978. Unfortunately, the sample size and design of the sample and questionnaires limit the reliability of the results. As the number of respondents who reported credit denial is extremely small, any analysis of their characteristics cannot be statistically reliable. Moreover, because of the nature of sampling (cluster sampling) and some problems with non-response, the degree of representativeness of the samples is uncertain. No tests were performed to ascertain that the characteristics of the sampled population correspond to characteristics of the population at large in terms of income, debt structure, and other socio-economic characteristics.[43] Moreover, because the sample relies on respondents recollection, unsupported by documentary evidence or unchecked against other sources, possible errors and biases may have occurred. The information emerging from these studies must therefore be treated as suggestive, rather than conclusive. We shall therefore report the results and contrast them with the information available on rationing in the United States, in order to evaluate the consistency of these results.

A brief description of the two studies follows. The first study, Access to Financial Services, was designed to determine whether certain types of Canadians have difficulty obtaining financial services, and if so, to give some preliminary information concerning the reasons for these problems of access. The study was conducted using two modified probability samples. The first, a national sample of 1,920 Canadians, and the second, using the same questionnaire, a low income sample of 928 Canadians living in low income areas (defined as Census Tracts with median income of below $8,500 in 1971) in Halifax, Montreal, Toronto, Winnipeg and Vancouver. The study investigated degree of use, applications and refusal of a variety of financial services. Of interest to us are the four modes of consumer credit investigated by the study: first and second mortages, personal loans and bank credit cards. For each of these, the respondents were asked whether they presently have the service and if so, where. If they did not have the service, they were asked if they had applied within the last three years, and if not, why not. Those who had the service, or had applied within the last three years, were asked if they had been refused the service in the course of the last three years and if so, where. The results were correlated with socio-economic characteristics of the respondents in an attempt to identify the reasons for refusals and/or self exclusion.

The second study, Consumer Credit Use in Canada,[45] was conducted using a modified probability sample of 2,287 adults across Canada. The study concentrated on mortgage loans taken out within the last 12 months, although information on other loans, particularly where no mortgage loans were applied for, was collected as well. It attempted to identify the choice of classes of lenders, the reasons for not taking credit, access to credit, image of classes of lenders and knowledge of interest rates. The distinction between mortgage

and other loans is not always clear in the analysis, making it difficult to evaluate some of the information on sources of finance.

The studies suggest that credit refusal is more serious for mortgages than for other borrowing the access[46] study roughly estimates the mortgage refusal rate at 7%, while the credit use study estimates it at about 12%.[47] The access study finds significant differences in the propensities of banks and trust companies for refusals, with banks tending to refuse a larger proportion of applicants than the average and trust companies a lower proportion than the average. However, given the very small numbers involved and the discrepancies between the different samples, it is difficult to put much credence in these differences. There is some evidence that the main reasons for refusal are related to lack of stable employment and younger age. Only 6 out of 114 applicants were refused second mortgages according to the access study.

According to the access study, the proportion of applicants who were refused a personal loan was 5 per cent of the national sample and 9 per cent of the low income sample. However, the majority of either group eventually did get the personal loan, although possibly for a smaller amount than originally applied, leaving only 1 per cent and 3 per cent respectively, who had applied for a loan and did not receive one ultimately. While again, the numbers denied loans are rather small, about 60 altogether, it appears that the major reasons for loan denial were lack of job stability. The majority of those who were denied a loan from both groups had been in their jobs for less than two years, whereas the majority of the applicants who received loans had been in their jobs for over 2 years. Similarly, renters were significantly more likely to be refused the personal loan than homeowners. Single persons

or divorced, were also more likely to have difficulty obtaining a personal loan. Finally, low income appeared to be an element. However, as many of these characteristics are likely to be intercorrelated, it is difficult to assign specific weight to these individual factors, as the study did not conduct a multivariate analysis. There appears to be no significant difference in the rate of refusal by different institutions in either group.

Finally, 23 of the national sample and 14 of the low income sample, were refused bank credit cards. It is not known how many applied during the relevant period. As a proportion of all those who have credit cards, refusal rate appears to be at least 3 per cent for the national samples and 7 per cent for the low income samples. This probably underestimates considerably the rate of refusal. However, about a third of those who were initially refused credit cards, eventually got them. A major reason for refusal was short residence in their last place of residence. The majority of those refused had been living in their homes for less than five years.

Because of the small numers of rejection, the study attempts to analyze the determinants of rejection by lumping all refusals together. Looking at one variable at a time, the study finds that in the national sample, refusal rate per applicant is only about 3 per cent, relative to 6 per cent for the low income sample. These differences appear to persist across all income classes suggesting that other characteristics of those who dwell in low income areas are of significance in addition to levels of income.[48] There is a clear negative correlation between the rate of refusal and the applicant's income for applicants with incomes above $9,000 per year. However, for applicants with incomes below that level, the picture is not clear. There is a clear negative correlation between probability of refusal and the length of

residence in the same address. Similarly, homeownership reduces the probability of refusal by a large factor. The possession of telephones appears to be also related to low refusals. Finally, the rate of refusal for married individuals is considerably lower than that for single ones, which is in turn considerably lower than that for divorced people. In particular, the rates of refusal for divorced people in the low income sample rise to about 20 per cent of applicants.

The analsis in the credit use study confirms the generally low rejection rates for credit other than mortgages. Of those indviduals who have mortgages and who have applied for other forms of credit, only 3 per cent were rejected. Of those individuals who do not have mortgages and who have applied for credit, only about 5 per cent were rejected. These figures are in general conformity with the average rates of rejection recorded for the national sample in the access study.

The general picture emerging is of relatively low rates of rejection on the average in most loan categories with the exception of mortgages. However, these relatively low rates,, which average about 3 per cent of applications, obscure a good deal of variance. With rejection rates rising to 10 per cent and above for single or divorced low income individuals with relatively unstable jobs. The CROP evidence does not indicate significant differences in rejection probabilities by institutions except for the case of mortgages, where because of very small numbers it is difficult to evaluate.

