

DEVELOPING THE RESIDENTIAL MORTGAGE MARKET

A report prepared by J. V. Poapst
for Central Mortgage and
Housing Corporation



Volume III Variable
Term Mortgages

DEVELOPING THE RESIDENTIAL MORTGAGE MARKET

Volume III

Variable Terms Mortgages

*A Report prepared by J.V. Poapst,
for Central Mortgage and Housing Corporation*

Foreword

In 1970, a Special Project Team was set up jointly by the Minister of State for Urban Affairs and Central Mortgage and Housing Corporation, to research and formulate legislative proposals on possible new financing mechanisms in the mortgage market. Three basic possibilities were examined by the team. These were the formation of a residential mortgage market corporation, the formation of mortgage investment companies, and variable terms mortgages.

It was considered that the studies and materials produced to aid the Project Team in its deliberations might well be of interest to a wider public. Accordingly, the research material related to each of the three mechanisms is presented in volumes I, II, and III, respectively, in this series.

Much of the material contained in these volumes is new, and that which has been reworked is presented in a new way. It should provide a helpful knowledge base for public discussion, and it has already proved most useful in legislative discussion. It should also be of considerable interest to the Canadian academic world and, to a more limited extent, on the international scene.

As a matter of interest, the Residential Mortgage Financing Act, Bill C-135, was introduced in the House of Commons on February 1, 1973. The new bill provided for the establishment of a mortgage market corporation, such as that discussed in Volume I in this series. It provided also for the formation of private mortgage investment companies, which form the subject of Volume II.

Acknowledgments

This study is the result of the labors of numerous individuals. Professor George Rich, Department of Economics, Carleton University, was study leader for the project. In addition, in collaboration with Mr. Stephen O'Connor, he contributed chapters 4 and 5 of this volume.

Professor Paul Halpern, Faculty of Management Studies, University of Toronto, prepared Chapter 3. Dr. Harry M. Agranove, on behalf of Woods Gordon and Company, designed the Questionnaire for the Survey of House-builders on Variable Terms Mortgages (Appendix D), conducted the test survey, and prepared the report on it (Chapter 6). He also provided a memorandum to assist in extending the survey across Canada when resources became available for this essential task.

Dr. E. Sussman, Assistant Director, Economics and Statistics Division, Central Mortgage and Housing Corporation, supervised the preparation of Appendix A, and edited the galleys. Most important, his extensive knowledge of government housing and mortgage market policy in Canada and the United States was available to the Special Project Team throughout its work. Mr. W. Peter Carter, Supervisor, Financial Services (Mortgage Controller), Royal Bank of Canada, with the aid of counsel, contributed Appendix B. Mr. Roger Simard, Economics and Statistics Division, Central Mortgage and Housing Corporation, prepared Appendix C.

There were a number of advisers to the project: Mr. P. W. Gauthier, Q.C., of Ogilvy, Cope, Porteous, Hansard, Marler, Montgomery and Renault; Messrs. W. G. C. Howland, Q.C., and W. Woloshyn and Mrs. Nancy L. Carnwath, of McMillan, Binch; Mr. W. Peter Carter, Royal Bank of Canada; Mr. J. Harold Deason, Assistant General Manager, Mortgages, Canada Permanent Trust Company; and Professor E. P. Neufeld, Department of Political Economy, University of Toronto. Messrs. Gauthier and Deason and Professor Neufeld also conducted interviews in California on behalf of the Special Project Team. In addition, many officials of the Federal Government and of private lending institutions shared their views with us.

There were my two executive associates on the Special Project Team, Mr. M. J. C. Boyd, of Boyd, Stott, McDonald Limited, and Mr. T. F. Tyson, President, Long Range Planning Limited. As Leader of the Special Project Team, Mr. Boyd participated in the work on variable terms mortgages throughout the project. He led many discussions on problems of developing

the residential mortgage market, the range of which is indicated in the extract from his memorandum reproduced in Chapter 1. Mr. Tyson, as Coordinator of the Special Project Team, expedited its work in a variety of ways.

The usual caveat applies that opinions expressed in this volume are those of the individuals concerned and do not necessarily represent the views of the institutions with which they are associated.

Finally, special thanks are due to Miss Christine Purden for editing the manuscript.

J. V. Poapst,
Professor of Finance,
Faculty of Management Studies,
University of Toronto

September 1973

Contents

Chapter 1

Introduction *by J. V. Poapst*

	Page
I GOVERNMENT HOUSING POLICY AND THE MORTGAGE MARKET	2
II OUTLOOK FOR DEMAND AND SUPPLY OF FUNDS IN THE MORTGAGE MARKET	4
III THE MORTGAGE MARKET AND TIGHT MONEY	6
IV IMPROVING THE PRIVATE SUPPLY OF MORTGAGE FUNDS	9
V FACTORS RELATING TO THE SELECTION OF THE THREE PROJECTS	11
VI CONTENTS OF VOLUME III	18

Chapter 2

The Concept and its Potential

by J. V. Poapst

I THE INTEREST RATE	21
II AMORTIZATION PERIOD AND MONTHLY PAYMENTS	23
III DURATION	25
IV PREPAYMENT CONDITIONS	27
1. Fixed Terms Mortgages	27
2. Variable Terms Mortgages	29
3. Debt Prepayment and Registered Retirement Savings Plan	29
V VARIABLE BALANCE	31

	Page
VI OTHER ASPECTS	33
1. Lending Criteria	33
2. Borrower Choice	33
3. Administrative Costs	33
4. Borrower Education	34
5. Legal Constraints	35

Chapter 3

Variable Rate Mortgages — Analysis and Review

by Paul Halpern

I THE BASIC PROBLEM OF MATCHING	37
II PROPOSED SOLUTIONS TO THE MATCHING PROBLEM	39
1. Liability side	39
2. Asset side	39
III THEORETICAL AND PRACTICAL PROBLEMS IN IMPLEMENTING VRMs	42
1. Implementation Problems	43
2. Cash Flow Effects	49
3. Marketability of VRMs	50
4. Shifting of Risk	52
5. Negative Yield Spreads	52
6. Timing of Introduction	53
7. Par Value and Prepayment Penalties	53
8. Variable Balance Mortgages	56
9. Effect on Secondary Market	57

	Page
IV EXPERIENCE OF USERS OF VRMs	58
1. Great Britain	58
2. United States	59
3. Summary	60
V EFFECTS OF VRMs ON INTEREST RATES	60
1. Demand for Mortgage Funds	60
2. Effect on Supply	61
VI CONCLUSIONS AND RECOMMENDATIONS	64

Chapter 4

Choice of an Optimum Anchor Rate

by George Rich and Stephen O'Connor

I THE NATURE OF THE ANCHOR RATES	67
1. Calculation of Rates	67
2. Characteristics of the Various Anchor Rates	67
3. Correlation Analysis	68
II ANCHOR RATES AND LENDERS' COSTS	75
III ANCHOR RATES AND BORROWERS	76
IV CONCLUSIONS	78

Chapter 5
Impact of Variable Terms Mortgages on Borrowers

by George Rich and Stephen O'Connor

	Page
I METHODS OF CHANGING THE RATE ON VTMs	82
1. Constant Monthly Payment versus Constant Amortization Period	82
2. Technique of Tying the Variable Rate to the Anchor Rate	84
II CHOICE OF EXAMPLES	84
III EXAMPLE: MORTGAGE ISSUED ON JANUARY 1, 1958	85
1. Government of Canada One to Three-Year Bond Yield	85
2. Chartered Banks' Prime Business Loan Rate	88
3. Trust and Loan Companies' One-Year Term Liabilities	89
4. Summary	90
IV EXAMPLE: MORTGAGE ISSUED ON JANUARY 1, 1966	91
1. Government of Canada One to Three-Year Bond Yield	91
2. Chartered Banks' Prime Business Loan Rate	93
3. Trust and Loan Companies' One-Year Term Liabilities	94
4. Summary	94
V EXAMINATION OF PREPAYMENT PRIVILEGES	95
VI CONCLUSIONS	96

Chapter 6

The House Builders' Viewpoint—Report on a Test Survey

by Larry M. Agranove

	Page
I SCOPE AND PURPOSE OF STUDY	98
II METHOD	99
III STUDY FINDINGS	99
1. Nature of Findings	99
2. Principal Findings	100
3. Other Findings	101
IV SUMMARY AND CONCLUSIONS	103

Chapter 7

Postscript *by J. V. Poapst*

I POTENTIAL ADVANTAGES OF VARIABLE TERMS	104
II PROPOSED MODEL	106
1. Interest Rate	106
2. Amortization Period	107
3. Term	109
4. Prepayment Privileges	109
5. Reborrowing	110
III IMPACT UPON THE RESIDENTIAL MORTGAGE MARKET ...	110

Appendices	Page
A Background Data <i>by E. Sussman and Staff</i>	116
B Practitioner Model of a Variable Terms Mortgage <i>by W. Peter Carter</i>	172
C Summary of Findings of Interview Survey of Lending Institutions on Variable Terms Residential Mortgage <i>by Roger Simard</i>	175
D Background Data for Chapter 5 <i>by George Rich and Stephen O'Connor</i>	180
E Questionnaire for Survey of House Builders on Variable Terms Mortgages <i>by Larry M. Agranove</i>	198
F Members of Special Project Team on New Financing Mechanisms and Institutions	203

Chapter 1

Introduction

by J. V. Poapst

For the large component of the private capital market that it is, the residential mortgage market is characterized by relatively little product variation in its financing contracts. In reaching agreement, lenders typically offer borrowers a relatively small choice of loan options. In a high proportion of loans, a going long-term rate of interest is selected, a twenty or twenty-five-year amortization period with constant blended monthly payments of principal and interest, and a term either equal to the amortization period or of five years' duration. The amount of the outstanding balance is expected to decrease monotonically over the life of the loan. The question arises of whether a larger range of loan options is viable that is attractive on both demand and supply sides of the market. This study is concerned with one approach to increasing product variation in the residential mortgage market — the variable terms mortgage (VTM).

In traditional practice, the terms of residential mortgage loans are fixed during the life of the contract. A variable terms mortgage is a mortgage wherein provision is made for the variation of specified terms of the loan, particularly the interest rate and the amortization period, on a predetermined basis during the lifetime of the contract. Such loans are often more narrowly described as variable interest rate mortgages (VRMs). While variability of the interest rate and amortization period are the terms most frequently discussed, other possible candidates for variability include the term of the loan, the outstanding balance, and the prepayment charge. The name *variable terms mortgages* (VTMs) best describes this wider range of possibilities.

In an age of rising consumer financial sophistication and computerized data processing, we foresee large potential use of VTM financing. First, VTMs could enlarge the participation in house financing of the chartered banks, which are by far our largest private financial institutions. Such loans would enable banks to make a better match between the term structure of their mortgage portfolios and the term structure of their liabilities. At the same time, the flexibility of variable terms mortgages could enable

prudent home owners to manage their savings more effectively. In effect, computer-based mortgage administration would activate the loans manager as a savings manager for borrowers.

This volume is the last in a series of three based on selected materials prepared for the Special Project Team on New Financing Mechanisms and Institutions, formed in CMHC in 1970. The Project Team was assigned the task of exploring means for increasing the access of private investors to housing finance. In particular, it was asked to examine three possible innovations in the residential mortgage market. The first was a residential mortgage market corporation (RMMC), originally referred to in our work as a central mortgage bank, and the subject of Volume I in this series. The second was mortgage investment companies (MICs), which would be analogous to the closed and open-end investment funds which invest primarily in corporate shares. These institutions, originally referred to in our work by the name of their American counterpart, real estate investment trusts (REITs), are the subject of Volume II in the series. The third possible innovation was the VTm.

The work of the Project Team culminated in the presentation to the Federal Government of recommendations for the adoption of all three measures as devices for improving the volume, terms, and conditions of private finance for housing in Canada. In May 1972, Bill C-209, the Residential Mortgage Financing Act, was introduced in the House of Commons by the Minister of State for Urban Affairs;¹ the legislation was reintroduced with some changes as Bill C-135, on February 1, 1973. This Act would provide for the creation of an RMMC as a Crown corporation and for the creation of MICs as a special form of loan company. Bill C-135 makes no provision for VTms. Provision could be made, however, by amendment to the Interest Act and to the National Housing Act or its regulations.

I. GOVERNMENT HOUSING POLICY AND THE MORTGAGE MARKET²

Federal Government housing policy seeks to assist Canadians in achieving higher housing standards. Improving housing standards for a rapidly growing, mobile population requires a high level of residential construction. This in turn implies a large demand for residential mortgages, the principal instrument for financing residential capital formation. In addition, a large and ever-growing supply of mortgage funds is needed to finance the turnover of the existing housing stock that occurs when households adjust their accommodation to changing needs and circumstances. At any point in time, overall housing standards are determined by matching the characteristics of new

¹ The Honourable Ron Basford, *The Residential Mortgage Financing Act, Notes on Bill C-209*, Introduced in the House of Commons, May 15, 1972. For sections on the RMMC, see Appendix F of this study.

² The content of sections I to V, inclusive, of this chapter is almost identical for all three volumes in the series. Readers who are familiar with this material may prefer to skip to the last section, which outlines the contents of the present study.

and existing housing stock to the needs and preferences of the population which occupies it. Housing standards thus depend upon the volume, terms, and conditions of available mortgage money.

In pursuing its housing objectives, the Federal Government has long sought to increase private participation in financing new housing. Indeed, this was a purpose of the Housing Acts from their beginning in 1935. It was the primary reason for admitting the chartered banks to National Housing Act (NHA) lending in 1954, and for the concurrent switch from joint private and public lending to insured private lending. Unlike the Government's Pool Guarantee System, which protected the private lender's share of the joint loan against loss, loan insurance was made transferable so that investors unwilling or unsuited to participate in the original market could acquire NHA loans through secondary market purchases.

In the 1960s, several steps were taken to improve the private supply of residential mortgage funds. Central Mortgage and Housing Corporation tried to broaden investor interest in NHA mortgages by conducting a series of auctions of loans from its portfolio. To elicit their participation in the market investment, dealers were invited to bid. Altogether, thirteen auctions were held in the period January 1961 to May 1965, in which over \$300 million of NHA mortgages were sold. (See *Table A-23*.) Rising interest rates and tight money led to a halt in the series. It was not resumed. To improve the liquidity of the NHA mortgage market, a Mortgage and Loans Purchase Fund of \$100 million was established in December 1962, to permit CMHC, under the provisions of Section 11 of the National Housing Act, to function as the lender of last resort. The terms of borrowing were established on a relatively punitive basis—"suicide financing" as one practitioner described them—and the facility has never been aggressively used. Although not too much should be claimed for the contribution of these two measures to the development of the residential mortgage market, they were antecedents of the two functions proposed for the RMMC.

At one time, the NHA and chartered bank loan interest rates were both subject to ceilings. Conditions governing the NHA rate provided for a change in ceiling from time to time, but required that whenever a new rate was struck it must not exceed the prevailing rate on long-term Canada bonds by more than $2\frac{1}{4}$ percent. The ceiling for chartered bank loans was 6 percent. In December 1959, when the NHA ceiling was raised to $6\frac{3}{4}$ percent, the chartered banks, which were legally able but tactically unable to continue lending at 6 percent, withdrew from the field. The revision of the Bank Act in May 1967 enabled the chartered banks to resume full-scale NHA lending, and authorized them to engage in conventional lending on a restricted basis.

Subsequently, NHA-insured mortgage lending was made more attractive. In three steps, culminating in June 1969, the interest rate was freed so that approved lenders would not be periodically diverted from the field by an unattractive maximum rate. In July 1969, the five-year renewable NHA loan was introduced to appeal to medium-term lenders, especially trust and loan companies. At the same time, equity participation loans were per-

mitted on rental housing to adapt the insured loan to the needs of lenders seeking to protect their funds from erosion by inflation. In February 1968, the lock-in period for rental loans was lengthened to appeal to long-term investors.

Meanwhile, action was taken to ease the non-interest terms of mortgage borrowing. The maximum amount of an NHA loan was raised in progressive steps to the current level of \$25,000³ for a single-family dwelling to prevent undue increases in downpayment requirements as the price of houses increased. The maximum loan to value ratios on NHA loans were increased in progressive steps to 95 percent of the first \$20,000 and 80 percent of the remainder, again to cut downpayment requirements. To lower monthly payments, the maximum amortization period on NHA loans was lengthened from thirty-five years to forty years. Existing houses became eligible for NHA-insured loans in several stages. Finally, the maximum loan to value ratio on conventional loans by federally registered insurance companies and loan and trust companies was raised to 75 percent. Private mortgage loan insurance was authorized, and for such insured loans, the maximum loan to value ratio was 90 percent. These changes increased the demand for mortgage funds.

The net effect of all these measures was that the Federal Government continued to provide large amounts of mortgage funds. Mortgage loans approved under the National Housing Act (1954), during the period 1954 to 1971, totaled \$15.4 billion. Of this sum, \$8.8 billion, or 57 percent, was provided by private lenders and \$6.6 billion, or 43 percent, was approved by CMHC. Of CMHC's share, 64 percent was for private housing for sale or rental at market prices, and 36 percent was for rental to low-income households at sub-market rents, or for other special purposes.⁴

II. OUTLOOK FOR DEMAND AND SUPPLY OF FUNDS IN THE MORTGAGE MARKET

Long-term projections of housing requirements in the 1970s, prepared in CMHC and based on demographic variables, pointed to a need for higher levels of house building if housing standards were to continue to improve.⁵ In the Speech from the Throne opening the Second Session of the 28th Parliament in 1969, the Government committed itself to a house-building program of one million dwelling units in the five-year period 1970 to 1974. This was 19 percent more than the number of units completed in the preceding five years. In its *Annual Report* for 1970, CMHC observed that even this volume of house building would not maintain the rate of improvement in housing standards that had been achieved in recent years.⁶

³ Changes in the National Housing Loan Regulations on August 24, 1972, raised the maximum loan to \$30,000 and the loan ratio to 95 percent of value.

⁴ Central Mortgage and Housing Corporation, *Canadian Housing Statistics—1971* (Ottawa: CMHC, 1972), p. 23.

⁵ Albert B. Goracz, *Housing Requirements to 1981*, Technical Paper No. 3, Central Mortgage and Housing Corporation, February 4, 1969, *mimeo*.

⁶ Central Mortgage and Housing Corporation, *Annual Report, 1970* (Ottawa: CMHC, 1971), p. 8.

Whether housing standards were to improve at a lower rate, at the old rate, or at a higher rate, a higher demand for mortgage funds was in prospect. Long-term projections of the demand for NHA and conventional funds, prepared in 1970 by CMHC for internal use, pointed to an even greater need of public funds in future years if Government housing objectives were to be met.⁷ The Government did not wish to be committed to such levels of mortgage lending for households which could afford adequate housing on a self-supporting basis. It wished to concentrate more of the resources it devoted to housing to the low-income field. It also wished to reduce the cost of financing new housing.⁸ There was thus a desire to increase the access of private savings to housing finance.

Meanwhile, structural changes were occurring in financial intermediation which raised uncertainties about the prospective long-term rate of growth in the private supply of mortgage funds. Total assets of trust and loan companies grew at a higher rate in the 1960s than they had in the 1950s, and both types of institutions had high ratios of mortgage loans to total assets (Table 1-1). Trust and loan companies, however, are the smallest of the major financial intermediaries which engage actively in mortgage lending. Life insurance company mortgage holdings in 1970 were 15 percent greater than those of loan and trust companies combined, a product of 50 percent greater total assets and a mortgage to asset ratio more than three-quarters as high.

Life insurance companies had long been the backbone of the supply of mortgage funds for new residential construction, but their assets grew at a slower rate in the 1960s than in the 1950s. An important reason for the slowdown in growth was the rise of the trustee pension funds. Pension savings that once would have gone into group annuities now frequently flow into uninsured pension plans. From 1960 to 1970, while life insurance company assets increased by only 89 percent, trustee pension fund assets increased by 209 percent. By 1970, the latter's assets were about two-thirds the size of life insurance company assets, and as large as the assets of loan and trust companies combined. By 1970, only 9 percent of trustee pension fund assets were in mortgages, exclusive of the small amount held through pooled funds.

⁷ The projection indicated that if recent trends persisted, the proportion of annual expenditures on new housing which was financed by mortgages from major lending institutions would decline from about one-half of total expenditures in 1969 to about two-fifths of an estimated \$5 billion of expenditures in 1975. J. V. Poapst, "R and D in the Mortgage Market", in *Mortgage Investments for Trustee Pension Plans* (Ottawa: Central Mortgage and Housing Corporation, 1971), p. 60.

⁸ In introducing Bill C-209, the Minister of State for Urban Affairs described recent policy for housing finance as follows:

Federal Government policies over the last several years have been directed toward generating new sources of money to finance construction of residential property. The purpose has been threefold:

- a) To ensure a strong and adequate supply of private mortgage capital to fill the needs of home buyers of middle and moderate incomes;
- b) To permit Federal Government funds to be increasingly applied to the provision of housing for low-income groups and senior citizens, whose needs cannot be filled through freeplay of market forces;
- c) To reduce where possible the cost of funds for financing residential construction.

The Honourable Ron Basford, *The Residential Mortgage Financing Act*, p. 1.

The chartered banks are by far the largest financial intermediaries. Their total assets in 1970 were about two-thirds of the total for all major lending institutions and trustee pension funds combined. Their assets grew at a higher rate in the 1960s than in the 1950s. Their return to the NHA mortgage field in 1967 and their new authority to engage in conventional lending, acquired at the same time, obviously had major positive implications for the growth of the private supply of residential mortgage funds.

In the context of 1970, it was not altogether clear how large a contribution the chartered banks could be expected to make in the years immediately ahead. Only 3 percent of their total assets were invested in mortgages at that time. Their volume of loan approvals was rising in 1970, but it had declined in 1969 from the preceding year. Major banks had set up mortgage subsidiaries to tap additional funds specifically for the mortgage market, by the issue of debentures and short-term paper backed by the mortgage portfolio of the subsidiary company. This, however, was the area of financial intermediation long engaged in by the trust and loan companies, so that substantial expansion of the bank subsidiaries would be financed partly at the expense of asset growth of traditional intermediaries which were heavily committed to mortgage lending.

Table 1-1

INDICATORS OF STRUCTURAL CHANGE IN THE SUPPLY OF
RESIDENTIAL MORTGAGE FUNDS BY FINANCIAL INTERMEDIARIES
CANADA, 1970

<i>Intermediary</i>	<i>Increase in Total Assets %</i>		<i>% of Total Assets in 1970</i>		<i>Mortgages¹ as % of Total Assets—1970</i>
	<i>1950-60</i>	<i>1960-70</i>	<i>Excl. T.P.F.s</i>	<i>Incl. T.P.F.s</i>	
Life Insurance Companies	102	89	21	18	50
Trust Companies	207	404	9	8	58
Loan Companies	126	313	5	4	76
Trust and Loan Companies	167	367	14	12	65
Chartered Banks	79	180	65	57	3
Total Lending Institutions	91	168	100 ²	87	22
Trustee Pension Funds	—	209	—	13 ³	9 ⁴
Total	—	171	—	100 ⁴	20

¹ Includes non-residential.

² \$72,867 million.

³ \$11,059 million of which \$1,022 million were mortgages exclusive of holdings via pooled funds.

⁴ Not including mortgages in pooled funds. Pooled funds were 7.3% of total assets.

Source: Appendix A, tables A-6, A-7, and A-8.

III. THE MORTGAGE MARKET AND TIGHT MONEY

The five-year housing program got off to a slow start. Activity declined in the residential mortgage market. The amount of loans approved by lending institutions for new construction decreased by 17 percent from 1969 to 1970. Dwelling unit starts decreased by 9 percent to 191,000 units. The drop would have been larger if there had not been a large increase in direct lending by CMHC in the second half of the year. Of the total NHA mort-

gage loans approved in 1970, \$903 million or 53 percent were CMHC loans, a proportion well in excess of the long-term average noted above. This was the highest level of government lending in Housing Act history.

Tight money conditions, of course, were an important cause of the reduced level of activity in the residential mortgage market. Among private borrowers, purchasers of housing (for owner occupancy or rental) are relatively sensitive to changes in interest rates. Housing is more capital intensive than most businesses, and interest, or more broadly the cost of capital, is an important cost. Unlike major corporations in some industries, the purchaser of housing cannot readily shift increased costs. In the case of housing for owner occupancy, the impact of a change in interest rates is not modified by a reduction in income taxes payable.

There were problems on the supply side of the market, too. Chartered banks are primarily high-turnover businesses, in both their assets and their liabilities. Business customers maintain current account deposits on which the banks pay no interest, and borrow on a basis in keeping with the generally short-term characteristic of bank liabilities. Current loans customarily are extended on the basis of a line of credit which the bank must take pains to honor, and on condition that the borrower clean up his debt once or more annually. Recently there has been much term lending to business customers. Term loans, however, are commonly written so as to turn over on a five to ten-year basis, with the interest rate subject to interim revision and linked to the prime rate. Business customers also make use of secondary bank services in the form of payroll servicing and foreign exchange facilities. Finally, business customers offer the prospect of a long-term association with the bank and a growing volume of business.

Residential mortgages, on the other hand, are low-turnover investments. Five-year loans are typically amortized on a twenty-five-year basis and written with the expectation that the lender will renew loans in good standing. There is not a close link between mortgage borrowing and the demand for other bank services. The mortgage borrower may well do his banking with another bank. Under these circumstances, residential mortgage lending tends to be a residual form of investment. It expands in times of easy money and contracts during periods of tight money, relative to current loans.

Life insurance companies have become peculiarly subject to tight money in recent years. A high proportion of outstanding policy contracts is subject to policy loan rights on which a maximum interest rate of 6 percent can be charged. As personal loans from other sources become scarce and borrowing costs rise, policy loans become more attractive. Investible funds, including mortgage money, are partly pre-empted by policy contract holders.

Other conditions of mortgage lending also operate to restrict the supply of mortgage funds during periods of tight money. Mortgage interest rates are politically sensitive, and major financial institutions have an economic incentive to maintain a positive social posture. As interest rates rise, the institutions may become hesitant to raise mortgage interest rates sufficiently to maintain their attractiveness relative to other long-term investment outlets. By law, loans to unincorporated borrowers are subject to prepayment after

five years, no matter how long the term. Thus, when interest rates are high, and there is a possibility that they will be lower after five years, mortgages lose in attractiveness relative to other long-term debts which have better protection against prepayment. Imposing the higher rate required to maintain the relative attractiveness of the mortgage in the face of this risk is difficult because of the political sensitivity of the rate.

Although less important, the same consideration applies to default risk. If default occurs when interest rates are low, any principal recovered becomes available for reinvestment at a less favorable rate. Thus, even if the loan principal is insured, there is some incentive to prefer investments with low default risk when interest rates are high, unless a premium to cover this risk can be included in the interest rate. In general, mortgages are subject to higher default risk than Federal Government bonds and high-grade bonds of other issuers.

Recent econometric work on the short-term behavior of the residential mortgage market indicates how institutional mortgage flows are affected by tight money.⁹ These studies indicate that "monetary factors have a substantial influence upon the volume of Canadian financial institution mortgage approvals, influencing both the inflow of funds and portfolio investment decisions."¹⁰ Ordered by the combined effects of the two influences, the chartered banks are the most sensitive lending institutions, followed by the trust companies, with the life insurance and loan companies third. Life insurance companies have the least interest-sensitive inflows, and loan companies the least interest-sensitive portfolio decisions, but the mortgage flows of both institutions are "strongly influenced by monetary factors".¹¹

Uncertainty and instability in the supply of residential mortgage funds have pervasive effects upon housing costs through effects upon construction wage rates, material prices, methods of construction, and the costs of land development. Injections of public money into the residential mortgage market can alleviate shortages of funds for house building, but they do not remove the possibility that future shortages might be permitted to develop. Thus, any success realized in reducing the instability of the private supply of mortgage money is conducive to reducing the costs of producing housing over the long run. A more efficient house-building industry, in turn, makes the price of existing housing less than it otherwise would be. Therefore, while the effects of tight money upon privately financed house building highlight the problem of achieving the Government's near-future house-building objective, broadening the private supply of mortgage funds and reducing its instability are, from a housing standpoint, desirable ends in themselves. If these ends are pursued in a way that improves the efficiency of the capital market as a whole, they are desirable not only from a housing standpoint, but from the standpoint of the economy as a whole.

⁹ Lawrence B. Smith, *The Postwar Canadian Housing and Residential Mortgage Markets and the Role of Government* (Toronto: University of Toronto Press, forthcoming); and Lawrence B. Smith and Gordon R. Sparks, "The Interest Sensitivity of Canadian Mortgage Flows", *Canadian Journal of Economics*, August 1970, pp. 407-21.

¹⁰ Smith, *Postwar Canadian Housing*, p. 16.

¹¹ *Ibid.*

IV. IMPROVING THE PRIVATE SUPPLY OF MORTGAGE FUNDS

To improve the private supply of residential mortgage money, we need to operate in some way upon the regulators of the flow of funds in the capital market. There are three types of regulators: (1) the expected after-tax rewards (profitability), and the risks of the investor; (2) legal constraints of a protective or regulatory kind upon the terms and conditions of financial contracts, upon their primary and secondary marketing, and upon the activities of investors; and (3) monetary and fiscal policies.¹²

There are many possible ways of approaching the problem. Any action that would raise the margin of revenue over cost associated with mortgage investment without altering its risk, or the expected after-tax rewards and the risks associated with other forms of investment, would increase the supply of mortgage funds. To illustrate, such an action might take the form of a reduction in mortgage administration costs per dollar of mortgage investment, which does not lead to an increase in risk; or it might take the form of improved diversification in the mortgage portfolio to reduce risk without sacrificing net income. It might take an indirect form. If the liquidity of mortgage investments were increased, the amount of associated investment in low-yielding liquid assets could be reduced, thereby enabling some substitution of mortgages for these and other assets.

Any change in the legal basis of mortgage investment that is attractive to investors would increase the supply of mortgage funds. This assumes, of course, that the change in law does not merely shift some of the burden of mortgage investment from the lender to the borrower. This would just mean a different basis for itemizing costs and receipts associated with the transaction. It also assumes that the change is feasible from a regulatory standpoint. Given these conditions, a change in the law which widened the range of terms and conditions on which the transacting parties could come to a binding agreement could increase the supply of mortgage funds. For example, if the Interest Act were amended to allow borrowers the option of legally postponing their prepayment privilege from the present five years to, say, ten years, the supply of mortgage funds for home ownership might contract less in times of tight money.

An example of a restriction upon mortgage marketing that might be considered for relaxation is the requirement in Ontario that securities salesmen qualify for selling either stocks and bonds or mortgages, but not both. An example of a legal constraint upon the activities of investors is the requirement of trust and loan companies that 20 percent of their demand and term deposits maturing within 100 days be held as cash, bank deposits, and federal or provincial government bonds (see Chapter 4). This places an upper limit upon the proportion of assets invested in other ways. In the absence of such a constraint, some companies might invest a higher proportion of their assets in mortgages, especially when an RMMC exists.

¹² The idea of classifying regulators of fund flow in the capital market is given in W. C. Hood, *Financing of Economic Activity in Canada*, a study prepared for the Royal Commission on Canada's Economic Prospects (Ottawa: Queen's Printer, 1958). A different classification is used here.

Monetary and fiscal policies can be divided into *general* and *selective* policies. General policies are not intended to affect one type of capital market participant, lender or borrower, more than another. They may have that effect, but that is a shortcoming rather than an intention. Monetary policy applied to chartered bank cash reserves is general in that it is not directed against specific classes of bank borrowers. It is anticipated that the banks' reaction will transmit the impact, ideally, throughout the capital market. In contrast, selective credit controls are applied to specific sectors of the capital market—for example, to consumer credit or to the residential mortgage market. Similarly, one can speak of general fiscal policy which focuses on total tax revenues and total government expenditures and is not intended to favor one type of economic activity over another. Fiscal policy that is general in its intended impact on the capital market would not, by design, discriminate between one type of investment and another, and would also be neutral between consumption and saving. Selective fiscal policy would discriminate. Obviously the imposition of a tax upon capital gains, taken in isolation, discriminates between common stocks and residential mortgages. The particular mix between the use of would-be general monetary policy and would-be general fiscal policy in combating economic instability is important for the supply of mortgage funds. Changes in general fiscal policy are thought to have less short-term impact upon the supply of mortgage funds.

To further the Government's objective of increasing the role of private funds in housing finance, the Special Project Team on New Financing Mechanisms and Institutions was formed in CMHC. The Project Team was necessarily concerned with all three types of regulators. Unless private mortgage investment was to be increased by legislative fiat, the measures adopted would have to be attractive in terms of profitability and risk. If legislative restraints of a regulatory or would-be protective kind were found to stand in the way of a potentially efficacious measure, the question of whether the constraint should be modified, replaced, or simply removed had to be considered. Because of the impact of monetary policy upon the mortgage and new housing markets, we were naturally interested in the effect that any measures might have upon that impact. It was not within the Project Team's terms of reference, however, to consider changing monetary policy, or changing the mix between the use of monetary and fiscal policies, as a means of improving the private supply of mortgage funds.

Finally, we were necessarily concerned with tax policy, for two reasons. First, the White Paper on tax reform, published in 1969, included proposals to encourage Canadian investment in corporate equities and proposals which would have the effect of discouraging private investment in rental housing.¹³ Second, the tax treatment of mortgage investment funds was believed to be of central importance to their feasibility.

There are many possible ways of influencing the flow of funds in the capital market. In making a selection, it is important to consider their

¹³ E. J. Benson, Minister of Finance, *Proposals for Tax Reform* (Ottawa: Queen's Printer, 1969).

effect upon the efficiency of the capital market. Efficient measures raise economic growth and living standards above the levels that would otherwise prevail; inefficient measures have the opposite effect. In selecting measures for improving part of the capital market, it is necessary to take into account their effect upon the efficiency of the market as a whole. A measure which reduces the efficiency of the capital market as a whole should be rejected, however effective it may be in solving the problem of the part.

Efficiency here has two dimensions—operational and allocational.¹⁴ The former relates to the costs and profits on the services supplied to the capital market by financial institutions and other suppliers (such as lawyers). Efficient measures reduce the costs of supplying the services, or move the level of profit on them closer to the optimum. The optimum level of profit is the level that is sufficient, but not more than sufficient in the long run, to attract enough resources to expand the supply of services to meet increases in demand. In the short run, the level of profits in an efficient market may exceed this level in the case of suppliers who respond quickly to changes in market conditions, and in the case of successful innovators. It is important for long-term improvement in the efficiency of the capital market that would-be innovators not be precluded from earning above-average profits in the short run. This requirement is no different from that of other industries. The fact that innovators in the provision of capital market services do not enjoy patent protection for their innovations tends to make the short run shorter than for innovators of patentable products.

Allocational efficiency refers to the ability of the capital market to allocate the limited supply of savings to those users whose projects have the highest expected total returns, after due allowance for risks and the costs of transferring funds. Conceptually, “returns” include benefits which are not normally quantified but which are nonetheless real, as in the case of the return on investment in owner-occupied housing. “Total returns” include both the return to the investors (both equity and creditor) and the benefits which accrue to others in the case of certain investments. For example, if the operations of an RMMC have the effect of reducing residential mortgage market interest rates, benefits accrue to borrowers in the form of reduced costs of financing housing. External benefits are noteworthy because they can be sufficient to warrant subsidizing an investment proposal for which the internal returns are too low to attract investors.

The foregoing view of efficiency served as a guideline for the work of the Project Team.

V. FACTORS RELATING TO THE SELECTION OF THE THREE PROJECTS

The Project Team was asked to examine in particular a residential mortgage market corporation, mortgage investment companies, and variable terms mortgages. Many factors were considered in selecting these projects. These

¹⁴ James S. Duesenberry, “Criteria for Judging the Performance of Capital Markets”, in H. K. Wu and A. J. Zakon, eds., *Elements of Investments: Selected Readings* (New York: Holt, Rinehart and Winston, 1965), pp. 1-9.

were enumerated originally by M. J. C. Boyd, Project Team Leader, as part of an internal memorandum, following discussions with members of the Project Team and with officials from the private and public sectors. They are reproduced here with only minor editing.

1. The position of the chartered banks, the pre-eminence of their branch system in Canada, the formation of such subsidiaries as Kinross, Roy-more, Tordom, their asset/liability structure, the low percentage of mortgage assets in their portfolios, their traditional lending practices on commercial loans, their role in lending to developers during construction
2. The role of trust and loan companies as mortgage lenders, their position in the institutional mosaic, their liquidity needs, their role as mortgage bankers, their role as portfolio advisers, the fairly disparate nature of asset and liability structure from one company to another
3. The position of pension funds as collectors of long-term impounded savings, their tax status, their expected growth, their sources of portfolio advice, the differing and complicated structure of the control over pension fund investments, the trend of long-term savers toward income property loans rather than single-family loans, the low percentage of their assets in mortgages, the differences in this percentage between large and small pension funds
4. The historic position occupied by the life insurance companies in mortgage lending, the development over many years of a well-established and experienced mortgage originating operation, the trend in recent years toward investment in income property loans and toward direct ownership of income properties, the effect of policy loans on their liquidity during tight money periods, the effect of taxation on their future growth, their excess mortgage expertise and how it can be harnessed
5. The absence in Canada of such thrift institutions as building societies, mutual savings banks, and savings and loan associations
6. The development in the past few years of independent mortgage banking companies in Canada, the requirements of such companies in the light of their relatively small capital
7. The development by the Royal Trust Company of the M Fund and its apparent acceptability to individual investors
8. The arrival on the scene in the past five years of large, publicly owned and traded real estate development companies such as Markborough, Cadillac, Trizec, Bramalea, and Campeau
9. The isolated nature of the primary mortgage market in Canada and the rudimentary form of the secondary mortgage market
10. The interest shown in the first part of the last decade by members of the Investment Dealers' Association in mortgage trading during the period when CMHC was auctioning blocks of mortgages to approved lenders and IDA members, the important position of the investment dealers in their bond trading activities as principals, their isolation in the past few years from the mortgage market, how to harness their expertise

11. The restrictions imposed by provincial securities commissions on the investment by mutual funds in illiquid assets
12. The increasing concern over the past five or six years by institutions and institutional investors in liquidity
13. The structure of the United States mortgage industry, the activities of an independent mortgage banking industry in the United States, the interface of mortgage bankers with commercial banks, the government or quasi-government back-up structure to the mortgage banking industry
14. The history and development of real estate investment trusts in the United States, and the property bond experiments in the United Kingdom
15. The development of the Government National Mortgage Association (GNMA) and the market for mortgage-backed securities in the United States
16. The increasing activities in the United States of investment bankers in mortgage banking firms, the increased interaction of the bond, stock, and real estate investment trusts and GNMA securities, the purchase by a number of leading investment bankers of mortgage broking or mortgage and real estate matters brought about by the growing aware- and mortgage markets
17. The widespread use of variable terms mortgages in the United Kingdom and the growing debate in the United States

In addition to the above list (which is not intended to be comprehensive), the following considerations appeared important:

1. In examining the future growth of pension funds as an increasingly important factor, an assessment has to be made of the method by which they will be provided with mortgage advice and mortgage banking services. It appears that the pension funds will require the development of mortgage banking services capable of originating and servicing mortgages in any major urban center in Canada.
The nature of pension fund mortgage investment in relatively large income property loans requires a high degree of mortgage expertise. The Canadian life insurance companies and trust companies developed a branch system enabling them to place mortgage lending personnel in all important areas. Similar arrangements are not open to the individual pension funds. A correspondent/mortgage banker/investment dealer relationship similar to the United States structure may have a role to play in Canada in respect to individual pension funds, supplementing the activities of some trust companies in this area.
2. Subsequent to the Second Conference on Mortgage Investment for Trusteed Pension Plans convened by the Honourable Robert Andras, Federal Minister Responsible for Housing, in December 1970, it was possible to assess the views of pension fund investors. The principal concerns (by no means unanimous) of such investors appear to be
 - a) the lack of liquidity in the mortgage market
 - b) the unavailability of a suitable packaging device such as conduits
 - c) the long lead time from commitment to funding

It was also suggested that one of the difficult problems was to reach the right decision-making personnel or strata of management in attempting to promote pension fund investment in residential mortgage loans.

3. Actions that would aid only one segment of the market at the cost of hurting another segment should be avoided. For example, to urge the banks to borrow in the mid-term market, thus providing them with more suitable liabilities against five-year renewable mortgages, will not help if it hurts the trust companies.
4. Recognition must be given to the needs of the home owner as borrower. One of the obvious factors is that, under the present and the proposed tax structures, the home owner may not deduct mortgage interest payments for tax purposes. Thus, to the extent that imperfections in the mortgage market are reflected in higher yields, the borrower's position is more serious, particularly as the mortgage loan can be considered the largest long-term debt liability a family is likely to incur. In addition, this factor tends to increase the variability of demand for home mortgages and contributes to instability in the mortgage market. Similarly, the ability of the home owner to voice concern in influential circles is greatly restricted vis-à-vis the businessman.

From an overall consideration of the various factors, it seemed desirable that any proposed action should attempt to facilitate

1. Greater residential mortgage lending activity by the chartered banks
2. Greater residential mortgage investment by the pension funds
3. Involvement by individuals and small institutions in the residential real estate and mortgage markets
4. Greater use of existing available expertise in both mortgage originating and trading

Thus, it appeared necessary to concentrate on financial devices designed to improve the efficiency with which the mortgage market

1. Provides liquidity and an effective response to changes in supply and demand
2. Links different market segments and utilizes available expertise
3. Offers small institutions and individual investors access to expertise, diversification, and participation in large mortgages and real estate projects
4. Uses a mortgage instrument flexible enough to meet the reasonable requirements of different types of borrowers and lenders

The principal requirements to ensure the development of the mortgage market in an effective manner and to enhance the long-term input from the private sector were considered to be

1. The creation of a more fully integrated residential mortgage market structure, with a strong center or focal point assisting in the establishment of an effective secondary mortgage market
2. A greater interface between such market segments as institutional lenders, investment dealers, mortgage bankers, investment counselors, and private mortgage insurers
3. An interaction between the mortgage, bond, and stock markets through

the provision of mechanisms which would permit investment dealers to distribute to the public shares in mortgage-based intermediary vehicles and to trade actively in mortgage-backed securities

The possibility of developing a more integrated market structure and of providing for improvements in liquidity, flexibility, stability, and efficiency in the utilization of existing expertise resulted in a decision to concentrate on the Residential Mortgage Market Corporation, mortgage investment companies, and variable terms mortgages as providing the fastest results.

THE RESIDENTIAL MORTGAGE MARKET CORPORATION (RMMC) would ease the restrictive effects upon the supply of residential mortgage funds caused by the low marketability of the mortgage instrument. The RMMC would operate as a secondary market maker. To do so, it would maintain a portfolio of residential mortgages ready for sale, and a liquid position (cash, other liquid assets, unutilized borrowing capacity) to enable it to increase its portfolio readily should the need arise. This would enable mortgage investors to achieve their target portfolios more readily when their holdings were below or above target levels. This would enable existing mortgage investors to hold relatively more assets in this form. It would also encourage new investors to enter the field. At the same time, the RMMC would remove some of the needs of lenders to sell their residential mortgages, or adjust their lending activity, for liquidity reasons. It would do this by making available to lenders collateral loans secured by a pledge of residential mortgage holdings.

An RMMC might also help to reduce the sensitivity of the supply of residential mortgage funds to changes in monetary policy. An RMMC might exert such an influence in one or two ways. First, it would do so if it increased the role of investors in the market who would participate with above-average stability. Second, it would do so if it could effectively supplement or enlarge the supply of residential mortgage funds during periods of tight money and reduce it during times of easy money. If the RMMC were profit motivated, it would be required to speculate judiciously on interest rate movements.

MORTGAGE INVESTMENT COMPANIES (MICs) would provide a type of intermediary for the mortgage and real estate markets analogous to the closed and open-end investment companies which operate primarily in the stock market. It is easy for small institutional and individual investors to own (indirectly) a portion of a well-diversified, professionally managed portfolio of securities because sizing, marketing, management, marketability, legal, regulatory, and taxation problems are recognized by the device of the investment fund. By contrast, such investors typically face these problems if they wish to invest in residential mortgages and real estate equities on a comparable basis. It is legally and administratively cumbersome to split mortgages and real estate equities in such a way that investors become owners of separate divided interests. The small investor needs some form of intermediary to split single large investments effectively, or to acquire a diversified portfolio of fractional interests in such investments. This is the basic reasoning on which MICs are predicated.

MICs would make a noteworthy contribution to housing finance, and to the improvement of the capital market, if they provided a useful service not otherwise readily available to important classes of investors. Thus, their differences from three other types of intermediaries should be noted. They would differ from traditional investment companies in assets in that they would hold mortgages and real properties. The predominant form of the traditional investment company is the open-end mutual fund. Reflecting the low marketability of their assets, the predominant form of MIC is likely to be the closed-end company, with shares listed on stock exchanges for marketability.¹⁵ Also, the mutual fund is normally unlevered whereas levered MICs will probably be the predominant form.

The MIC's nearest substitute is the loan company,¹⁶ but MICs would differ from loan companies in important ways. They would be allowed to hold a higher proportion of real estate in their investment portfolios, and would be restricted to lower levels of leverage. Most important, they could qualify for conduit status for income taxation. If they met prescribed requirements, including the payout of a high proportion of net income, their earnings would not be subject to income tax at the corporate level. The payout would accrue tax at the applicable rates of the recipients. In exchange for such tax treatment, MICs would be precluded from engaging in "active" business, even any speculative trading of their assets. They are intended to be "passive" vehicles for holding mortgage and real estate investments.

Finally, MICs would differ from real estate development companies in their high mortgage orientation, "passivity", and high payout characteristics.

MICs would be like the RMMC in that they could have the effect of bringing investment dealers actively into the residential mortgage market. The RMMC would enable them to offer residential mortgages to their investor clients, along with stocks and bonds. The MICs would provide familiar forms of securities to offer their investor clients and also would provide underwriting opportunities. The active and widespread involvement of the investment dealing industry in the mortgage market would be a significant step in the development of that market, and in the development of the capital market as a whole. As with the RMMC, MICs might help to reduce the sensitivity of the supply of residential mortgage funds to changes in monetary policy. They would do this if they succeeded in bringing investors into the market who have above-average stability in their mortgage investment behavior. They would also have a stabilizing effect if their activities offset changes in market participation by other investors.

In searching Canada's financial system for means of broadening the supply of residential mortgage funds, one is certain to observe the large flow of money savings that occurs in the form of increases in deposits in the chartered banks and other deposit-taking institutions. As is evident in *Table*

¹⁵ Conceivably this condition could change in due course, if an RMMC were successful in developing the secondary market in residential mortgages, and if the MIC held few other assets of low marketability.

¹⁶ In fact, Bill C-135 proposed that MICs be treated as a form of loan company and regulated under the Loan Companies Act. Canada, House of Commons, Bill C-135, *The Residential Mortgage Financing Act*, First Reading, February 1, 1973.

1-1, the chartered banks stand "head, shoulders, and torso" in size above the other financial intermediaries. While chartered banks and other depositories participate in the residential mortgage market, it is fair to say that a relatively low proportion of mortgage lending is financed by these low-cost short-term deposits. It is well recognized, of course, that financial intermediaries must be concerned about the degree of mismatching between the term structures of their assets and their liabilities. Mortgages, even the five-year kind, complicate the matching problem for short-term depositors.

This condition raises three questions. Can a form of residential mortgage be devised which would ease the matching problem for depositories? Would the mortgage be sufficiently attractive to induce depositories to invest more of their short-term deposits in residential mortgages? At the same time, would it be attractive to borrowers? The importance of these questions led the Project Team to examine variable terms mortgages as a possible addition to Canada's residential mortgage market mechanisms.

A VARIABLE TERMS MORTGAGE (VTM) is a mortgage wherein provision is made for the variation of specified terms of the contract on a predetermined basis during the lifetime of the loan. The important terms that may be varied are the rate of interest, amortization period, and the amount of the installment payments. Some lenders may be able to accommodate a variable balance feature as well, which would not penalize prepayments and would permit further borrowing as part of the lending arrangement. The term of the loan would remain fixed.

As proposed by the Project Team, the interest rate in a VTM would be linked to a well-established capital market rate, such as the average rate for long-term Canada bonds as published by the Bank of Canada. The lender would be free to set the initial spread over the anchor rate, which would be maintained (approximately) by annual or possibly semi-annual updating over the term of the loan. To the extent that movements in its deposit rates correlated with movements in the anchor rate, the lender's spread would be stabilized. Variations in the interest rate on the loan, within certain limits, would not preclude stable monthly payments if provision were made for appropriate variation of the amortization period. Alternatively, provision could be made to vary the amortization period from year to year independently of the interest rate. The borrower then could use the VTM as a flexible savings device. A variable balance feature would further facilitate the borrower's saving-investment process.

For the chartered banks, the VTM would be less unlike commercial loans than are fixed terms mortgages. How effective VTMs might be in competing for the investible funds of the banks would depend upon the importance of the remaining differences, especially in their profitability. The profitability of the VTM depends to a great extent on how attractive its non-interest features are to borrowers.

These were the three proposals for improving the private supply of mortgage funds which were examined by the Project Team. They do not, of course, exhaust the list of possibilities. One could argue, perhaps, that they are not the three best measures to examine. On the other hand, the task

of improving the residential mortgage market, like the task of improving the capital market as a whole, should be treated as continuous. In that context, ranking the possibilities is important, but so is getting on with the job.

Once the three proposals were selected for examination, a study team was formed to explore each one. The teams were structured to include, in each case, at least one economist, lawyer, and financial practitioner, and to have private market, government, and academic viewpoints all represented. From the beginning of the work, a special effort was made to elicit the views of appropriate practitioners. For the RMMC project, an extensive interview survey of major lending institutions and investment dealers was conducted, and a mail questionnaire survey of trustee pension funds was undertaken. For VTMs, two small interview surveys were conducted: one of selected banks and trust companies; the other of house builders. Some interviews also were conducted as part of the MIC project. In the MIC project, there was extensive study of United States experience, but the lessons of foreign experience were sought in the other two projects as well.

Once the projects were considered to be sufficiently advanced, an Interdepartmental Committee was formed to examine them. The Project Team was represented on the Committee and worked with it in developing the latter's report to the Government. The Project Team was dissolved upon submission of the Interdepartmental Committee's report.

VI. CONTENTS OF VOLUME III

The study has seven chapters and six appendices. The subject of VTM financing is of interest to lenders, borrowers, house builders, and governments. House builders are affected because they often initiate the mortgages on the houses they build. The Federal Government is affected because it has interests in the volume and stability of the supply of mortgage funds, because VTMs could affect the distribution of the impact of monetary policy, and because amendments would be required to the Interest Act and the National Housing Act to extend VTM financing to unincorporated borrowers. There are implications for both federal and provincial governments from the rising social interest in consumer protection. Chapter 2 outlines the concept of the VTM and provides a qualitative, somewhat speculative, indication of the potential for its use.

The central term in VTM financing is the interest rate. Variability of the interest rate is important in itself; and while it would be possible to make other terms variable in the absence of a variable interest rate, the variable rate facilitates or invites such additional flexibility. In Chapter 3, Professor Paul Halpern examines variable interest rate mortgages (VRMs). The chapter outlines the basic problem of matching asset and liability structures of mortgage lending institutions, reviews the various proposed solutions to the problem, and singles out the VRM as the best alternative. The rate of interest that should be charged and the manner in which it should be varied are examined in the light of theories of the term structure of interest rates. Other questions and problems of VRM financing are considered in the light of this theory as well. There is also a brief review of the experience of

British and American users of these mortgages. It is found that some major objections raised in the literature to this form of financing are unwarranted or exaggerated. Finally, the effect of VRMs on mortgage interest rates is considered.

It is conceivable in VTM financing to have the interest rate subject to change at the discretion of the lender. This is the practice of the building societies in Great Britain. Early in our work, counsel retained by the Project Team advised that to make the VTM legally enforceable, it would be necessary to require that the interest rate be linked to a well-publicized rate outside the lender's control. In Chapter 4, Professor George Rich and Stephen O'Connor explore the subject of choosing an optimum rate upon which to base variations in the VTM interest rate. They examine four Government of Canada bond yield averages and two lending institution interest rate series.

In Chapter 5, Rich and O'Connor turn to the subject of the impact of variable terms mortgages on borrowers. For three different anchor rates, they illustrate the significance of the choice of the method of tying the variable interest rate to the anchor rate, and the effects of making the total amortization period extendable by up to ten years. Comparisons are made with fixed terms mortgages. They also compare before-tax rates of return on saving through prepayments on a VTM with investing in Canada Savings Bonds. The illustrations are for a five-year renewable mortgage and relate to two specific time periods, 1958 and 1966, selected because they were years when the Government of Canada bond yield curve was relatively level.

How would buyers of new houses react to VTMs? To obtain answers to this question, an interview survey of house builders was designed and tested with thirteen firms in Toronto, Ottawa-Hull, and London, Ontario. Originally, it was intended that the survey be replicated across Canada, but time and resources precluded this. Although the test survey comprised a small sample, the similarity of responses and the paucity of additional new information provided in subsequent interviews suggest that some significance can be attached to the findings; accordingly, they are presented in Chapter 6. Dr. Larry M. Agranove conducted the survey for the Project Team and prepared Chapter 6. Ideally, of course, we would have liked to survey a sample of consumers, but this would have cost more and taken even more time than a nation-wide survey of house builders.

The last chapter in the study is a postscript by the editor. It consists of observations upon points raised in the preceding chapters and in other materials assembled by the Project Team.

Chapter 2

The Concept and its Potential

by J. V. Poapst

As defined in Chapter 1, a variable terms mortgage (VTM) is a mortgage wherein provision is made for the variation of specified terms of the loan on a predetermined basis during the lifetime of the contract. Terms that may be varied are the interest rate, amortization period, amount of installment payments, duration, prepayment conditions, and the loan balance. This chapter examines each of these terms in relation to variable terms mortgages from the standpoints of both lenders and borrowers.

Conceivably, variable terms mortgages are applicable to all housing, but they would have a larger role in financing owner-occupied housing. Corporate landlords have access to a variety of financing instruments; they can borrow on a non-callable basis for longer periods; their gross income is usually highly levered, leaving minimal "discretionary" cash flow to handle variable terms mortgages; and variable amortization periods and variable loan balances are features less likely to be advantageous to them. Early in its work, the Project Team conducted a survey of ten lending institutions on the subject of variable terms mortgages.¹ All interviewees believed that developers of rental housing would be very reluctant to use variable terms mortgages. For these reasons, this study is limited to housing for owner occupancy.

The literature on variable terms mortgages concentrates on two subjects. One is the depository institution's problem of matching the term structure of mortgage portfolios with the term structure of its liabilities. The other is the problem imposed on the borrower by a variable interest rate. Far too little is made of the potentiality of the variable terms mortgage for improving the allocation of the savings of the family over its life cycle.

The optimum pattern for the allocation of the savings of the typical family changes over the stages of its life cycle. A family can have a better standard of living, both during the breadwinner's working career and during his retirement, if it follows this changing pattern in the allocation of its

¹The survey was conducted in October 1970 and included four banks, five trust companies, and one life insurance company. Of the ten companies, only two banks and one trust company had previously explored the subject of variable terms mortgages at a senior level. (See Appendix C.)

savings. In the early years, the high-return investments are in physical assets—house, car, household appliances—rather than in any form of financial claim, including tax-supported pension rights and other life-contingent claims. The returns on physical investments are so high that it is “profitable” to borrow at interest rates of 10 percent, 15 percent, and higher to acquire the assets sooner rather than later. Real income is raised through the use of debt. The process is exactly the same as corporations use to raise their profits by leverage. The “profits”, of course, are not measured in the case of the household; but they are realized, and they are *felt*. The important difference from the business borrower is that the probability is generally much higher that the household at the physical asset acquisition stage of its life cycle will raise its well-being by long-term borrowing.

Once the family has accumulated physical assets to meet its basic needs, the allocation of savings which has the highest rate of return is the reduction of its debt as fast as possible. The family does not have financial investment opportunities which yield more than 10 percent to 18 percent, after allowance for risk, taxes, and investment costs.

Once debts have been cleared, financial investment is left as the most remunerative. Moreover, as the family contracts, housing investment can be reduced, or be eliminated by renting. This is the ideal point at which contributions to tax-favored pension plans should begin. At this point, it would not be difficult to make contributions well above the proportional limits set under current plans.

It is with this view of the optimum lifetime savings investment pattern in mind that the concept of variable terms mortgage financing and its potential are examined in this chapter.

The contract for a variable terms mortgage would specify the initial set of terms, which terms are variable and which are not, the conditions under which variable terms would be changed, any limits that are desired upon the range of variations and upon the frequency and timing of changes, and notice requirements.

In the discussion that follows, frequent reference is made to advantages to lenders or borrowers. In an adequately competitive market, however, changes in benefits and costs tend to be shared, because of the interaction of supply and demand. Thus, for example, if a variable terms mortgage enables borrowers to improve their allocations of resources, some of the benefits may accrue to lenders through higher interest rates arising from a shift in demand.

I. THE INTEREST RATE

There are two basic alternatives in providing for changes in the interest rate. One is to allow the lender to manage the rate, subject to the requirements that the borrower (1) be permitted to pay off the loan without penalty if the rate is changed and (2) be given sufficient notice of the change in rate to be able to arrange refinancing. The second alternative is to link the rate to a specific, well-known interest rate that is beyond the lender's control, and to change the rate automatically in accordance with a predetermined formula

which specifies precisely how the reference rate is to be used to calculate the changes in the market rate.²

In our lending institution survey, the interviewees were asked to comment upon the relative merits of several methods for changing the interest rate in variable terms mortgages, including (1) changes being left to the discretion of the lender and (2) four alternative ways of tying the rate, in two of which the lender would be free to set the spread. All interviewees expressed reluctance at accepting what they called a pegged rate. The banks favored a rate based on "supply and demand" about 2 percent above the prime rate. Four trust companies and the life company interviewees favored a rate related to their money costs. One trust company would accept a McLeod Young Weir long-term bond average.

Following this survey, counsel retained by the Project Team reported that to ensure the legal validity of a variable terms mortgage, the rate should be tied to a well-publicized rate which was beyond the control of the lender. The lender, however, would be free to set the margin between the variable terms mortgage rate and the reference rate to which it was tied. Accordingly, subsequent work on the interest rate was directed to exploring the suitability of various possible reference rates and to specifying a formula for determining precisely how the reference rate is to be used to calculate the changes in the mortgage rate.

There are at least two important economic considerations to be taken into account in selecting a reference rate. One is how well its movements will relate to movements in the lender's costs. Since different lenders have different term structures of liabilities, they can be expected to want different reference rates. The second consideration is the size and frequency of the changes that will occur in the borrower's costs and cash flow. Setting aside the need in prudent lending to take into account the needs of the borrower, a depository institution might prefer a mortgage rate that could change as often as its deposit rate changed. Frequent changes, however, raise administrative costs, particularly the costs of dealing with borrowers' queries.

There are several historical series of bond yield averages that could be drawn upon as reference rates. For Government of Canada Treasury Bills and bonds, there are the averages for six maturity ranges, which are published regularly by the Bank of Canada. There are also the McLeod Young Weir bond averages, which are released monthly.

In our variable terms mortgage survey of lending institutions, it was observed that rates on government obligations, whether short or long term, at times were artificial and distorted. This is one reason why it is desirable to average rates over a period of time. It should be added, however, that what is required is not a perfect rate, but merely a rate that would be a significant improvement over a five-year fixed rate.

The problem of the choice of reference rate can be separated from the problem of frequency and magnitude of change by the design of the formula. For example, twelve-month averages of the reference rate can be used, with

²A third possibility, to have the borrower control the rate subject to the lender's right to call the loan, we dismissed as completely impractical.

movements rounded down to the nearest one-quarter of one percent. Changes in the reference rate and the mortgage rate need not be equal. If movements in a particular reference rate are highly correlated with movements in the lender's costs, but are larger than the lender wishes to impose on the borrower, some fraction of the movement can be used.

A variable interest rate helps a depository keep its mortgage lending rate and its deposit borrowing cost in line. The risk is shifted to the borrower. In a competitive market (or one in which lenders desire to be seen as competitive), whatever premium lenders would normally charge for bearing such risk should be removed from the interest rate. For this reason alone, the average rate of interest paid by variable terms mortgage borrowers as a group would be expected to be less over the long run than the average rate paid by fixed terms mortgagors.

In a competitive market, substitutable products must be priced in relation to each other. Setting aside differences between other terms of the loan, this means that the lender will relate an *expected series* of variable terms mortgage interest rates to the prevailing rate for fixed term mortgages. The focus of comparison should not be solely upon the initial variable terms mortgage rate and the fixed terms mortgage rate. That is only part of the comparison. This important point, along with its implications, is fully developed by Professor Paul Halpern in Chapter 3.

II. AMORTIZATION PERIOD AND MONTHLY PAYMENTS

A change in the interest rate would alter the monthly payments on the mortgage unless there were an offsetting change in the amortization period. Some borrowers might prefer to vary their payments, provided that the changes occurred no more often than, say, annually. Many borrowers, however, can be expected to prefer stable monthly payments or payments subject only to decreases. Within limits, they can be protected against increases in monthly payments through extension of the amortization period. Beyond some point, the monthly payment becomes insufficient to pay interest alone, and the unpaid balance of the loans will rise. While some borrowers and lenders might find this condition acceptable, most undoubtedly would not.

In our interview survey, we asked lenders to comment on the merits of varying the amortization period as opposed to varying the monthly payments when interest rates change. Interviewees in banks stated that both alternatives should be available and the choice made by mutual agreement between lender and borrower. The trust companies were divided on the subject, two preferring variable monthly payments and three preferring a variable amortization period to stabilize monthly payments. On the basis of these replies, it appears that if these institutions were to adopt variable terms mortgages lending, both alternatives would be available to borrowers.

If it is feasible to vary the amortization period when the interest rate changes, why not provide for varying it even if the rate does not change? This would establish a convenient means for the borrower to increase his annual savings in response to increases in his discretionary income. It would

also automatically allocate his savings to an outlet with a relatively high after-tax rate of return.

Both points should be stressed. Consider a borrower with a variable terms mortgage wherein the interest rate and the amortization period can be changed annually. His payment year is scheduled to correspond with his salary year. About the time he receives notice of an increase in salary, he receives notice that the interest rate on his mortgage will remain unchanged at 9 percent; the notice also states what the remaining amortization period is and what it would be if it were shortened by intervals that would raise his monthly payments by amounts close to \$5, \$10, \$15, and so on. Finally, the notice states that shortening his amortization period means investing his extra payments at the mortgage rate and that, of course, there are no resulting income taxes, whereas on the other outlets there are.

It is rare for the borrower to be able to find financial investments superior to debt prepayments—that is, financial investments which, after allowing for risk, income taxes, and other costs (including the opportunity value of his time spent selecting and managing his investments), earn a higher rate of return (including capital gains) than he can earn simply by prepaying his debt. The vast majority of borrowers cannot even come close. For a borrower in a 30 percent marginal tax bracket, Canada Savings Bonds would have to yield 12.9 percent before taxes to equal the after-tax rate of return on prepayments on a 9 percent mortgage.³ Yet most borrowers will experience rising money incomes during the life of the loan, and many will probably be in a position to accumulate some financial assets, such as Canada Savings Bonds, life insurance policies, mutual fund shares, other bonds and stocks, and savings deposits.

Registered retirement savings plans, with their favorable tax treatment, can be an attractive outlet for savings, provided that they do not need to be cashed in advance. Because of this condition, we do not consider them to be a potent direct competitor to short-term saving through temporary shortening of the amortization period on debt. We will discuss them later under debt prepayment.

Sometimes borrowers will have good reason to reduce their current rate of saving. With the variable terms mortgage, this can be done merely by extending the amortization period, subject to the limits of prudent lending. This possibility increases somewhat the liquidity of debt prepayment as an investment channel, thereby increasing the prudent borrower's willingness to shorten his amortization period in the first place.

An important purpose of the variable terms mortgage is to enable the lender to relate better his short-term borrowing rate (such as his savings deposit rate) and his mortgage lending rate. This could produce some improvement in the lender's cash flows. A variable amortization period, however, could tend to operate in the opposite direction. How important is this problem?

To answer this question, it is necessary to consider the variable terms mortgage portfolio as a whole and to distinguish between systematic and

³Assuming no prepayment penalty (see Section IV). Whether the debt is prepaid or not, the borrower carries the full risk of investment in his house.

non-systematic tendencies. For example, suppose that all variable terms mortgage loans were made on the basis that a change in interest rates would produce an opposite change in amortization periods, subject to some upper limit on the latter. A change in variable terms mortgage interest rates would not alter cash flow, and in this respect the lender would be in substantially the same position as with a portfolio of fixed terms mortgages. Assuming, however, that his borrowing rate is highly correlated with his variable terms mortgage rate, net earnings would be more stable, and this could affect his overall cash flow, depending on dividend policy.

Now suppose that borrowers had been given an option between offsetting and not offsetting changes in interest rates by changes in amortization periods. Some would elect each alternative. A change in interest rates then would induce a positively correlated change in cash flow on the portfolio. There would be a tendency for cash flow on the portfolio to rise in times of tight money and to fall during times of easy money. Net earnings would be as stable as before.

Finally, suppose that borrowers had the option of varying the amortization period independently of changes in the rate of interest. In times when interest rates did not change, many borrowers undoubtedly would leave their amortization periods unchanged. Some, experiencing rising incomes and in the physical asset expansion stage of the family life cycle, might wish to extend their amortization periods to make way for these acquisitions. Others, experiencing rising incomes and having passed through the physical asset expansion stage, would be concerned with raising their money savings and earning a high net rate of return on them. They would want to shorten their amortization periods. Even families with stable incomes passing out of the physical asset expansion period would have a desire to increase their money savings and invest them for high returns.

If interest rates rose, again borrowers' reactions would depend much upon their stage in the family life cycle. Those expanding their physical assets would be more likely to prefer to extend their amortization period, some perhaps more than they would have if interest rates had not increased. Those beyond the physical asset expansion stage would be more likely to opt to maintain their rate of saving, or even to increase it, by opting to keep their amortization periods constant or to decrease them. Similarly, borrowers would be likely to have varying reactions to decreases in interest rates.

An implication of the foregoing remarks is that in establishing a variable terms mortgage portfolio, a lender can protect himself against unduly large fluctuations in the portfolio's cash flow. This is done by maintaining an appropriate mix between new loans and loans in the later stages of amortization. The latter would be introduced into the portfolio by offering borrowers on renegotiable fixed terms mortgages an option to convert to a variable terms mortgage at time of renewal.

III. DURATION

At present, loans for owner-occupied housing are typically written for a term of five years and amortized on a twenty to thirty-year basis. Borrowers do

not have a legal right to renewal, but it is standard institutional practice to renew readily loans which have a favorable record. Renewal is usually for five years and is repeatable until the loan is fully amortized.

For the lender, the arrangement has important advantages. Assets may be matched against up to five-year obligations for which a sizable market exists. The call privilege is not governed by the Interest Act. The loan may be renewed at the current rate of interest on new loans or slightly higher. Transaction costs for a new loan encourage the borrower to renew rather than refinance. Renewal may be declined if necessary.

Renewal risk thus is borne by the borrower. Modern house financing relies heavily upon mortgages which are high in relation to property values and which provide for a reduction of loan principal of less than 10 percent during the first five years. If, say for local reasons, property values in a community declined by 10 percent during the term of the loan, would lenders be tempted not to renew? Would they be so tempted if values declined by, say, 20 percent, with most of the decline occurring in the last year of the loan, with an unfavorable economic outlook for the community, and with a national economic decline in progress? Normally, renewal risk is low. But in 1971, 90 percent of NHA loans for home ownership made by approved lenders were made with a renegotiable term, and most conventional residential loans probably were made on the same basis.

From a social standpoint, is it wise to rely so heavily upon lenders' ability and willingness to renew? The point can be put another way. Although there are numerous differences between home-owner loans and corporate long-term debt financing, one can ask: would it be wise to base 90 percent of corporate bond financing on five-year issues wherein the sinking fund would accumulate to less than 10 percent of the issue and the issuer would bear the renewal risk? A variable terms mortgage can provide a better match for fluctuations in a lender's short-term borrowing rate and at the same time enable him to offer a loan with a term (for the principal component of the debt) in excess of five years.

The question remains: should the term of the loan be variable? Consider the lender's position. The right to shorten term is the right to call. Conceivably, a lender might value this right if it enabled him to reduce his mortgage holdings more readily, should he wish to do so. Granting the right, however, exposes the borrower to refinancing costs and risks. This might be handled by requiring the lender to pay a call premium at least sufficient to cover the borrower's refinancing costs, and to provide for him an acceptable lender willing to take on the loan at the prevailing terms. In this case, it would be simpler for the lender merely to sell the loan. On the other hand, the right to extend the term is akin to the right to renew. To be equitable, this right could not be given without at the same time giving the borrower the right to pay off the loan without penalty. This he already has.

Consider the borrower. The right to shorten the term is simply the right to prepay. This is considered in the next section. The right to extend the term is simply the right to renew. As argued above, a variable terms mortgage would facilitate originating loans for a longer term, thereby reducing

the need for renewal. If lending law were altered to make renewal mandatory for regular intervals up to the full amortization period, provided that each time the borrower had fulfilled all his obligations on schedule, current practice would be effectively converted to five-year variable terms mortgage financing. Under this arrangement, term would be governed by the amortization period.

IV. PREPAYMENT CONDITIONS

1. *Fixed Terms Mortgages*

In fixed terms mortgages, the borrower usually has some form of right to prepay, its nature depending upon the type of loan. Under the Interest Act, all unincorporated borrowers may pay off their loans in full if they have run for more than five years, and the lender may charge by way of penalty an amount not greater than three months' interest on the prepaid amount. A minimum prepayment right is thereby established for mortgages with a term in excess of five years. On the more popular, partially amortized five-year loan, the borrower must pay off in full at the end of five years; this usually means refinancing or negotiating a renewal. If he has the funds, he may pay off part of the loan on the due date and refinance the balance or negotiate a renewal for the balance. As the loan arrangement usually is predicated upon renewal, the borrower in effect acquires a quinquennial right to prepay without penalty. The NHA borrower has the right to prepay up to 10 percent of the original amount of the loan on each of its first two anniversary dates; and on the third and subsequent anniversary dates, the loan is open to full prepayment. On all prepayments, the lender is entitled to charge by way of penalty an amount equal to three months' interest on the prepaid sum. Some conventional loans offer a more favorable privilege wherein prepayments up to specified proportions of the face amount of the loan are permitted annually without penalty after a specified period has elapsed.

This is a step toward inducing borrowers to allocate their savings to debt reduction where it offers the highest rate of return available to them. A high proportion of mortgage debt prepayment that now occurs, however, arises from refinancing associated with turnover of the housing stock. Because the loan has been paid down, or the property value has increased, the buyer commonly cannot make a downpayment equal to the seller's equity in the property and therefore is unable to assume the existing mortgage or mortgages on the property. Similarly, the remaining term or amortization period may be unsuitable. Refinancing is often at a higher interest rate.

The lender is legally entitled to charge the applicable prepayment charge. The borrower did not contract to borrow the prepaid sum for any period up to the due date of the loan. He contracted to borrow for the whole term, neither more nor less, subject to specified amortization requirements and prepayment rights, if any.

Nevertheless, given the social antipathy to paying interest that exists, lenders sometimes feel obliged to justify the imposition of prepayment

charges, particularly if they do not waive them when the funds can be reinvested at a higher interest rate. One popular justification appears to be that there will be a delay and a cost in reinvesting the money in another mortgage. If such justification is to be taken at its face value, it implies a need for improving the lender's overall financial planning and control. In even small financial institutions, funds are being received and invested continually in a variety of financial claims. Normal planning should anticipate some prepayments, as well as some delayed draws on advance commitments. It is the difference that could be difficult to place quickly in mortgages.⁴ But even unanticipated surpluses need not remain idle; they can be invested in short-term Treasury Bills and drawn down in a period of unanticipated deficit.⁵

The lender's real need for a prepayment charge is for protection against having to reinvest funds at a lower interest rate when his costs of financing the loan have not declined. It is to protect him against a loss in spread. But does he need to impose a prepayment charge if he can reinvest the funds at a higher rate?

Consider the case where a property is to be sold which has a \$20,000 mortgage against it at 8 percent, with three years remaining. The purchaser requires a loan of \$25,000, and for this reason the existing loan is refinanced at 9 percent. The additional \$5,000 debt costs the buyer 13 percent for the first three years. This is also the return to the lender from having his loan refinanced. If the prepayment charge is an amount equal to three months' interest, the lender may ask for an additional \$400 at the time the loan is paid off. The net additional financing thus provided is \$4,600, and the effective rate for the first three years is roughly 16 percent.⁶

If the lender did not require protection against refinancing when interest rates had risen, could prepayment charges be prohibited under these conditions? A law to this effect could be difficult to administer. In the absence of secondary trading in the debt, it can often be uncertain whether the interest rate has in fact risen. New loans may be written at a fractionally higher rate of interest but may differ in the other principal terms. Allowing for these differences, the interest rate may not in fact be higher than for the loan that was prepaid.

Meanwhile, borrowers may fail to anticipate the unsuitability of their

⁴The development of the secondary mortgage market would help in this respect.

⁵It is noteworthy that, despite the development of the money market in Canada in the last two decades, the improvements in financial planning and control skills, and the long-term rise in interest rates, the long-standing practice of imposing a charge on prepayment equal to three months' interest is widely continued.

⁶Calculated by the approximation method. Another way of stating the benefit to the lender is to measure the discount at which the existing loan would have to be sold in the secondary market to yield the prevailing rate of interest. In a recent case, the lender's representative stated that his policy was to charge three months' interest unless they obtained the refinancing loan. In this case, the loan to be refinanced had a coupon rate of 7 percent, with a ten-year term remaining, and the lender was offering new loans at 9½ percent. Thus, on a yield basis, the loan would sell at a discount of 9.97 percent, ignoring transaction costs. Instead, the lender collected a premium of one and three-quarters percent. Sometimes a lender can be found who will "blanket out" the old loan. Here the lender assumes responsibility for the old loan, makes a new loan to the borrower for the total amount he needs, and disburses the difference. The new lender then is in a position to offer some of the interest saving to the new borrower, provided that the legal costs of the procedure are not too high.

mortgage for a subsequent purchaser. As a result, to preserve the possibility for a purchaser to be able to take advantage of the existing loan when interest rates rise, they may withhold from making prepayments. This is to make the house more marketable. With NHA loans, even if the interest rate did not rise, the lower limit on loans on existing property could require recourse to conventional financing. There are also the costs of originating a new loan. As a result, funds that could be applied to debt reduction may be invested in less advantageous ways.

2. Variable Terms Mortgages

The situation with variable terms mortgages is different. If the reference rate is well selected and the formula for linking it to the mortgage rate is well designed, the mortgage rate will be kept more or less current. Minor lags in adjusting the rate should not cause undue refinancing, given the legal and appraisal costs that would be incurred by the borrower. Unless it can be shown that the market is so segmented that rates on existing variable terms mortgages will move quite independently of new rates on fixed terms mortgages, and in a way that will leave the variable terms mortgages uncompetitive when fixed terms mortgage rates fall, then the lender should not experience undue refinancing. Depending upon the reference series and linking formula used, there may be no need for any prepayment charge (see Chapter 3).

Perhaps it is debatable whether at the present time Canada's capital market is segmented sufficiently and in such a way as to create exposure to refinancing. It is clear, however, that the actions of an effective residential mortgage market corporation would reduce market segmentation. The RMMC would buy and sell mortgages at prices depending upon its outlook for mortgage interest rates and would finance its mortgage inventories with varying amounts of short and long-term funds, again depending upon its outlook for movements in the term structure of interest rates. Thus, not only would mortgage market and bond market rates become more closely linked, but short and long-term rates in both markets would as well. Moreover, the introduction of the variable terms mortgage itself would reduce segmentation.

The lender would be subject to some risk of refinancing if he set too large a spread between the variable terms mortgage rate and the reference rate. It is desirable, however, that lenders be subject to this risk.