There is very little information on rejection rates in the U.S. However, the information available suggests that rejection rates for personal loans from finance companies, are very much higher than that indicated by the CROP study in Canada. The National Commission on Consumer Finance[49] suggests

very much higher rejection rates for personal loans from finance companies. While interest rate restrictions are likely to lead to a greater amount of rationing, and hence a larger degree of rejection, rejection rates are still high for states which have high rate ceilings and relatively harsh creditor remedies. The average rejection rate for these states appears to be around 30 per cent, very much higher than that indicated in the CROP study. Similarly, Sullivan (1981) shows hat approximately 20 per cent of both bank and finance company customers who had received loans from either, had previously been turned down for credit in the past couple of years. As the proportion of those who had been turned down for credit is likely to be smaller for those who were subsequently awarded credit than for others, these are likely to be underestimates of the overall proportion of credit rejections. As the figures relate to Louisiana, where rate ceilings are not binding, they are comparable to conditions in Canada.

As pointed out in the access report, rejections may not tell the whole story, because consumers, knowing of the credit policies of the different lenders, may ration themsevles out by not applying for credit, because they anticipate being refused. Moreover, consumers may apply to high cost sources, in the belief that low cost sources will deny them credit. Thus, self-selection by consumers will strongly reinforce rationing and market segmentation. However, there is no necessary correlation between consumer assessment of the probabilities of receiving a loan, and the objective probabilities. If consumers do not apply in the mistaken belief that they will not be granted a loan, they can not detect the error and therefore, will effectively confirm their own expectations. It is particularly important to distinguish the degree to which self-rationing is an accurate reflection of objective market conditions, because this will indicate whether the problem lies in policies of

lending institutions or whether it arises from deficiences in information of consumers.

The access study attempted to identify the reasons for non-application and correlate them to the objective difficulties in access. In particular, they attempted to identify the reasons for non-application as stated by consumers and to relate actual non-application rates by consumer characteristics to the determinants of refusal rates. It is notable that for all categories, a very high proportion of the respondents indicated that they did not apply for the relevant loan because they did not need one. Only a small proportion gave other reasons for lack of application. Thus, for example, about 92 per cent of both the national and the low income sample did not apply for first mortgage loans because they did not need one. Similarly, over 90 per cent of those who did not apply for a second mortgage gave the reason that they did not need one. Only in the case of personal loans, did a significant number indicate that they did not apply because they could not get a loan. In particular, in the low income sample, about 5 per cent of individuals with incomes below $12,000 per year indicated that they did not apply, because they thought they could not get a loan. Similar results were indicated for applications for credit cards. Thus, based on respondents answers, access does not appear to be a problem, except in a very small proportion of cases.

These results must be interpreted carefully. It is most unlikely that the true reasons for non-application were elicited correctly. The reason most frequently give,lack of need, may well conceal a significant fraction who did not need a loan because, expecting to be denied one,they did not think in terms of borrowing. This reasoning is borne out by some correlations in the access study. Refusal rates by income are significantly negatively related to

application rates by income in both the national and the low income samples. Similarly, respondents who have had a job for a longer period of time are less likely to be refused credit and more likely to apply. According to the access study, these results may be due to realization that lower income individuals are less likely to be awarded credit, or to an agreement with the financial institution assessment of their ability to repay the loan. Because only a small number of applicants are refused, and a smaller number yet indicate inability to obtain credit as their main reason for not applying, the access study concludes that "there appears to be a general concordance with the view of major financial institutions and consumers perceptions regarding the availability of their taking out loans."[50] Unfortunately, while these results are possibly indicative, they cannot be accepted on the basis of the analysis in the access report, mostly because of the lack of multivariate analysis, which might enable us to pinpoint the determinants of both application and rejection rates.

An indication that perceptions of rationing are more important than those indicated in the access study, can be derived from the credit use study. While 74 per cent of the respondents believe that they could get a $1,000 personal loan from a bank quite rapidly, and 62 per cent believe that they could get it from a finance company quite rapidly, only 44 per cent of those with income under $6,000 indicate that they could obtain a loan rapidly from a bank and 39 per cent think they could obtain it rapidly from a finance company. Thus, for low income respondents, perceived access is clearly severely limited.

Thus, absolute rationing, whether on the basis of actual rejection or on the basis of self-selection, appears to be mainly concentrated in the low income end of the population. However, according to the CROP studies, its quantitative effect on other groups of the population is relatively small.

3.9 Is There a Market Failure Due to Informational Problems on the Supply Side?

Our survey of the issues and the evidence suggests that difficulties in screening potential customers for risk, coupled with moral hazard and adverse selection problems, provide a rationale for the observed credit rationing in consumer credit markets. In addition, together with economies of scale which lead to specialization, they may also explain some aspects of market segmentation by risk between low and high cost lenders. While the evidence suggests that globally, rationing in the form of outright refusal and market segmentation may not be quantitatively important, we cannot reject the hypothesis that self-selection by consumers, in anticipation of such rationing and segmentation maybe quite important. Moreover, because both rationing and segmentation, whether explicit or by self-selection, affect mainly low income consumers, as well as special groups such as the young or the separated and divorced, the effects of rationing and segmentation on these groups may be quite significant.

Assuming that these informational problems on the supply side are the sole determinant of these phenomena, do they represent a market failure? And if so, what corrective actions might be available to the government?

In evaluating these questions, we must not use as a standard of reference a world in which these informational problems are non-existent. Informational problems are likely to exist for the government as well as for anyone else. Their solution involves significant real costs and these must not be ignored. Consequently, the relevant question is whether the market organization utilizes the avilable information in an efficient way and whether the institutional solution of rationing is socially desirable.