3. Debt Prepayment and Registered Retirement Savings Plans

It was observed above that after all forms of cost and risk are considered, rarely will it be found that a borrower can earn a higher rate of return (including capital gains) on financial investments than he can on debt prepayment. A possible exception is the registered retirement savings plan (RRSP), because of the tax support it enjoys. Contributions are deductible from taxable income; interim earnings attributed to them are not taxed; benefits are subject to tax at the time received. Eligible contributions are limited to \$2,500 per year or \$4,000 per year, depending upon whether the contributor is a member of an employer plan or is self-employed. With debt

prepayment, the outlays do not reduce taxable income, but interim "earnings" are not taxed, nor is any redemption of capital or "earnings". Which allocation of savings is more liquid depends upon which "matures" first and upon the costs of liquidation before maturity. Debt prepayments are realized as cash before the end of the normal life of the mortgage; contributions to registered retirement savings plans are realized on retirement. Debt prepayments can be realized earlier by additional borrowing, entailing a legal fee for search of title and possibly an appraisal fee if the borrower's equity in the property is small in relation to the prepayments reborrowed. Under 1972 tax law, RRSP redemptions are added to current income and taxed at the applicable marginal rate.

The combined effects of these differences can be illustrated with a hypothetical example. For simplicity, consider a 9 percent, twenty-five-year full amortization fixed terms mortgage with fourteen years to maturity.⁷ The borrower prepays 10 percent of the face amount of the loan. This has the effect of reducing the remaining amortization period to eleven years. Let us assume that the borrower has a marginal tax rate of 30 percent⁸ and that he expects this rate to apply twelve, thirteen, and fourteen years hence when the prepayment on his mortgage "matures". At that time, he will reinvest the proceeds in an RRSP. Thus, our comparison is between investing in an RRSP now, or investing first in debt prepayment and in an RRSP when the loan is paid off.

For convenience, consider an original amount of loan principal of \$1,000, so that prepayment at the end of year eleven is \$100, the outstanding balance on the loan drops from \$797 to \$697, and the remaining amortization period drops to eleven years. This means that in the period twelve to fourteen years hence, thirty-six monthly payments of \$8.28 will not have to be made. With no significant error, we can treat these amounts as equivalent to three year-end payments of \$100 each. By investing the funds released (by the payments he does not have to make) in an RRSP, the borrower will reduce his income taxes payable by \$30 per year. Thus, the cash flows attributable to this course of action are an outlay of \$100 at the end of period zero, followed by after-tax receipts of \$130 per year at the end of years, twelve, thirteen, and fourteen. This is equivalent to investing at a rate of interest after taxes of slightly more than 11 percent (annual compounding). To equal this rate, the RRSP will have to earn 7.7 percent after deduction of administration fees and other investment expenses.⁹

Administration fees vary with the type of fund used as a vehicle for the plan. For one leading trust company, the annual management fees for the mortgage fund, bond fund, and stock fund are one percent, three-quarters

⁷This is merely to make the presentation and calculations easier. Alternatively, we could assume a variable terms mortgage under circumstances such that its effective rates of interest over the first eleven years — years twelve to twenty-two, and twenty-two to twenty-five — each would work out to be the same as for the corresponding periods of the above loan.

⁸At 1971 rates of federal income tax, this would mean a borrower with a taxable income of \$8,000 to \$10,000, or an income of \$11,000 to \$13,000 with \$3,000 in exemptions.

⁹Required rate of return/(1 — marginal tax rate) = 7.7 percent.

of one percent, and one-half of one percent respectively. In each case, to this is added one-fifth of one percent per year as a registered retirement savings plan charge. Then, if the mortgage fund has an average gross return of 9 percent, its net return is 7.8 percent, approximately the same as for debt prepayment.

The same trust company has a plan based on its five-year Guaranteed Investment Receipt certificates, for which there is no annual administrative or retirement savings plan fee. There is only a charge of the lesser of one percent of \$100 on redemption or transfer. The rates at which the certificates are offered vary, commonly at a margin of about one and one-half percent to one and three-quarters percent below the mortgage rate. Debt prepayment in the above example would be competitive with this plan.

Suppose now that the borrower expects that over the twelve-year interval his income will rise, raising his marginal tax rate to 40 percent. This will raise the value of his "receipts" at the end of years twelve to fourteen to \$140 each. This is equivalent to a rate of interest after taxes of 11.7 percent (annual compounding). To equal this rate, the RRSP will have to earn 8.2 percent, after deduction of administration fees and other investment expenses, compared to 7.7 percent before.

Similarly, if the borrower's initial marginal tax rate is 40 percent and rises to 50 percent over the period,¹⁰ debt prepayment (followed by RRSP investment) will return 12.3 percent per year, and the required rate of return on the RRSP will be 7.4 percent.

When it comes to liquidity, the RRSP suffers badly. Redemptions are taxed at the marginal rate applicable in the year of redemption. Debt prepayment means reborrowing, with its legal fees and possibly appraisal charges, but no taxes.

Our conclusions are that apart from liquidity considerations, there is a significant group of borrowers for whom debt retirement should precede accumulation of RRSP investments; and taking liquidity into account, the size of this group increases substantially. It was observed earlier that debt retirement offers higher rates of return than can be achieved by nearly all borrowers on financial investments other than RRSPs.

V. VARIABLE BALANCE

We have discussed prepayment charges at length partly because they affect the attractiveness of the variable balance mortgage. A variable balance mortgage would permit the borrower to reduce his debt through prepayment or to raise it by additional borrowing, subject to the limits and requirements of sound lending procedure. A right to reborrow would remove one more impediment to debt reduction. If he can get his money back inexpensively and without undue delay, the borrower has less occasion to withhold prepayments, particularly if there is no prepayment charge. Then if there is a need to borrow—say, to sell the house—the borrower deals with the same lender,

¹⁰At 1971 federal income tax rates, a 40 percent marginal tax rate applied to taxable income of \$12,000 to \$15,000, and a 50 percent rate applied to taxable income of \$25,000 to \$40,000.

reducing the task in title search. If the borrowing is for non-housing purposes, the borrower is in a position to substitute mortgage debt for higher-cost forms of personal financing.

What would sound lending procedure require? First, there would be a reappraisal of the property if the loan were originated some time ago and if the outstanding balance were to be increased materially. The appraisal cost would be charged to the borrower. Second, a title search would be undertaken to ensure that no liens had been registered against the property subsequent to the original loan. This too would be charged to the borrower, but would cost less than refinancing with a larger loan. Third, to protect against the development of an unduly large data processing task, it would probably be necessary to control prepayments and additional borrowing transactions by some minimum limit on size and maximum limit on frequency.

Another consideration is the nature of the borrower's right to additional borrowing. If it is an unrestricted mandatory right, then an accumulation of prepayments and a rise in property values could impose a threat to the lender's liquidity. In our survey of lending institutions, we asked about a reborrowing right which would be limited to the amount of prepayments. Bank interviewees were concerned that even this would create lines of credit that could compete with other borrowers' needs when money was tight.

Such a concern is interesting. Households also have financing needs when money is tight; one of the objectives of the Project Team was to determine ways in which they could better compete with other uses of funds at such times. Perhaps the interviewees responded as they did because the application of funds to other sectors is more profitable in times of tight money. If so, one could welcome the evidence that a robust private market mechanism exists. Perhaps the response indicated that the banks have more profitable ways of providing finance to the household sector. If so, one could be concerned about the rejection of a possibly viable way of reducing household borrowing costs. If, however, the response reflected an attitude that other sectors have some prior claim to bank funds for reasons not associated with return and risk, there is a serious structural problem in this area of financial intermediation. It suggests that there could be a need for building societies, home loan banks, or some similar type of organization, to serve the household sector better.

Let us assume that the responses indicated a healthy desire on the part of the banks to maintain their freedom in allocating funds to their most profitable uses to the best of their ability. Then we might hope for a development of variable balance lending upon modified lines. One line of approach would be for the lender to limit the purposes for which additional loans could be made—for example, to sale of the property. Alternatively, additional lending could be predicated on an understanding that “worthy” needs would be met, funds permitting. Such a “commitment” might not be as strong as that in the case of loan renewal, but it could be meaningful. Presumably, banks currently try to meet some of these “worthy” needs, even in times of tight money.

VI. OTHER ASPECTS

1. *Lending Criteria*

A variable interest rate mortgage, with or without a variable amortization period, would shift some interest rate risk and cash flow risk from the lender to the borrower. For this reason, in our survey we asked lenders if they foresaw that a variable interest rate mortgage would require materially different lending conditions in respect to such matters as maximum loan, loan to value ratio, (initial) amortization period, ratio of initial gross debt service to loan applicant's income, and insurance fee for NHA loans. Generally, all interviewees saw no reason to have different conditions, provided that the amortization schedule could be extended to meet limitations in the gross debt service ratio. In one bank, however, it was suggested that lower-income applicants and those with less stable incomes be directed to fixed terms mortgages. Actually, the variable terms mortgage we have discussed is suitable for borrowers with variable incomes, provided that their average income is large enough in relation to estimated maximum annual gross debt service requirements.

2. *Borrower Choice*

Our approach to variable terms mortgages was to consider them as a device for increasing the range of options for transactors in the residential mortgage market. Lenders and borrowers alike could choose between traditional fixed terms mortgages and variable terms mortgages. There is no problem in giving the lender his choice. For certain borrowers, however, there can be one.

In project building, it is common practice to originate to the builder mortgage loans which are destined for the purchasers of the housing. The builder assigns the loan on sale of the house. At the time the loan is written and registered, the prospective purchaser may or may not be known. The builder then would have to anticipate the borrower's preference in mortgages as well as his preference in houses. Should he make a mistake in mortgage preference, he might find himself faced with reducing the price of the house to dispose of it or with enabling the borrower to convert the loan, if the lender is willing.

In the larger issue of whether to authorize the adoption of variable terms mortgage financing, this seems to be a minor problem. First, it does not arise (1) if interim financing is used, (2) in custom building or where sale otherwise permits the final borrower his choice, or (3) with turnover of existing housing. Second, if the availability of the option makes housing in total a little more attractive, builders benefit. Third, if variable terms mortgages enlarge the supply of residential mortgage funds and reduce the instability in its flow, builders benefit. It is not unusual for those who can choose well to benefit more than those who cannot.

3. *Administrative Costs*

In our survey, we also asked about administrative costs. All interviewees felt that there would be an increase in costs, compared to fixed terms mort-

gages, largely incurred through notifying borrowers of changes and through time spent in answering queries and hearing complaints. The interviewees indicated that accounting costs would increase only nominally if proper computer programming were implemented. It is clear that non-computerized lenders could not cope with the administrative requirements of variable terms mortgages on an economical basis.

Administrative costs must be considered, but they should be kept in proper focus. For the lender, it is ultimately profits, not administrative costs, that are relevant. The fact that some lenders would be too inefficient to compete in the variable terms mortgage market is not a valid reason for depriving all lenders of the possibility of serving borrowers better.

4. Borrower Education

To implement variable terms mortgage financing effectively, borrower education would be required. Borrowers would need to understand clearly the nature of variable terms mortgages in order to realize all their advantages and to avoid imposing undue administrative costs upon lenders while doing so. In a competitive market, a reduction in suppliers' costs lowers supply prices; if queries and complaints were minimized, savings in administrative costs would be shared with borrowers. Also, if the lender were to participate, his public image would need to be considered. Misconceptions about increases in interest rates, if widespread, might lead to the imposition of controls detrimental to the long-run interests of lenders and borrowers alike.

The lender has both a responsibility and an economic incentive to see that the borrower is not misled. But the lender's vested interest and the fact that in some lending he deals only with the builder preclude him from doing the whole job. There is need for public participation too.

Social attitudes toward "interest" tend to inhibit the improvement of loan markets. There is what is known as a goods bias: goods are popularly seen as inherently superior to services of equal market value, and interest is a service. There is a popular tendency to justify price on the basis of labor input—as Karl Marx did—and the rate of interest has low labor content. Interest is a cost paid by the have-nots to the haves, but it is the haves who borrow—the have-nots cannot afford to. In an affluent society, have-nots actually are haves too; it is just that they have less. Their assets include savings deposits, life insurance policies, and pension rights, and in this way they are indirect holders of mortgages: As a result, an increase in home mortgage interest rates tends to raise their income, not lower it. Interest or debt is widely referred to as a burden. Yet interest expenses are incurred for the same reason as other expenses—the expectation that the benefits derived will exceed the cost. It is appropriate to call interest a burden if it is appropriate to call the cost of food, clothing, entertainment, and other items a burden. When the costs of these other items rise, reporters for the popular press do not sum the increase over a twenty-five-year period, as is sometimes done when interest rates rise. Nor do they compare a twenty-five-year total of food bills with the cost of land, which is just about as meaningful

as comparing a twenty-five-year total of mortgage payments with the price of the house.

Efforts to dispel such attitudes would have beneficial effects beyond the variable terms mortgage market.

5. Legal Constraints

To be legally enforceable contracts, variable terms mortgages would have to be drawn to comply with the provisions of the Interest Act,¹¹ the National Housing Act and its regulations in the case of NHA loans, and the applicable laws of each province. In the course of our work, we received advice from counsel to the effect that given the necessary changes in the above federal legislation, an interest rate linked to a reference rate beyond the lender's control, and an amortization period that would be variable in the event of a change in the interest rate,¹² the variable terms mortgage would be legally enforceable in each province. Additional borrowing is legally viable on the basis of title search and registration of a mortgage covering the additional advance. Hence, the removal of the federal impediments to variable terms mortgage financing would make it legally operative.

¹¹It appears that amendments would be required to ensure that "any rate of interest" (Section 2) and a rate "fixed" by law (Section 3) do not preclude a variable rate of interest, and to ensure that the variable rate is enforceable where the mortgage is payable on a sinking fund plan, blended payments plan, or any plan allowing interest on stipulated repayments (sections 6, 7, and 9).

¹²Counsel was not asked to determine whether the amortization period could be changed in the absence of a change in interest rate.

Chapter 3

Variable Rate Mortgages — Analysis and Review

by Paul Halpern

The maintenance and expansion of the housing stock continues to be a very important consideration for social policy. Central Mortgage and Housing Corporation (CMHC) was established to provide funds for mortgages and thereby stimulate house building. In addition, the financial institutions in Canada—specifically, mortgage and loan, trust, and life insurance companies—have been active in the supply of mortgage credit through both NHA and conventional mortgages. As a result of legislative changes, the chartered banks are now re-entering the NHA mortgage market and have authority to make conventional loans as well. Consistent with the perceived importance of housing in Canada, CMHC is interested in determining methods whereby the total supply of mortgage funds can be increased. The specific recommendation with which this chapter is concerned is the variable rate mortgage (VRM). This is a mortgage whose interest rate could be revised in both directions, over the life of the loan. The revision of the mortgage rate may be tied by some prearranged system to an underlying interest rate series or left to the discretion of the mortgage company.

This paper is divided into six sections. In Section I, the basic problem of the imbalance of asset-liability maturities is discussed with special reference to the savings and loan companies in the United States. The relative impact of this imbalance on S and Ls and on Canadian trust companies also is considered. In Section II, some proposed solutions to the imbalance problem are considered. The most promising solution is the variable rate mortgage, and we demonstrate that this is the long-term analogue to a bank demand loan. Section III presents a discussion of the theoretical and practical problems of implementing VRMs. In Section IV, a brief discussion of the historical experience of users of VRMs is presented. Section V considers, by means of a theoretical analysis, the effect on interest rates and the supply of mortgage money if VRMs are introduced along with the usual fixed rate mortgage. Last, in Section VI, specific recommendations are made.

I. THE BASIC PROBLEM OF MATCHING

During the middle and late 1960s, financial institutions which borrowed short to finance long-term investments in their portfolios were affected adversely by *unanticipated* interest rate increases. The institutions affected most severely by this problem were the savings and loan (S and L) companies in the United States. These companies accepted short-term deposits on which current short-term rates of interest were paid and invested the funds in long-term mortgages. As short rates increased, they were forced to pay competitive rates on their deposits in order to maintain the level of deposits. To the extent that their deposit rates were below the rates paid on comparable investments, individuals removed their savings from the S and Ls. The increasing deposit rate costs, combined with the fixed interest income on mortgages, led to declining profits for the S and Ls. In addition, prepayments on mortgages declined as interest rates increased, and therefore the volume of funds available for investment in mortgages at the higher rates diminished.

The problem was further complicated by the fact that any adjustment to the new higher mortgage rates was made on the flow of mortgages—that is, on new mortgage commitments rather than on the stock of existing mortgages which were contracted at lower rates. Higher rates, however, had to be paid on all deposits. The net effect was a reduction in the amount of mortgage money available through S and Ls and a reduction in their profits.

Unlike the S and Ls, insurance companies are able to hedge against this risk, since both their liabilities and assets (mortgages) are long term.¹

An important distinction must be made between anticipated and unanticipated interest rate changes. This distinction is based on the yield curve—that is, the relationship of interest rates on financial instruments to their term to maturity. Suppose that the yield curve slopes upward to the right (the usual case) and we accept the expectations hypothesis. This hypothesis states that long-term rates are geometric averages of expected short-term rates. Therefore, the holder of a long-term security will earn, on average, just as much as the holder of a series of short-term securities over any specified holding period.² The upward shape of the yield curve implies that future short rates are expected to increase. The yield curve implies that if a financial institution borrows short and lends long, the future short rates will increase; but since these increases are anticipated, the interest income on the long-term investment will cover the increasing short-term costs of borrowing. If, however, there is an unanticipated increase (decrease) in short rates, the company will incur a loss (profit). Thus, in order to hedge against unanticipated interest rate increases, the financial institution must match the maturities of assets and liabilities.

This analysis is substantially unchanged if we assume that the liquidity premium hypothesis is correct.³ This hypothesis states that (1) individuals

¹In fact, insurance companies have liabilities with maturities in excess of the maturity of their assets.

²Reuben A. Kessel, "The Cyclical Behaviour of the Term Structure of Interest Rates", National Bureau of Economic Research, Occasional Paper 91, 1965.

³*Ibid.*, p. 1 and chap. 2.

are more concerned with capital loss than with income loss⁴—that is, the risk of holding a long security is greater than the risk of holding a series of shorts for the same holding period; (2) the community as a whole prefers to avoid risk; and (3) speculators must be compensated for bearing risk. This implies that the future short rates are expected short rates plus a liquidity premium. Any institution which lends long is bearing capital risk and will be compensated by obtaining a return over and above the return that could be obtained by investing in a series of short-term notes over the same holding period. If expectations are realized, then this additional return is the liquidity premium. If an institution lends long and finances the investment with a series of short-term notes, the returns from lending long equal the costs of borrowing at expected future short rates plus the liquidity premium for bearing capital risk. Note that the expected future short rates can be inferred from the yield curve if the liquidity premiums are known. If expectations are not realized—that is, if there are unanticipated interest rate changes, the lending institution will have an increase or decrease in profits in addition to the liquidity premium paid.⁵

There is yet a third explanation of the term structure of interest rates, which is known as the market segmentation or preferred habitat theory. This hypothesis argues that institutions that buy securities have a preferred maturity; and since they dominate the market, they are able to determine the yields on the securities they buy. Further, these institutions do not consider a series of short notes to be a substitute for a long-term investment. Therefore, the structure of the yield curve will be determined by the inventories of long and short securities, and no information about future expected rates can be inferred from the yield curve. We do not consider this hypothesis in our discussion since the evidence, while unable to determine conclusively whether the liquidity premiums or expectations hypothesis should be accepted, has not been kind to the market segmentation hypothesis. Very few studies have found empirical results consistent with this theory.

In Canada, the problem of unanticipated interest increases has not been severe to date. The Canadian counterparts of the American S and Ls are the loan companies and to a lesser extent the trust companies.⁶ While trust companies do accept short-term deposits, they also issue deposit certificates which are promises to pay a stated rate of interest ranging from one to five years. The actual term for their five-year certificates is two and a half years, and two years for their four-year certificates.⁷ Therefore, the liabilities are not as short as those in the savings and loan companies.

On the asset side, the term of conventional mortgages for trust companies (and now, as a result of their instigation, of NHA mortgages) is five years.

⁴An individual incurs capital risk when the holding period is less than the maturity of the instrument he holds; he incurs income risk when the maturity is less than the holding period.

⁵To the extent that the financial institutions do not match maturities, they are speculating on future interest rate movements. Therefore, their income stream will have more variability, over time, than an institution which matches maturities.

⁶Trust companies, unlike loan companies, have a wider product line than S and Ls.

⁷Interview Survey of Lending Institutions, October 1970. See Appendix C.

After five years, the mortgage opens up and the terms are renegotiated. The actual term of these five-year mortgages is close to five years.⁸ Thus, trust companies are closer to matching their asset and liability maturities than are S and Ls, and therefore the trust companies are partly hedged.⁹

II. PROPOSED SOLUTIONS TO THE MATCHING PROBLEM

There have been many proposed solutions to the matching problem. These can be categorized into proposals to alter either the liability side (deposits) or the asset side (mortgages).

1. *Liability Side*

An obvious solution is to increase the term of the deposits so that they match the maturity of the assets. For some institutions in Canada, this has been accomplished, but only partly, since the effective term of the deposit certificates remains shorter than the term of the liabilities. In the United States, this is not the case, and any increase in the term of the deposits will assist in reducing the S and Ls' risk.

To the extent that the terms of the deposits and assets can be brought closer in line, the interest rate risk will be reduced. Financial institutions can therefore pass on the benefits of reduced risk in the form of higher deposit rates. This will allow these institutions to become more competitive when interest rates increase.

2. *Asset Side*

One solution is to introduce escalator or change-at-will clauses in all mortgage contracts. In the New England area, there are twenty-three financial institutions which either had these clauses already included in their outstanding mortgages or were inserting these clauses in new mortgages.¹⁰ These clauses permit the lender to increase the interest rate after a given notice period. In the case of new mortgages, the lender and borrower must come to an agreement on the mortgage interest rate, and this accommodation will reflect the inclusion of the escalator clauses.

This is not the case, however, for existing mortgages. Even though the clause was included in the mortgage when the borrower signed the contract, the clause was either ignored by the borrower and/or lender or, if it was questioned by the borrower, the lender passed off the objection to its inclusion by arguing that the provision had never been used before. Therefore, when notice of a rate increase was sent to the borrowers on old mortgages, a storm of protest occurred.¹¹

⁸*Ibid.*

⁹To determine the extent of hedging, we must know the dollar value in five-year and four-year certificates relative to the dollar value invested in securities of similar maturity.

¹⁰P. S. Anderson and J. P. Hinson, "Variable Rates on Mortgages: Their Impact and Use", *New England Economic Review*, March-April 1970, p. 6.

¹¹An Ohio savings association sent a rate increase notice to 4,000 borrowers and found itself the target of a vehement anti-escalation crusade. The association was forced to rescind the increase. *Ibid.*

While the escalation or change-at-will clause is a possible solution, it will not be accepted readily by the public because borrowers are not certain that interest rate reductions would be passed on to them. Their only recourse, if rates fall, is to prepay the mortgage along with the penalty charge and refinance. This is a costly operation and one which is undertaken only if interest rates fall enough to make prepayment profitable.

Another possible solution is to force renegotiation of interest rates when an existing property is sold. Thus, an old mortgage at a low rate of interest will be updated to current rates when the property is transferred. Although updating interest rates is an easy technique, it is a very slow process, since only a small proportion of old homes changes hands in any given year. Also, adjustment occurs with a long lag.

As a third alternative, instead of including an escalator clause, some institutions insert a clause allowing them to call the outstanding mortgage, after a specified notice period, for rate renegotiation. If this clause is not directed to the attention of the borrower when the mortgage is written, its use leads to strong opposition. In 1970, a large Massachusetts savings bank activated its long dormant clause for rate renegotiation, stating that the rate would increase by 3 percent if any borrowers wished to extend the mortgage. The borrowers picketed the institution, and a one percent increase was agreed upon.

Fourth, instead of issuing a long-term mortgage, the financial institution may use a series of short-term or demand notes. The lender writes the note for three to five years and then converts it to a demand note or extends it for a short term. In this case, lenders can alter interest rates, but an onerous degree of liquidity risk falls on the borrower.

Another technique that is used is the open-end advance. When the borrower wishes to borrow against the equity in his property, the rate on the mortgage is readjusted to reflect current rates. The borrower incurs a very large penalty if he uses the advance and thereby locks in his equity investment in times of high rates. As a solution to the maturity imbalance problem, this is far from successful. With the high penalty costs, very few borrowers will seek advances, and the interest income in the stock of outstanding mortgages will increase only marginally.

The first, third, and fourth techniques are attempts to reduce the maturity of the asset and bring it in line with the current costs on short-term deposits. All attempts to use these clauses are doomed to failure for one of two reasons: either clauses are one-sided (there is no benefit to the borrower), or the borrower is not aware of the clauses. The removal of the latter reason will not in itself make these clauses acceptable to borrowers. Techniques two and five are attempts to adjust the interest income on the stock of mortgages to bring them into line with the rates charged on new mortgages and thereby ensure the institution's profits. These proposals are piecemeal and affect only a small proportion of outstanding mortgages.

The most promising technique is the variable rate mortgage (VRM). A VRM is a mortgage in which the interest payments fluctuate (in both directions) according to some predetermined system. This technique has none of

the shortcomings of the alternatives discussed previously. The borrower is certain that his interest costs will be flexible downward as well as upward. Since this technique has had little use in North America, the lender must explain its operation to the borrower so that the latter will be aware of the variable rate clause in the mortgage. Interest rate changes will be reflected automatically in the outstanding mortgages (to the extent that they are VRMs); there is no necessity to call the mortgage or to wait for the property to be sold.

The mechanical movement of the VRM implies that the variable rate is tied by some formula to some interest rate series. An alternative that has been used in Great Britain is a lender-managed rate. Movements in this rate would not be altogether automatic and for this reason would not be as well received by borrowers as the automatic variable rate, which is based on an interest rate series uncontrolled by the lender.

With respect to the interest rate, the net effect of the VRM is to reduce the effective term of the mortgage to zero,¹² since any changes in interest rates will be immediately reflected in the mortgage. The maturity imbalance with respect to short-term deposit interest rates is corrected, and deposit-taking institutions using VRMs are hedged against unanticipated interest rate movements on their deposits. This is similar to the commercial bank policy on corporate loans, where the loan is written so that any changes in the prime rate are passed on to the borrower. For these loans, the banks match deposit and asset maturities and thus are hedged against unanticipated interest rate changes.

Putting aside for now the difficult but not insoluble problem of the relationship of changes in outstanding mortgage interest rates to changes in some underlying interest rate series, the actual implementation of VRMs is straightforward. Suppose that a twenty-five-year variable rate mortgage is written with a 6 percent interest rate and a monthly payment of \$193.30. After three years, the interest rate on the mortgage becomes 8 percent. A notice is sent to the borrower that the interest rate on his mortgage is to be revised. The borrower has two options available for paying the higher rate.¹³ First, he may make a higher monthly payment to cover the increased interest cost; in this case, the payment would be \$228.07 per month. Alternatively, he may maintain the same payment but increase the amortization period; the new period in this case would become forty-five years. The second alternative leads to some problems. First, if the interest rate increases enough, the amortization period may become infinite or larger than a maximum legal period. To overcome this problem, a combination of the techniques can be used. Initially, all interest rate changes would be reflected in the amortization period up to a maximum previously determined; any further interest rate increases would be reflected in the increased monthly payment. If interest rates subsequently

¹²Actually, the term is instantaneous only if the VRM rate adjusts without a lag. The interest rate risk is removed, but the default risk may not be altered.

¹³In fact, the borrower and lender will have decided at the time of contracting the loan which of the alternatives will be used if the interest rate is changed.

declined, the initial reaction would be on monthly payments and then on the amortization period.

Thus, the VRM is a viable technique for solving the problems of financial intermediaries that borrow short and lend long. In Canada, these are the trust and loan companies and the chartered banks; the insurance companies, as previously mentioned, will not be assisted, since they are hedged already.

In the case of the chartered banks, the maturity of their liabilities is very short. The VRM will reduce the interest rate maturity of their mortgages from five years to zero, and they will be hedged for both mortgages and corporate loans.

The trust companies, however, are not as fortunate. Suppose that all their deposits are composed of deposit certificates with a three-year term to maturity, and that they introduce VRMs with the same aggregate dollar value as their liabilities. The result will be that these companies are not matching the maturities of their assets and liabilities; that is, the maturity of assets is very short, but the maturity of deposits is three years. Thus, by issuing a VRM, the trust companies become susceptible to interest rate risk. If trust companies want to issue VRMs, they must institute simultaneously one of two changes: every dollar invested in a VRM must be financed either by short-term deposits — similar to the operations of chartered banks — or by long-term deposits which pay interest that depends on the interest rates on the VRM (that is, a variable rate savings deposit).

An alternative solution which is intuitively appealing but analytically incorrect is to mix VRMs and FRMs in certain proportions such that, on average, the terms to maturity of assets and liabilities are equal. With these proportions, the company appears to be hedged. The only effective way of hedging, however, is to match the terms to maturity of each asset and liability; matching on average is not correct.

In our example, effective matching could be achieved by making mortgages renegotiable after three years — that is, by using a VRM with a three-year term to maturity.

The basic restructuring needed by trust companies to use VRMs of very short term to maturity, combined with the small degree of mismatching currently present in maturities, leads us to believe that these companies will not enter the VRM field aggressively. The chartered banks, however, are already structured to accept VRMs, and they will become the major users of the instrument if it is implemented.

III. THEORETICAL AND PRACTICAL PROBLEMS IN IMPLEMENTING VRM's

Many articles have been written about variable rate mortgages. Most of them suffer from a common shortcoming — a misunderstanding of the implications of the yield curve. All the articles present more or less the same set of pros and cons. In this section, we will consider problems raised in the articles, as well as some additional ones.

1. Implementation Problems

a) Rate Setting

Many possible tying techniques have been presented in the literature. All assume that the base rate is the interest rate on fixed mortgages and that this rate fluctuates with changes in some underlying interest rate series. The series considered are short-term Treasury Bills, long-term bonds, the fixed interest rate mortgage rate, and the rate paid on deposits. To consider which is the appropriate tying technique, we must delve into the meaning of the yield curve.

Suppose that in 1960 we observe the following hypothetical yield curve where interest rate is a function of term to maturity.¹⁴

Table 3-1

HYPOTHETICAL YIELD CURVE IN 1960

Term to Maturity	Interest Rate	Expected Future Rates
1 year	1.0%	
2 years	2.0%	3%
3 years	3.0%	5%
4 years	4.0%	7%

If we accept the expectations hypothesis, the yield curve gives us the expected future short-term rates. These are the marginal rates of interest and are presented in *Table 3-1*. For example, one year hence, the short-term rate is expected to be 3 percent; two years hence, the expected short-term rate is 5 percent, and so forth.

If expectations are realized, in 1961 the actual yield curve will be as shown in *Table 3-2*. Therefore, a rising yield curve implies that future short-term rates will increase. Conversely, a falling yield curve implies that future rates will decrease.

Expectations need not always be realized. Suppose that in 1961 the observed yield curve is as shown in *Table 3-3*. To demonstrate the impact of un-

Table 3-2

ACTUAL YIELD CURVE IN 1961

Term to Maturity	Interest Rate	Expected Future Rates
1 year	3%	
2 years	4%	7%
3 years	5%	5%

Table 3-3

OBSERVED YIELD CURVE IN 1961

Term to Maturity	Interest Rate	Expected Future Rates
1 year	2.0%	
2 years	3.3%	4.6%
3 years	4.0%	5.4%

¹⁴In the examples that follow, long-term interest rates should be geometric rather than simple averages of expected future one-year rates. Simple averages were used for ease of computation and exposition. The geometric averages would not be very different. In any case, the argument is not affected.

anticipated interest rate movements, assume that a three-year fixed rate mortgage (FRM) for \$100 was issued in 1960 at 3 percent. The proceeds of this mortgage will be \$9. The mortgage company, however, issues \$100 of one-year notes to be rolled over annually to pay for the investment. The interest cost is \$1 in 1960, \$2 in 1961, and \$4.6 in 1962 (assuming that expectations are realized in 1962), yielding a total cost of \$7.6. Since there was an unanticipated interest rate reduction, the mortgage company has made an unanticipated profit of \$1.4 on the investment.¹⁵

Financial institutions may wish to become immune to these shortrun unanticipated interest rate changes. The best method to use is to issue VRMs tied to the short-term interest rate, so that the mortgage rate will fluctuate with changes in the short-term interest rate. Since VRMs have an instantaneous term with respect to interest rate, they are in essence mortgages with provisions to renegotiate at any time. Since the short rate may fluctuate a great deal, a sensible tying rule is to alter the interest rate on the VRM when the short rate increases by x percent for y months. An additional provision could be that the rate will be changed only on the anniversary date of the mortgage. In addition, since a mortgage will still be written with a long amortization period and since it cannot be called at will by the lender, some compensation over and above the basic short-term rate will be needed. This spread will be determined by each institution, and competition on the size of the spread will appear; the more efficient the company, the smaller the spread will be.

To demonstrate how the VRM tying technique would work, suppose that a \$100 mortgage is written for three years at the short rate plus one-half of one percent. Assume that changes in interest rates occur only on anniversary dates. Since the rate of interest paid on deposits will reflect changes in the short-term interest rate, the interest cost of issuing the \$100 mortgage will be \$1 in the first year (*Table 3-1*), \$2 in the second year (*Table 3-3*), and, assuming expectations are realized from then on, \$4.6 in the third year (*Table 3-3*), yielding a total cost of \$7.6.

The receipts from the VRM mortgage are \$1.5 plus \$2.5 plus \$5.1, yielding a total return of \$9.1. The difference between the return and the cost is the compensation for the illiquidity of the mortgage. This ignores the influence of transactions costs and default risk, both of which would be included in the premium above the short rate.

If expectations were realized, then tables 3-1 and 3-2 would be used; the interest cost of the mortgage would be $\$1 + \$3 + \$5 = \9 and the return, $\$1.5 + \$3.5 + \$5.5 = \10.5 . If the yield differential were removed, the costs would be equal to the receipts.

If the liquidity premiums hypothesis is the appropriate explanation of the yield curve, then the forward or marginal rates are the expected future rates plus a liquidity premium. The rate with the smallest liquidity premium is the

¹⁵If the unanticipated change was an increase in interest rates, the company would suffer an unanticipated loss.

one-year rate.¹⁶ The VRM can be issued at the short rate plus a market-determined premium, and the results are the same as in the expectations hypothesis. As a future rate becomes a current rate, the liquidity premium is removed and the actual one-year rate is used for the VRM rate.

Instead of using the short-term rate as the base for the VRM rate, the long-term fixed rate mortgage (FRM) rate can be utilized. This rate, however, reflects the expectations of the market with respect to future short-term interest rate movements.

For example, returning to *Table 3-1*, suppose that a three-year VRM for \$100 is written at the fixed rate mortgage rate of 3 percent,¹⁷ the funds for investment are obtained by issuing \$100 worth of one-year notes for three years, and expectations are realized. The return on the mortgage will be \$9 (assuming simple interest), and the interest cost of issuing the mortgage is the sum of the marginal rates (\$1 + \$3 + \$5) or \$9. Therefore, even though the short-term rates have increased from one to 3 to 5 percent subsequent to the issue of the mortgage, *no revision of the VRM interest rate is necessary*. In fact, if the VRM were written as¹⁸ the FRM rate of 3 percent plus any cumulative changes in the short-rate, the total returns from the mortgage would be \$3 in the first year, \$3 + \$2 = \$5 in the second year, and \$5 + \$2 = \$7 in the final year, for a total return of \$15. In this case, revenues exceed costs. The opposite is true when the yield curve is falling; then the returns decrease more than the costs. The only time that this system works is when the yield curve is flat and no interest rate adjustments are necessary. If this tying technique is adopted, the mortgage company, instead of reducing risks by instituting a VRM, is actually increasing the variability of its earning stream.

The reason we obtain incorrect adjustments using the above technique is that the interest rate on the VRM is altered in response to both anticipated and unanticipated interest rate changes.

To correct this rule, we must ensure that the interest rate on VRMs fluctuates with unanticipated interest rate changes only. To accomplish this, the rule we suggest is as follows:

$$r_{VRM,t} = r_{FRM} + (r_{act,t} - r_{exp,t})$$

where $r_{VRM,t}$ is the interest rate paid on a VRM in period t , r_{FRM} is the fixed interest rate mortgage rate, $r_{act,t}$ is the one-year short-term interest rate observed in t , and $r_{exp,t}$ is the short-term rate expected in period t , *inferred from the yield curve prevailing when the mortgage was written*. In *tables 3-4*, *3-5*, and *3-6*, we present the hypothetical actual yield curves for 1960, 1961, and 1962 respectively. The mortgage has three years to maturity and is issued at the beginning of 1960 for \$100.

¹⁶The shorter the term to maturity, the smaller is the liquidity premium. Since we are considering maturities not less than one year, the one-year rate has the smallest liquidity premium.

¹⁷The relationship of the VRM rate and the FRM rate when the former has the latter as its base is considered in Section V.

¹⁸This is the formulation most often presented as the appropriate VRM provision.

Table 3-4

YIELD CURVE IN 1960

Term	Interest Rate	Expected Rate
1 year	1%	
2 years	2%	3%
3 years	3%	5%
4 years	4%	7%

Table 3-5

YIELD CURVE IN 1961

1 year	4%	6%
2 years	5%	
3 years	6%	8%

Table 3-6

YIELD CURVE IN 1962

1 year	5.1%	
2 years	5.5%	5.9%
3 years	6.0%	7.0%

The mortgage is issued in 1960 at a rate of 3 percent. Therefore, $r_{VRM, 1960} = 3\%$. In 1960, the expected short-term rate for 1961 was 3 percent ($r_{exp, 1961} = 3\%$), and the actual rate was 4% ($r_{act, 1961} = 4\%$). Thus, there was an unanticipated interest rate increase and $r_{VRM, 1961} = 3\% + (4\% - 3\%) = 4\%$.

In 1962, the expected short-term rate ($r_{exp, 1962}$) inferred from the 1960 yield curve is 5%, but the actual rate is 5.1% — another unanticipated increase. Therefore, $r_{VRM, 1962} = 3\% + (5.1\% - 5\%) = 3.1\%$. The total return from the VRM is $\$3 + \$4 + \$3.1 = \10.1 . The interest cost of the mortgage was $\$1 + \$4 + \$5.1 = \10.1 (that is, the sum of the actual short-term interest rates). Thus, the institution is completely hedged and costs equal revenues.¹⁹

To use a VRM correctly, if the base rate is the fixed rate mortgage rate, the VRM in any year is the base rate plus any unanticipated interest rate changes in the short rate.

If the liquidity premiums hypothesis holds, then the solution using this rule is more difficult, since the future rate inferred from the yield curve is the expected future short rate plus the liquidity premium. Therefore as the future rate becomes a short rate, the change (future minus actual short) is due to removal of the liquidity premium and unanticipated interest rate changes. Unless the liquidity premium is known, the rule as stated will not give the correct solution. For example, suppose that the liquidity premium for a one-year note is zero percent, for a two-year note is one percent, and for a three-year note is 2 percent. Then the expected rates in Table 3-4 can be rewritten as 2 percent, 3 percent, and 4 percent. Now, applying our rule, we find that the

¹⁹It can be shown that costs equal revenues if there are unanticipated interest rate decreases. The result is independent of the shape of the yield curve.

VRM rate will be as follows: 1960 — 3%

1961 — $3\% + (4\% - 2\%) = 5\%$

1962 — $3\% + (5.1\% - 3\%) = 5.1\%$

This yields a total return of \$13.1 on a \$100 mortgage and a cost of \$10.1. The extra \$3 is the payment for bearing capital risk by going long.

Other possible techniques are to tie the VRM rate to the long rate on bonds or to the fixed mortgage rate. Even if this rule is properly specified to ensure that the VRM rate is altered only in response to unanticipated interest rate changes, the result will still not completely hedge the institution buying the mortgage, since the returns are fluctuating in response to unanticipated long-term rate changes and the costs are fluctuating with short-term rate changes. Although the revisions in the future rates are correlated, they are not equal in absolute value.²⁰

In sum, if the company wants to guarantee a hedge against unanticipated interest rate changes, the VRM should be issued with a short-term rate that fluctuates in response to either short-term rate changes or the interest rate paid on deposits in the institution. As long as the former is related to the latter, then both techniques are equivalent. From a public relations standpoint, borrowers would prefer a guarantee that the rate will fluctuate automatically — that is, that it is out of the lenders' hands entirely. For this reason, the tie to the short-term rate is preferable.

It is possible also to use an FRM rate as a base and to allow the VRM rate to fluctuate with unanticipated interest rate changes. The costs of determining the expected rate from the yield curve are not trivial and may be prohibitive if the liquidity premiums hypothesis holds. In addition, to prevent a large number of small changes, a minimum unanticipated change level must be specified.

As we have demonstrated, however, if the VRM rate used the FRM rate as a base, it would be incorrect to change mortgage rates in response to all short-term rate changes. To the extent that the institutions use this rule and that yield curves are rising on the average, they are adjusting VRM rates to anticipated changes and increasing their profits at the expense of borrowers.

If the liquidity premiums hypothesis holds, what appears to be a change in unanticipated rates may be due to the removal of the liquidity premium as the mortgage becomes a better substitute for money. Therefore, if the VRM has the FRM as its base and the liquidity premium is not removed, the VRM rate will fluctuate a great deal, since expected rates and realizations of these expectations will differ as the security gets closer to maturity. To avoid this problem, the VRM should be based on a short-term rate (preferably one year) with a market-determined allowance for non-callability. The VRM rate will fluctuate with the one-year rate, which is relatively free of liquidity premiums.

b) Public Relations

"VRM problems are so different that it is unlikely that rate variability will

²⁰See Kessel, "Cyclical Behaviour of Interest Rates" and David Meiselman, *The Term Structure of Interest Rates* (Englewood Cliffs, N.J.: Prentice-Hall, 1962).

be widely adopted unless it is supported and actively promoted by financial institutions, their trade associations and the Federal government.”²¹

As has been mentioned before, the use of an escalation clause or a call option for renegotiation has caused a great deal of consternation among borrowers who have been either unaware of the option or convinced that it would never be used. Any plan that makes interest rates variable will be disliked by the general public, since it is a retrogression from the status quo. As mortgages now stand, the borrower may prepay if interest rates fall by enough; if interest rates rise, he is not affected. If a VRM provision is introduced, the borrower must accept more risk since his interest payments will fluctuate; therefore, for this type of instrument to be saleable, some guarantees will be necessary.

First, the borrower must be certain that any rate reductions will be passed on to him. If the fixed rate base VRM is used, the borrower will have to be educated as to what is an interest rate change that will be reflected in his mortgage rate. This problem does not exist if the short-term rate technique is used. Because borrowers tend to be skeptical, it is unlikely that they will accept a VRM system that ties variable interest rates to deposit rates. One possibility to make this latter technique operational is to allow the borrower a costless prepayment option. Then, if the lender is slow in reducing his deposit rate and therefore the mortgage rate, the borrower can prepay without penalty and obtain new financing. Under this alternative, however, the borrower must still undertake substantial transactions costs to refinance (the prepayment penalty is not the only cost in refinancing). While we do not expect deposit rates to lag significantly behind short rate changes and therefore consider the deposit rate alternative as a feasible technique, most authors argue that the public will not accept it.²²

Of course, there already exists a system which allows individuals with different views to reach an accommodation — the market system. Since borrowers are not enthusiastic about VRMs, their reluctance can be overcome by giving them a lower rate on VRMs than on FRMs.

In the New England survey of S and Ls, approximately 30 percent of those considering the adoption of VRMs stated that these instruments would be priced at a discount from their FRMs. Also, 25 percent of those companies reporting that they had a variation clause in their contracts gave a discount on their VRM loans.²³ We do not know, however, how many of the mortgages with variation clauses inserted are operational. These companies may not have pointed out the variable interest rate clause, and therefore borrowers may not have bargained for a lower rate.

Other authors argue that the costs of instituting a VRM would be very

²¹P. S. Anderson and R. W. Eisenmenger, “Structural Reform with the Variable-Rate Mortgage”, Conference on Housing and Monetary Policy, October 14-16, 1970, p. 1.

²²Anderson and Hinson, “Variable Rates on Mortgages”; Robert Moore Fisher, “Variable Interest Rate Mortgages”, paper presented to the Ninth National Mortgage Conference of the American Bankers Association, Miami Beach, Florida, May 7, 1969; and Charles P. Garrison, “A New Plan for Variable Mortgage Rates”, *Savings and Loan News*, January 1967, pp. 26-31.

²³Anderson and Hinson, “Variable Rates on Mortgages”, p. 12. The data are consistent with our analysis in Section V below.

great and would be passed on to the borrower in terms of higher loan fees.²⁴ The costs are mainly costs of informing the borrower of the new interest rate and calculating either the new amortization term for his loan or the revised interest payments he must make. The responses on the interview survey of lending institutions on the importance of these costs were mixed; some institutions felt that the costs would be very large, while others argued that the lenders already inform the borrowers each year of the current mortgage payment and the required changes for a VRM would be small (see Appendix C). It is hard to believe that in this era of computers, the costs of calculating the new interest charges (or amortization term) would be substantial.

2. *Cash Flow Effects*

a) Lenders

There are two techniques available to adjust for changes in interest rates. On one hand, the change in rate can be fully reflected in the monthly payments. This will keep interest earnings in line with the lender's current short-term interest expenses. Under this technique, the repayment of principal is not disturbed. Alternatively, the monthly payments can be kept constant and the amortization period altered. Fisher has argued that this will not alter the cash flow to the institution.²⁵ If interest rates increase but the amortization period is extended, a larger portion of the monthly payment goes to interest expense to pay for the current deposit rates, and consequently less of the payment goes toward reducing the principal. In fact, if the interest rate increase is large enough, there may be a negative payment on principal. Others have argued that even though cash flow does not increase, the income accruing in the period (that is, the interest payment increases) does and so does the tax.²⁶ The net result is a decrease in after-tax cash flow as the mortgage rate increases.

The arguments presented are correct if the institution has issued VRMs only recently. But if the company continues to issue these instruments, then at some future time, if interest rates increase, those mortgages which have variable clauses will have to continue paying interest due to the extended amortization period and this will increase the cash flow. In addition, the higher interest rates (longer term) will give borrowers an incentive to pre-pay. Thus, the VRM with the option to extend the amortization period does increase cash flow, but it is not a short-run solution.

b) Borrowers

The cash flow effect on the borrowers has been presented as an argument against the acceptance of VRMs.²⁷ To the extent that VRM provisions are already included in existing mortgages, most institutions use the variable monthly payments alternative. For the borrowers, uncertainty over the

²⁴See, for example, John M. Wetmore, "Variable Interest on Mortgages — Miracle or Mirage", Mortgage Bankers Association of America, October 1970, p. 5.

²⁵Fisher, "Variable Interest Rate Mortgages"; and Robert Moore Fisher, "Variable Rate Mortgages", *The Appraisal Journal*, July 1967, pp. 325-32.

²⁶R. B. Ricks and H. C. Friedman, "Variable Interest Rate and Variable Balance Mortgages", Working Paper #1, Federal Home Loan Bank, December 12, 1969, p. 9.

²⁷Anderson and Hinson, "Variable Rates on Mortgages".

amount of cash flow makes it difficult for people to plan, particularly borrowers on fixed incomes.

This argument can be easily countered. Most individuals who are home owners and paying off mortgages are not on fixed incomes, but on salaries. Also, their incomes and net worth usually move up with interest rates and inflation, albeit with a lag.

An additional argument is presented by Maisel.²⁸ He claims that borrowers are more sensitive to changes in monthly payments than in length of maturity. If this is correct, then the constant monthly payment alternative may be preferable.

3. Marketability of VRMs

Another widely accepted argument is that the VRM will not be marketable in competition with the fixed rate mortgage and therefore will be driven out of existence by competitive pressure.²⁹ It is suggested that in periods of relatively low rates when the market expects the rates to increase, borrowers will want the fixed rate loans; and given the abundance of mortgage money, lenders will be forced to capitulate. In periods of relatively high interest rates when rates are expected to fall, lenders will ration their scarce mortgage funds among borrowers willing to accept fixed rate obligations.

Individuals who use this argument do not understand the implications of the yield curve. Consider the case where interest rates are high but expected to fall. The yield curve associated with this situation is presented in *Figure 3-1*, where r_A is the fixed rate mortgage interest rate. The yield curve implies that future short rates will be lower than present short rates. Therefore, an FRM can be issued at r_A ; and if the expectations hypothesis is correct, the return from this investment on the average will yield a return

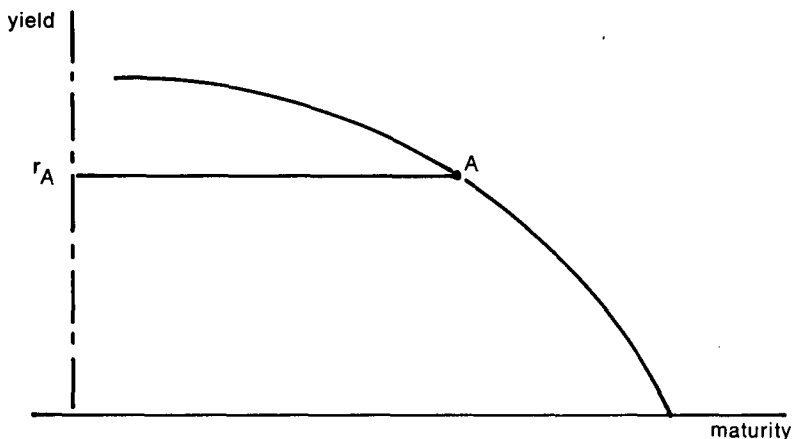


Figure 3-1

²⁸Sherman Maisel, "Some Relationships Between Assets and Liabilities of Thrift Distributions", *Journal of Finance*, May 1968, p. 367.

²⁹Fisher, "Variable Interest Rate Mortgages"; and Ricks and Friedman, "Variable Balance Mortgages".

equal to a series of short-term investments. If a VRM is issued with the base rate equal to r_A and the market has already considered the expected rate reductions, the VRM mortgage will be altered only as a result of unanticipated interest rate changes.³⁰ Therefore, if the institution is not interested in unanticipated interest rate risk, it will be indifferent in choosing between FRMs and VRMs. If it is a risk averter, it will choose the VRM with its lower expected yield.

If the accepted argument is true that lenders prefer FRMs when rates are high, this implies that while the market expects yield curve (1) in *Figure 3-2*, lenders in aggregate expect yield curve (2).

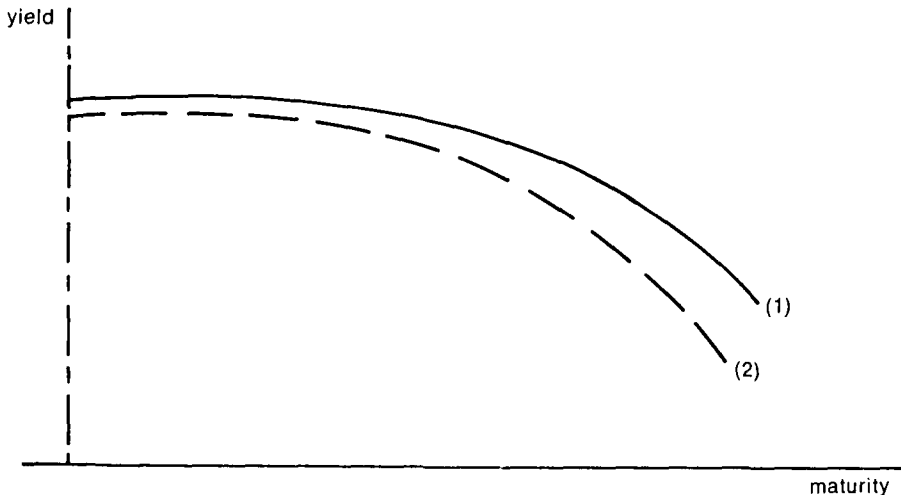


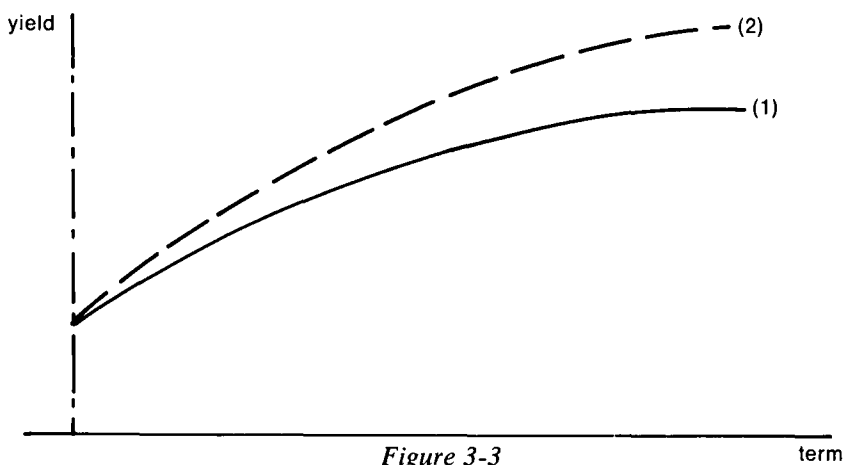
Figure 3-2

Therefore, the lenders anticipate unanticipated interest rate reductions. If this is the case, obviously they will want FRMs. If, however, all lenders believe that the yield curve should be (2), then by market pressure this should be the yield curve. Any individual lender may disagree with the expected rates and therefore prefer FRMs, but all lenders in aggregate cannot disagree with the existing yield curve.

Conversely, suppose that rates are low and are expected to rise (*Figure 3-3*). In this case, the market expects future short rates to increase. Assuming that the expectations hypothesis is correct, the lender, if risk neutral, is indifferent as to whether he issues a VRM or an FRM, since the yield curve already includes anticipated changes. If the Fisher argument is correct, then when there is a rising yield curve, borrowers prefer FRMs. If this is true, then borrowers in aggregate consider that yield curve (1) is incorrect and the appropriate curve is (2).

Therefore, borrowers expect future rates to be higher than the expectations of these rates from the market yield curve. By reasoning analogous to the falling yield curve case, all borrowers in aggregate cannot expect a yield curve that is different than the market's. Some will believe that expectations

³⁰In fact, as we argue in the next section, the VRM rate will be below the FRM rate.



are too high; others, that expectations are too low. The former will want VRMs, whereas the latter will want FRMs since they have expectations about the direction of the unanticipated interest rate changes.

We therefore expect that VRMs will remain competitive with FRMs and will be used by risk-averting institutions and individuals, both lenders and borrowers, who disagree with the market's expectations of future rates.

Even if the liquidity premiums hypothesis is correct, the basic result that VRMs will remain competitive with FRMs remains intact. The consequence of the liquidity premiums hypothesis is that the financial institution will obtain a competitive rate of return for holding the non-callable VRM.

4. *Shifting of Risk*

One writer argues that the introduction of a VRM will shift the risk of unanticipated interest rate fluctuations from lenders to borrowers.³¹ This increased risk may discourage certain home owners from borrowing to finance homes and thereby reduce the demand for housing; this is the antithesis of the result desired by CMHC and the Federal Government.

As we will argue in Section V, if a VRM clause is inserted in the mortgage contract, the demand schedule for housing will be reduced. The supply schedule, however, will increase. The net result is a reduction in the rate charged on VRMs as compared with the FRM alternative. This lower rate will compensate some borrowers for the increased risk; at the margin, the borrower is just compensated. Moreover, we are not considering the complete replacement of FRMs by VRMs. If both are available, those individuals who are not compensated by the lower rate will buy an FRM at a higher rate and avoid the increased risk. Therefore, with an open choice of VRM or FRM, the aggregate demand for mortgages need not decrease.

5. *Negative Yield Spreads*

Wetmore argues that the introduction of VRMs will not solve the basic pro-

³¹J. R. Ferguson, "A Study of Variable Interest Rate Mortgages and an Assessment of their Possible Advantages to the Canadian Mortgage Market", CMHC (unpublished study), Ottawa, 1970.

blem of borrowing short (at high rates) and lending long (at lower rates) when the yield curve slopes downward.³² In these cases, the return from the VRM will not cover the costs of borrowing. This argument, however, suffers from a misunderstanding of the yield curve. When the yield curve is decreasing with term to maturity, the market expects future short rates to be lower than present short rates. If expectations are realized, the return from the long investment will either equal the costs of borrowing money at progressively lower rates (if the expectations hypothesis is correct) or be greater than the costs (if the liquidity premium hypothesis holds). Even if there are unanticipated interest rate changes, as we have already demonstrated, the returns and costs would be equal (if the expectations hypothesis is correct.)

6. *Timing of Introduction*

Wetmore further argues that the present time is inauspicious for the introduction of VRMs.³³ First, VRMs would not assist in alleviating the profit squeeze in S and Ls since the bulk of the mortgages issued are fixed rate mortgages. While this is true, the argument is not valid; the institutions realize that the VRM is not a short-run solution. Second, Wetmore argues that interest rates are at a cyclical peak, and introducing VRMs could mean a faster reduction in income once rates decrease as compared with the income from fixed rate mortgages. To the extent that VRMs are issued at the long rate and this rate reflects the market's expectations, the issuance of VRMs or FRMs will yield the same expected income. The VRM rate will not be altered as short interest rates fall if the change is anticipated. Wetmore's concern is correct, however, if instead of considering anticipated changes, he means unanticipated changes. If interest rates fall and the decrease is unexpected, then the income of the institution will decline in comparison to the income that would be earned if an FRM were issued. Institutions in aggregate, however, do not know when unanticipated changes will occur. Some institutions may expect unanticipated decreases in the interest rate, and they will issue FRMs. Institutions in aggregate, however, concur with the market's expectations of future rates and will issue both FRMs and VRMs.

7. *Par Value and Prepayment Penalties*

To this point, we have considered three different techniques to adjust the VRM interest rate to fluctuations in short-run money costs. These include (1) issuing a VRM at the short-term rate of interest plus any premium for non-callability; (2) issuing a VRM at the FRM rate, less the discount on yield necessary to make the instrument acceptable to borrowers, plus any unanticipated changes in the short-term rate; and (3) issuing a VRM at the FRM rate, as in (2), but adjusting the VRM rate by the entire change in the short rate (this implies that the long rate does not include expectations of future short rates). The first two techniques are analytically sound, but the third is not, since it may cause distortion of rates.

³²Wetmore, "Variable Interest on Mortgages", p. 5.

³³*Ibid.*

We will first investigate the dollar value of VRMs in relation to their par value, and then consider the implications of this for the necessity of a prepayment penalty.

With the first technique, the mortgage will always be at par. Any change in short interest rates, be it anticipated or not, will be reflected in the interest payments and the yield of the mortgage increases through the increasing interest payments and not by changes in par value.³⁴

The second technique is not as straightforward. Suppose we consider the hypothetical yield curve in 1960 and 1961, and we assume that expectations (see *Table 3-7*) are realized. What will be the relationship of market and par values on a three-year note issued in 1960 at a 4 percent rate?

Table 3-7

HYPOTHETICAL YIELD CURVE IN 1960 AND 1961

<i>Term</i>	1960		1961	
	%	<i>Marginal</i>	%	<i>Marginal</i>
1	6		4	
2	5	4	3	2
3	4	2	2.3	1
4	3.2	1		

In this example, the future short rates are expected to be less than the current short rates. In addition, as each year passes, the yield curve moves in a predictable fashion.³⁵ Thus, in 1961, the three-year note is now a two-year note with a rate of interest of 3 percent. But this is an unexpected reduction from the rate of 4 percent at which the bond was issued. If an investor purchased the bond with a 4 percent coupon at the beginning of 1961, in order to yield 3 percent, the two-year rate, the price must be above par. This will continue until the maturity date, when the note is redeemed. If there are any unanticipated interest rate changes, since the coupon payment of 4 percent is fixed, the price of the note will fluctuate to give the appropriate yield. Therefore, the market price will differ from the par value with anticipated interest rate changes.

Now we consider the relationship between market and par values on a VRM if the second tying technique is used. If interest rates change over time as expected, the value of the VRM will rise above par (see our numerical example). Suppose, however, that interest rates change in an unanticipated manner as a result of the tying rule chosen. The VRM will reflect fully the unanticipated change, but the dollar value of the VRM will still reflect the anticipated changes. Therefore, if a three-year mortgage is issued at 4 percent, the return will be 4 percent every year. If the yield curve changes as expected, the mortgage should yield 3 percent as a two-year instrument and therefore its price will go above par. If there is an unanticipated interest rate increase, the coupon payment reflects this and the price of the mortgage must still go above par to yield the two-year rate. Therefore, a VRM issued in 1960 at the three-year rate will have a series of dollar values equal to

³⁴There is a problem if the premium for non-callability fluctuates over time.

³⁵Assuming, of course, that expectations are exactly realized.

that series of dollar values implicit in the yield curve when viewed from the date when the mortgage was issued.

In the third technique, unlike the second, all changes in interest rates are reflected in the VRM rate, and the VRM will always sell at par.³⁶

For all three cases, there is an implicit assumption that any changes in interest rates (all changes for the first technique, unanticipated changes for the second, and all changes for the third) are immediately reflected in the VRM rate. In addition, we assume no gross imperfections in capital markets. Because of institutional constraints, however,³⁷ the dollar value will deviate from those mentioned above until the interest rate on the VRM is altered.

The dollar values on the mortgages have implications for prepayment penalty clauses as well. Prepayments on FRMs usually occur when current interest rates fall below the coupon rates, so that prepaying will allow the borrower (the issuer of the mortgages) to refinance at the lower rates. Since interest rates have fallen, however, if there were a secondary market in mortgages, the prices of mortgages would increase above the par value. If the borrower is permitted to repurchase his mortgage at par value and not the dollar value, then he has an incentive to do so; the investor in the mortgage is quite clearly opposed to seeing mass refinancing. To discourage prepayment, a penalty is levied on it. In effect, this is an attempt to make the borrower repay a sum closer to the current dollar value of the mortgage than its par value. If there were a secondary market in mortgages, no prepayment penalty would be necessary, since the borrower would repurchase the mortgage at its prevailing price (greater than the par value).

The usual argument for a repayment penalty is that it covers the transactions costs of the mortgage company. While this may be partly correct, we find that the prepayment penalty is often waived or a bonus is paid for prepayment. This occurs when current interest rates are above the FRM rate and the dollar value of the FRM is below its par value. If there were a secondary market in mortgages, the borrower could repay his mortgage by purchasing it on this market at a depressed price. Since there is no market, the borrower must pay the par value, and prepayment is very expensive. Therefore, the waiver of the prepayment or the use of a bonus is an attempt to bring the repurchase price down to the price that would prevail if there were a secondary market. The net result would be more prepayments when interest rates were above the FRM rate, and this is clearly in the best interests of the mortgage companies.

If the first tying technique (the series of short-term rates) is used for the VRM, there will be no incentive for anyone to prepay; and even if they do, no penalty needs to be extracted, since the value of the mortgage is equal to par. With this technique, a borrower will not refinance to purchase a new VRM, since interest rates charged on old and new mortgages will differ at most by the market-determined premium for non-callability. Since changes

³⁶Over time, there may be a learning process as to the size of the premiums required for non-callability and default. For a time, therefore, the VRM might not sell exactly at par.

³⁷These constraints would include the inability to change the rate more than once a year or the requirement that the rate change must be greater than some minimum level.

in this quantity are not expected to be extremely important, we will ignore this complication.³⁸

Suppose, however, that the yield curve is declining. Will the borrower prepay his mortgage and refinance with an FRM at the lower rate? The answer is no. Once again, the long rate is the average of the expected future short rates, and the borrower will pay the same amount in interest regardless of the alternative chosen. If the borrower has expectations that differ from those of the market, he may refinance in the stated manner, but borrowers in aggregate will not.

Suppose that there are unanticipated interest rate changes that increase the short rate. The long rate on FRMs also will be revised as a result of the change in expectations; the new long rate will be an average of the expected future short rates. Thus, there will be no incentive to prepay.³⁹

Next, we consider the second analytically correct variation of the VRM: the FRM (adjusted) rate plus any unanticipated short interest rate changes. As we have argued, this security is unlikely to have a dollar value equal to the par value. Suppose that rates are expected to fall and no unanticipated interest rate changes occur. The borrower accepts a three-year mortgage at 4 percent. The following year, the rate is 3 percent. If the borrower prepays the mortgage at its current market value (above par), his interest cost is approximately equal to the one-period rate. If he then takes a new VRM at the three-year rate and continues to prepay every year, he is no better off than he would be if he financed by a series of one-period short rates.

If there is no penalty on prepayment (where the penalty is approximately equal to the difference between market and par values of the mortgage), the borrower has an incentive to prepay, since the cost of one-year money obtained by issuing a long mortgage and prepaying after one year is much less than the cost of a series of one-year notes. Therefore, there will be a mass prepayment.⁴⁰

The solution is unaltered if there are unanticipated interest rate changes. The penalty clause must be retained in order to prevent mass prepayments.

8. *Variable Balance Mortgages*

An interesting addition to the use of VRMs is the variable balance mortgage.⁴¹ Although its introduction is independent of the decision to introduce VRMs, the mechanics and acceptance of the variable balance mortgage are facilitated if a VRM is used. This type of mortgage is similar to the open-end advance, except that the advance is issued at the current VRM rate. The

³⁸If this quantity turns out to be important, a prepayment penalty on VRMs of this type will have to be instituted to prevent mass refinancing when the call premium falls by more than the borrowers' transactions costs in refinancing.

³⁹This is clearly an oversimplification. Since the lender has more risk in an FRM, its rate will be higher than a series of one period investments at the VRM rate. To switch from VRM to FRM, the borrower must consider the increased payment he must make. Since he chose the VRM when he had the option of both, he is compensated for the added risk by the lower rate and will not switch because the long rate on FRMs is below the existing VRM short rate.

⁴⁰The financial institutions faced with this problem would be forced to institute a prepayment penalty to stop the reduction in their mortgages outstanding.

⁴¹Ricks and Friedman, "Variable Balance Mortgages", pp. 12-16.

variable balance mortgage is based on two premises: (1) a home has a useful life, much longer than that currently recognized by existing mortgage practices; and (2) home equity should not be locked in, but it should be an asset against which a line of credit can be established.⁴² As the equity in the house increases or as property values increase, the borrower can borrow continuously against the increasing value.

An example presented by Ricks and Friedman may be helpful in understanding the concept.⁴³ Suppose that an initial loan to value ratio on a mortgage is 80 percent; after five years, the house is reappraised and if conditions still warrant the ratio of 80 percent, "the borrower obtains a line of credit for some portion of the difference between 80% of the current value and his current mortgage balance."⁴⁴ The line of credit is set at the prevailing VRM rate and can be paid off by increasing either the amortization period or the monthly payments.

There are two advantages for the borrower. First, savings locked into the mortgages can become liquid. Second, transactions costs of obtaining a new loan are reduced; there is no need to shop around for a lender.

For the lender, the variable balance mortgage reduces transactions costs; there is no need to perform a credit search and advertising expenses could be reduced, but a title search is required. Those financial institutions which have a large personal loan business, however, will not accept the variable balance mortgage if the rate on personal loans is greater than the rate on the VRM.

9. *Effect on Secondary Market*

A secondary market in outstanding mortgages is essential to guarantee liquidity. In the absence of a secondary market, if liquidity is an important variable, a lender will not accept a mortgage unless there is some compensation in the yield. Given the importance of marketability in determining the lender's required yield, we must investigate the impact of VRMs on the development of this market.

With existing fixed interest rate mortgages, fluctuations in interest rates are reflected in the dollar value of the mortgage, and individuals are vulnerable to capital loss. With a VRM issued at the short-term rate, however, the unanticipated interest rate fluctuations will have no effect on the dollar value, but the cash flow will be affected.

It is argued that because of income variability, VRMs are less attractive in the secondary market.⁴⁵ But some authors argue that the slightly speculative nature of the VRM will enhance its attractiveness in the secondary market, since buyers and sellers are matching their skills in predicting unanticipated interest rate changes.⁴⁶

This is also true for the FRM in the secondary market. As unanticipated rates change, the dollar value of the FRM will fluctuate, and capital

⁴²*Ibid.*, p. 12.

⁴³*Ibid.*, p. 14.

⁴⁴*Ibid.*, p. 12.

⁴⁵*Ibid.* See also Fisher, "Variable Interest Rate Mortgages".

⁴⁶Ricks and Friedman, "Variable Balance Mortgages".

gains and losses can be incurred. Therefore, the VRM yields income risk, whereas the FRM yields capital risk. The only advantages to the VRM is the fact that speculative gains and losses are obtained without selling the instrument. For an FRM, the gain or loss is realized only on the sale.

If the market has no preference to accept income risk over capital risk (that is, if the expectations hypothesis applies), there will be no adverse effect on the secondary market. The value of a VRM can always be calculated, and these obligations can be traded. If the market must bear risk and it prefers income risk (as supposed by the liquidity premium hypothesis), then FRMs, which yield capital risk, will sell to yield a higher rate of return.

IV. EXPERIENCE OF USERS OF VRMs

1. *Great Britain*

In Great Britain, the major source of mortgage credit is the building societies — institutions which accept deposits on which interest payments are made. The original form of interest rate variation clause used by the building societies allowed the mortgage rate (which was a long-term, not a short-term, rate) to vary with changes in the bank rate. This proved to be unworkable, however, because of the large fluctuations in this series. The basic rate now used almost universally by these lenders is the deposit rate.⁴⁷

The variation clause enables the board of directors of the building society to vary the interest rate charge on mortgages from time to time; a constraint on this variation is that the maximum rate charged cannot exceed the rate charged on new loans of a similar type. Between 1946 and 1967, the rate was increased seven times and lowered twice.⁴⁸

In actual fact, the trade organization makes the decisions as to the new loan rate. Although it appears that the borrowers are at the mercy of the “cartel” and rely on a spirit of “fair play” by the building societies, they do have some safeguards. For example, the borrower may repay in full at the old rate within the first month that the increase is in effect. The borrower also has the option as to whether the amortization period or the monthly payment will be altered. The building societies prefer the latter, and the decision on which alternative will be used is made when the mortgage is granted.

Even with the ability to vary the mortgage rate, it is still the case that in times of high interest rates, there is an outflow of funds from the deposits of the building societies to other financial instruments which are yielding higher returns (that is, they experience disintermediation). This results in a reduction in mortgage commitments, but the reduction is probably much smaller than is the case in the United States, where higher deposit rates cannot be paid when short-term rates increase.

A series of articles discusses the observation that deposit rate increases lag mortgage rate increases and that this lag, although shorter, may still exist

⁴⁷Ad Hoc Committee, *Interest Equalization Clauses on Mortgages*, Savings & Loan Mortgage Officers' Society, November 30, 1966, p. 12.

⁴⁸*Ibid.*

with VRMs.⁴⁹ This would account for the disintermediation still found in Britain.

2. United States

A survey by the Federal Reserve Bank of Boston and one by the Savings and Loan Association, both in 1969, found that the VRM "was not a new phenomenon and its use was widespread".⁵⁰ In the former survey, about "½ of the 532 survey respondents now have some provision for adjusting rates on the outstanding mortgage loan contracts."⁵¹ For the United States as a whole, of 766 S and L companies, 10 percent have VRM provisions and about one-half of these have used them. In addition, eighty-three S and Ls intended to introduce these clauses.

For the companies using VRMs, the years in which these clauses were instituted are presented in *Table 3-8*.

Table 3-8
ADOPTION OF ADJUSTMENT CLAUSES BY
SAVINGS AND LOAN COMPANIES

<i>Year</i>	<i>Number</i>
Prior to 1960	12
1960	5
1961	4
1962	3
1963	2
1964	2
1965	2
1966	6
1967	6
1968	13
1969	20
Not given	2
Total	77

Source: Survey on Status of Mortgage Loan Interest Adjustment Clauses at Savings & Loan Associations, Research Department, U.S. Savings and Loan League, October 1969.

The table indicates an increase in the rate of adoptions during the 1960s. This reflects the unanticipated interest rate increases that occurred in the late 1960s. The VRM as a proportion of the total mortgage portfolio is small, but this is expected since most of the VRMs were instituted after 1967.

In the New England survey, lenders who used VRMs were asked to rate the consumer reaction to the clauses.⁵² Their responses are summarized in *Table 3-9*.

⁴⁹Stephen M. Goldfeld and Dwight M. Jaffee, "The Determinants of Deposit-Rate Setting by Savings and Loan Associations", *Journal of Finance*, Vol. 25, No. 3, June 1970, pp. 615-32; Paul A. Meyer, "Interest Rates on Mortgages and Dividend Rates on Saving and Loan Shares: Comment", *Journal of Finance*, Vol. 22, No. 3, 1967, pp. 467-70; Gerald I. Weber, "Interest Rates on Mortgages and Dividend Rates on Savings and Loan Shares", *Journal of Finance*, Vol. 21, No. 3, 1966, pp. 515-21; and Gerald I. Weber, "Reply" to Paul Meyer, *Journal of Finance*, Vol. 22, No. 3, 1967, pp. 471-73.

⁵⁰Anderson and Hinson, "Variable Rates on Mortgages", p. 3.

⁵¹*Ibid.*

⁵²A VRM clause included demand notes, tied rates, and change-at-will clauses.

Table 3-9

CONSUMER REACTION TO ADJUSTMENT CLAUSES
AS PERCENTAGE OF RESPONDENTS
(Total Respondents, 125)

Enthusiastic	13
Understanding	61
Resigned	13
Angry	10
No experience	3

Source: P. S. Anderson and J. P. Hinson, "Variable Rates on Mortgages: Their Impact and Use", *New England Economic Review*, March-April 1970, p. 9.

Accepting the biases that can occur when the lender does the rating, the results imply that borrowers will accept VRM provisions. It would be interesting to determine whether the tied rate VRM was accepted more enthusiastically than the change-at-will or demand note variations.

3. Summary

With the observed success in Great Britain and the acceptance, albeit not enthusiastic, by borrowers in the United States, it appears that VRMs would be an acceptable mortgage instrument to borrowers. A substantial education program for potential borrowers, however, is a necessity; this will ensure that they are aware of the variation clauses and know how the clauses operate.

V. EFFECTS OF VRMs ON INTEREST RATES

In this analysis, we will investigate the impact of VRMs on the demand for and supply of mortgage funds. To facilitate the analysis, we will assume that conventional mortgages will be issued at fixed rates only and NHA mortgages of variable rates only, with the VRM having the FRM rate as a base. We also assume that there are no legal impediments to issuing variable rate mortgages.

A complete analysis of the determination of the VRM rate is very complicated, since it requires specification of the flow and stock markets for fixed rate mortgages, variable rate mortgages, and government bonds.⁵³ Therefore, we will present an intuitive explanation of the impact of VRMs on interest rates.

1. Demand for Mortgage Funds

The variables that are important in the demand for mortgage funds are identical to those that are relevant for the demand for housing. These variables include per family disposable income, stock of housing per family, the conventional and NHA rates, and a vector of non-price variables, such as amortization period and ability to prepay.⁵⁴

Under existing fixed rate mortgages, the borrower has a wealth gain if interest rates rise. To the extent that the mortgage does not have an interest

⁵³A more detailed analysis is presented in P. Halpern, "An Economic Analysis of the Residential Mortgage Bank", a study prepared for the Special Project Team on New Financing Mechanisms and Institutions.

⁵⁴Lawrence B. Smith, "A Model of the Canadian Housing and Mortgage", *Journal of Political Economy*, Vol. 77, October 1969, pp. 795-816.

escalation clause, as interest rates increase, the payment by the borrower remains fixed. Conversely, if interest rates fall, the borrower can incur the penalty provision and the legal fees, pay off the mortgage, and refinance at a lower rate. Of course, the size of the interest rate decrease must be large enough to make prepayment profitable. Therefore, the borrower under a fixed rate mortgage is insulated against unanticipated interest rate fluctuation risk.

If variable rate mortgages are instituted for NHA loans, the transaction costs of refinancing if interest rates fall are reduced slightly. If rates increase, however, the borrower is worse off, since either his monthly payment will increase or the amortization term of his loan will increase. In either case, there is an increase in the risk of unanticipated interest rate changes borne by borrowers. The result will be that borrowers will increase their demand for conventional fixed rate mortgages and reduce the demand for variable rate, NHA mortgages.

This is displayed in figures 3-4 and 3-5. In the NHA market, the demand for funds has decreased from D_0^{NHA} to D_1^{NHA} ; in the conventional market, the demand has increased from D_0^c to D_1^c .