It is reasonable to assume that market information is as efficiently utilized as possible by the existing credit institutions. This is because it is in their self interest to identify as best as possible, the true risk characteristics of potential customers. It is costly to turn away a potentially profitable customers, as it is to accept a loan application which has little chance of being repaid. While screening methods are clearly imperfect, and possibly subjective, there is no reason to believe that they are governed by prejudice rather than fact. However, because of privacy considerations and the lack of complete information sharing, it is possible that an improvement in efficiency of classification could be achieved if complete pooling of information occurred. It is clear that with the large capacity of computer information systems, and the advance of Electronic Fund Transfers (EFTS), access to financial information about consumers will rapidly increase. As well, the advantage of banks in obtaining and utilizing financial information is likely to increase considerably with the advent of EFTS.

While the availability of better information is likely to improve screening methods and accurancy, it has potentially two sources of disadvantage. The first if the potential ocnflict between the right to privacy and the desirability of efficient screening. The second is that increased advan-

tage in screening by banks will increase their market power relative to other financial institutions. As the banking industry is highly concentrated, this may increase the degree of monopoly of banks to the detriment of consumers. This problem may be overcome if banks are forced to share their information with each other and other sources of credit. However, the issue of the conflict betwen privacy and efficency is not easily resolvable and is outside the scope of this study.

Credit contracts involve a certain amount of insurance due to limitations on creditor remedies. Under certain circumstances, debts are forgiven, wholely or in part, even though some resources may exist to compensate the lender. These limitations on creditor remedies may be legal or voluntary on the pat of lenders. In any case, they exacerbate the problem due to moral hazard and adverse selection, and hence cause increased rationing. Thus, there is a trade off between the amount of insurance purchased jointly with credit and the degree of rationing. While increases in insurance may be socially desirable, they may lead to increased rationing which causes inefficiencies. The inefficiencies due to rationing occur because individuals who are denied credit are restricted in their ability to optimize their consumption over time and to benefit from the tax and other advantages associated with ownership of housing and consumer durables. At the other extreme, high risk individuals who are given credit by low cost institutions are subsidized by low risk consumers. Thus, low risk consumers pay part of the insurance premium of high risk consumers and hence, acquire too little credit.

The desirability of insurance against adverse individual circumstances is well established. The rationale for specific insurance, which is tied to consumer's credit, is that by acquiring consumer credit and spending the loan,

the individual commits himself to a specific pattern of expenditure in the following period. If circumstances alter, which change drastically the marginal valuation of different forms of expenditure, this precommitment may cause a severe loss in utility. Therefore, the individual may wish to purchase insurance, which will alleviate the severity of this precommitment when circumstances change. While normally the volume of such insurance may be left to the individual's discretion, it is argued that lack of knowledge and foresight, particularly on the part of high risk individuals, requires the setting of minimum insurance requirements in the form of regulations on creditor remedies and bankruptcy. However, as we have seen, the costs of increased mandatory insurance are increased rationing and segmentation. We do not have enough information to evaluate whether the current regulatory insurance is optimal. However, as rationing problems are possibly serious for low income consumers, it is not clear whether any additional protection for delinquent consumers is desirable.

It is thus clear that while rationing and market segmentation by risk may cause serious accessibility problems to low income consumers, there is no convincing evidence to suggest that they are socially inefficient, given our inability to screen effectively.

3.10 Summary

This chapter analyzes risk and information problems on the supply side of the market, in order to evaluate their effects on the operation of consumer credit markets. These informational problems arise from inability of lenders to screen potential borrowers effectively according to their objective risk characteristics. This inability, coupled with limitations on creditor remedies, causes low cost lenders, such as banks, credit unions and trust companies, to ration credit to consumers. Rationed consumers then must borrow from more expensive sources, such as finance companies or sellers of durables. Some potential borrowers are rationed out altogether.

Examination of the available evidence in Canada from two studies conducted by CROP for the Department of consumer and Corporate Affairs, suggests that the problems of rationing and market segmentation are not as serious in Canada as in the U.S. This appears to be because of the lower degree of government regulation of the industry. In particular, the removal of credit ceiling restrictions on banks and the reduced regulatory barriers to competition from trust companies has increased credit availability in Canada. It is important that the government resist the temptation to institute such ceilings. Their main effect will be to restrict availability, particularly to the poor.

However, the data did not enable us to distinguish the seriousness of access and segmentation problems for the poor and the young, who appear to suffer from these problems. Further studies concentrating on access to different forms of credit for these groups are necessary to identify if any remedial action is necessary.

IV

Informational Problems on the Consumer Side

4.1 Introduction

The evidence analyzed in the previous chapter did not enable us to distinguish whether market segmentation in the consumer credit market occurrs due to rationing by risk or whether it reflects market inperfections due to consumer ignorance. It has been amply demonstrated in the economics literature that where consumer ignorance, due to high search costs or other reasons is prevalent, the market may support firms which sell an identical product at different prices, even though entry is free and apparent competition prevails.[51] In this type of market, high priced sellers sell to ignorant comsumers, while knowledgeable consumers are able to purchase the product at lower price from other suppliers. This situation is particularly likely where product qualities are not easily evaluated, so that price differentials may masquerade as quality differentials. Because of the likely correaltion between high risk and ignorance due to low education and income, it is extremely difficult to distinguish whether the apparent segmentation of low income consumers in the high price end of the credit market is due to their higher risk or to their ignorance. In order to evaluate this question, we shall investigate the evidence on the nature of consumer information about credit.

Knowledge of interest rates is also important in consumer decisions with respect to optimal resource allocation over time and across commodities, as well as to the composition of asset holdings. We have argued that non-rationed consumers equate their marginal time preference to marginal interest

rates. Thus, knowledge of marginal credit costs is important in determining the amount of borrowing and the allocation of consumtion over time.