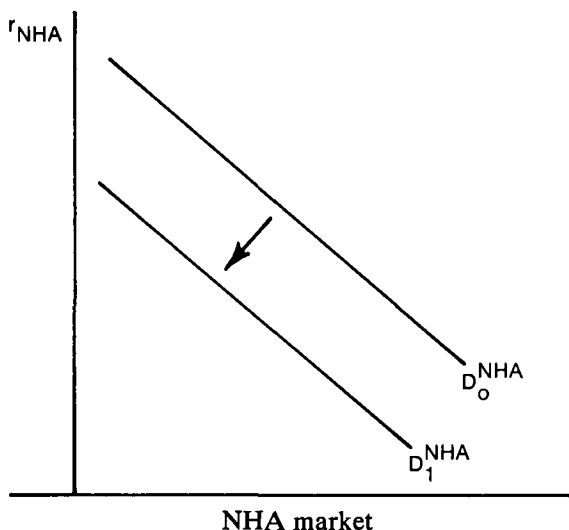


Figure 3-4

2. Effect on Supply

With fixed rate mortgages, we observe that some institutions are heavily engaged in both NHA and conventional lending, whereas others are not. The major institutions that are involved with both types are the life insurance companies, the loan and trust companies, and the chartered banks. We will investigate the impact of a VRM on each institution.

a) Loan Companies

The impact of a VRM on these financial institutions is difficult to assess, since it depends upon the existing degree of mismatching of assets and liabilities. The term of their mortgages is five years. The terms of their liabilities vary from demand deposits to deposit certificates of a medium

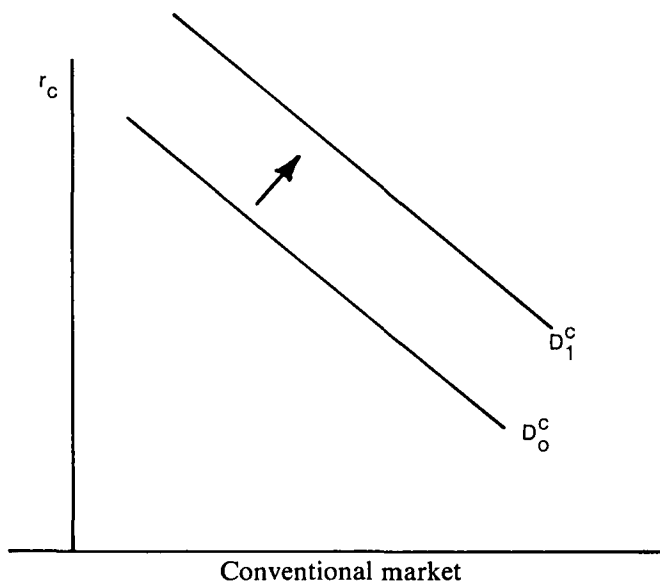


Figure 3-5

term (one to five years) issued at a fixed rate of interest. The average maturity of their liabilities is probably two to three years.

Given this minor degree of mismatching, would loan and trust companies move to VRMs? If they did, they would face a serious matching problem; therefore, it is unlikely that they will move out of FRMs into VRMs.

b) Insurance Companies

The introduction of VRMs for NHA mortgages will have no impact on insurance companies. Their term risk is already removed since their liabilities are of a very long maturity. Since they are now able to match asset and liability maturities, as a first approximation, the proportion of NHA to total mortgages will not change.

c) Chartered Banks

Banks are constrained as to the dollar amount of mortgages in their portfolio. In 1974, the proportion of their portfolio in mortgages will be limited to 10 percent of their deposit liabilities and outstanding debentures. The interest costs of their demand deposits are zero (however, there are service costs), their savings deposit rate moves, and the rate on their outstanding debentures is fixed. The savings deposit term, however, is very short. Thus, there is a very important matching problem for the chartered banks. With the introduction of VRMs for NHA loans, the term problem is alleviated. As interest rates increase, depositors move out of demand deposits into savings deposits, since the latter pays a higher yield. Simultaneously, the mortgage rate is increasing and this assists in paying for the increased yields on savings deposits. Therefore, banks will move heavily into VRM mortgages, thereby increasing the supply. In fact, the banks' matching problem is more critical than that of the trust companies, since the latter have

medium-term savings instruments and the former do not to any great extent.

d) Aggregate Supply Shifts

The total supply of mortgage funds is the sum of mortgage approvals for all institutions. With the introduction of VRMs, the supply of NHA mortgages will increase (mainly through the impact of banks). To the extent that there is any substitution of VRMs for FRMs, the supply of conventionals will decrease.

The impact on the conventional and NHA markets is shown in figures 3-6 and 3-7. Superimposing the supply changes on the demand changes, we find that the rate of interest on NHA (VRM) mortgages will fall (r_0^{NHA} to r_1^{NHA}) and the rate on conventional mortgages will rise (r_e^o to r_e^i).

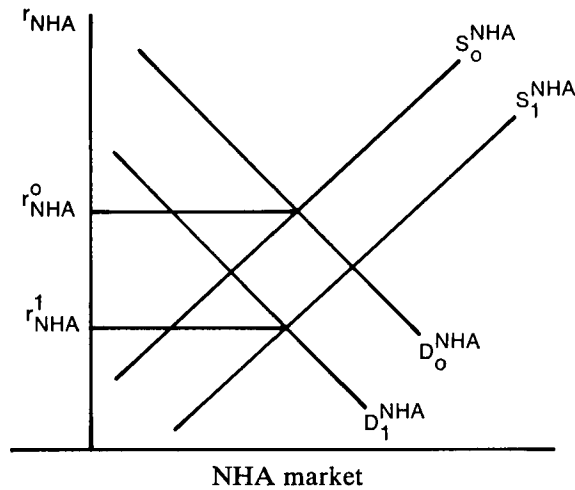


Figure 3-6

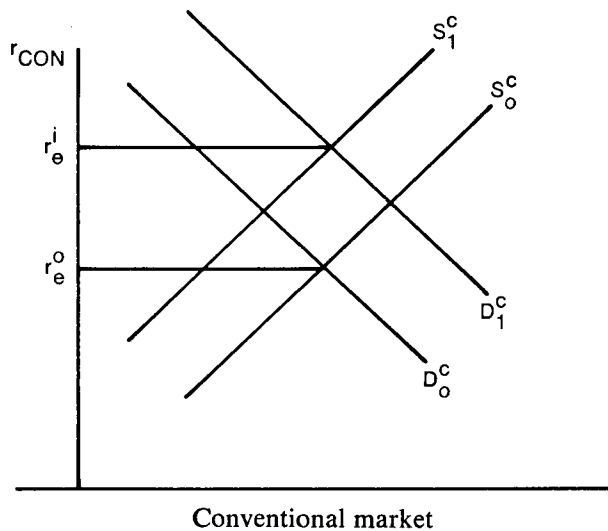


Figure 3-7

Therefore, if a VRM is introduced into NHA lending, the variable rate mortgage will be sold at a discount from the fixed rate mortgage.

An important question is what will happen to the total supply of mortgage funds. At the margin, the borrower is indifferent in choosing between the FRM, which has a higher cost and a lower risk, and the VRM, which has a lower cost but a higher risk. The equilibrium supply of mortgage funds, however, will depend upon the number of borrowers who prefer the lower-cost, higher-risk VRM alternative. This is an empirical question and cannot be resolved *a priori*.

The spread between FRM and VRM rates will change as people's tastes for accepting the higher risk alternative change. Also, changing expectations of future interest rate movements should alter the demand and supply curves for both NHA and conventional mortgages, leading to changes in the FRM-VRM spread. It seems unlikely, however, that the riskier VRM will have an initial rate greater than the less risky FRM.

VI. CONCLUSIONS AND RECOMMENDATIONS

1. The variable balance mortgage can be considered independent of the VRM provision. It is a very effective method for increasing the liquidity of savers, and it should therefore be instituted. The rate at which it should be issued would be either the current interest rate on mortgages, or if the mortgage already incorporated a variable rate provision, the VRM rate on the existing mortgage.

2. The VRM is a viable technique enabling financial institutions to hedge against unanticipated interest rate risk. From the British and limited United States experience, we are confident that the public will accept VRMs if they are compensated (in terms of lower yields). Also, competition will not drive out VRMs.

The best technique to use for implementing a VRM is to issue it amortized over, for instance, twenty or twenty-five years at the current one-year rate, and including any market-determined premiums for non-callability for the lender. The rate will be altered as one-year rates change and only once a year on the anniversary date of the mortgage.⁵⁵ This alternative is preferred since (1) the changes in rates on new and existing VRMs will be the same; (2) no prepayment penalty is needed; (3) operationally, it is easy to administer; (4) there will be no large-scale refinancing if the rates change; and (5) the value of the mortgage will always be at par.⁵⁶

The alternative VRM specification where the VRM rate is the FRM rate (adjusted) plus any unanticipated interest rate changes also is acceptable, but it is much more difficult to implement; it will not have a dollar value

⁵⁵The actual one-year rate used could be an average of one-year rates on outstanding securities.

⁵⁶Conclusions (1) and (2) must be amended if the non-callability premium and service charges change over time. To the extent that these changes are large (which is unlikely), the rates on new and outstanding VRMs will be different and a prepayment penalty will have to be imposed to prevent refinancing when the spread falls. Also, the old VRM will not sell at par, but the price will reflect the changed spread. This, however, is not seen as an important problem.

equal to the par value; the expected one-year rates must be calculated; the borrower must be educated on the implications of the yield curve; and a prepayment penalty must be used. In addition, if the liquidity premium hypothesis is correct, the revision of the VRM rate must exclude the removal of the liquidity premium.

Of these two options, the first is better from both analytical and practical aspects. Moreover, these two techniques are superior to the accepted technique of using the FRM rate plus any short rate change. This scheme implies that the yield curve is composed entirely of liquidity premiums and that expectations have no influence.

3. If the FRM rate alternative is used, the interest rate of the VRM will be below the FRM rate.

4. On the supply side for mortgage money, we expect that the chartered banks would be the greatest users of VRMs. The trust companies also could use them if they made some adjustments in their method of accepting deposits (for example, introducing a certificate that has a variable payment provision or moving to very short-term deposits). The insurance companies would not use them to any great extent.⁵⁷

⁵⁷The insurance companies have a policy loan problem that could be solved by the use of VRMs. A better solution for them, however, is to make variable rate policy loans.

Chapter 4

Choice of an Optimum Anchor Rate

by George Rich and Stephen O'Connor

As described in the foregoing chapters, variable terms mortgages allow for annual or semi-annual changes in the contract interest rate in accordance with a prescribed market rate, which we shall call the anchor rate. This chapter deals with the problem of choosing an optimum anchor rate. Obviously, VTMs are not likely to be successful lending instruments unless the selected anchor rate is acceptable to both lenders and borrowers.

There are several considerations which allow us to reduce to a manageable size the range of feasible anchor rates. First, we consider only rates which are acceptable to either lenders or borrowers. It is reasonable to argue that lenders will prefer an anchor rate that closely reflects their cost of borrowing short-term funds, and borrowers are likely to opt for an anchor rate which is controlled by the Government rather than the lending institutions. Thus, rates controlled by either the lending institutions or the Government should be included in a list of feasible anchor rates. Second, there are strong legal reasons for ensuring that the selected anchor rate is not controlled by any individual lender or borrower. Thus, it is advisable to choose an anchor rate that is a regularly published figure in a specified Government of Canada publication. Third, the economic arguments presented in the previous chapter indicate that the chosen anchor rate should be a short-term rate. For this reason, the rate on fixed terms mortgages is excluded from the list of feasible anchor rates.

These considerations suggest that the following rates could serve as anchors:

1. The one to three-year Government of Canada bond yield
2. The three to five-year Government of Canada bond yield
3. The five to ten-year Government of Canada bond yield
4. The over ten years Government of Canada bond yield
5. The chartered banks' prime business loan rate
6. The rate on trust and loan companies' one-year term liabilities

It should be noted that, with the exception of the rate on trust and loan companies' term liabilities, figures on all these rates are published regularly

in the *Bank of Canada Review*. Moreover, a suitable published series reflecting the chartered banks' cost of borrowing short-term funds also could be incorporated in the list of feasible anchor rates. Unfortunately, it has proved to be difficult to find such a series. The chartered banks' deposit rate on chequable accounts, for example, displays too little variability to serve as a useful anchor rate. For this reason, the list includes only one rate pertaining to the chartered banks.

In the subsequent analysis, an attempt is made to select from the list anchor rates which are optimum from the point of view of lenders and borrowers. Our analysis is divided into four parts. First, we provide a description of the six anchor rate series. Second, an attempt is made to contrast the anchor rates with the lenders' cost of borrowing short-term funds; it is hoped that this analysis will shed some light on the question of which anchor rate is likely to be most acceptable to lenders. Third, we attempt to find an anchor rate which is optimum from the point of view of borrowers. Finally, a number of conclusions are drawn from our study.

Our analysis is based on a hypothetical VTM with the following characteristics:

1. The amortization period initially is twenty-five years.
2. Initially, lenders and borrowers are free within the confines of the law to set any rate for the mortgage.
3. The mortgage contract may be renegotiated every five years.
4. Within any five-year period, the mortgage rate can be changed only in accordance with an anchor rate.
5. Within any five-year period, the mortgage rate can be changed only twice a year. We assume that the mortgage loan is granted on January 1 or July 1 and that subsequent changes in the mortgage rate occur only on January 1 and July 1.

1. THE NATURE OF THE ANCHOR RATES

1. *Calculation of Rates*

Each anchor rate is based on an average of six monthly rates as recorded by the Bank of Canada Research Department.¹ For example, consider the anchor series based on the one to three-year Government of Canada bond yields. The anchor rate for January 1, 1970, constitutes an average of the yields for the last Wednesdays of the months of May–October 1969, while the anchor rate for July 1, 1970, forms an average of the yields for the last Wednesdays of the months of November 1969–April 1970. Thus, the value of an anchor rate is known two months prior to the date when it becomes effective.

2. *Characteristics of the Various Anchor Rates*

The various anchor rate series are plotted in *figures 4-1 to 4-6*. Our study covers the period January 1, 1952–July 1, 1970. Because of data limita-

¹All the figures employed in this study were obtained from the Bank of Canada Research Department. Most of the figures are also published in the *Bank of Canada Statistical Summary*. For the data, see Appendix A.

tions, however, the series based on the rate on trust and loan companies' one-year term liabilities covers only the period January 1, 1962–July 1, 1970 (*Figure 4-6*).²

Under any VTM scheme, the variability of the anchor series determines the variability of the rate on VTMs once the spread between the mortgage and the anchor rate is determined.³ Thus, an examination of the variability of the various anchor series provides some information on the likely magnitude of the fluctuations in the rate on VTMs.

Figures 4-1 to 4-4 indicate that the anchor rates based on the four Government of Canada bond yields are closely related. With a few exceptions, there is a close matching of the turning points in the four series. The most notable exception can be observed for the period January 1, 1970–July 1, 1970. During this period, the one to three-year anchor yield shows a decrease, while the other anchor yields continue to rise. Of course, there are substantial differences in the amplitude of the fluctuations in the four anchor yields. As the term to maturity of the bonds rises, the amplitude of the fluctuation in the bond yield decreases. Even if we take six-month averages in the bond yields, this tendency does not disappear.

It is not surprising that the relationship between the bond yield series and the prime loan rate series is not as close as that between the bond yields themselves (*Figure 4-5*). Although, on the whole, the various anchor rates tend to move in the same direction, the turning points do not always match. As far as the amplitude of the fluctuations is concerned, the prime loan rate series seems to display about the same pattern as the anchor series based on the over ten years bond yield.

Because of lack of data, it is difficult to draw definite conclusions about the rate on trust and loan companies' liabilities. It appears, however, that although this rate tends to move in the same direction as the other anchor rates, the turning points in this series do not always occur at the same time as those for the bond yield or the prime rate anchor series. The amplitude of the fluctuations in this series is somewhat larger than that observed for the prime rate.

3. Correlation Analysis

It may be useful to investigate the degree of correlation among the six anchor rates by means of a more formal analysis. *Table 4-1* provides simple correlation coefficients which we calculated for the various anchor rates. Note that a coefficient of 1 stands for a perfect correlation between two rates, while a coefficient of 0 reveals absence of any correlation. For each possible combination of two rates, two correlation coefficients were calculated. The top figure refers to the period January 1, 1952–July 1, 1970, while the bottom figure (in parentheses) refers to the period January 1, 1962–July 1, 1970. It was necessary to calculate two sets of figures because

²For the data underlying the charts, see *tables 4-4 and 4-5* at the end of this chapter.

³It is assumed here that the contract for a VTM stipulates a fixed spread between the mortgage and anchor rate. The rate spread can be altered only when the contract is terminated. Thus, as long as lenders and borrowers are bound by the contract, the changes in the rate on the VTM are exactly equal to the changes in the anchor rate.

GOVERNMENT OF CANADA ONE TO THREE-YEAR BOND YIELD

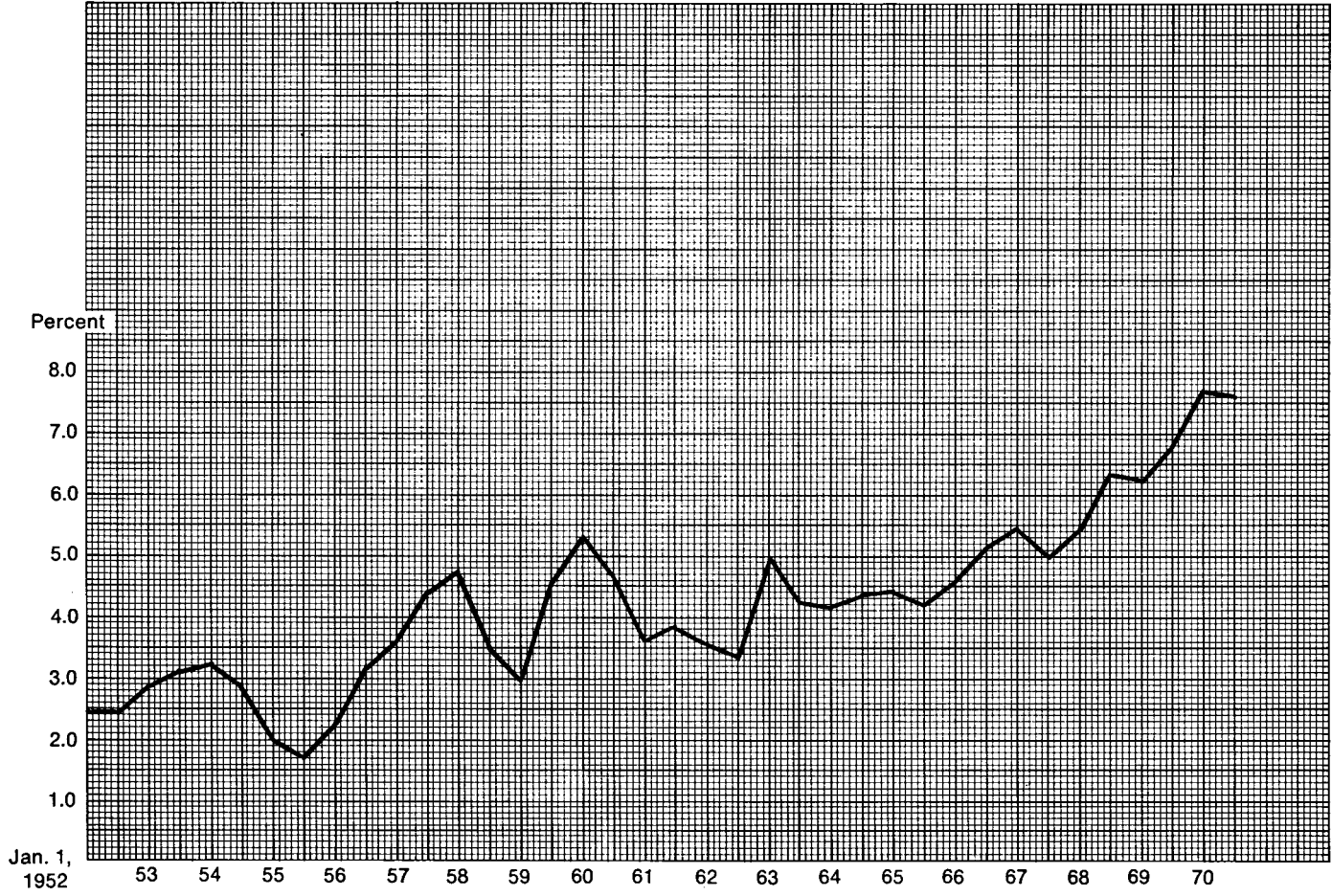


Figure 4-1

Source: Table 4-4.

GOVERNMENT OF CANADA THREE TO FIVE-YEAR BOND YIELD

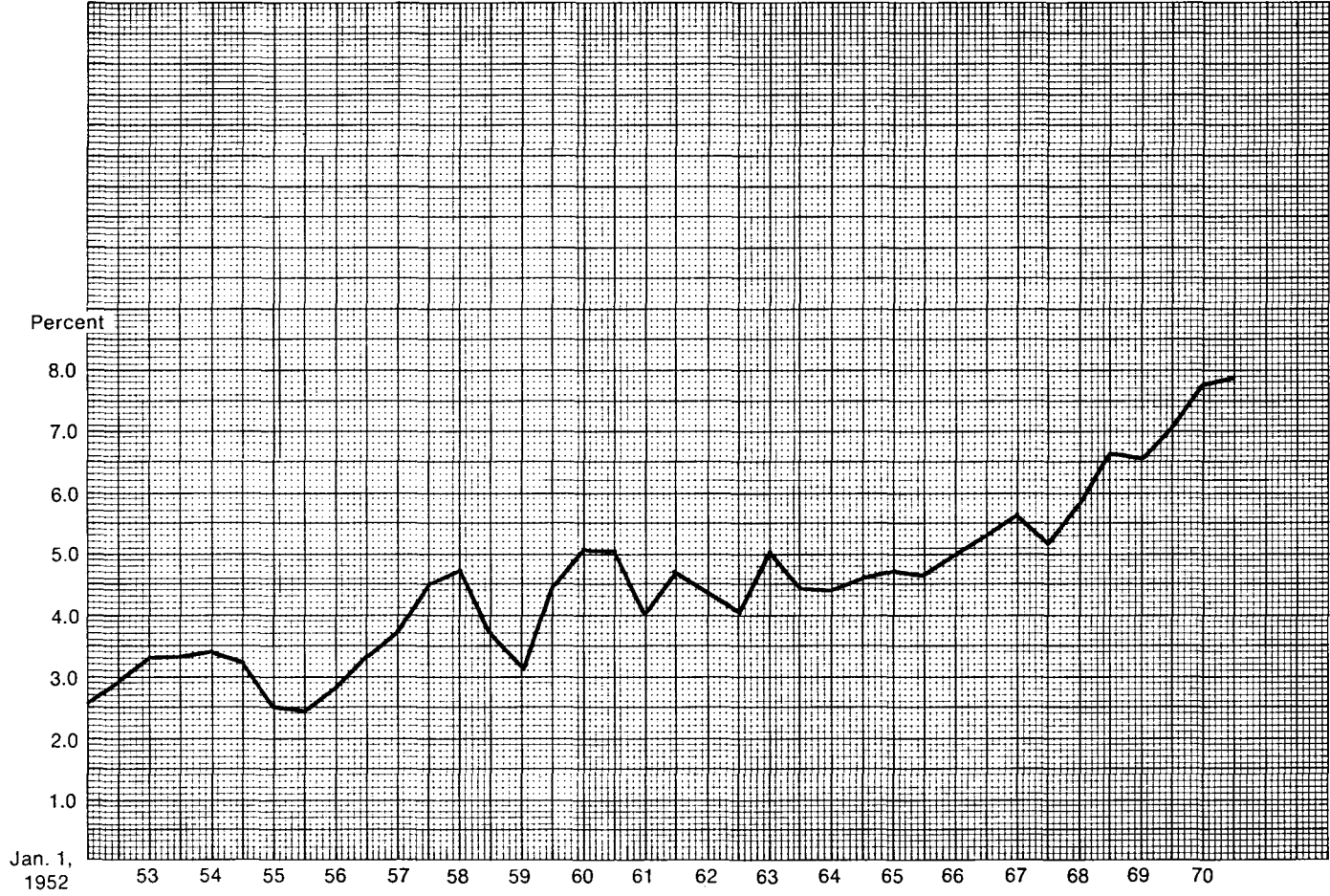


Figure 4-2

Source: Table 4-4.

GOVERNMENT OF CANADA FIVE TO TEN-YEAR BOND YIELD

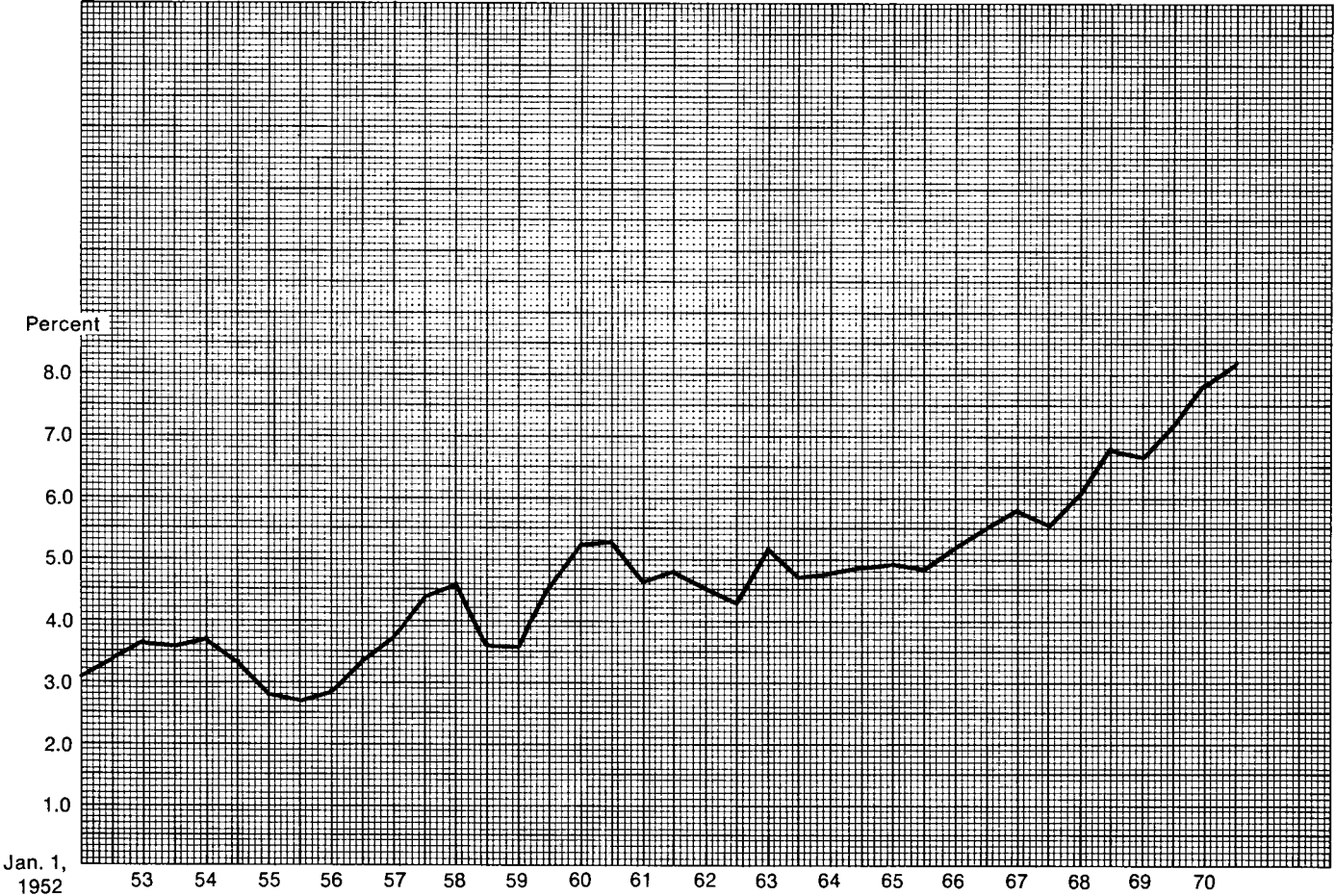


Figure 4-3

Source: Table 4-4.

GOVERNMENT OF CANADA OVER TEN YEARS BOND YIELD

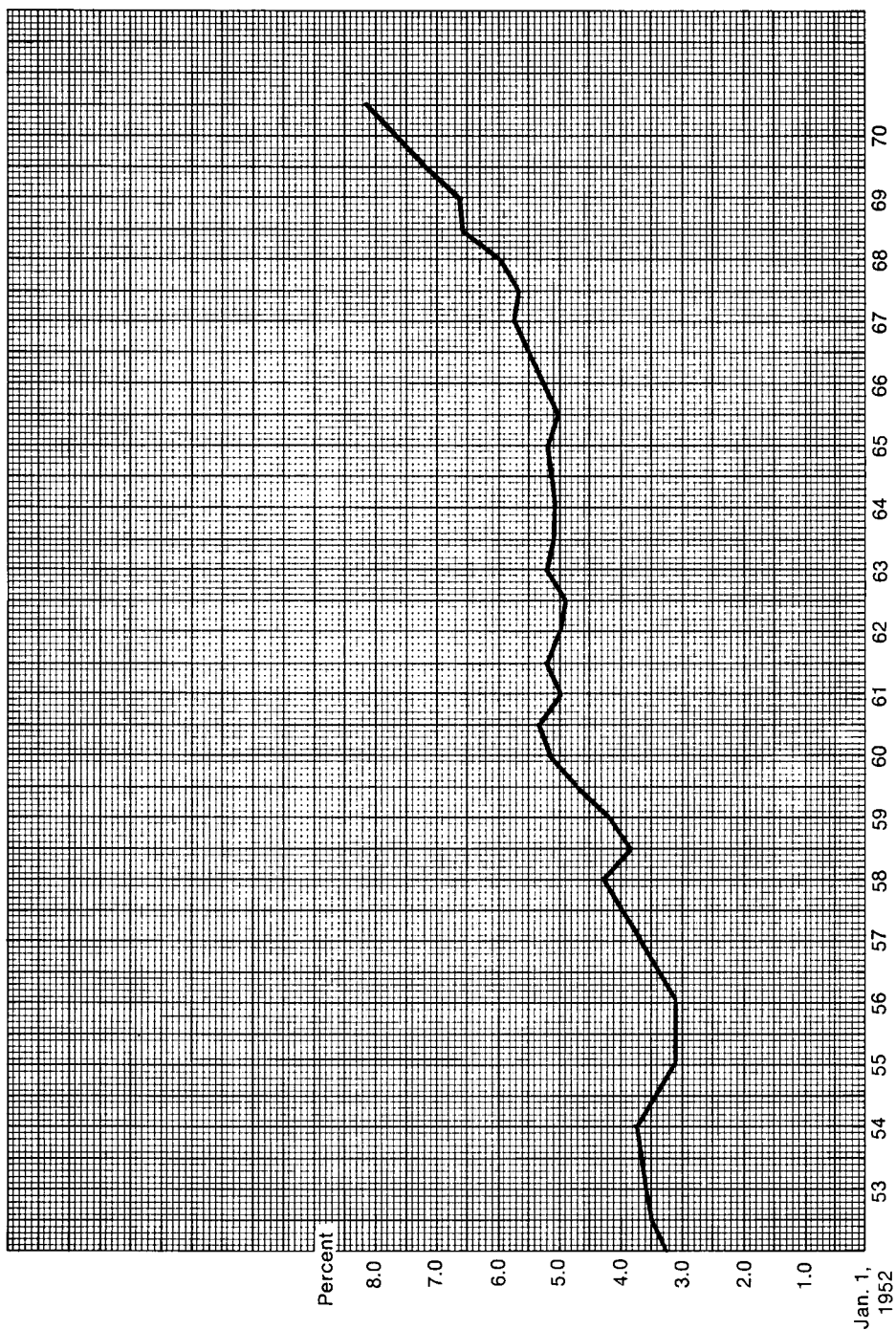


Figure 4-4

Source: Table 4-4.

CHARTERED BANKS' PRIME BUSINESS LOAN RATE

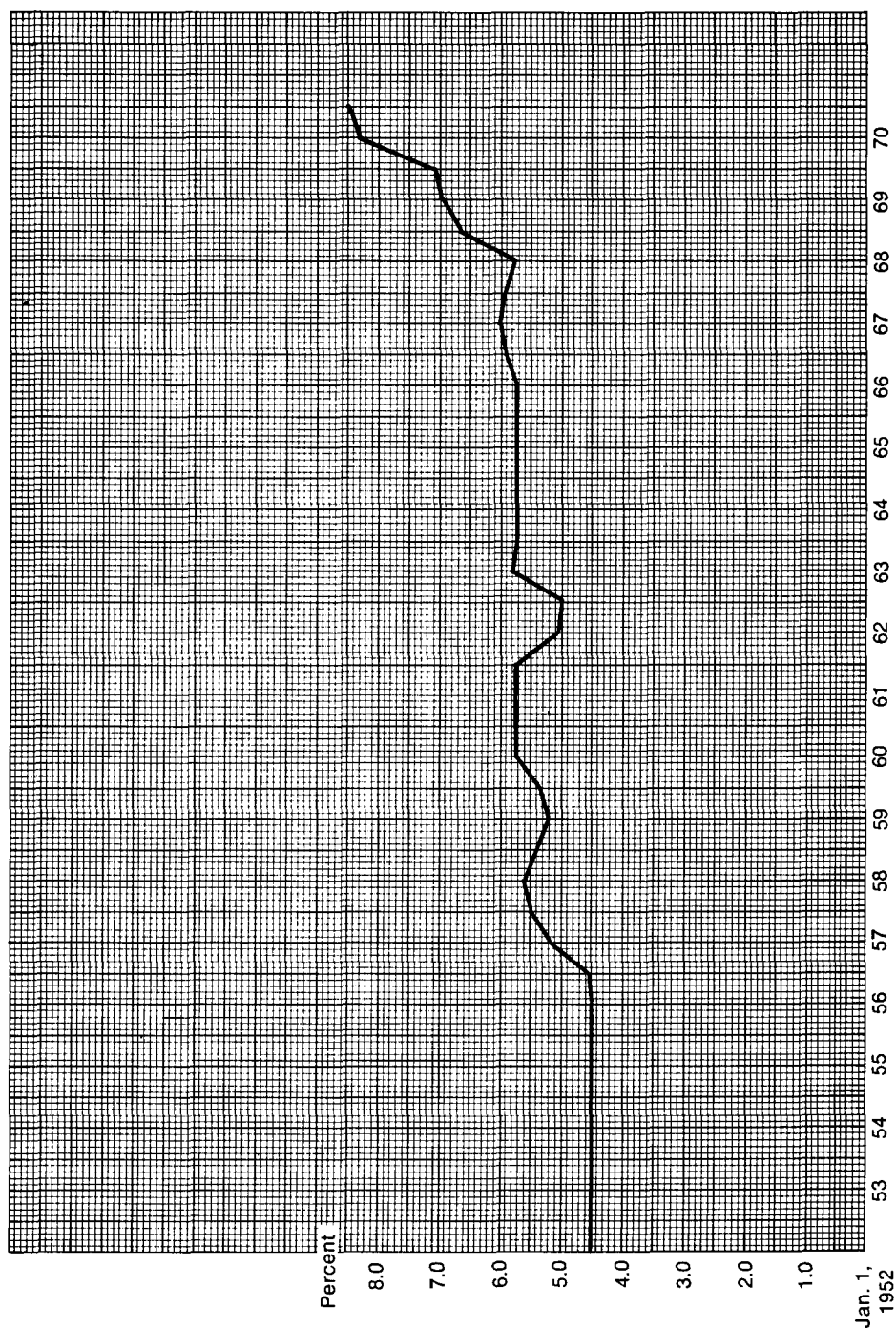


Figure 4-5

Source: Table 4-4.

TRUST AND LOAN COMPANIES' ONE-YEAR TERM LIABILITIES

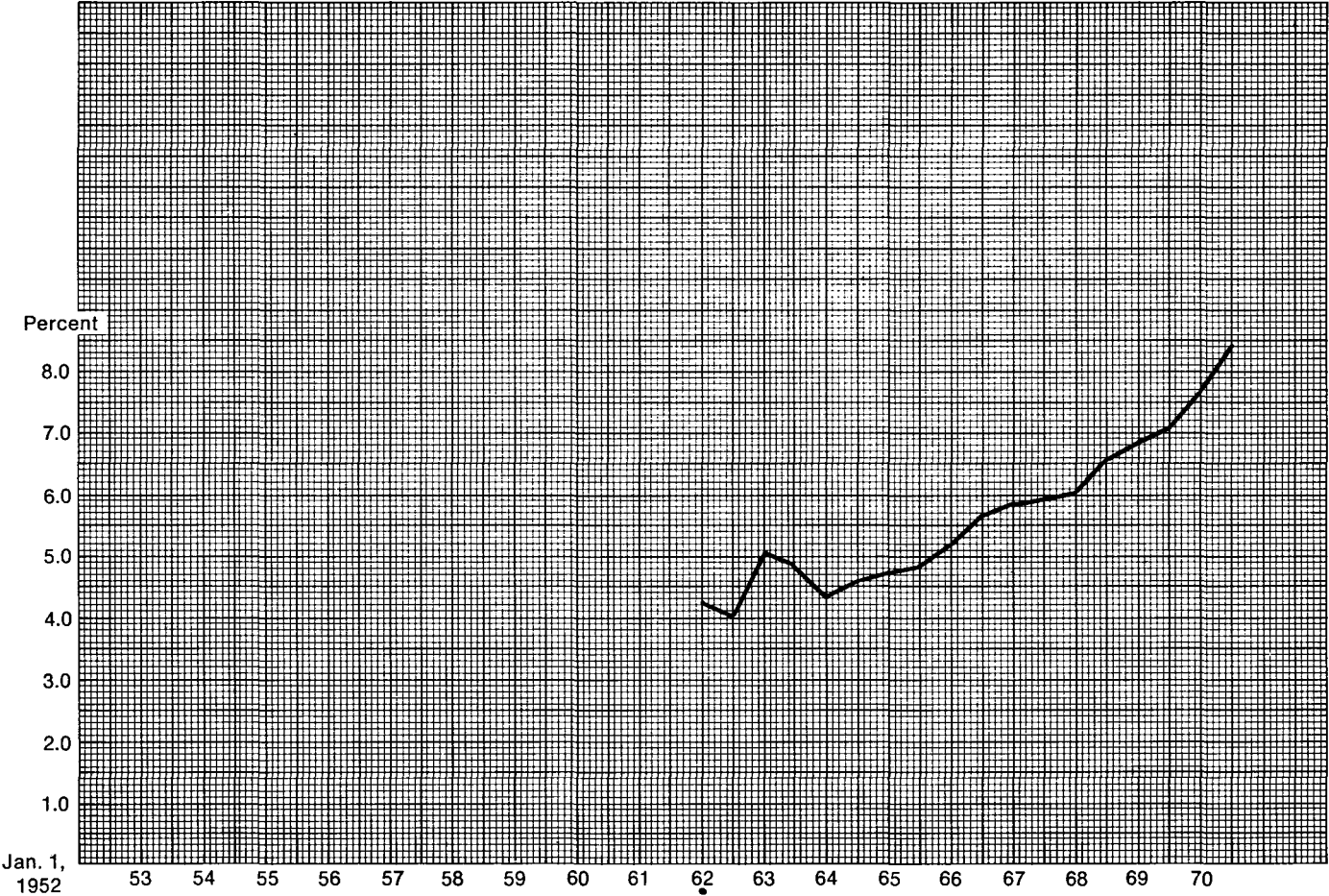


Figure 4-6

Source: Table 4-4.

for the rate on trust and loan companies' liabilities the required information was available only for part of the period.⁴

Table 4-1

SIMPLE CORRELATIONS AMONG ANCHOR RATES						
	<i>1 to 3 yrs.</i>	<i>3 to 5 yrs.</i>	<i>5 to 10 yrs.</i>	<i>Over 10 yrs.</i>	<i>Prime</i>	<i>Trust</i>
1 to 3 yrs.	1.000					
3 to 5 yrs.	0.989 (0.992)	1.000				
5 to 10 yrs.	0.978 (0.988)	0.993 (0.997)	1.000			
Over 10 yrs.	0.942 (0.969)	0.942 (0.987)	0.987 (0.991)	1.000		
Prime	0.934 (0.927)	0.952 (0.940)	0.955 (0.943)	0.958 (0.964)	1.000	
Trust	n.a. (0.979)	n.a. (0.982)	n.a. (0.986)	n.a. (0.974)	n.a. (0.926)	1.000

Source: *Table 4-4*.

Table 4-1 suggests that the correlation among all the rates is high — that is, the value of the coefficients tends to vary between 0.926 and 0.997. As far as government bonds are concerned, the table clearly shows that the closer the term to maturity between two classes of bonds, the closer is the correlation between their yields. Moreover, for the prime rate, the best correlation can be observed with the over ten years bond yield. Note that the correlation between the prime rate and the bond yields declines gradually as the term to maturity of the bonds decreases. Finally, for the rate on trust and loan companies' liabilities, the highest correlation can be found with the five to ten-year bond yield. Note also that the lowest correlation coefficient recorded in the table is between the prime rate and the rate on trust and loan companies' liabilities.

The implications of these results will be discussed in the next section.

II. ANCHOR RATES AND LENDERS' COSTS

The purpose of this section is to analyze the relationship between the various anchor rates and the lenders' cost of borrowing short-term funds. The analysis should allow us to choose an anchor rate which is optimum from the lenders' point of view. Obviously, the lenders will want to adopt an anchor rate whose variation is closely correlated with the variation in the cost of borrowing short-term funds. To shed some light on this question, we determine the degree of correlation between the anchor rates and the cost of borrowing short-term funds.

Unfortunately, we find it impossible to construct a satisfactory series of data on the chartered banks' cost of borrowing short-term funds. Therefore, we assume that for the chartered banks any anchor rate is acceptable

⁴Monthly data are not available for the period prior to 1961.

which is closely correlated with the prime loan rate. Moreover, we assume that the trust and loan companies will accept any anchor rate which is closely correlated with the rate on one-year term liabilities.

Thus our analysis is carried out as follows. An anchor rate for, say, January 1, 1952, is related to the January 1952 figures for the prime rate and the rate on trust and loan companies' liabilities. Using this procedure for all the anchor rates, we are able to calculate a set of correlation coefficients. These coefficients are presented in *Table 4-2*.

Table 4-2

ANCHOR RATES AND LENDERS' COSTS

<i>Anchor Rate Based On:</i>	<i>Prime Loan Rate</i>		<i>Rate on Trust and Loan Co. Liabilities</i>	
1 to 3 year	0.927	(0.905)	0.967	(0.951)
3 to 5 year	0.944	(0.921)	0.970	(0.950)
5 to 10 year	0.945	(0.925)	0.968	(0.953)
Over 10 year	0.944	(0.941)	0.954	(0.936)

No figures are presented for anchor rates based on the prime loan rate and the trust and loan companies rate, since we can expect these correlation coefficients to be very high. Obviously, lending institutions will prefer an anchor rate which is subject to their control. But if it is decided that the anchor rate should be based on a government bond yield, the question arises as to which of the four anchor rates based on bond yield would be most acceptable to the lending institutions.

Table 4-2 provides the answer to this question. For each possible pair of rates, two correlation coefficients are presented. The figures without parentheses are based on the period January 1, 1952–July 1, 1970. Because of data problems, the trust and loan company rates refer to the second and fourth quarters of each year, prior to 1961, and to June and December after 1961. The figures in parentheses are based on the period January 1, 1961–July 1, 1970. In this case, the trust and loan company rates refer to January and July of each year.

Consider first the chartered banks. The correlation coefficients clearly indicate that the chartered banks would opt for a long-term rather than a short-term anchor rate. While the figures without parentheses do not allow us to make a clear-cut choice, the coefficients in parentheses point to the over ten years bond yield as the optimum anchor rate for the chartered banks.

As far as the trust and loan companies are concerned, it is more difficult to make a clear-cut choice. Our results suggest, however, that the over ten years bond yield is *not* an optimum anchor rate for them. They would probably opt for a shorter-term yield.

Note that these results are consistent with the findings of Section I.

III. ANCHOR RATES AND BORROWERS

In this section, we address ourselves to the question of which anchor rate

can be considered optimum from the point of view of the borrowers. To find an answer to this question, we carry out the following analysis. For each anchor series, we calculate the potential gains and losses accruing to borrowers from fluctuations in the anchor rates. For example, if a VTM loan had been granted on January 1, 1952, any change in the mortgage rate during the subsequent five years would have been tied to an anchor rate. The fluctuation in the anchor rate therefore would have resulted in gains or losses to borrowers. To calculate these gains or losses for, say, the period January 1, 1952–January 1, 1957, we calculate the average deviation in the anchor rates during this period from the rate prevailing on January 1, 1952. This procedure is repeated for mortgages issued on July 1, 1952, January 1, 1953, . . . January 1, 1966; that is, we calculate average deviations for each of the twenty-nine five-year sub-periods. Thus, each anchor series yields twenty-nine figures measuring the potential gains and losses resulting from the fluctuations in the anchor rates. The results of our analysis are reported in *Table 4-5*. Note that positive figures reflect gains, while negative figures reflect losses.⁵

Table 4-3
AVERAGE GAIN OR LOSS TO BORROWERS

<i>Anchor Rate</i>	<i>Sub-periods starting Jan. '52-July '61</i>	<i>Sub-periods starting Jan. '62-Jan. '66</i>	<i>Sub-periods starting Jan. '52-Jan. '66</i>
1 to 3 year	-0.32%	-0.83%	-0.47%
3 to 5 year	-0.34%	-0.60%	-0.42%
5 to 10 year	-0.31%	-0.73%	-0.44%
Over 10 year	-0.37%	-0.52%	-0.42%
Prime	-0.27%	-0.34%	-0.29%
Trust	n.a.	-0.85%	n.a.

Source: *Table 4-5*.

⁵ For, say, the period January 1, 1952 – January 1, 1957, the gain or loss is given by

$$G = (1/10) \sum_{i=1}^{10} (r_i - r_1)$$

where r_i stands for the semi-annual anchor rates and r_1 for the rate prevailing on January 1, 1952. Note that the above expression is only an approximation to the true formula. Ideally, G should be calculated from the following formula:

$$[1 + (r_i - G)/2]^{10} = \prod_{i=1}^{10} (1 + r_i/2).$$

Note that $[1 + (r_i - G)/2]^{10} = 1 + 5(r_i - G) + A$ and $\prod (1 + r_i/2) = 1 + (1/2) \sum r_i + B$ where A and B stand for expressions involving products of interest rates. Therefore, A and B are very small, and we may set $A = B = 0$. The above expression then becomes

$$\text{or} \quad 1 + 5(r_i - G) = 1 + (1/2) \sum r_i,$$

$$G = (1/10) \sum_{i=1}^{10} (r_i - r_1).$$

The calculations in this chapter are based on the last formula.

Table 4-3 summarizes the results of our calculations. From *Table 4-5*, we calculate the average gain or loss for three sets of five-year sub-periods. The first column of *Table 4-3* provides averages for the sub-periods starting on January 1, 1952–July 1, 1961. These figures suggest that, on the average, borrowers would have incurred annual losses of about one-third of one percent of the value of the mortgage due to the fluctuations in the anchor rates. The losses would have been smallest if the mortgage rate had been tied to the prime loan rate. Among the government bond yields, the optimum anchor rate, from the point of view of the borrowers, would have been the five to ten-year yield. The second column provides averages for the sub-periods starting on January 1, 1962–January 1, 1966. Again, the prime loan rate appears to be the optimum rate. Among the government bond yields, however, the over ten years anchor yield now results in the smallest loss.

Thus, it appears that borrowers would have fared best if the prime loan rate had served as an anchor rate. If the choice of an anchor rate were restricted to the government bond yields, it would be more difficult to select an optimum rate. It seems that, at least in recent years, borrowers would have fared better with a long-term than with a short-term bond yield.⁶

IV. CONCLUSIONS

Our analysis allows us to draw the following conclusions:

1. It is unlikely that any single anchor rate would be ideal for the borrowers, the chartered banks, as well as the trust and loan companies.
2. From the point of view of the borrowers, the prime loan rate appears to be the optimum anchor rate. In spite of our results, however, borrowers may prefer a rate which is not controlled by the lenders and may therefore opt for a government bond yield.
3. The lenders are likely to opt for an anchor rate which is based on, or closely reflects, their costs of borrowing short-term funds. We doubt, however, that the prime loan rate would be acceptable to the trust and loan companies, even if it were considered to be optimum by the chartered banks and the borrowers.
4. The solution, therefore, is to adopt a government bond yield as an anchor rate. The results of this study suggest that the optimum anchor rate would be based on
 - a) the over ten years bond yield for the chartered banks;
 - b) a yield on medium-term bonds (five to ten years) for the trust and loan companies;
 - c) a medium or long-term yield for the borrowers.
5. Thus, the following rule could be acceptable to lenders and borrowers. The chartered banks should employ the over ten years bond yield as an anchor rate, while the trust and loan companies should use the five to ten-year bond yield.

⁶It should be pointed out that our results do not necessarily imply that borrowers would have fared worse with VTMs than with FTMs, since we do not make any assumption about the initial rate spread between VTMs and FTMs. Moreover, our conclusions are valid only if the initial rate spread between VTMs and FTMs is not influenced by the nature of the anchor rate selected by lenders and borrowers.

6. These conclusions should be considered to be tentative. Our method of determining the optimum anchor rate for the chartered banks is by no means perfect. Our recommendations could be marred by the fact that we were unable to obtain accurate information on the chartered banks' costs of borrowing short-term funds.

Table 4-4

ANCHOR RATES*

Date	Government of Canada Bond Yields				Trust & Chartered Loan Co. Banks 1 Year Prime Term Business Liabilities Loan Rate	
	1-3 years	3-5 years	5-10 years	Over 10 Years		
Jan 1952	2.44%	2.53%	3.06%	3.24%	4.50%	—
Jul 52	2.45	2.97	3.37	3.49	4.50	—
Jan 53	2.90	3.34	3.64	3.59	4.50	—
Jul 53	3.13	3.38	3.60	3.66	4.50	—
Jan 54	3.27	3.46	3.67	3.75	4.50	—
Jul 54	2.86	3.21	3.32	3.41	4.50	—
Jan 55	1.98	2.51	2.77	3.11	4.50	—
Jul 55	1.69	2.44	2.69	3.09	4.50	—
Jan 56	2.23	2.83	2.84	3.11	4.50	—
Jul 56	3.18	3.36	3.38	3.38	4.58	—
Jan 57	3.60	3.77	3.78	3.68	5.17	—
Jul 57	4.39	4.54	4.38	4.01	5.50	—
Jan 58	4.73	4.79	4.60	4.28	5.63	—
Jul 58	3.52	3.66	3.61	3.83	5.42	—
Jan 59	2.91	3.19	3.57	4.13	5.25	—
Jul 59	4.53	4.49	4.59	4.70	5.38	—
Jan 60	5.32	5.09	5.25	5.18	5.75	—
Jul 60	4.63	5.09	5.29	5.36	5.75	—
Jan 61	3.60	4.04	4.63	5.00	5.75	—
Jul 61	3.85	4.67	4.79	5.23	5.75	—
Jan 62	3.54	4.36	4.58	5.00	5.54	4.28
Jul 62	3.36	4.00	4.27	4.90	5.50	4.02
Jan 63	4.96	5.06	5.12	5.27	5.83	5.06
Jul 63	4.22	4.47	4.71	5.07	5.75	4.89
Jan 64	4.14	4.42	4.77	5.08	5.75	4.34
Jul 64	4.37	4.65	4.90	5.19	5.75	4.60
Jan 65	4.41	4.75	4.93	5.21	5.75	4.72
Jul 65	4.20	4.64	4.84	5.04	5.75	4.85
Jan 66	4.60	4.99	5.19	5.27	5.75	5.18
Jul 66	5.13	5.31	5.52	5.50	5.96	5.66
Jan 67	5.45	5.64	5.81	5.74	6.00	5.86
Jul 67	4.99	5.21	5.56	5.66	5.96	5.93
Jan 68	5.46	5.85	6.08	6.00	5.79	6.03
Jul 68	6.35	6.66	6.82	6.62	6.67	6.57
Jan 69	6.25	6.54	6.71	6.66	7.00	6.89
Jul 69	6.77	7.04	7.20	7.19	7.08	7.10
Jan 70	7.69	7.79	7.85	7.61	8.25	7.72
Jul 70	7.59	7.92	8.22	8.15	8.50	8.46

*Table 4-4 represents six-month averages computed from the data given in Appendix A, tables A-25/A-28 and A-30/A-31. The average of the months of May, June, July, August, September, and October was calculated and applied to January 1 of the following year; the average of November, December, January, February, March, and April was calculated and applied to July 1.

Table 4-5

GAINS OR LOSSES TO BORROWERS FROM VARIATION IN ANCHOR RATES*

Sub-period Starting	Government of Canada Bond Yields				Chartered Banks Prime Business Loan Rate	Trust & Loan Co. 1 Year Term Liabilities
	1-3 years	3-5 years	5-10 years	Over 10 Years		
Jan 1952	-0.17%	-0.47%	-0.17%	-0.14%	-0.01%	
Jul 52	-0.28	-0.16	+0.06	+0.06	-0.08	
Jan 53	-0.02	+0.06	+0.23	+0.11	-0.18	
Jul 53	+0.02	-0.05	+0.10	+0.11	-0.29	
Jan 54	+0.12	+ 0	+0.17	+0.18	-0.38	
Jul 54	-0.25	-0.22	-0.17	-0.19	-0.46	
Jan 55	-1.30	-1.05	-0.85	-0.62	-0.54	
Jul 55	-1.92	-1.38	-1.18	-0.85	-0.67	
Jan 56	-1.67	-1.25	-1.29	-1.06	-0.79	
Jul 56	-0.86	-0.84	-0.93	-0.98	-0.84	
Jan 57	-0.51	-0.56	-0.67	-0.86	-0.37	
Jul 57	+0.29	+0.15	-0.15	-0.66	-0.07	
Jan 58	+0.73	+0.45	+0.08	-0.48	+0.06	
Jul 58	-0.50	-0.71	-0.96	-1.03	-0.17	
Jan 59	-1.18	-1.26	-1.11	-0.85	-0.38	
Jul 59	+0.31	-0.08	-0.21	-0.38	-0.30	
Jan 60	+1.12	+0.50	+0.42	+0.05	+0.04	
Jul 60	+0.52	+0.54	+0.49	+0.23	+0.04	
Jan 61	-0.47	-0.47	-0.12	-0.10	+0.04	
Jul 61	-0.32	+0.07	-0.02	+0.10	+0.04	
Jan 62	-0.75	-0.31	-0.30	-0.15	-0.19	-0.48%
Jul 62	-1.12	-0.79	-0.74	-0.33	-0.28	-0.90
Jan 63	+0.31	+0.15	-0.02	-0.03	+ 0	-0.05
Jul 63	-0.48	-0.52	-0.52	-0.31	-0.07	-0.32
Jan 64	-0.77	-0.49	-0.67	-0.45	-0.16	-1.03
Jul 64	-0.75	-0.47	-0.74	-0.50	-0.29	-1.03
Jan 65	-0.95	-0.61	-0.94	-0.68	-0.42	-1.16
Jul 65	-1.49	-1.05	-1.32	-1.09	-0.67	-1.33
Jan 66	-1.43	-1.31	-1.31	-1.17	-0.95	-1.36

*Table 4-5 represents five year averages computed from data given in Table 4-4, using the formula

$$G = (1/10) \sum_{i=1}^{10} (r_i - r_i)$$

where G stands for gain or loss, r_i is the semi-annual anchor rate, and r_i is the anchor rate at the start of the five-year period.

Chapter 5

Impact of Variable Terms Mortgages on Borrowers

by George Rich and Stephen O'Connor

In the previous chapter, an attempt was made to evaluate the usefulness of various anchor rates from the point of view of borrowers. This chapter is devoted to a more detailed analysis of the potential impact on borrowers of variable terms mortgages. Included in the discussion are various methods of tying the variable interest rate to a published rate and the resulting impact on borrowers of a changing variable rate. We shall show how borrowers are affected if changes in the variable rate result in changes in the amortization period rather than changes in the monthly payment. The above issues are illustrated through numerical examples incorporating various historical data. First the examples calculate, for VTM loans structured under various assumptions, the monthly payment schedules and the rates of return. Second, these calculations are made for corresponding fixed terms mortgage (FTM) loans in order to identify the differences between VTM and FTM loans. Third, the issue of prepayment privileges is also briefly considered.¹

Since we are unable in this study to provide an exhaustive discussion of the topic, we limit ourselves to two examples. We shall explore the characteristics of hypothetical mortgages issued on January 1, 1958, and January 1, 1966, respectively. To simplify the calculations, we assume that the rate on VTMs can be changed only once a year. Moreover, we only consider three anchor rates: The Government of Canada one to three-year bond yield, the chartered banks' prime business loan rate, and the rate on trust and loan companies' one-year term liabilities.²

The examples are based on a VTM with the following characteristics:

1. The amortization period initially is twenty-five years, with the possibility to extend the amortization period to a maximum of thirty-five years.

¹However, this study does not provide an exhaustive discussion of prepayment privileges. Nor do we consider the question of reborrowing privileges.

²We also conducted experiments using the chartered banks' deposit rate on chequable accounts as an anchor. These results were not very encouraging because this rate displays very little variation. The calculations, however, are reported in Appendix D.

2. Initially, lenders and borrowers are free, within the confines of the law, to set any rate for the mortgage.
3. The mortgage contract may be renegotiated every five years.
4. Within any five-year period, the mortgage rate can be changed only in accordance with a published anchor rate.
5. Within any five-year period, the mortgage rate can be changed only once a year. For the sake of simplicity, we assume that the mortgage loan is granted on January 1 and that subsequent changes in the mortgage rate occur only on January 1.
6. Any change in the rate within a five-year period may take the form of a change in the monthly payments or a change in the amortization period. The amortization period, however, cannot exceed thirty-five years.

Moreover, the VTM is compared with an FTM with the following characteristics:

1. The amortization period is twenty-five years.
2. Initially, lenders and borrowers are free within the confines of the law to set any rate for the mortgage.
3. The mortgage contract may be renegotiated every five years.
4. The mortgage loan is granted on January 1.
5. Within any five-year period, the mortgage rate and the amortization period cannot be changed.

I. METHODS OF CHANGING THE RATE ON VTMs

1. *Constant Monthly Payment versus Constant Amortization Period*

When the rate on VTMs is changed within any five-year period, borrowers can be given the choice between a change in the monthly payment or a change in the amortization period. Changes in the amortization period, however, raise certain difficulties which should be discussed briefly. Since we assume that the amortization period of VTMs cannot be extended beyond thirty-five years, substantial increases in the variable rate may cause the amortization to reach its ceiling. Thus, any further increase in the variable rate can only lead to an increase in the monthly payment.

It follows that the usefulness of allowing borrowers to opt for changes in the amortization period rather than the monthly payment depends upon the range of variation in interest rates permitted by this method. To determine the maximum increase in the variable rate that is possible without changing the monthly payment, we present a number of hypothetical examples. Unfortunately, it is impossible to derive a general rule, because the size of the maximum possible increase depends upon several factors, such as the current rate on the mortgage, the amount of principal outstanding, and the nature of previous changes in the amortization period. Nevertheless, we feel that the subsequent examples shed some light on this problem.

The examples presented here are based on *tables D-3 to D-6* in Appendix D. The following assumptions underlie the calculations:

1. In *Table D-3*, we present the example of a new mortgage, issued on January 1 of the current year, with a term to maturity of twenty-five years.

Tables D-4 to D-6 provide examples of old mortgages, with a remaining amortization period of twenty, fifteen, and ten and five years respectively, on January 1 of the current year.

2. For each example, we calculate the fixed monthly payments for the current year, given various possible levels of the mortgage rate prevailing on January 1 of the current year. We assume that in all cases the value of principal outstanding on January 1 of the current year is \$1,000.
3. We assume that the mortgage rate is raised on January 1 of the following year. Given the monthly payments for the current year and the value of principal outstanding on January 1 of the following year, we calculate the maximum possible increase in the mortgage rate, assuming that the monthly payment remains unchanged and that the amortization period can be extended by, at most, ten years. For example, for the new twenty-five-year mortgage, the amortization period on January 1 of the following year is increased to thirty-four years (twenty-four years plus the extension of ten years). Similarly, for the old mortgages, the amortization periods are increased to twenty-nine, twenty-four, nineteen, and fourteen years respectively. Obviously, the maximum possible increase in the mortgage rate would be lower/higher if the amortization period had been extended/reduced previously.
4. The set of possible mortgage rates on January 1 of the following year is limited to the 5 to 10 percent range and to increments of one-quarter of one percent within that range.

A comparison of the mortgage rates prevailing on January 1 of the current year with those prevailing on January 1 of the following year provides some information on the maximum possible increase in these rates. *Table D-3* suggests that for a new twenty-five-year mortgage the maximum possible increase is typically between three-quarters of one percent and one and one-quarter percent. As the amortization period is reduced, the maximum possible range of variation for the mortgage rate is increased, because a smaller and smaller fraction of the monthly payment constitutes interest. For example, according to *Table D-4*, for a mortgage which is to be amortized over a period of twenty years, the maximum possible increase in the mortgage rate on January 1 of the following year varies between one and one-half percent and 2 percent. If the amortization period is fifteen years, the rate could be increased from 5 percent to $8\frac{3}{4}$ percent or from 6 percent to $9\frac{1}{2}$ percent; while for initial rates in excess of 7 percent, the new rate would always be above 10 percent (*Table D-5*). Finally, for amortization periods of ten years or less and initial rates of 5 percent or more, the new rate could always rise above 10 percent (*Table D-6*).

It follows that the maximum possible increase in the mortgage rate, without increasing the monthly payment, is not very large during the first ten years of the life of a twenty-five-year mortgage. Once the amortization period falls below fifteen years, however, it is possible to accommodate virtually all the rate changes that are likely to occur by means of changes in the amortization period.

2. *Technique of Tying the Variable Rate to the Anchor Rate*

There are various possible methods of tying the variable rate to an appropriate published rate.³ In this chapter, the following technique is used.

We assume that, initially, the rate on the VTMs is determined by the lenders and borrowers. For the purpose of this study, we further assume that the rate selected for the VTMs is one-quarter of one percent below the rate on corresponding FTMs, provided that short-term rates of interest are expected to remain unchanged during the following five years. The initial rate is subject to an additional adjustment, however, if the expectations are that short-term interest rates will rise or fall during the next five years. The additional adjustment is calculated by taking the difference between the yields on one-year and five-year Government of Canada bonds.⁴ For example, in times of rising interest rate expectations, we assume that the initial rate on VTMs is less than the corresponding rate on FTMs by a factor represented by the sum of the above difference plus one-quarter of one percent.

Moreover, we have already assumed that the rate on VTMs can be changed only once a year, on January 1. In the event of a change in the rate, certain administrative functions on the part of the lending institutions become necessary, including provision of all relevant information to the borrowers by the January 1 effective date; the information must state not only the new variable rate, but also the amortization period and monthly payments. To enable the institutions to perform these duties, a time spread must exist between the date on which the variation is measured and the date on which the new rates become effective. Accordingly, the analysis in this study uses the September/October averages of the respective anchor rates as a base for the calculation of the annual variation.⁵ The difference between two successive September/October averages yields the adjustment to the previous variable mortgage rate, thereby generating a new variable rate to be applied to existing VTMs on the following January 1. For example, the rate on an old VTM on, say, January 1, 1971, would be equal to the rate on this mortgage set on January 1, 1970, plus the difference between the September/October 1970 and the September/October 1969 averages of the anchor rate.

II. CHOICE OF EXAMPLES

In this study two examples are discussed which are based on historical data.⁶ In both examples, monthly payments as well as rates of return are calculated for a variable terms mortgage as well as a corresponding fixed terms mortgage. The results of these calculations help to answer the question of whether a borrower would have fared better with a VTM rather than an FTM during the time periods considered by the examples. For the sake of simplicity, how-

³For a more detailed discussion of this point, see Chapter 4.

⁴This is, of course, a very crude method of incorporating expectations in the analysis. Expectations are unlikely to be the only factor influencing the shape of the yield curve for Government of Canada bonds.

⁵It would have been preferable to use a six-month average, as in Chapter 4. In order to simplify the calculations, we employed a two-month average.

⁶Other examples could be added if necessary.

ever, only the results for the first five years of a new VTM and an FTM are presented.

The appropriate five-year term periods were selected with reference to the Government of Canada bond yield curves of the last two decades. For the examples, we sought periods of relatively stable expectations, at least over the initial five years. To this end, the five-year periods beginning with the years 1958 and 1966 were chosen. The yield curves for both these periods were fairly level with the 1966 curve, implying an expectation of a slight increase in interest rates.⁷

III. EXAMPLE: MORTGAGE ISSUED ON JANUARY 1, 1958

The first example covers the period 1958-1962. During this period, interest rates tended to fluctuate somewhat. In January 1962, the conventional mortgage rate and the chartered banks' prime business loan rate were virtually the same as in 1958, while the NHA rate was higher and the one to three-year Government of Canada bond yield was lower. This is shown by *Table 5-1*.

Table 5-1

INTEREST RATES, 1958-1962

<i>January of</i>	<i>Gov't Bond Yield</i>	<i>Chartered Banks' Prime Loan Rate</i>	<i>Mortgage Rate</i>	
			<i>NHA</i>	<i>Conventional</i>
1958	3.63%	5.50%	6.00%	6.95%
1959	4.32	5.25	6.00	6.85
1960	4.89	5.75	6.75	7.30
1961	3.78	5.75	6.75	7.00
1962	3.50	5.50	6.50	7.00

Source: Bank of Canada Research Department and Appendix A.

To calculate the initial rate and subsequent adjustments in the initial rate for a hypothetical VTM, we use the procedures outlined above. Two initial rates are computed: one employs the conventional mortgage rate and the other uses the NHA mortgage rate as the FTM rate. The initial rates on the VTMs are assumed to be one-quarter of one percent less than the corresponding FTM rates. The rates on the FTMs and the VTMs are limited to quarter percent figures. Thus, it is possible to calculate the rates on the VTMs by either rounding up or rounding down the figures. In this study, we consider only the rounded down figures, because the conclusions remain unchanged if the figures are rounded up.

As we pointed out, several anchor rates are examined in the analysis. In the following sub-sections, we discuss the results based on each of these anchor rates.

1. *Government of Canada One to Three-Year Bond Yield*

If the rates on the VTMs are tied to the Government of Canada one to three-year bond yield, we obtain the variable rates summarized in *Table 5-2*.

⁷See *Figure 5-1*.

YIELD CURVE FOR GOVERNMENT OF CANADA SECURITIES

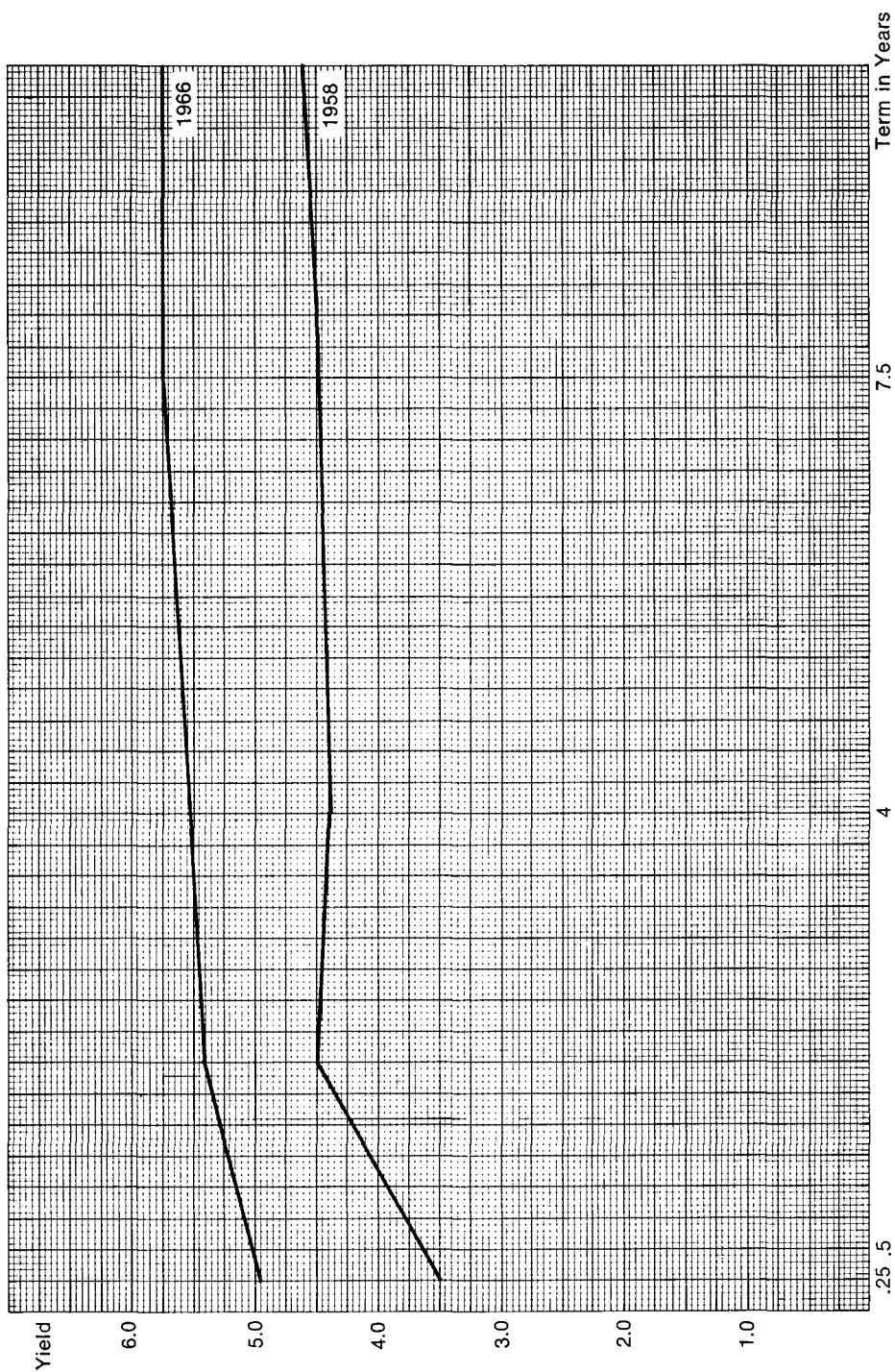


Figure 5-1

Source: Appendix A.

Our calculations indicate that the rates on the VTMs would have been consistently below the rates on the FTMs, with the exception of rates in 1959. Therefore, the average rates of return on the VTMs over the five-year period would have been smaller than the corresponding fixed rates, and borrowers would have fared better with VTMs than with FTMs.

Table 5-2

COMPARISON OF FTM RATES WITH VTM RATES TIED TO GOVERNMENT
OF CANADA ONE TO THREE-YEAR BOND YIELDS, 1958-1962

<i>Sept./ Oct. Av. for</i>	<i>1-3 year Bond Yield</i>	<i>Jan. of</i>	<i>1-3 year Bond Yield</i>	<i>NHA Rates</i>		<i>Conv'l Rates</i>	
				<i>FTM</i>	<i>VTM</i>	<i>FTM</i>	<i>VTM</i>
1957	4.67	1958	3.63	6.00	5.75	6.75	6.50
1958	3.22	1959	4.32		4.25		5.25
1959	5.40	1960	4.89		6.50		7.50
1960	3.29	1961	3.78		4.25		5.25
1961	3.42	1962	3.50		4.50		5.50
Average Rate of Return on Mortgage (Compounded semi-annually)				6.00	5.06	6.75	6.00

NOTE: The mortgage rates are rounded down to the next one-quarter of one percent.

Source: *Table 5-1* and Appendix D, *tables D-2, D-8, D-9, and D-10.*

Table 5-2 also reveals that using the one to three-year bond yield as an anchor rate raises a number of difficulties. First, note that the substantial fall in the variable rates between 1958 and 1962 is attributed to the fall in the September/October averages of the one to three-year bond yield. If the January figures for the bond yield had been used, the fall in the variable mortgage rates would have been only one-quarter of one percent, rather than one and one-quarter percent. Thus, the results are very sensitive to changes in the method of calculating the variable rate. This is undesirable. Second, since the bond yield is very volatile, the variable mortgage rates also display substantial variation.

Table 5-3

CUMULATIVE MONTHLY PAYMENTS AND UNAMORTIZED PRINCIPAL
ON JANUARY 1, 1963, FOR \$1,000 FTM MORTGAGE

<i>Type of Mortgage</i>	<i>Monthly Payments</i>	<i>Unamortized Principal</i>
NHA FTM	\$384.00	\$898.21
Conventional FTM	\$411.60	\$906.88

For example, in 1960, the variable rates would have surged by 2¼ percent and a year later would have dropped again to their 1959 levels. It is likely that borrowers and lenders would object to such sharp fluctuations in the variable rates.

Monthly payments and an amortization schedule also are calculated.⁸ The results for the FTMs are summarized in *Table 5-3*. The cumulative

⁸ For details, see Appendix D, *tables D-11 to D-14.*

monthly payments refer to the five-year period starting January 1, 1958. These results are contrasted with those for a corresponding NHA and conventional VTM. If monthly payments had been changed, cumulative payments during the first five years would have been \$352.44 per \$1,000 of loan for an NHA VTM, with an unamortized principal of \$884.70. Similarly, cumulative payments would have been \$385.20 for a conventional VTM, with an unamortized principal of \$897.58. Consequently, if borrowers had relied on VTMs rather than FTMs, cumulative payments would have been lower by 8.2 percent in the case of an NHA VTM and by 6.4 percent in the case of a conventional VTM.

Of course, borrowers would be interested not only in the cumulative payments, but also in the degree of fluctuation in the monthly payments. In 1958, the monthly payments would have amounted to \$6.26 per \$1,000 of loan for an NHA VTM and \$6.70 for a conventional VTM. The maximum monthly payments would have occurred in 1960, namely, \$6.64 for an NHA VTM and \$7.26 for a conventional VTM.

Alternatively, borrowers may opt for changes in the amortization period rather than the monthly payments. By assumption, the monthly payments would have been lower for VTMs than for FTMs. Moreover, on January 1, 1963, the amortization period would have been twenty years for FTMs (or VTMs with variable monthly payments), sixteen and a half years for an NHA VTM, and sixteen and two-thirds years for a conventional VTM, with fixed monthly payments.

2. Chartered Banks' Prime Business Loan Rate

If the rates on the VTMs had been tied to the chartered banks' prime business loan rate, we would obtain the variable rates summarized in *Table 5-4*. Again, we find that the rates on the VTMs would have been consistently below the rates on the FTMs. Therefore, the average rates of return on the VTMs over the five-year period would have been smaller than the corresponding fixed rates. The results are consistent with our earlier conclusion that borrowers would have fared better with VTMs than with FTMs. A comparison of *tables 5-2* and *5-4* reveals that the fluctuations in the variable rates are much smaller if the prime business loan rate is employed as an

Table 5-4

COMPARISON OF FTM RATES WITH VTM RATES TIED TO CHARTERED BANKS' PRIME BUSINESS LOAN RATE, 1958-1962

Sept./ Oct. Av. for	Prime Loan Rate	Jan. of	Prime Loan Rate	NHA Rates		Conv'l Rates	
				FTM	VTM	FTM	VTM
1957	5.75	1958	5.50	6.00	5.75	6.75	6.50
1958	5.25	1959	5.25		5.25		6.00
1959	5.75	1960	5.75		5.75		6.50
1960	5.75	1961	5.75		5.75		6.50
1961	5.50	1962	5.50		5.50		6.25

Average Rate of Return on Mortgage
(Compounded semi-annually)

6.00 5.56 6.75 6.36

Source: Appendix D, *tables D-11* to *D-14*.

anchor rate. Moreover, the results are less sensitive to changes in the method of calculating the variable rate if the prime business loan rate is used.

As in the previous example, monthly payments and an amortization schedule also are calculated. For the FTMs, the results are summarized in *Table 5-3*. Contrast these results with those obtained for the VTMs. If monthly payments had been changed, cumulative payments would have been \$369.00 per \$1,000 of loan for an NHA VTM, with unamortized principal of \$893.20. Similarly, cumulative payments would have been \$396.60 for a conventional VTM, with unamortized principal of \$902.58. Consequently, if borrowers had relied on VTMs rather than FTMs, cumulative payments would have been lower by 3.7 percent in the case of an NHA VTM, and by 3.6 percent in the case of a conventional VTM.

Moreover, the maximum monthly payment would have been charged in 1958—that is, in the first year. On the whole, the monthly payments would have varied between \$6.26 and \$5.97 for an NHA VTM and between \$6.70 and \$6.41 for a conventional VTM.