Because of the interdependence of consumtion and investment and the wealth effects of changes in the interest rate, these decisions may also affect the composition of consumtion. Market segmentation implies that the supply function for credit facing individual consumers is likely to involve discrete jumps, with secured personal loans and first mortgage finance cheapest, followed by unsecured personal bank and credit union loans, closed end retail credit, open end revolving credit and consumer finance companies. Each of these categories has further relevant dimensions in terms of convenience, flexibility, timing, etc. Thus, even for unrationed consumers, the marginal cost of borrowing is not independent of the purpose of loans. Moreover, variations in loan quality may invalidate simple comparisons between interest rates. It is therefore important to identify the relevant interest rates for different consumption and investment decisions. This is not always the unsecured pesonal loan rate. In addition,because of risk consideration, the average rate of interest may rise with increases in borrowing. If so, marginal cost of additional borrowing may be considerably higher than the average cost of the loan.[52] Thus, variations in the average cost of loans may have small effects on the marginal cost.

This is particularly likely where consumers are rationed. In this case, variations in interest rates have only an income effect, but no substitution effect. Thus, they have little effect on loan demand unless the loans are large, and hence on intertemporal consumption or investment decisions. We have argued that a large number of young consumers, with high human capital but low non-human capital, are likely to be in this position. Thus, the level

of interest rate should have little effect on their decisions, except where wealth effects of changes in interest rates are high, that is, in the mortgage loan market.

Similarly, low income comsumers may be rationed or face increasing credit costs as credit needs expand, through having to resort to more expensive credit outlets as their borrowing increases. Thus, over the relevant range they may be facing the vertical segment of their credit supply curve. Again, credit costs are unlikely to affect their borrowing and consumption decisions, unless the wealth effect is sufficiently large. This is unlikely, unless the debt carrying costs are high relative to their income.

The rate of interest should therefore affect credit allocation decisions of those consumers who face a relatively flat credit supply curve, or where wealth effects are large. Wealth effects are positively related to size and duration of loans. As most consumer borrowing is done at fixed interest for the duration of the loan (except for mortgages), the duration of the loan determines the period over which this rate will prevail. The longer this period, the larger is the effect of a given interest rate change on wealth and the larger the effect on consumer decisions. Thus, while the interest rate is the relevant cost for intertemporal decisions, the total interest cost is the measure of the wealth effect of the interest rate. This measure is therefore likely to be important to consumers.

As to portfolio allocation, the role of borrowing is complicated by tax considerations. If loan interest is not tax deductible, as in the case of mortgages on own residence or purchases of durables, tax considerations mitigate against the use of borrowed money, if own capital is available. Thus, borrowing will be minimized regardless of its cost. This tendency is

particularly strong for high wealth individuals, who are likely to have some discretion in their portfolio decisions. For such individuals, consumer borrowing is more likely to be a short term convenience to minimize transaction costs. If these transaction costs are significant, interest rate variations are unlikely to affect their borrowing and portfolio behaviour.

It is clear from the analysis above, that sensitivity to interest rate variations is likely to be very low for a significant number of customers and will be confined mostly to those who face a relatively flat credit supply curve or who have a high debt to income ratio, and hence a large wealth effect.

We should expect that such conditions apply to middle and upper income groups whose non-human capital is insufficient ot finance all their consumption and assets. As education and income are positively correlated and as the ratio of income to non-human wealth is negatively correlated with age, we should expect this group to consist mainly of the educated young to middle age. In addition, we should find high sensitivity to interest rates in the mortgage market becasue of the large wealth effect of mortgage interest. As the size of debt relative to income declines with age and other assets their effects should also be strongest for the same group indicated above. However, lower income individuals may also be seriously affected if their housing requirements cannot be easily obtained in the rental market.

Because acquiring and utilizing information is costly, we should expect information about interest rates to be most accurate for consumers who are borrowers and whose borrowing is large relative to their income. Therefore, knowledge about interest rates is likely to be greater among the educated, relatively young consumers. As well, this information is likely to be most

accurate for the sources of crdit involving large loans of long duration, i.e. for mortgages and large value consumer durables.

Credit is not a uniform commodity. Each loan to each consumer involves different risks and conditions and knowledge of interest rates is insufficient to evaluate the best credit source. We shall therfore evaluate consumers knowledge of interest rates and of credit terms and availability. We shall then attempt to evaluate the extent to which consumer ignorance is likely to lead to the observed market segmentation in consumer credit markets and to suggest possible remedies, if required.

4.2 Consumer Information on Interest Rates

The main source of information about consumer credit information in Canada is the CROP study on credit use. The study asks consumers about their knowledge of interest rates and their importance in credit decisions, according to type of credit and related the answers to some consume characteristics. A brief review of their findings follows.

In general, knoweldge of interest rates appears to be very poor, 20.4 per cent of the respondents admitted not knowing the interest rates paid on loans they had taken in the past three years. Among the rest, estimates of interest rates actually paid varied widely. Unfortunately, as these are not identified by source or purpose, it is difficult to evaluate whether this variance is due to a large variance in the nature and timing of the loan. The study argues that in general, there is a significant tendency to underestimate the rate of interest paid. Thirty-seven per cent of the respondents said that they had paid 12 per cent or less for borrowing over the past 3 years, where the median interest rate relevant was about 13.5 per cent. As might be

expected, the reported rates decline with income and education, implying access to cheaper sources of credit for the better educated and those with higher incomes. Similarly, the proportion who admit to lack of knowledge of interest rates paid by them, declines with education. The majority (82 per cent) of borrowers claim to have known their rate of interest before they accepted the loan. However, only 61 per cent of low income consumers (under $6,000 a year) and 53 per cent of the old (over 60) reported being aware of the interest rate before accepting the loan. Similarly, only 67 per cent with grade 8 or lower education reported knowing the interest rate before accepting the loan. It is thus clear, that these groups were either rationed, and hence relatively indifferent to the interest rate, or unknowledgeable, and therefore unable to evaluate its significance.

Similar results were obtained when respondents were asked to estimate the rate of interest from different sources for a hypothetical loan. A large proportion of all respondents could not or would not estimate the interest rate which different institutions would be charging. The proportion of the ignorant ranged from 38 per cent in the case of banks to 72 per cent in the case of life insurance companies. "Those who did state an interest rate, tended to underestimate it. If we estimate the medium interest rate which the various classes of lenders are believed to charge, it is evident that most Canadians believe that interest rates are lower than they actually are. The estimated median interest rate falls between 11 and 12 per cent for banks, credit unions and life insurance companies. The median for trust companies is about 13 per cent and about 17 per cent for retail stores and credit card companies. The highest estimated interest rate is accorded to finance companies, 18 per cent. With the possible exception of credit card companies and life insurance companies, all classes of lenders charged more than the estimated

median interest rate."[54]

Surpringly, a comparison of borrowers and non-borrowers reveals little diffeence between the median estimate of interest rates from different sources. Again, the lowest income and education group professes the largest degree of ignorance. However, in contrast to the results of the survey regarding interest actually paid, the estimated rate of interest rises with income for banks and credit unions and by education for retail stores. This positive correlation is likely to reflect the better knowledge of the higher income and education groups about credit conditions. The variance of the estimates is lowest for banks and crdit unions and highest for finance companies and retail stores. This again, is in conformity with expectations, as the variance in the types and terms of credit offered by banks and credit unions and in their interest rates is generally lower than that for finance companies and retail stores.

Unfortunately, no information on mortgage interest actually paid or estimated is available from the study. Thus, we are unable to directly confirm our expectation that knowledge of these rates, particulaly by actual borrowers, is likely to be greater than for other categories. However, there is some indirect support for the hypothesis, in that a much greater degree of importance is assigned to the interest rate, in questions about factors determining credit choice, than for other credit categories.

The general picture of lack of accurate knoweldge about interest rates and the tendency to underestimate them is confirmed by a number of U.S. studies. Juster and Shay (1964) found that only 7 per cent could calculate their interest rates, moreover, 28 per cent of their respondents thought they paid 6 per cent per annum, where in fact they had paid considerably more. Moreover,

they held this belief regardless of the rate they had actually paid. Similar results were obtained by Brent and Bay (1970). Over 60 per cent of their respondents were unaware of their true interest rate on closed end credit financing cars and other consumer durables The degree of ignorance appeared to be particularly great for individuals with low income and education.

The introduction of disclosure legislation in the United States does not seem to have affected consumer knowledge significantly. Shay and Shober (1970) discovered some increased awareness after the legislation, confined to the credit card and revolving credit interest rates. Possibly because these are reported on each statement. A more recent study in 1975[55] found that few respondents had knowledge of the annual percentage rate of interest on open end crdit accounts or knowledge of the actual dollar finance charge. It must be pointed out however, that as consumers tend to use credit cards and revolving accounts for relatively small short term loans, interst rates are unlikely to be or great importance in the consideration of such loans, because of the overriding importance of convenience.

In any case, it is clear that consumer knowledge and ability to utilize this knowledge for effective decisions in credit market is seriously deficient. While it is possible that at the time of the loan, appropriate consideration is given to the rate of interest which is revealed in the process, this is by no means certain, and requires a great deal of further investigation.

While information about the absolute levels of interest rates appears to be quite deficient, information about the relative interest rate available from alternative sources in Canada appears to be fairly accurate. The majority of consumers ranked sources of credit correctly according to their average

cost. However, a significant number could not peform the ranking or had incorrect opinions. Thus, for example, 13 per cent believed that finance comanies are about the same or less expensive than banks and 34 per cent believed that they are the same or less expensive than Chargex or Master Charge. Thus, while there appears to be a general awareness of the ranking of the relevant sources of finance, there is a significant minority who are unknowledgeable or who hold incorrect beliefs. It is possible therefore, that this minority, mostly composed of lower income and low education consumers, may indeed be the source of borrowers from high cost sources. However, it is most likely that these are mostly individuals who do not participate in the credit market. We have insufficient information to make a judgment in this respect.

The finding that consumers appear to be reasonably knowledgeable about relative costs of borrowing from different sources, although they are ignorant of the absolute level of the costs, is consistent with the findings of Shay and Shober (1970). However, U.S. studies also confirm that a significant minority, usually low income, low education, exists, which does not possess even this level of information.

4.3 Consumer Information on Credit Terms and Availability

As a great deal of ignorance exists about the cost of credit, one might expect an even greater degree of ignorance to exist about the terms and conditions of credit. There is not as much information on this question either in Canada or abroad. However, the credit use study investigated the awareness of consumers with respect to a common credit condition. Many credit agreements specify that a loan cannot be reapid earlier than specified in the payments schedule, except upon a payment of penalty. Eighty-nine per cent of consumers clearly do not understand this provision. Most ot them believe that they would not have to pay a penalty, should they choose to prepay their loan.

It is most unlikely that consumers know their precise rights under current legislation and that they understand the fine print on their loan contracts. However, we are not aware of any empirical study on these questions. Consumer knowledge about non-price aspects of consumer credit is important, because lack of information about it, is likely to lead to undersupply of quality.[57] Fine print may be defined as an experience quality[58] of loans, in the sense that consumers generally do not know about it, unless problems arise where contract provisions come into play. If greater awareness of price leads to greater price competition, the incentive to cut costs and therefore quality increases. Thus, unless quality awareness or appropriate protection of quality standards by government increases, the outcome of increased competition may be detrimental to consumers, in that quality may deteriorate, leaving consumers worse off. At present, we do not possess enough information to evaluate the adequacy of information in this field or of government regulation of standards.