Alternatively, if borrowers had opted for changes in the amortization period, on January 1, 1963, the amortization period would have been twenty years for FTMs, nineteen years for an NHA VTM, and eighteen and eleven-twelfths years for a conventional VTM.

3. *Trust and Loan Companies' One-Year Term Liabilities*

If the rate on trust and loan companies' one-year term liabilities is employed as an anchor rate, we obtain the results summarized in *Table 5-5*. As in the previous examples, the average rates of return on the VTMs are below those

Table 5-5

COMPARISON OF FARM RATES WITH VTM RATES TIED TO TRUST AND
LOAN COMPANIES' ONE-YEAR TERM LIABILITIES, 1958-1962

Sept./ Oct. Av. for	Trust & Loan Liabilities	Jan. of	Trust & Loan Liabilities	NHA Rates		Conv'l Rates	
				FTM	VTM	FTM	VTM
1957	4.73	1958	n.a.	6.00	5.75	6.75	6.50
1958	3.90	1959	n.a.		4.75		5.75
1959	5.52	1960	n.a.		6.50		7.25
1960	4.38	1961	4.50		5.25		6.25
1961	4.25	1962	4.00		5.25		6.00
Average Rate of Return on Mortgage (Compounded semi-annually)				6.00	5.50	6.75	6.36

Source: Appendix A; Appendix D, *tables D-11 to D-14*; interest rate data for trust and loan companies supplied by the Bank of Canada Research Department.

of the FTMs, and borrowers would therefore have fared better with VTMs than with FTMs. It appears that the average rates of return on the VTMs would have been similar if the rate on trust and loan companies' liabilities or the chartered banks' prime loan rate had been employed as an anchor rate, although the range of fluctuation in the variable rates would have been smaller if they had been tied to the latter rather than the former.

As in the previous examples, monthly payments and an amortization schedule also can be calculated. The results for the FTMs are summarized

in *Table 5-3*. Compare these results with those obtained for the VTMs. If monthly payments had been changed, cumulative payments would have amounted to \$366.96 for an NHA VTM, with an unamortized principal of \$891.19. Similarly, the cumulative payments would have amounted to \$396.84 for a conventional VTM, with an unamortized principal of \$902.48. Consequently, if borrowers had relied on VTMs, cumulative payments would have been lower by 4.4 percent in the case of an NHA VTM and by 3.6 percent in the case of a conventional VTM.

Moreover, the maximum monthly payment would have been charged in 1960. The monthly payment would have been 6.4 percent higher in 1960 than in 1958 for an NHA VTM and 6.3 percent higher for a conventional VTM.

Alternatively, if borrowers had opted for changes in the amortization period, on January 1, 1963, the amortization period would have been twenty years for FTMs, eighteen and one-sixth years for an NHA VTM, and eighteen and one-third years for a conventional VTM.

4. Summary

The results for the first example are summarized in *Table 5-6*. The first two columns provide data on the differences between the rates of return on VTMs and FTMs. Our results suggest that borrowers would have fared better if they had relied on VTMs rather than FTMs. Moreover, they would have fared best if the rates on the VTMs had been tied to the one to three-year Government of Canada bond yield. The same conclusions, of course, are reached if we compare cumulative monthly payments for the FTMs and the VTMs, as well as the amortization periods recorded on January 1, 1963.

Table 5-6

COMPARISON OF VARIOUS TYPES OF MORTGAGES, 1958-1962

	Rate of Return (%) VTM-FTM		Cumulative Monthly Payments Difference between VTM & FTM as a % of FTM		Max. Spread between Monthly Payments as a % of Payments in 1958		Amortization Period on Jan. 1, 1963 VTM-FTM (years)	
	NHA	Conv.	NHA	Conv.	NHA	Conv.	NHA	Conv.
1 to 3 year Gov't of Canada	—0.94	—0.75	—8.2	—6.4	19.3	19.1	—3 11/12	—3 4/12
Chartered Banks' Prime Loan	—0.44	—0.39	—3.7	—3.6	4.6	4.3	—1	—1 1/12
Trust and Mortgage Loan Co.	—0.50	—0.39	—4.4	—3.6	15.3	12.8	—1 10/12	—1 8/12

Table 5-6 also indicates, however, that the fluctuations in the monthly payments would have been largest if the rates on the VTMs had been tied to

the one to three-year Government of Canada bond yield. Thus, it appears that the larger the difference between the rates of return on VTMs and FTMs, the larger the fluctuations in the monthly payments.

IV. EXAMPLE: MORTGAGE ISSUED ON JANUARY 1, 1966

The second example covers the period 1966-1970. During this period, interest rates tended to rise. This is shown by *Table 5-7*.

Table 5-7

INTEREST RATES, 1966-1970

<i>January of</i>	<i>1 to 3 year Government Bond Yield</i>	<i>Chartered Banks' Prime Loan Rate</i>	<i>Mortgage Rate</i>	
			<i>NHA</i>	<i>Conventional</i>
1966	4.99	6.00	6.75	7.38
1967	4.92	6.00	7.25	7.93
1968	6.35	6.50	8.17	8.83
1969	6.71	7.00	8.93	9.45
1970	7.95	8.50	10.01	10.58

Source: *Bank of Canada Statistical Summary*, February 1970, pp. 115-16 and January 1971, pp. 33-34.

As in the previous example, it is necessary to calculate the initial rates and subsequent adjustments in the initial rates for hypothetical NHA and conventional VTMs. The calculation of the initial rates is outlined in Appendix D, *table D-7*. Rounding down all the figures, we obtain initial rates of 6.00 percent and 6.75 percent for the hypothetical NHA and conventional VTMs respectively. The corresponding fixed mortgage rates are 6.75 percent and 7.25 percent respectively. Note that the difference between the fixed and variable mortgage rate is 0.25 percent plus a factor reflecting anticipated changes in short-term rates.

Again, several anchor rates are employed in calculating the annual changes in the variable rates. The hypothetical variable rates for the period 1966-1970 are summarized in Appendix D, *tables D-8* and *D-9*. In the subsequent analysis, we use the rounded down versions of these figures.

1. *Government of Canada One to Three-Year Bond Yield*

Table 5-8 indicates that the rates on VTMs would have been below the corresponding fixed rates in 1966 and 1967, but would have risen above the fixed rates after 1967 if they had been tied to the one to three-year government bond yield. The largest single increase in the variable rates would have occurred on January 1, 1970, when the rates would have been boosted by one and three-quarters percent. The average rates of return on the VTMs over the five-year period would have exceeded the corresponding returns on FTMs, and borrowers would therefore have fared better with FTMs than with VTMs.

Again, *Table 5-8* reveals substantial discrepancies between the January figures for the bond yield and the corresponding September/October averages. Thus, the results are affected significantly by the method of calculating the anchor rate.

Table 5-8

COMPARISON OF FTM RATES WITH VTM RATES TIED TO GOVERNMENT
OF CANADA ONE TO THREE-YEAR BOND YIELD, 1966-1970

Sept./ Oct. Av. for	1-3 year Bond Yield	January of	1-3 year Bond Yield	NHA Rates		Conv'l Rates	
				FTM	VTM	FTM	VTM
1965	4.94	1966	4.99	6.75	6.00	7.25	6.75
1966	5.52	1967	4.92		6.50		7.25
1967	5.80	1968	6.35		7.00		7.50
1968	6.05	1969	6.71		7.25		7.75
1969	7.80	1970	7.95		9.00		9.50
Average Rate of Return on Mortgage (compounded semi-annually)			6.75	7.16	7.25	7.25	7.76

Source: Table 5-7 and Appendix D, tables D-2, D-8, D-9, and D-10.

Monthly payments and an amortization schedule also are calculated.⁹ The results for the FTMs are summarized in Table 5-8. The cumulative monthly payments refer to the five-year period starting January 1, 1966. These figures are compared with the results obtained for the VTMs. If monthly payments had been changed, cumulative payments would have amounted to \$423.60 for an NHA VTM, with an unamortized principal of \$911.60. Similarly, cumulative payments would have amounted to \$446.64 for a conventional VTM, with an unamortized principal of \$918.38. Consequently, if borrowers had relied on VTMs rather than FTMs, cumulative payments would have been higher by 2.9 percent in the case of an NHA VTM and by 4.0 percent in the case of a conventional VTM.

Table 5-9

CUMULATIVE MONTHLY PAYMENTS AND UNAMORTIZED PRINCIPAL
ON JANUARY 1, 1971, FOR \$1,000 FTM MORTGAGE

Type of Mortgage	Monthly Payments	Unamortized Principal
NHA FTM	\$411.60	\$906.88
Conventional FTM	\$429.60	\$913.25

As far as the range of fluctuation in the monthly payments is concerned, the largest single increase would have occurred on January 1, 1970, when borrowers would have been confronted with an increase of 13 percent in the monthly payments on NHA as well as conventional VTMs.

Alternatively, borrowers could have opted for changes in the amortization period rather than the monthly payments. The rise in the variable mortgage rates would have forced lenders to extend the amortization period by the permissible maximum of 10 years on January 1, 1970. Moreover, the lengthening of the amortization period would not have been sufficient to cover the increase in the variable rate occurring on that date. For this reason, it would have been necessary on January 1, 1970, to raise the monthly payments from \$6.40 to \$7.48 in the case of NHA VTMs and from \$6.86 to

⁹For details, see Appendix D, tables D-15 to D-18.

\$7.83 in the case of conventional VTMs. The cumulative payments would have amounted to \$396.96 for NHA VTMs and \$423.24 for conventional VTMs—that is, the payments would have been lower than for FTMs. Thus, in terms of monthly payments, borrowers would have fared better with VTMs if they had been permitted to extend the amortization period by ten years.

2. Chartered Banks' Prime Business Loan Rate

The results obtained for the chartered banks' prime business loan rate are similar to those obtained for the Government of Canada one to three-year bond yield (*Table 5-10*). The variable rates would have had a tendency to rise over the five-year period, albeit not by as much as if they had been tied to the bond yield. The average rates of return on the VTMs, however, would still have exceeded the rates of return on the corresponding FTMs.

Table 5-10

COMPARISON OF FTM RATES WITH VTM RATES TIED TO CHARTERED BANKS' PRIME BUSINESS LOAN RATE, 1966-1970

<i>Sept./ Oct. Av. for</i>	<i>Prime Loan Rate</i>	<i>January of</i>	<i>Prime Loan Rate</i>	<i>NHA Rates</i>		<i>Conventional Rates</i>	
				<i>FTM</i>	<i>VTM</i>	<i>FTM</i>	<i>VTM</i>
1965	5.75	1966	6.00	6.75	6.00	7.25	6.75
1966	6.00	1967	6.00		6.25		7.00
1967	5.88	1968	6.50		6.25		6.75
1968	6.75	1969	7.00		7.00		7.75
1969	8.50	1970	8.50		8.75		9.50
Average Rate of Return on Mortgage compounded semi-annually)				6.75	6.86	7.25	7.56

Source: *Table 5-7* and Appendix D, *tables D-2, D-8, D-9, and D-10*.

These results confirm our earlier conclusion that the fluctuations in the variable rates would have been smaller if they had been tied to the prime rate rather than the government bond yield.

For the monthly payments, we obtain the following results. If monthly payments had been changed, cumulative payments would have amounted to \$412.68 for an NHA VTM, with an unamortized principal at the end of the five-year period of \$908.51. Similarly, the payments would have amounted to \$438.72 for a conventional VTM, with an unamortized principal of \$916.53. Comparing these figures with *Table 5-9*, we find that cumulative payments on VTMs would have exceeded those on FTMs by 0.3 percent for NHA mortgages and by 2.1 percent for conventional mortgages.¹⁰

Otherwise, the performance of the prime rate and that of the bond yield as anchor rates are very similar. If rate changes had been translated into changes in the amortization period rather than changes in the monthly pay-

¹⁰For details, see Appendix D, *tables D-15 to D-18*.

ments, the amortization period would have hit its ceiling on January 1, 1970, regardless of the nature of the anchor rate employed.

3. *Trust and Loan Companies' One-Year Term Liabilities*

There is a great deal of similarity between the performance of the trust and loan companies' rate and that of the bond yield as anchor rates. Note that the average rates of return reported in *tables 5-8* and *5-11* are virtually the same. Moreover, very similar results are obtained for monthly payments and amortization periods.¹¹ If the variable rates had been tied to the trust and loan companies' rate rather than the bond yield, however, they would have increased more gradually. For example, the increase on January 1, 1970, would have been 1.25 percent rather than 1.75 percent if the trust and loan companies' rate had served as an anchor rate.

Table 5-11

COMPARISON OF FTM RATES WITH VTM RATES TIED TO TRUST AND
LOAN COMPANIES' ONE-YEAR TERM LIABILITIES, 1966-1970

Sept./ Oct. Av. for	Trust & Loan Liabilities	January of	Trust & Loan Liabilities	NHA Rates		Conventional Rates	
				FTM	VTM	FTM	VTM
1965	5.37	1966	5.72	6.75	6.00	7.25	6.75
1966	5.97	1967	6.02		6.75		7.25
1967	6.31	1968	6.46		7.00		7.50
1968	6.82	1969	7.18		7.50		8.00
1969	8.05	1970	8.59		8.75		9.25
Average Rate of Return on Mortgage (Compounded semi-annually)				6.75	7.20	7.25	7.76

Source: Appendix D, *tables D-2, D-8, D-9, and D-10*; data for trust and loan companies supplied by the Bank of Canada Research Department.

4. *Summary*

The results for the second example are summarized in *Table 5-12*. The first two columns provide data on the differences between the rates of return on VTMs and FTMs. Our results suggest that during the period 1966-1970, borrowers would have fared better with FTMs than with VTMs. Moreover, they would have fared worst if the variable rate had been tied to the Government of Canada bond yield or the rate on trust and mortgage loan companies' one-year term liabilities. The same conclusions are reached, of course, if we compare cumulative monthly payments for VTMs and FTMs (columns 3 and 4).

The rate of increase in the monthly payments on VTMs would have been substantial during the period 1966-1970. Since there would have been a virtually continuous increase in the monthly payments, we can conclude from columns 5 and 6 that in 1970 the monthly payments would have been about 25 percent higher than in 1966. Of course, borrowers could have relied on changes in the amortization period rather than the monthly pay-

¹¹For a summary, see *Table 5-11*.

Table 5-12

COMPARISON OF VARIOUS TYPES OF MORTGAGES, 1966-1970

	Const. Amortization Period						Var. Amort.	
	Cumulative Monthly Payments. Difference between VTM and FTM as a % of FTM				Max. Spread between Monthly Payments as a % of payments in 1966		Cumulative Monthly Payments between VTM and FTM as a % of FTM	
	Rate of Return % VTM-FTM							
	NHA	Con.	NHA	Con.	NHA	Con.	NHA	Con.
1 to 3 year Govt. of Canada Chartered Banks Prime Loan Trust and Mortgage Loan Co.	0.41	0.51	2.9	4.0	26.71	23.17	-3.5	-1.5
	0.11	0.31	0.3	2.1	24.21	23.03	-4.3	-1.7
	0.45	0.51	3.4	4.0	24.68	21.28	-3.6	-1.9

ments. As we pointed out, however, this would not have solved all the problems, because the amortization period would have hit its ceiling on January 1, 1970. Nevertheless, cumulative monthly payments would have been lower for VTMs than for FTMs if borrowers had opted for changes in the amortization period (columns 7 and 8).

V. EXAMINATION OF PREPAYMENT PRIVILEGES

Thus far, we have not examined a possibility that could greatly enhance the attractiveness of VTMs, namely, to endow them with prepayment privileges. For example, borrowers could be allowed to prepay the mortgage in whole or in part whenever the mortgage rate was changed or was expected to be changed. In this manner, VTMs could become an attractive device for borrowers to invest their savings.

We can present an example that clearly demonstrates the usefulness of

Table 5-13

DIFFERENCE BETWEEN AVERAGE RATES OF RETURN ON INVESTMENTS
IN VTMs AND CANADA SAVINGS BONDS¹

(Rounded down figures only)

Characteristics of VTM	Investments Carried Out Over the Periods	
	1959-62	1967-70
<i>NHA</i>		
1 to 3 year Gov't of Canada	0.80%	1.55%
Chartered Banks' Prime Loan	1.38%	1.15%
Trust and Mortgage	1.28%	1.68%
<i>Conventional</i>		
1 to 3 year Gov't of Canada	1.80%	2.15%
Chartered Banks' Prime Loan	2.13%	1.83%
Trust and Mortgage	2.18%	2.18%

¹The calculation of the average rates of return raises a number of problems which are discussed in Appendix D, tables D-19 to D-22. Because of the limitations of our study, it is not possible to examine investment periods in excess of four years.

VTMs as a saving device. Suppose that a borrower may either invest his savings in Canada Savings Bonds or use his savings to prepay his mortgage. Moreover, assume that he starts to save one year after obtaining a mortgage loan. Each year he decides to save \$1, including the interest payments on the savings accumulated during previous years. In terms of our two earlier examples, the borrower begins to invest \$1 in Canada Savings Bonds or starts to prepay his mortgage on January 1, 1959, and January 1, 1967, respectively. Further investments are made on January 1 of the three consecutive years. What would be the average rates of return on the two types of investments over the two four-year periods? *Table 5-13* clearly indicates that the borrower would fare much better if he stayed away from Canada Savings Bonds and used his savings to prepay his mortgage. Investments in VTMs would yield a return which would be between one and two percent higher than the average return on Canada Savings Bonds. If rounded-up figures were used, the difference would be even larger.

VI. CONCLUSIONS

The examination of two examples based on historical data allows us to draw several conclusions:

1. During periods of declining interest rates, the average rates of return on VTMs tend to be below those on FTMs. The opposite can be observed during periods of rising interest rates. Of course, the rate differential between VTMs and FTMs is reduced if at least part of the future changes in the rates on VTMs is correctly anticipated. For example, in this study it is assumed that on January 1, 1966, lenders and borrowers expected short-term interest rates to rise. Therefore, the calculations for the period 1966-1970 are based on an initial rate spread between FTMs and VTMs exceeding the assumed "normal" spread of 0.25 percent. If the initial spread had been 0.25 percent—that is, if borrowers and lenders had expected short-term rates to remain unchanged—borrowers relying on VTMs would have fared even worse than is indicated by our calculations.
2. The results depend upon the nature of the anchor rate employed in the analysis. The one to three-year Government of Canada bond yield and the rate on trust and loan companies' one-year term liabilities tend to display stronger fluctuations than the chartered banks' prime business loan rate. Large fluctuations in the anchor rate result in large gains to borrowers of VTMs during periods of falling rates and large losses during periods of rising rates. Over a long period of time, of course, most of these gains and losses will cancel out, and the borrowers of VTMs will be left with a small net gain, provided that, on the average, the return on VTMs falls short of the return on FTMs. Nevertheless, lenders and borrowers may consider large fluctuations in the anchor rates to be undesirable. If a Government of Canada bond yield is selected as an anchor, it may be advisable to rely on a long-term rather than a short-term yield, in order to reduce these fluctuations. This conclusion is consistent

with the findings of Chapter 4. Unfortunately, the limitation on time and resources did not allow us to extend the analysis to other government bond yields.

3. Our analysis indicates that the annual changes in the rate of VTMs may be substantial; that is, they may be as high as 2 percent. Therefore, if VTMs were introduced, it would be absolutely necessary to inform borrowers about the potential changes in the mortgage rates and the monthly payments.
4. Even if borrowers opt for changes in the amortization period, they may sometimes have to accept increases in the monthly payments. Our analysis suggests that this possibility is not just academic. Again, this is a problem which calls for substantial borrower education.
5. Our study suggests that the attractiveness of VTMs could be increased significantly if they were endowed with prepayment privileges.

Chapter 6
The House Builders' Viewpoint —
Report on a Test Survey
by Larry M. Agranove

I. SCOPE AND PURPOSE OF STUDY

Any appraisal or evaluation of the variable terms mortgage would be incomplete without a measure of the acceptance of the instrument by the borrowers for whom it is intended. Ideally, a study should have been undertaken of a sample of consumers as representative as possible of those who borrow on the security of residential mortgages or who are likely to do so. This study would have examined in depth the attitudes and perceptions of the sample, their knowledge of mortgage financing, and their likelihood of accepting a variable terms mortgage under various market conditions. Such a study would have been useful, but it also would have been costly and would have taken considerably more time than was available to the Special Project Team.

It was therefore decided to use a sample of house builders as a proxy for house buyers. The builders, who come into daily contact with their customers, and have a common interest in an ample, stable, efficient flow of mortgage funds, were asked how they thought their customers would respond to various aspects of variable terms mortgages.¹ In addition, they were interviewed on their own acceptance of the instrument, since they would bear a large part of the responsibility for explaining it to the customer.

Using the builder as a proxy was economical both in time and in money, but it compounded the considerable difficulties of asking people to predict their own behavior with the problems of anticipating the behavior of other people. The convergence of the house builders' responses, however, allowed us to conclude that the findings could be accepted with considerable confidence.

The study was undertaken in Toronto, Ottawa, and London. Thus, it included some diversity in English Canada with a small sampling, in the

¹The questionnaire is reproduced as Appendix E to this volume.

Ottawa-Hull area, of French Canada as well. It would be most desirable if the study could be replicated across Canada. This could be done, using CMHC personnel, at little cost; and it is recommended that this be undertaken before any widespread introduction of variable terms mortgages is contemplated.

II. METHOD

A questionnaire was designed to elicit responses on builders' reactions to variable terms mortgages and on their expectations of consumer reactions.² Although the questionnaire was designed as an instrument to prompt free-flowing discussion on variable terms mortgages, it was rigorously drafted and substantially revised after field testing. Sections on anchor rates and frequency of rate changes, for example, were found to elicit confusion rather than information, and were dropped. The finished document is reproduced as Appendix E to this study.

The sample, consisting of thirteen firms, included some small builders, who were adequately represented in terms of their share of market but were perhaps under-represented in terms of their closer contact and closer identification with the consumer-borrower. It also included some of the most important firms in the industry, as well as a mortgage broker who has wide contacts in the primary and secondary mortgage markets. The sample was not large, but the similarity of responses and the paucity of additional new information gleaned from succeeding interviews indicated that it was adequate.

Interviews ranged from one to four hours, with most lasting from one and a half to two hours. The respondents were highly motivated and highly interested. In only one case did the respondent seem inattentive; he represented a small firm that had abandoned the detached house market. In the case of some larger firms, the interviewee was accompanied by one or more senior colleagues.

III. STUDY FINDINGS

1. *Nature of Findings*

As we mentioned earlier, there was substantial agreement among the builders interviewed. Where there was divergence, this will be noted in the account of the findings. It must be emphasized, however, that the study is basically qualitative in nature. Because of the nature of the research instrument and the type of questioning, and because of the small sample size, results cannot be tabulated quantitatively, with a specific percentage in favor of a proposal and another percentage opposed. In any event, such a tabulation would not reflect the degree of conviction, emphasis, or expertise

²Variable terms mortgages were explained to the builders as mortgages which would run until fully amortized and on which the rate would change once or twice a year in concert with some published rate that the borrower would perceive to be beyond the lender's ability to manipulate. It would probably be offered initially at a slightly lower interest rate than a comparable fixed terms mortgage contracted at the same time; it could contain various provisions not generally available on mortgages at present.

expressed by the respondent. This can be expressed only by the application of the judgment, or the misjudgment, of the author of the study.

2. *Principal Findings*

a) Acceptance of Variable Terms Mortgages

Slightly more than half the builders agreed that house buyers would accept, or could be persuaded to accept, variable terms mortgages. The others felt that house buyers would tend to prefer fixed terms mortgages if given a choice. The question of acceptance, however, came early in the interviews, when the concept of variable terms mortgages was relatively new to the respondents. As the interviews progressed, the builders invariably appeared to be more receptive to the new instrument.

Two builders raised the point that borrowers would be more likely to accept variable terms mortgages if they perceived interest rates to be high and likely to fall. They also suggested that lenders would be more amenable to offering variable terms mortgages at the bottom of the interest rate cycle.

b) Level Monthly Payments

The interviewees were unanimous, emphatic, and adamant that if interest rates change during the term of a variable terms mortgage, that change must be reflected, to the extent possible, in a changed amortization period rather than a changed monthly payment. This point was particularly stressed in the case of the marginal borrower, or the borrower who just barely qualifies for his loan. The builders supported the contention, long part of the folklore of lenders (and recently confirmed by other research³), that the monthly payment is the single most important component of a loan to the typical borrower. The consensus was clearly that a borrower would be much more likely to accept the risk of a change in percentage rate, which he sees as a mathematical abstraction that somehow affects his amortization period, but would not accept the risk of a change in monthly payment, which is a regularly recurring obligation for which he has budgeted very carefully.

While this did not emerge from the survey findings, it would be worth determining whether a borrower might respond to a choice among a range of potential monthly payments; for example, if the interest rate on a \$15,000 twenty-five year mortgage increased from 8 percent to 9 percent, increasing the monthly payment by \$9.71 per month, would that payment be acceptable?

c) Features

The variable terms mortgage was described to the builders as potentially carrying such features as the following:

1. A reborrowing provision, allowing the principal to be brought back up to some level approaching the original balance
2. More generous prepayment provisions, allowing prepayment in full or part without penalty

³Larry M. Agranove, *The Effect of Interest Rate Disclosure on Consumer Instalment Purchase Behavior*, Unpublished Doctoral Dissertation, University of Western Ontario, 1970.

3. Variable payments (and therefore variable amortization periods) at the mortgagor's option in the absence of a change in rate
4. Variable interest rates
5. Variable amortization periods in the event of a rate change

All the respondents considered that the reborrowing provision was the most desirable feature, given that a variable amortization period in the event of a rate change is obligatory.

Next in desirability was the prepayment provision, although it was generally agreed that housebuyers would not in practice make use of the provision nearly as much as they might think they would.

There was no particular enthusiasm for the provision that monthly payments could be voluntarily adjusted in the absence of a rate change. This is understandable, given that the borrower has the option to increase or decrease his principal balance by round sums, and this would probably involve less cost to lenders than the periodic changing of monthly payments. The reborrowing and prepayment options have the further advantage of reducing the propensity of borrowers to retain liquid assets at the same time as they sustain debt, in order to preserve liquidity and to facilitate the possible sale of their house by maximizing the size of its mortgage. This propensity would be likely to diminish over time as a result of learning.

In general, the builders did not consider that the borrower would be prepared to pay a higher interest rate in return for the features; the features would be a necessary condition in order to induce borrowers to accept the risks of variable rates. It was agreed almost unanimously that consumers would prefer the package of features that was offered to the variable interest rate itself.

d) Builders' Acceptance

During the course of the interviews, the builders' enthusiasm for variable terms mortgages increased as they became more knowledgeable about them. Although the builders were divided as to whether variable terms mortgages would make it easier for them to sell houses, they were largely in agreement (particularly the larger builders) that the supply of mortgage funds would increase if variable terms mortgages were available. All who offered an answer were unanimous in their belief that the flow of funds would be more stable, because lenders would no longer be inclined to withhold funds from the market in anticipation of a rate change. All agreed that variable terms mortgages would make the interest rate on mortgages on houses in their inventory more congruent with interest rates prevailing in the market at the time of the sale of a house, except for two builders who already had arrangements with their lenders to adjust interest rates at the time of sale in the event of a decrease. One respondent raised the cogent point that if variable terms mortgages adjusted rates only once or twice a year, the lag would not exert a great influence on rate congruence.

3. *Other Findings*

a) Rate Spread—Variable or Fixed Rates

Answers ranged from the suggestion that no rate spread would be necessary

to induce borrowers to accept variable terms mortgages (two respondents) to the opinion that no spread would be adequate to induce them to accept such mortgages (one respondent). Others suggested rate differentials of one-half of one percent, and two respondents thought that the differential might have to approach a full one percent.

b) Timing of Decision

Typically, builders place mortgages on houses in order to finance their construction, and the buyer assumes the mortgage at the time of purchase. All the builders but one indicated the necessity of the builder's having to commit the customer to the type of mortgage that he elects. Many of the builders suggested, however, that there should be some mechanism to allow the purchaser to change the type of mortgage if he so desires.

c) Suitability of Variable Terms Mortgages

There was a substantial body of opinion that held that variable terms mortgages would be most suitable for the home buyer of higher sophistication and education, as well as higher disposable income. It was felt that the greater sophistication would be required to understand the complexities and choices available with variable terms mortgages. A higher disposable income would assist the borrower in assuming the risks of variable interest rates: a person on a stringent budget, who was just barely able to qualify for his loan, would be least able to accept any risk of having his monthly payment increased.

d) Miscellaneous Comments

Obviously, in many hours of interviewing, a substantial number of comments would emerge. Most formed the basis for the findings reported above. Some do not fit into any particular pattern but are worth reporting.

While not forming a consensus, some builders felt that lenders would like variable terms mortgages because they could maintain the spread between their costs of money and yields.

Some of the more astute builders commented that a substantial selling effort would be necessary, to inform as much as to persuade, on the subject of variable terms mortgages. Those builders who mentioned this felt, probably quite correctly, that a large part of this informational effort would devolve on them.

Two mortgage brokers who were consulted during but not necessarily in connection with the study suggested that the introduction of variable terms mortgages with prepayment and reborrowing provisions would tend to eliminate the second mortgage.

Finally, a couple of the largest builders felt that unspecified tax incentives could direct substantial amounts of money into mortgages. Another suggested that a secondary mortgage market, by enhancing the liquidity of mortgage investments, would sharply reduce the spread between government bonds and NHA-insured mortgages, a spread that they attributed to investors' liquidity preference.

IV. SUMMARY AND CONCLUSIONS

A test survey of thirteen firms, designed to determine house builders' assessment of their customers' receptivity to variable terms mortgages, indicated that these mortgages would be acceptable to house buyers provided that any change in interest rates would be reflected as much as possible in changes in amortization period rather than in monthly payments. House buyers would be particularly amenable to such provisions as reborrowing and prepayment clauses, in fact preferring the "features" to the variable rate itself.

The builders themselves reacted favorably to the concept of variable terms mortgages, and their acceptance increased markedly as they learned more about the instrument.

As a result of this study, it was concluded that

1. Variable terms mortgages would be acceptable to house buyers.
2. Certain requirements would be necessary for the successful implementation of variable terms mortgages:
 - a) Monthly payments would have to be maintained, to the extent possible, at a level amount, and any change in interest rates would have to be reflected in a lengthening or shortening of the amortization period.
 - b) The inclusion of provisions allowing prepayment in full or in part without penalty and allowing reborrowing would greatly facilitate the acceptance of variable terms mortgages.
 - c) Some mechanism might be required allowing the purchaser to choose between a fixed or variable terms mortgage, even if the house purchased had previously been encumbered by the builder.
 - d) A substantial promotional program would be necessary, both for persuasion and information, in order to introduce variable terms mortgages.
3. In order to substantiate the results of this very limited study, it should be replicated across Canada with greater representation in the sample of the smaller builder and the builder for the French-Canadian market. As the study has been designed and the questionnaire thoroughly field tested, the incremental costs would be low in comparison with the gain in confidence in the findings which would result.

Chapter 7

Postscript

by J. V. Poapst

In the preceding chapters, the VTM was examined in respect to its concept and potential, the implications of the term structure of interest rates, the effect upon interest rates, the choice of an anchor or reference rate, the impact of interest rate changes on borrowers, and through builders, the anticipated attitudes of buyers of new houses. In this chapter, we shall review the potential advantages of VTMs, present a "model" of the basis on which the Project Team considered that VTM financing should develop, and comment upon the impact that such financing might have upon the residential mortgage market. Under the last heading, we set out some problems raised by senior officers of banks interviewed in the late stages of our work.

I. POTENTIAL ADVANTAGES OF VARIABLE TERMS

A variable interest rate would help chartered banks and other deposit-taking institutions to maintain a satisfactory relationship between their borrowing rate and their lending rate on outstanding mortgages. In respect to interest rate, their mortgage assets and liabilities would be better matched. At the same time, the interest rate on outstanding mortgages would remain attractive relative to interest rates on current "demand" loans, which are subject to short-term change. By shifting interest rate risk to the borrowers, depositories presumably could offer residential mortgage money at a lower supply price. For borrowers in a position to accept this risk, the expected mean level of interest costs would be lower.

A variable amortization period would enable a borrower to change his "mortgage-saving" rate from year to year compared to what would be required under a fixed terms mortgage. One reason for varying the amortization period would be to neutralize the impact on monthly payments of changes in the interest rate. Another reason to vary the amortization period would be simply to enable the borrower to change his annual mortgage-saving rate in keeping with changes in his discretionary income, or with changes in his propensity to save motivated by any other cause. Typically, for both tax and non-tax reasons, the after-tax rate of return on savings

applied to debt retirement exceeds the expected after-tax rate of return (income plus capital gain) on any form of financial investment of comparable risk.¹ Amortization periods would be subject to an upper limit imposed by the dictates of prudent lending.

At present, loans for home ownership are typically written for a term of five years and amortized on a twenty to thirty-year basis. One reason why the term is set at five years is that the Interest Act provides that beyond this term a loan may be paid off in full at any time, subject to a prepayment penalty equal to three months' interest which may be imposed by the lender. A second and possibly related reason is that trust and loan companies typically issue obligations for periods up to five years. This basis of lending anticipates that lenders normally will renew, or that otherwise the loan can be conveniently refinanced by a borrower who has not been troublesome. Renewal or refinancing risk is borne by the borrower. If the interest rate is variable, it should be feasible to write loans for a longer term without materially affecting the matching of the lender's assets and liabilities. Alternatively, loans might be written wherein extension of the term for, say, five years would be provided in the contract if the borrower had a good payment record.

As observed above, for both tax and non-tax reasons, debt reduction is a more profitable allocation of savings than financial investment of comparable risk. In addition, provided that origination costs can be kept low, mortgage borrowing is relatively cheaper than most other forms of personal borrowing. Residential mortgage borrowers stand to benefit if it is more feasible to substitute debt reduction for financial investment, and mortgage borrowing for other forms of borrowing. There is a case for the variable balance mortgage from the borrower's standpoint.

With VTMs, the lender has little need to preclude prepayment because the interest rate is kept current. The right to prepay in part or in full without penalty on at least one or two dates per year would impose some turnover costs upon lenders to the extent that borrowers availed themselves of the opportunity. Current loans made by banks also impose such costs. It does not follow that actual prepayments should be individually penalized. The lender's turnover costs can be covered on a portfolio basis. Meanwhile, an unpenalized prepayment privilege would be of psychological (but nonetheless real) value to borrowers in general, whether or not they in fact prepaid any portion of their loan.

A variable balance clause could be written to provide for increasing the loan amount to a level consistent with the reappraised value of the house, subject to the lender's agreement. A borrower then would be able to add to his debt an amount equal to the sum of the principal he had repaid plus or minus the appreciation or depreciation in the appraised value of the property. A more limited variable balance clause could provide for increasing the loan amount by the amount of any prepayments of principal that had been made, subject to the lender's agreement, provided that the proceeds of

¹Registered retirement savings plans are a possible exception. Their tax advantage, however, requires that the savings be impounded until normal retirement age. (See Chapter 2.)

additional borrowing were applied to some specified purpose, such as sale, extension, or improvement of the house.

II. PROPOSED MODEL

This section describes and explains a model of the basis on which the Project Team considered that VTM financing should develop. It is based on the findings of our various studies and on meetings held with members of the study team.

An important assumption underlies the specifications of this proposed model, namely, that it is desirable to avoid any unnecessary restrictions upon the set of options that appears feasible at this time or might become feasible in the future. We believe that through the accumulation of experience, experimentation, and competition, VTM financing practice will evolve over the years to the mutual benefit of lenders and borrowers.

1. *Interest Rate*

It was counsel's opinion that the interest rate of the loan must be tied to a reference rate beyond the lender's control and published regularly in an official publication. The lender would be free to set the margin between his interest rate and the reference rate at whatever level he chose. It was recommended that the law provide for automatic application of the reference rate (subject to the margin stipulated in the deed) to all mortgage loans made at a variable interest rate. We agree with these recommendations.

In the interest of simplicity, it would be desirable to have a single reference rate. Different types of lenders, however, have different liability structures, and it is important to enable them to match accordingly. Also, borrowers undoubtedly differ in the variability of interest rate that they are willing to accept. It is therefore proposed that there be several alternative reference rates. The Interest Act would require that an approved rate be used; approved rates would be described in the Regulations.

It is proposed that initially there be four approved rates, each based on the average yield for a range of maturities for Government of Canada bonds. The maturity classes would be (1) one to three years, (2) three to five years, (3) five to ten years, and (4) ten years and over, as currently published by the Bank of Canada.

It is not certain that all lenders of one type, such as banks, would necessarily adopt the same reference rate. Attitudes may differ as to the best compromise between such factors as the correlation between movements in the reference rate and the prime rate or the lender's deposit rate, the frequency and magnitude of change that borrowers are expected to prefer, and the public relations associated with the margin between the mortgage rate and the reference rate. For example, most bank deposits are payable on demand, and this suggests a reference rate of the shortest maturity. On the other hand, such bond rates fluctuate the most, and normally would require the largest spread between the reference rate and the mortgage rate required to achieve a given mean level. Moreover, according to one test (see Chapter 4), of the four recommended reference rates, the coefficient of

correlation was highest between bonds of over ten years and the prime rate.

In the interest of simplicity, both for borrowers and lenders, we recommend that the interest rate not be changeable more frequently than at six-month intervals, and that all changes be made on two specific dates (such as July 1 and January 1). The reference rate would be calculated as a six-month average of the applicable series for the period ending two months before the date of change. Two months' advance is required to provide notice to the borrower should he wish to prepay all or part of his loan. Standardizing the interest rate adjustment procedure in this way treats borrowers more equitably than if, say, their loan anniversary dates were used. It also simplifies loan administration.

To avoid bothersome small changes and limit administrative costs, it is recommended that no increase or decrease in rates be made for any fraction less than one-quarter of one per cent per annum. Averages in the references rates would be rounded to the nearest one-quarter of one percent.

It is recommended that the lender be bound to notify the borrower in writing of any change in the interest rate two months before the change is due to occur. In fairness to borrowers, the official publication of the reference rate should be made readily available to all borrowers by requiring the lender to post it at his place of business.

2. Amortization Period

As observed earlier, borrowers might wish to be able to vary the amortization period of the loan either (1) to stabilize their monthly payments when the interest rate is changed, or (2) simply to alter their mortgage-savings rate as their financial circumstances change, whether the interest rate is changed or not. The findings of our builders' survey indicate that, currently at least, the second purpose would not be important to borrowers. Our view is that this provision might become significant for buyers of new houses from project builders after some increase in borrower sophistication occurs. Such house buyers characteristically are financially stretched and do not see themselves in an early position to raise their monthly payments. Other buyers may attach more significance to this provision.