We have seen that consumers' institutional information on the relative cost of credit in different institutions is relatively good. It might therefore be relied upon to prevent segmentation due to ignorance. However, if individuals believe that they cannot obtain credit from low cost suppliers, such segmentation may still occur. It is therefore important to investigate consumers' belief about the availability of credit to them from the cheaper sources.

From the credit use study it appears that, on the whole, consumers do not perceive great difficulties in obtaining personal loans of $1,000. Seventy-four per cent of the respondents believed that they could obtain such a loan rapidly from a bank and an additional 9 per cent believed that they could obtain it from the bank with some delay. However, 8 per cent believe that they could not obtain such a loan from a bank or a finance company and another 8 per cent at least, do not know. It is interesting that access to loans from finance companies is not perceived to be easier than from a bank. This does not appear to be the case in the U.S., where access to credit from finance companies is considered to be easier than that from banks.[59] Interestingly, consumers perceive a higher difficulty of obtaining credit from retail stores than from either banks or finance companies.

These low proportions of consumers who peceive difficulty in obtaining credit, obscure the fact that a large proprtion of them are concentrated in low income groups. Thus, 22 per cent of all respondents whose income was under $6,000 a year, felt that they could not obtain a loan from a bank or a finance company. Similarly, 14 per cent of those whose income is between $6,000 and $12,000 a year felt they could not obtain a loan from a bank, though only 9 per cent of them felt that they could not obtain a loan from a

finance company.

Thus, perceived access to credit in Canada does not support the market segmentation hypothesis. Even low income consumers do not perceive finance companies as easier sources of credit than banks. The combination of institutional knowledge of relative interest costs and the lack of perceived difficulty in access suggests that market segmentation due to consumer ignorance of relative interest rates is unlikely. Indeed, an evaluation of the source of borrowing relative to availability and perceived costs showed that, "relatively few borrowers name high interest rate lenders (finance company, retail store, Chargex or Master Charge) as the least expensive lender available to them rapidly. Only 2 per cent of borrowers obtained credit from a high interest class of lender and also believed this to be the least expensive source available to them."[60] When we further consider that one-third of these borrowed on their credit cards, and this may indeed be relatively inexpensive for short term small loans, it appears that the incidence of borrowing from high interest lender, because it is the least expensive available is relatively infrequent.

It is difficult to evaluate these results in the light of knowledge that a significant number of consumers do borrow from high credit sources, though the proportion of those is very much lower than in the U.S. It appears that either the perceived ease of access is in fact incorrectly reported by respondents and that low cost credit sources impose more severe rtioning or alternatively, that borrowers frequently go to a class of lender they believe is not necessarily the cheapest available to them, because of other considerations. There is some support in the access study for this hypothesis, as only 49 per cent of borrowers obtained credit at the least expensive source they believed

accessible to them while 28 per cent borrowed from a more expensive source, presumably because other terms and conditions were more suitable. However, it must be borne in mind that the numbers on which these statistics are based are extremely small, so that the statistical validity of the information is questionable.[61]

Shopping behaviour appears to be very limited. Only 17 per cent of all borrowers applied to more than one place and even some of those are likely to have done so because they were refused the first time. Shopping for mortgages is a bit more important. 30 per cent applied more than once, relative to 9 per cent for personal loans. However, this may reflect a higher rate of refusal rather than a higher rate of shopping. Shopping is also clearly more prevalent among the more highly educated and higher income individuals. This is consistent with the self-assessed importance of economic and non-economic factors by the different groups. Whether such non-shopping behaviour is in fact important, cannot be easily determined. Because of institutional knowledge, that is the knowledge as to which are the more expensive sources, such shopping may be unnecessary among alternative institutions, while the relatively small number of banks and their uniformity of rates, leads to little gain from shopping among banks. In addition, consumers are generally limited to borrowing in the banking institution in which they maintain their accounts.

Consumers may thus consider a total package of banking services in determining their affiliation and therefore, do not require comparative shopping for specific loans. It is only when one moves into the relatively high cost sources of credit, where possible variability in rates between sources is significant. However, here consumers frequently buy a product and credit

simultaneously, thus shopping for the product implies some shopping for credit as well. We do not have any information on the nature of such search. The high level of ignorance of consumers about credit costs and interest rates suggests that consumers may have difficulty in evaluating the package of durable goods and credit offered by different sources. Indeed, there is some evidence from the U.S. that there is a trade off between the price of the item and the terms of credit, with the price rising to compensate for low terms of credit. This tendency is reinforced by the fact that the prices of durable goods are frequently subject to individual negotiations and bargaining and therefore, likely to involve personal price discrimination according to ignorance and consumer demand elasticity.

As we have seen, it is extremely difficult to evaluate from the existing evidence, the reasons why many consumers borrow from higher cost suppliers if they perceive correctly, that they could obtain the loan from lower cost suppliers. As suggested in the credit use study, this is apparently because many consumers consider other elements of loan quality to be more important than the cost of the loan. It appears that ease in having the loan, speed in obtaining it, and friendliness of people in credit departments are considered important by credit users. However, all of these relate to ease of access and therefore, are not entirely consistent with the perceived ease of access to credit. Given the small sample size and the very low proportion of borrowers in the sample who appear to have borrowed from high cost sources, it is difficult to form a clear opinion as to the reasons for borrowing from these sources or their rationality.

It is clear, that in order to distinguish whether credit rationing or consumer ignorance are responsible for the observed market segmentation, or whether such segmentation is simply a matter of differences in the type and hence, quality and cost of different types of credit, cannot be determined on the basis of existing evidence. A study concentrating on this part of the market is needed in order to evaluate these questions. It is not possible to devise government remedial policies with respect to such segmentation, unless the reasons for its existence are better understood.

4.4 Summary

This Chapter evaluates informational problems on the consumer side. The CROP studies confirm information from the U.S., which identify a large measure of consumer ignorance about interest rates and other terms of credit among borrowers and non-borrowers alike. It does not appear that disclosure legislation has a large effect on knowledge of interest rates, mostly because of lack of knowledge necessary to utilize this information among low income, low education groups.

However, it appears that most consumers are aware of the relative ranking of credit grantors by costs and other terms. Thus, it appears that a majority of customers possess enough information to ensure reasonable competitiveness of the market for loans, in spite of the fact that active shopping for credit is not widely practiced. It does appear however, that consumers are unable to properly evaluate cost and terms information in making consumption decisions. These problems appear to be more acute for low income, low education groups. Considerable additional study concentrating on these groups must be undertaken before remedial action can be contemplated.

The study points out that the joint provision of insurance and credit is socially desirable. Therefore, there exists an economic rationale for legal limitations on creditor remedies. Such rationale is reinforced by the limited knowledge of consumers about the terms of credit and the nature of creditor remedies. However, because such limitations lead to problems of willfull default (moral hazard) and hence, raise credit cost, it is difficult to determine optimal consumer protection rules. The detailed examination of such rules is outside the scope of this study.

In conclusion, our examination of informational problems in consumer credit markets fails to detect serius market imperfections, which call for remedial action on the part of the government. Further research is necessary to identify the severity of problems facing lower income and education groups, in terms of access and cost of credit in order to identify if corrective action is necessary.

It is important to note, that unlike in the United States, where regulation of credit terms and entry conditions by the different states has created serious problems of access and hence rationing and segmentation, the situation in Canada does not exhibit these symptoms to the same extent. This can easily be seen by the fact that credit from low cost sources constitutes about 80 per cent of outstanding consumer credit in recent years in Canada, but less than 60 per cent in the U.S. It is important that such regulation of credit terms and entry conditions not be extended in Canada, without strong evidence about its desirability and effects. The evidence so far, suggests that such regulation in the U.S. has had significant detremental affects on access to inexpensive sources of finance.

EXECUTIVE SUMMARY

Chapter 2 of the study investigates the role of consumer credit in the context of consumption investment and portfolio decisions with particular emphasis on mortgage markets in order to evaluate the welfare implications of rigidities and market imperfections. In particular, we investigate the difficulties which arise due to the fact that consumers are unable to diversify across assets in the early stages of their lives. Because human capital is accumulated early in life, and because it is not marketable as an asset, individuals are foreced into concentrating most of their assets in this form. This increases the risk of their portfolio considerably in early working life.

Imperfections of rental markets for consumer durables and housing (partiularly single family homes) forces consumers into further specialization in the form of their asset holdings. This tendency is reinforced by the interaction of the income tax and inflation, which increases the net after tax returns to consumer durables and housing. Because there are no markets for risk sharing of investment in homes, younger consumers are forced to carry a non-diversified portfolio, composed mostly of human capital, homes and consumer durables, financed by consumer borrowing. This lack of diversification and high leverage, imply a very high degree of risk assumed by younger consumers. Consequently, such risks must be, at least partly, borne by lenders who protect themselves by spreading the risk, by lending to many customers and thus assuming the role of insurers or by rationing out the higher risk consumers. Thus, consumers must either pay higher rates of interest to include insurance against default, or forego home and durable ownership when their risk is too high.

Because of the size of mortgage borrowing relative to income, this problem is most acute in the mortgage field. As monetary policy has become more erratic in recent years, leading to large interest rate fluctuations, these risks to borrowers and lenders have increased markedly, leading lenders to shorten mortgage terms and to institute variable rate and inflation adjusted (indexed) mortgages. The study analyzes these forms of mortgage financing and points out that reduction in risk due to inflation for both borrowers and lenders which may be achieved by indexed mortgages, required modification of current regulations to allow inflation adjusted deposits and changes in the tax treatment of imputed nominal interest. However, these will have important revenue implications and may further increase the tax advantage of homes relative to other productive assets. It is shown that government programs to increase access to mortgages and hence to homeownership, such as AHOP cannot be instituted without increases in risk for consumers, lenders, or the government. It is recommended that shared appreciation mortgage forms be encouraged for condominum and co-operative housing, as a means of encouraging investors to share in portfolio risk of consumers. In particular, CMHC should investigate the use of shared appreication mortgages to encourage first time homeownership. A considerable amount of additional research about these new mortgage forms is required in order to find the best ways for their implementation.

Chapter 3 of the study analyzes risk and information problems on the supply side of the market, in order to evaluate their effects on the operation of consumer credit markets. These informational problems arise from inability of lenders to screen potential borrowers effectively according to their objective risk characteristics. This inability, coupled with limitations on creditor remedies, causes low cost lenders, such as banks, credit unions and trust companies, to ration credit to consumers. Rationed consumers then must borrow

from more expensive sources, such as finance companies or sellers of durables. Some potential borrowers are rationed out altogether.

Examination of the available evidence in Canada from two studies conducted by CROP for the Department of Consumer and Corporate Affairs, suggests that the problems of rationing and market segmentation are not as serious in Canada as in the U.S. This appears to be because of the lower degree of government regulation of the industry. In particular, the removal of credit ceiling restrictions on banks and the reduced regulatory barriers to competition from trust companies have increased credit availability in Canada. It is important that the government resist the temptation to institute such ceilings. Their main effect will be to restrict availability, particularly to the poor.

However, the data did not enable us to distinguish the seriousness of access and segmentation problems for the poor and the young, who appear to suffer from these problems. Further studies, concentrating on access to different forms of credit for these groups, are necessary to identify if any remedial action is necessary.

Chapter 4 evaluates informational problems on the consumer side. The CROP studies confirm information from the U.S., which indentifies a large measure of consumer ignorance about interest rates and other terms of credit among borrowers and non-borrowers alike. It does not appear that disclosure legislation has had a large effect on knowledge of interest rates, mostly because of lack of knowledge necessary to utilize this information among low income, low education groups.

However, it appears that most consumers are aware of the relative ranking of credit grantors by costs and other terms. Thus, it appears that a majority of customers possess enough information to ensure reasonable competitiveness of the market for loans, in spite of the fact that active shopping for credit is not widely practiced. It does appear however, that consumers are unable to properly evaluate cost and terms information in making consumption decisions. These problems appear to be more acute for low income, low education groups. Considerable additional study concentrating on these groups must be undertaken before remedial action can be comtemplated.

The study points out that the joint provision of insurance and credit is socially desirable. Therefore, there exists an economic rationale for legal limitations on creditor remedies. Such rationale is reinforced by the limited knowledge of consumers about the terms of credit and the nature of creditor remedies. However, because such limitations lead to problems of willfull default (moral hazard) and hence raise credit costs, it is difficult to determine optimal consumer protection rules. The detailed examination of such rules is outside the scope of this study.

In conclusion, our examination of information problems in consumer credit markets fails to detect serious market imperfections, which call for remedial action on the part of the government. Further research is necessary to identify the severity of problems facing lower income and education groups, in terms of access and cost of credit, in order to identify if corrective action is necessary.

Footnotes

1. Source: Table VI, p. 32, Stat. Can. 13-572.

2. Op. cit.

3. Op. cit.

4. Op. cit. p. 33.

5. Bank of Canada Review.

6. e.g., Freidman, (1958); Brown, (1981).

7. e.g., Health and Welfare Canada (1977).

8. Freidman, (1958).

9. Stat. Can. 13-572, Table 28.

10. Brandt and Day (1973) found that 28% of consumers in their sample had sufficient cash but chose to buy a durable on credit.

11. For a detailed theoretical analysis of this problem see Merton, (1981).

12. Implicit discount rates ranged from about 5% p.a. for consumers with incomes above $35,000 p.a. to over 39% for those with incomes below $10,000 p.a. The mean discount rate was about 25%.

13. Rates of return on washer/driers varied between 12.8% to 65% depending on intensity of use.

14. Stat. Can. 13-572, Table 6.

15. Op. cit., Table 4.

16. Op. cit., Table 28.

17. Op. cit., Table 28 (1978)

18. CROP (1978) p. 8. For a detailed description and evaluation of this study see ch. 9.

19. We assume for simplicity that borrowing and lending rates are equal.

20. For further discussion of this point see pp. ___.

21. For evidence on the extent of such borrowing in the U.S. see Seiders (1978).

22. Much of the following discussion of the tilt problem and alternative mortgage instruments is based on Carr and Smith (1981) and Modighani and Lessard (1975).

23. Seidens (1978).

24. Graduated payments option is available under the new Canadian Imperial Bank of Commerce Mortgage plan. However, it is limited to individuals with at least 30% equity.

25. For a discussion of this problem with respect to government debt see Jump (1980).

26. For a discussion of shared mortgage risk see Henderson and Vilani (1981).

27. See Baltensperger (1978) for a detailed sicussion of the literture on the theory of crdit rationing. See also NCCF (1972) for evidence on its extent in the U.S.

28. Except for consumer credit used to finance education.

29. Akerlof (1970).

30. NCCF (1972).

31. Brighton (1979).

32. See NCCF (1972) for evidence in the U.S. and CROP (1978, 1979) for evidence in Canada.

33. See e.g., Samuelson (1965).

34. Hodgeman 1960, Jaffe and Modigliani (1969, 1976).

35. CROP (1978) p. 11.

36. Op. cit. p. 155.

37. Fried and Howitt (1980).

38. Stat. Can. 13-550 Volume 1, p. 87. Evidence is also contained in the raw data of the CROP studies, but has not been analysed.

39. NCCF (1972) p. 113.

40. For a detailed discussion of creditor remedies see Rea (1982).

41. For evidence see Mintz (1979).

42. NCCF (1972) p. 128.

43. For example, the access study shows that only 21 per cent of the national sample families held bank debt, while the corresponding figure from the survey of consumer finances is 28 per cent. Similarly, while about 30 per cent of the national sample have a mortgage loan, compared with 32 per cent of consumer finances sampled, the distribution of ownership by income class is certainly not as close. For example, only 41 per cent of those with income above $25,000 are shown to have a mortgage in the national sample or the access study, compared to about 60 per cent of the comsumer finance group. Perhaps an indication of the limitation of the data in the CROP studies can be obtained by the fairly large proportions who apparently refused to report their income, or to supply other pertinent information.

44. CROP (77).

45. CROP (78).

46. CROP (77) p. 141.

47. These are likely to be underestimates of refusal rates, because some who were initially refused may have obtained a mortgage elsewhere and some may have recieved smaller loans than desired.

48. At first glance, this appears to be a result of 'Red Lining'--i.e. discrimination by district of residence, alleged to prevail in the U.S. However, the difference is most likely due to other characteristics, such as income and residence stability and not to red lining.

49. NCCF (1972) p. 132.

50. CROP (1977) p. 150.

51. See e.g. Butters (1977), Stiglitz (1979).

52. See Figure I, Ch. 2.

53. CROP (1978).

54. Op. cit. p. 43.

55. Kingsley and McAllister (1977).

56. Similar results were obtained by Coapstick and Geistfeld (1977), for the U.S. who found that 40% of those who had credit insurance were unaware of the fact.

57. See Schwartz and Wilde (1979) for an extended discussion of price/quality substitution.

58. Experience quality is composed of attributes which cannot be verified prior to purchase and require experience to discover. See Nelson (1970), for extensive discussion of this concept.

59. Dauten and Duaten (1978).

60. CROP (1978) p. 35.

61. There were only 182 respondents who had mortgages and 296 who had personal loans in the credit use study, of which altogether only 12 had incomes of less than $6,000. Even for the second group, whose income was between $6,000 and $12,000, there were altogether only 77 respondents who held either mortgages or personal loans.