Varying the amortization period to neutralize the effect of changes in interest rates upon monthly payments, however, is another matter. The survey report on this point reads as follows:

"The interviewees were unanimous, emphatic, and adamant that if interest rates change during the term of a variable terms mortgage, that change must be reflected, to the extent possible, in a changed amortization period rather than a changed monthly payment."²

The builders stressed the importance of fixing monthly payments in the case of the marginal borrower, the borrower who just barely qualified for his loan. The size of likely changes needs to be borne in mind. Examination of the material in Appendix D, *tables D-3 to D-6*, indicates that increases of one-half of one percent in six months' or one year's time can occur frequently unless over ten years bond yields are used as the reference series.

²Chapter 6, p. 100.

Even for this series, there would have been two such increases and one of three-quarters of one percent (and no decline) in the past five years. An increase in the rate of interest from, say, 9 percent to 9½ percent after one year of a twenty-five-year amortization mortgage would raise monthly payments by about 33¢ per \$1,000, or \$8.25 on a \$25,000 mortgage, or \$99 per year. This would be a proportional increase of about 4 percent. This impact would fall upon after-tax discretionary income. As the remaining amortization period shortens, the impact of a given change in interest rate upon monthly payments declines. But it is at the start that the new house buyer is likely to be most vulnerable. Clearly, if the VTM is to be usable by marginal buyers, it is necessary to be able to write VTMs with provision for varying the amortization period to stabilize monthly payments, subject to a maximum cumulative increase in amortization period that prudent lending will allow.

The practitioner model shown in Appendix B of this study, and prepared in the earlier stages of our work, expresses the opposite view:

"The amortization period should remain unchanged. Otherwise, it would be difficult to provide with any clarity in the deed the extent to which the change in the amortization period should be related to the interest rate, and there is little hope that the average borrower would fully comprehend the basis of the amortization and any change therein. Moreover, a maximum period of amortization would have to be stipulated, which would further complicate the wording of the deed whenever the maximum was reached, and the rate of interest then would have to result in a change in the installments."³

This particular view can be accommodated if it is not mandatory for the lender to provide for varying the amortization period up to the cumulative maximum imposed by prudent lending. What the average borrower can comprehend, with or without the aid of counsel, will depend, however, upon the way in which VTMs are implemented. Certainly, as VTMs came into use, what the average borrower could comprehend would increase.

As noted already, the new house buyer is likely to be most vulnerable to an increase in interest rate in the early years of the loan. It is possible, however, to calculate in advance for any new loan the maximum increase in interest rate that can occur in the first period that could be offset by an extension of the amortization period.⁴ If the rate can be changed no more often than once in six months, and the change in rate can be made only after the loan has run at least six months, the borrower has an indication of the amount of interest rate increase he is protected against for at least one year. The period may be longer, depending upon the number of months before an interest rate adjustment date that he takes out the loan.

This one figure can be of considerable help to the borrower in his budgeting. He knows that if the increase does not occur in the first period, the extension of his amortization period will be the same or less. Alternatively,

³Appendix B, p. 1.

⁴In their calculations in Chapter 5, Rich and O'Connor used a maximum amortization period of thirty-five years. With a maximum amortization period of forty years in under NHA, the maximum interest rate increases that could be offset would be somewhat larger than those shown in Chapter 5.

he knows that the increase in interest rate that can occur will rise slightly as time goes by.

This figure could be supplemented by others which would show the effect upon the borrower's monthly payments of specific increases in the interest rate, beyond the amount which could be stabilized, if the change occurred at the end of the first period. The borrower could know also that the impact on monthly payments would decline if the specified rates prevailed later.

Taking into account the two opposing views about the treatment of amortization period, we make the following recommendations:

1. The deed must state whether the amortization period is to be fixed or variable.
2. If fixed, the deed must stipulate a specified amount by which the monthly installments would be increased or decreased for each increase or decrease of one-quarter of one percent per annum in the rate of interest.
3. If variable, the deed must show the amount of increase in interest rate that can occur at the end of the first period and be neutralized in its impact upon monthly payments by extending the amortization period by the maximum amount allowable.
4. If the increase in rate that can be neutralized is less than the range of reasonable increases in rate that are considered possible, then the impact of the excess increase upon monthly payments must be shown.
5. The maximum amortization period must be specified if the amortization period is variable. In no case should it exceed forty years.
6. The lender should be bound to notify the borrower in writing of the impact of a change in interest rate upon his monthly payments and/or amortization period.

3. *Term*

As suggested earlier, where the term of the loan is substantially less than the amortization period, an argument could be advanced for making the loan contractually renewable for a borrower who has made all his payments on time during the initial term. This would reduce the renewal risk to the borrower inherent in the current practice of making five-year loans that are amortized on a twenty-five-year basis. A variable interest rate, however, should increase lenders' willingness to make loans to home owners for a term greater than five years. Therefore, in the interest of simplicity, and in the light of mortgage lending experience, no action is suggested in this matter.

4. *Prepayment Privileges*

In the builders' survey, it was found that "the inclusion of provisions allowing prepayment in full or in part without penalty and allowing reborrowing would greatly facilitate the acceptance of variable terms mortgages."⁵ In respect to prepayment privileges, it was noted earlier that there is little need for a penalty where the interest rate is kept current. Certainly, any extra turnover costs to the lender are likely to be small in the early years of loans.

⁵Chapter 6, p. 103.

As a minimum, it is recommended that borrowers must have the right to prepay in part or in full whenever the interest rate is changed. Partial prepayments should be limited in minimum amount, say, to \$500.

It would not be a major additional step to require that similar prepayment privileges apply on the dates for changing the interest rate, whether or not the reference rate calls for a change. So as not to discourage lenders from adopting VTMs, however, it is recommended that the adoption of this and more favorable prepayment privileges be left to the discretion of the lenders.

5. Reborrowing

In the builders' survey, all respondents considered the reborrowing provision to be the most desirable feature to include, given that a variable amortization period in the event of a change in interest rate is mandatory. In our interviews of lenders, however, it was found that they generally would be reluctant to make loans which included a privilege for the borrower to reborrow his prepayments at his option alone. Similar reluctance is also expressed in the practitioner model. Accordingly, despite the apparent attractiveness of this feature to borrowers, we do not recommend that the provision be mandatory.

We believe, however, that lenders should be encouraged to permit reborrowing, at least for selected housing purposes, even if provision for it is not made mandatory; that is, lenders should be encouraged to treat reborrowing of prepayments in the same way as they treat renewal of five-year mortgages, which is not mandatory. One way to encourage this practice would be to provide for insuring such loans under the NHA. It is recommended that the purpose of insurable reborrowing be limited to sale, improvement, or extension of the property. It is further recommended that to make this provision effective, provision be made to insure loans on existing housing for an amount required to make all reborrowing of prepayments insurable on loans which were originally taken out to finance new residential construction.

III. IMPACT UPON THE RESIDENTIAL MORTGAGE MARKET

The impact that VTMs could have upon the volume, composition, and stability of the flow of funds in the residential mortgage market depends largely upon how the chartered banks would react to the new instrument. To obtain a better reading on this matter, the writer interviewed eleven senior officers in four banks in August 1971. With due respect to the interviewees, it is appreciated that the information obtained must be interpreted with care. The bankers all knew that the Government sought to increase private access to housing finance one way or another—if not through VTMs, then how? But if through VTMs, then just what kind, and how much? As the largest financial institutions in the nation, banks have been faced with other proposals to induce them to allocate “relatively more” funds to a particular sector. In general, the interviewees approached the subject of VTMs openmindedly, but with caution.

Interviewees in one bank appeared generally receptive to the idea of VTMs, at least to the extent of testing the device. They were not certain that VTMs would increase the supply of mortgage funds, but it was indicated that if the variable yield remained attractive over the years, there could be some change in their asset mix as a result. They saw that the right to prepay could be of interest to the borrower.

In this bank, there was an appreciation of the need for developing financial services and options for the household sector. In our view, this is the context in which residential mortgage lending should be seen. Being a form of economic enterprise as well as a social institution, the household needs a whole range of financial services, just as businesses do. If it is true that lending to businesses is more profitable than residential mortgage lending because businesses make greater use of other services of the bank, it might well be that the condition holds at least partly because banks have failed to develop the set of financial services that modern households require. It is as an element in a set of financial services to households that the VTM makes most sense from a bank's standpoint.

In a second bank, the highest-ranking interviewee and principal spokesman was not receptive to the idea of VTM financing in general. He felt, however, that once the bank had some experience with renewals of five-year loans, a three-year renewable loan might be considered. As observed earlier, if the borrower were given the right to renew, contingent upon having fulfilled his obligations promptly, the renegotiable mortgage in fact would be one form of VTM. As compared with a VTM with an interest rate that was changeable once or twice a year, the three-year renewable loan would avoid the need for tying the rate and would have lower administrative costs; as compared with the five-year renewable loan, it would facilitate matching and provide more opportunity for unpenalized prepayment. Consideration could be given to changing the amortization period at renewal to stabilize monthly payments or for other purposes.

Interviewees in the other two banks indicated that if VTM lending were authorized, they probably would not enter the field early. One interviewee suggested that CMHC and credit unions⁶ might be the appropriate lenders to lead the way into the VTM field.

The bankers voiced several concerns over VTMs. Some of these have been considered elsewhere, but two need to be mentioned here.

One concern was the effect of mortgage loans in general, and VTMs in particular, upon the turnover of bank assets. The bankers described themselves as organized for turnover; banking is a high turnover business. Hence, in mortgage lending, the desire is to use bank funds to finance loans in the origination and packaging stages, then sell them and retain the servicing. VTMs with liberal prepayment provisions would be consistent with increas-

⁶At the end of 1971, local credit unions and *caisses populaires* in Canada had total assets of \$5.5 billion, of which \$1.6 billion was invested in mortgages and \$1.7 billion in personal cash loans. By comparison, chartered banks' assets amounted to \$40.2 billion, of which \$2.3 billion was in residential mortgages. (*Bank of Canada Review*, August 1972.)

ing the turnover of mortgage portfolios, subject to their also being disposable in the secondary market.

Turnover in banking must have a different meaning from turnover in non-financial businesses. Financial assets accrue earnings without turning over. Unless standby fees and placement fees are significant, earnings arise largely from having loans outstanding rather than from making them. Because bank deposit liabilities turn over rapidly, there is a need to match them with assets that do so as well. The VTM is designed to have high turnover in respect to interest rate. Although designed to turn over more in respect to principal than other mortgage holdings not originated for sale, the VTM would not match the current loan. But unless deposit liabilities contract, this should not be a large problem; even if they do contract moderately, it need not be a large problem. The real question is whether VTMs offer a rate of return, often allowing for direct and indirect revenues and costs, and differences in risks, which is competitive with other uses of bank funds. If VTMs would be competitive in this way, there is no more need to sell them off than there is a need to sell off current loans.

This is the rub. All costs, risks, and benefits considered, if the return required on VTM lending to compete with other outlets for bank funds is too high to attract borrowers, or is higher than the Government wishes to see prevail, then some kind of subsidy will be required to elicit large amounts of mortgage funds from banks. But if the competitive return is not too high and banks are unwilling to lend, then some other type of policy is called for. It is called for, not only because housing is under-financed (and possibly other sectors too), but also because other sectors are over-supplied. If this is true, it means that our largest financial institution is a major misallocator of resources.

The second concern of the bankers was the political risk that rate increases would be blocked, even if the rate were tied to an external reference rate. If governments cater to misplaced social antipathies to private institutional capital and prevent free market forces from working, simply because the price involved is the rate of interest, this concern on the part of bankers is understandable. Such indulgence could be expensive; in this case, it could mean loss of an opportunity for improving the allocation of resources, including the resources of those whose anti-capital attitudes are catered to. But in this instance, if the Federal Government not only passes enabling legislation for VTM financing applicable to NHA as well as conventional loans, but also shares in a public information program to help in its introduction, the political risk that a rise in rates would be blocked should diminish markedly.

The need for a public information program, and for the Government to share in it, should be stressed. VTMs offer borrowers potential advantages, and it is desirable that they be made aware of them. Undoubtedly, the banks and other major financial institutions would do this if they were to enter the field. It would simply be too damaging to these institutions to allow reasonable borrowers to have legitimate claims to being misinformed about their contracts. This fact and the central role that these institutions would

play contribute in an important way to the viability, from the borrowers' standpoint, of VTM financing in Canada.

Our situation in this respect is very different from that in the United States. There, a large number of small, independent savings and loan associations provide a large amount of mortgage loans for home ownership. It has been reported that many of these organizations are poorly managed, with decision making suffering from conflicts of interest and with recruiting of new management handicapped by nepotism.⁷

As stated in Chapter 3, recent surveys in the United States have found that the "VRM was not a new phenomenon and its use was widespread" in the sense that lenders had some form of "provision for adjusting rates on outstanding mortgage loan contracts". To obtain some first-hand information about VTM financing, representatives of the Project Team conducted interviews of lenders and state officials in California. California was selected because it had recently passed legislation on VTMs which became operative in November 1970.⁸ Our representatives found a situation diametrically opposite to our own. The law had not prohibited VRMs, and the new legislation was not enacted with the intention of increasing the supply of mortgage funds for single-family dwellings. Rather, it was a compromise reached after complaints were made of the use of an "escalator clause" by some savings and loan organizations. The basis of the complaint was that the impact of the escalator clause had not been drawn to the attention of the borrowers; in any event, the borrowers did not really understand how the clause functioned.

Other pertinent differences were revealed. Under California law, the amortization period cannot exceed thirty years and lenders typically lend on a twenty-five-year basis. There is thus less scope for extending the period than in Canada, where under the NHA typically there would be a fifteen-year margin. In California, provision was made for separate reference rates for savings and loan associations, banks, and life insurance companies, but not for other lenders. Nor was there provision for the official publication of either regulations or reference rates. The only practical way the borrower would learn of the variation in the reference rate or change in the regulations would be through the lender's notice, which the borrower was entitled to receive.

Our representative interviewed two senior officers in a large financial institution. The interview was partly reported as follows:

"They expected to encounter serious difficulties in educating the public at large, and more particularly the homeowner borrowers, on the validity and advantages of variable interest rate loans. Notwithstanding the legality of variable interest rate provisions, they expressed the fear that public pressure may nullify the practical effects of variable interest rate on the occasion of a jump in the rate related to a jump in the prescribed standard. Even though the functioning of the variable interest rate provision may have been fully explained to the individual borrower, some trouble is expected at the time an increase takes place so that the lending institutions may have to back down."

⁷Sandford Rose, "The S. and L.'s Break Out of Their Shell", *Fortune*, September 1972.

⁸California, *Civil Code*, Section 1916.5, as enacted in 1970.

Given the background, the circumstances under which the increases in rate would take place, and the focus on the interest rate alone to the neglect of the other potentialities of the VTM, it is not surprising to find that these concerns exist.

In Canada, it seems fair to say, major lending institutions would play a larger role in consumer "education" about VTMs than is characteristic of goods producers. Nonetheless, borrower education should not be left to the lender. "Loan consumers" seem peculiarly sensitive to price increases; when interest rates rise, the VTM might be seen by naive borrowers as a device contrived primarily for the benefit of lenders. A government role is required to ensure adequate dissemination of information to borrowers and, by commitment to the device, to assure lenders that the rate will move up as freely as it moves down. Explanatory brochures distributed by the Department of Consumer and Corporate Affairs, direct VTM lending by CMHC, the use of Government of Canada bond yield averages as published by the Bank of Canada as reference rates, trading in VTMs by the Residential Mortgage Market Corporation, would all help to build up government commitment to the concept and operation of VTM financing in the eyes of borrowers and lenders.

How would the acceptance of VTMs by the mortgage market affect the market's cyclical behavior? All costs, risk, and benefits considered, if the banks find that the VTMs compare in attractiveness with their current loans, their mortgage lending operations should become more stable. Mortgage lending would cease to be a residual form of investment. In times of tight money, mortgage borrowers would be rationed like other borrowers; in times of easy money, there would be less of a surge of lending to make up for the recent slowdown.

On the demand side, we would not expect much change. When FTM rates were high, the VTM alternative would enable borrowers to avoid a long-term commitment. But as the two types of financing are substitutes, the market's expected series of VTM rates would be related to the current FTM rate. Only those borrowers who expected rates to fall more than did the market as a whole, and who would not currently borrow on an FTM basis, might be induced into the market by a VTM. But if more than a few borrowers acted on expectations different from the market, the market itself would change. Borrowers who expected rates to rise more than the market did would demand FTMs. If interest rates were low, borrowers who expected rates to rise less than the market did would want VTMs. We do not know at which point more borrowers would be affected, but in both cases the number should be small or the market would be different from what it is.

If VTM financing became well established, it might have some effect upon the incidence of monetary policy. Both new and existing borrowers would be subject to changes in interest rates. There would be time lags before changes in interest rates would be transmitted to existing VTM borrowers, depending upon the formula for changing the rate. Also, some borrowers would opt to offset the effect of interest rate changes upon their monthly payments by changing the amortization period. Even so, their purchase

decisions could be marginally affected. Other borrowers would opt for a change in monthly payments. The changes would be absorbed by changing either current saving or consumption (including so-called consumer durables). Altogether we would not expect the effects to be large.

It is uncertain whether VTMs would be sufficient to lead banks into making, over the long run, a sizable structural change in their lending policies. What is certain is that the banks cannot act unless the Government does. Hopefully, the potential advantages of VTMs to prudent borrowers will carry the decision. To fail to act because not all borrowers are prudent is akin to banning private use of motor vehicles because some people have accidents.

On the subject of personal finance in 1964, the Royal Commission on Banking and Finance concluded: "Our studies indicate that by and large Canadians manage their finances with greater wisdom than is popularly believed."⁹ To this one might add that it is not the basic financial wisdom of Canadians in general that is wanting, but the normative conventional wisdom of personal finance. Given employment and reasonable stability of prices, if most households cannot be expected to manage their finances with competence, we have a far more fundamental institution to worry about than the residential mortgage market.

⁹*Report of the Royal Commission on Banking and Finance* (Ottawa: Queen's Printer, 1964), p. 31.

Appendix A

Background Data

by E. Sussman and Staff

Appendix A

List of Tables

- A-1* Dwelling Starts and Completions, 1950-71.
- A-2* Expenditures on New Housing by Source of Financing, 1950-71.
- A-3* Percentage Distribution of Expenditures on New Housing by Source of Financing, 1950-71.
- A-4* Mortgage Loans Outstanding with Government Agencies, Lending Institutions, and Other Investors, 1950-71.
- A-5* Bond Debt Outstanding, 1952-71.
- A-6* Mortgage Loans Outstanding of Lending Institutions and Trusteed Pension Funds, 1950-71.
- A-7* Total Assets of Lending Institutions and Trusteed Pension Funds, 1950-71.
- A-8* Mortgage Loans Outstanding as a Percent of Total Assets of Lending Institutions and Trusteed Pension Funds, 1950-71.
- A-9* Mortgage Loans Outstanding and Total Assets of 11 Trust Companies and 8 Loan Companies, by Company, 1970.
- A-10* Mortgage Loans Approved under the Housing Acts by Approved Lenders and CMHC, 1935-71.
- A-11* Mortgage Loans Approved on New Residential Construction by Lending Institutions and CMHC, 1950-71.
- A-12* Mortgage Loans Approved on Existing Residential Property by Lending Institutions and CMHC, 1950-71.
- A-13* Mortgage Loans Approved on Residential Property by Lending Institutions and CMHC, 1950-71.
- A-14* Mortgage Loans Approved on Residential Property by Lending Institutions and CMHC and New Issues of Canadian Dollar Bonds and Stocks, 1952-71.
- A-15* Percentage Distribution of Mortgage Loans Approved on Residential Property by Lending Institutions and CMHC and New Issues of Canadian Dollar Bonds and Stocks, 1952-71.
- A-16* Mortgage and Bond Yields, and Yield Margins Over Long-Term Canadas, 1951-71.
- A-17* Mortgage and Bond Yields, and Yield Margins Over Long-Term Canadas. Monthly, 1965-71.

- A-18* Average Interest Rates on NHA Loans Approved on New Construction for Home-Ownership by Region, Approved Lenders, and Montreal and Toronto Field Offices of CMHC, Monthly 1970-71.
- A-19* Sales of NHA-Insured Mortgages and NHA-Insured Mortgage Loans Outstanding, 1954-71.
- A-20* Sales and Purchases of NHA-Insured Mortgages, by Type of Transactor, 1954-71.
- A-21* Distribution of Transactions in NHA-Insured Mortgages, by Type of Transactor, 1971.
- A-22* Bids, and Amounts, Prices, and Yields on Sales for CMHC Auctions of NHA-Insured Mortgages, 1961-5.
- A-23* Allotments at CMHC Auctions of NHA-Insured Mortgages, 1961-5.
- A-24* Housing Act Mortgage Terms for Joint and Insured Loans, 1935-71.
- A-25* Government of Canada Securities — Average Yield on One to Three-Year Maturities, Monthly, 1950-71
- A-26* Government of Canada Securities — Average Yield on Three to Five-Year Maturities, Monthly, 1950-71
- A-27* Government of Canada Securities — Average Yield on Five to Ten-Year Maturities, Monthly, 1950-71
- A-28* Government of Canada Securities — Average Yield on Ten Years and Over Maturities, Monthly, 1950-71
- A-29* McLeod, Young, Weir — Average Yield on Forty Bonds, Month Ends, 1951-71
- A-30* Chartered Banks' Prime Business Loan Rate, Monthly, 1951-71
- A-31* Trust and Loan Companies — Interest Rate on Term Liabilities of One Year, Quarterly and Monthly, 1951-71
- A-32* Maximum NHA-Insured Mortgage Interest Rates, Monthly, 1951-71
- A-33* Conventional Mortgage Interest Rates, Monthly, 1951-71
- A-34* Trust and Loan Companies — Interest on Chequable Deposits, Quarterly, 1951-71
- A-35* Chartered Banks — Interest Rates on Chequable Accounts, Quarterly, 1951-71
- A-36* Chartered Banks — Interest Rates on Ninety-Day Deposit Receipts and on Non-Chequable Savings Deposits, Monthly, 1961-71
- A-37* NHA-Insured Loans for Home Ownership — Margin of Average Interest Rate Over Yields on Other Selected Instruments, Monthly, July 1969-71
- A-38* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Yield on One to Three-Year Government of Canada Securities, Monthly, 1951-71
- A-39* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Yield on Three to Five-Year Government of Canada Securities, Monthly, 1951-71
- A-40* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Yield on Five to Ten-Year Government of Canada Securities, Monthly, 1951-71
- A-41* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Yield on Ten Years and Over Government of Canada Securities, Monthly, 1951-71

- A-42* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Prime Business Loan Rate of Chartered Banks, Monthly, 1951–71
- A-43* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Interest Rate on Ninety-Day Deposit Receipts and Non-Chequable Savings Deposits of Chartered Banks, Monthly, 1961–71
- A-44* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Interest Rate on Chequable Accounts of Chartered Banks, Quarterly, 1951–71
- A-45* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Interest Rate on Chequable Deposits of Trust and Loan Companies, Quarterly, 1951–71
- A-46* Conventional Mortgage Loans — Margin of Average Interest Rate Over Average Interest Rate on One-Year Liabilities of Trust and Loan Companies, Quarterly and Monthly, 1951–71

Table A-1

DWELLING STARTS AND COMPLETIONS, 1950-71

	<i>Starts</i>	<i>Completions</i>
1950	92,531	89,015
51	68,579	81,310
52	83,246	73,087
53	102,409	96,839
54	113,527	101,965
55	138,276	127,929
56	127,311	135,700
57	122,340	117,283
58	164,632	146,686
59	141,345	145,671
1960	108,858	123,757
61	125,577	115,608
62	130,095	126,682
63	148,624	128,191
64	165,658	150,963
65	166,565	153,037
66	134,474	162,192
67	164,123	149,242
68	196,878	170,993
69	210,415	195,826
1970	190,528	175,827
71	233,653	201,232

Source: CMHC.

Table A-2

EXPENDITURES ON NEW HOUSING BY SOURCE OF FINANCING, 1950-71
(\$ Millions)

	<i>Public Funds Under Federal Legislation</i>				<i>Institutional Funds</i>		<i>Other Funds</i>		
	<i>Direct Expendi- ture</i>	<i>CMHC Loans</i>	<i>Other Loans</i>	<i>Total</i>	<i>NHA</i>	<i>Conven- tional</i>	<i>Owners Equity</i>	<i>Other</i>	<i>Total</i>
1951	43.1	86.5	9.8	139.4	130.0	58.1	188.1	225.1	782.1
52	52.9	64.2	7.4	124.5	125.2	67.4	192.6	284.0	880.3
53	39.5	100.7	9.0	149.2	173.0	86.7	259.7	361.4	1,168.0
54	18.5	86.3	8.5	113.3	338.7	120.9	459.6	292.2	1,310.2
55	25.7	23.3	9.9	58.9	563.3	197.9	761.2	312.8	1,675.1
56	30.8	16.3	8.9	56.0	564.1	254.8	818.9	344.9	1,685.0
57	40.0	59.8	8.8	108.6	286.1	256.6	542.7	218.0	1,493.4
58	41.1	334.5	8.5	384.1	447.6	275.9	723.5	282.8	1,909.9
59	31.7	309.1	8.0	348.8	410.1	338.5	743.6	382.8	1,831.3
1960	28.6	271.3	7.9	307.8	180.6	299.6	480.2	266.4	1,492.9
61	19.9	275.2	3.8	298.9	382.6	247.0	629.6	227.9	1,469.3
62	23.0	192.3	7.8	223.1	375.8	388.7	764.5	310.6	1,533.8
63	28.5	143.2	9.3	181.0	335.5	543.8	879.3	243.7	1,628.5
64	17.8	302.8	11.8	332.4	294.9	688.3	983.2	264.1	1,971.8
65	14.3	336.4	15.2	365.9	301.9	792.9	1,094.8	308.9	2,177.7
66	24.8	479.5	10.3	514.6	198.5	617.9	816.4	455.6	2,150.3
67	25.0	770.0	11.7	806.7	239.2	576.5	815.7	427.7	2,346.9
68	33.5	399.4	10.0	442.9	709.4	820.3	1,529.7	550.0	2,770.9
69	60.7	409.1	35.7	505.5	680.3	1021.7	1,702.0	556.3	3,338.9
1970	28.5	567.1	29.4	625.0	686.2	542.7	1,228.9	714.7	3,437.3
71	30.9	722.4	19.3	772.6	1360.6	714.3	2,074.9	891.4	4,377.5

Description: Total expenditures include construction costs, supplementary costs and the cost of land. The item "Owners Equity" includes the equities of owners or builders on dwellings financed with mortgage loans from public funds or from institutional lenders. Equities on dwellings financed with mortgage loans from lenders other than lending institutions or by loans other than mortgages, or equities on dwellings fully financed by their owners, are included under "Other Funds". Loans and grants made by provincial and municipal governments for new housing construction are also included under this item. Under "Public Funds" the item "Direct Expenditures" represents disbursement on residential construction undertaken by Federal Departments for their employees. "CMHC loans" include loans under Section 40 to supplement those made by private lenders, and loans made for housing low income groups under such programmes as limited dividend and non-profit corporations, and loans made to provincial housing corporations. "Other" loans made out of public funds include loans made under the Veterans' Land Act and the Farm Credit Act.

Table A-3

PERCENTAGE DISTRIBUTION OF EXPENDITURES ON NEW HOUSING
BY SOURCE OF FINANCING, 1950-71

	<i>Public Funds Under Federal Legislation</i>				<i>Institutional Funds</i>			<i>Other Funds</i>		
	<i>Direct Expendi- ture</i>	<i>CMHC Loans</i>	<i>Other Loans</i>	<i>Total</i>	<i>NHA</i>	<i>Conven- tional</i>	<i>Total</i>	<i>Owners Equity</i>	<i>Others</i>	<i>Total</i>
1951	5.5	11.1	1.3	16.6	16.4	7.4	24.0	28.8	29.3	100.0
52	6.0	7.3	0.8	14.1	14.2	7.7	21.9	32.3	31.7	100.0
53	3.4	8.6	0.8	12.8	14.8	7.4	22.2	30.9	34.1	100.0
54	1.4	6.6	0.6	8.6	25.9	9.2	35.1	22.3	34.0	100.0
55	1.5	1.4	0.6	3.5	33.6	11.8	45.4	18.7	32.4	100.0
56	1.8	1.0	0.5	3.3	33.5	15.1	48.6	20.5	27.6	100.0
57	2.7	4.0	0.6	7.3	19.2	17.1	36.3	14.6	41.8	100.0
58	2.2	17.5	0.5	20.1	23.4	14.4	37.8	14.8	27.2	100.0
59	1.7	16.9	0.4	19.0	22.4	18.2	40.6	20.9	19.5	100.0
1960	1.9	18.2	0.5	20.6	12.1	20.1	32.2	17.8	29.4	100.0
61	1.4	18.7	0.3	20.4	26.0	16.8	43.8	15.5	21.3	100.0
62	1.5	12.5	0.5	14.5	24.5	25.3	49.8	20.3	15.4	100.0
63	1.8	8.8	0.6	11.2	20.6	33.3	53.9	15.0	19.9	100.0
64	0.9	15.4	0.6	16.9	15.0	34.9	49.9	13.3	19.9	100.0
65	0.7	15.4	0.7	16.8	13.9	36.4	50.3	14.2	18.7	100.0
66	1.2	22.3	0.5	24.0	9.2	28.7	37.9	21.2	16.9	100.0
67	1.1	32.8	0.5	34.4	10.2	24.6	34.8	18.2	12.6	100.0
68	1.2	14.4	0.4	16.0	25.6	29.6	55.2	19.8	9.0	100.0
69	1.8	12.3	1.1	15.2	20.4	30.6	51.0	16.6	17.2	100.0
1970	0.8	16.5	0.9	18.2	20.0	15.8	35.8	20.8	25.2	100.0
71	0.7	16.5	0.4	17.6	31.1	16.3	47.4	20.4	14.6	100.0

Table A-4

MORTGAGE LOANS OUTSTANDING WITH GOVERNMENT AGENCIES,
LENDING INSTITUTIONS, AND OTHER INVESTORS, 1950-71

	<i>Governments</i>	<i>Lending Institutions</i>	<i>Others</i>	<i>Total</i>
1950	459	1303	1368	3130
51	595	1520	1666	3781
52	674	1693	1914	4281
53	768	1936	1725	4429
54	850	2348	1904	5102
55	868	3025	2387	6280
56	893	3723	3394	8010
57	973	4112	3321	8406
58	1337	4657	3334	9323
59	1681	5234	3241	10156
1960	1995	5650	3704	11349
61	2229	6219	5095	13543
62	2410	7041	5325	14776
63	2531	7911	5789	16231
64	2823	9091	6278	17703
65	3222	10502	6992	20716
66	3879	11454	7655	22988
67	4769	12282	8632	25683
68	5267	13447	8226	26940
69	5497	14930	8810	29237
1970	6171	16216	8910	31297
71	7038	* *		

Sources: Compilations and estimates by CMHC.

Table A-5

BOND DEBT OUTSTANDING, 1952-71

	<i>Municipal</i>	<i>Corporate & Institutional</i>	<i>Provincial</i>	<i>Federal</i>	<i>Total</i>
1952	1,547	3,406	3,292	15,186	23,431
53	1,729	3,780	3,567	15,637	24,713
54	1,969	4,263	3,863	15,466	25,561
55	2,203	4,611	4,073	16,000	26,887
56	2,427	5,410	4,616	15,234	27,687
57	2,710	6,379	5,169	15,165	29,423
58	3,063	6,964	5,786	16,416	32,229
59	3,370	7,093	6,366	17,135	33,964
1960	3,740	7,511	6,855	17,747	35,853
61	4,058	7,441	8,211	18,636	38,346
62	4,363	7,991	9,051	19,448	40,853
63	4,723	8,564	10,240	20,276	43,803
64	5,109	9,411	11,182	20,733	46,435
65	5,398	10,793	11,946	20,681	48,818
66	5,772	11,870	13,534	21,111	52,287
67	6,115	12,860	15,634	22,011	56,620
68	6,366	13,790	17,621	23,556	61,333
69	6,644	14,822	19,676	23,902	65,044
1970	6,946	16,302	21,736	25,746	70,730
71	7,221	18,135	23,931	28,277	77,564

Description: Total volume of bonds outstanding, denominated in Canadian or foreign currency, as estimated by the Bank of Canada. Reprinted from various issues of the Bank of Canada Statistical Summaries.

Table A-6

MORTGAGE LOANS OUTSTANDING OF LENDING INSTITUTIONS
AND TRUSTEED PENSION FUNDS, 1950-71

(\$ Millions)

<i>Lending Institutions</i>							
	<i>Life Insurance Com- panies</i>	<i>Chartered Banks</i>	<i>Trust Com- panies</i>	<i>Loan Com- panies</i>	<i>Other</i>	<i>Total</i>	<i>Trusteed Pension Funds</i>
1950	901	—	113	265	24	1,303	—
51	1,077	—	128	289	26	1,520	—
52	1,214	—	136	314	29	1,693	—
53	1,402	—	149	352	33	1,936	—
54	1,658	74	178	396	42	2,348	—
55	2,016	294	228	444	43	3,025	—
56	2,408	493	268	497	57	3,723	120
57	2,660	586	275	521	70	4,112	179
58	2,875	790	343	569	80	4,657	231
59	3,140	968	409	629	88	5,234	279
1960	3,412	971	472	698	97	5,650	299
61	3,710	953	622	815	119	6,219	341
62	4,142	921	845	989	144	7,041	414
63	4,560	885	1,103	1,188	175	7,911	479
64	5,094	846	1,449	1,492	210	9,091	542
65	5,662	810	1,927	1,827	276	10,502	623
66	6,248	778	2,169	1,949	310	11,454	676
67	6,636	840	2,414	2,073	319	12,282	724
68	7,107	1,043	2,727	2,235	335	13,447	776
69	7,490	1,325	3,264	2,508	343	14,930	863
1970	7,675	1,457	3,829	2,868	387	16,216	1,022
71	7,771 ^e	2,304	4,463 ^e	3,142 ^e	400 ^e	18,080	1,194 ^e

Description: Total mortgage loans held by various lenders as estimated by CMHC via annual surveys. Includes NHA-insured mortgage loans, and conventional mortgage loans. Includes also mortgage loans secured by non-residential real estate.

Table A-7

TOTAL ASSETS OF LENDING INSTITUTIONS
AND TRUSTEED PENSION FUNDS, 1950-71

(\$ Millions)

Lending Institutions								
	Life Insurance Companies	Chartered Banks	Trust Companies	Loan Companies	Other	Total	Trusteed Pension Funds	Total
1950	3,972	9,443	424	405	310	14,554	—	14,554
51	4,223	9,458	446	423	318	14,868	—	14,868
52	4,497	10,128	466	446	336	15,873	—	15,873
53	4,889	10,656	474	464	350	16,833	—	16,833
54	5,180	11,433	624	532	370	18,139	—	18,139
55	5,642	12,690	706	598	392	20,028	—	20,028
56	6,035	13,408	740	644	414	21,241	2,000	23,241
57	6,544	14,244	772	694	430	22,684	2,460	25,144
58	7,066	15,840	954	771	463	25,094	2,791	27,885
59	7,491	15,784	1,058	844	464	25,641	3,200	28,841
1960	8,040	16,917	1,302	914	495	27,668	3,583	31,251
61	8,660	19,153	1,585	1,090	526	31,014	4,036	35,050
62	9,381	20,272	1,894	1,300	548	33,395	4,530	37,925
63	10,188	22,094	2,321	1,544	583	36,730	5,127	41,857
64	10,893	23,872	2,860	1,936	626	40,187	5,766	45,953
65	11,699	25,875	3,439	2,426	676	44,115	6,541	50,656
66	12,358	27,773	3,923	2,570	701	47,325	7,250	54,575
67	13,121	31,649	4,353	2,772	757	52,652	8,068	60,720
68	13,841	36,699	4,980	2,978	839	59,337	8,972	68,309
69	14,461	42,578	5,771	3,292	787	66,889	10,003	76,892
1970	15,218	47,307	6,564	3,778	857	73,724	11,059	84,783
71	15,978	54,428	7,401	4,191	930	82,928	12,200	95,128

Source: Compiled by CMHC from various published sources.

Table A-8

MORTGAGE LOANS OUTSTANDING AS A PERCENT OF TOTAL ASSETS
OF LENDING INSTITUTIONS AND TRUSTEED PENSION FUNDS, 1950-71

Lending Institutions								
	Life Insurance Companies	Chartered Banks	Trust Companies	Loan Companies	Other	Total	Trusteed Pension Funds	Total
1950	22.7	—	26.7	65.4	7.7	9.0	—	8.9
51	25.5	—	28.7	68.3	8.2	10.2	—	10.2
52	27.0	—	29.2	70.4	8.6	10.7	—	10.7
53	28.7	—	31.4	75.9	9.4	11.5	—	11.5
54	32.0	0.7	28.5	74.4	11.4	12.9	—	12.9
55	35.7	2.3	32.3	74.3	11.0	15.1	—	15.1
56	39.9	3.7	36.2	77.2	13.8	17.5	6.0	16.5
57	40.7	4.1	35.6	75.1	16.3	18.1	7.3	17.1
58	40.7	4.9	40.0	73.8	17.3	18.6	8.3	17.5
59	41.9	6.1	38.6	74.5	19.0	20.4	8.7	19.1
1960	42.4	5.7	36.3	76.4	19.6	20.4	8.3	19.0
61	42.8	4.9	39.2	74.8	22.6	20.0	8.5	18.7
62	44.1	4.5	44.6	76.1	26.3	21.1	9.1	19.7
63	44.8	4.0	47.5	76.9	30.0	21.5	9.3	20.0
64	46.8	3.5	50.6	77.1	33.6	22.6	9.4	21.0
65	48.4	3.1	56.0	75.3	40.8	23.8	9.5	22.0
66	50.7	2.8	55.3	75.8	44.2	24.2	9.3	22.2
67	50.9	2.7	55.5	74.8	42.1	23.3	9.0	21.4
68	51.4	2.9	54.7	75.1	39.9	22.7	8.7	20.8
69	51.8	3.1	56.6	76.2	43.6	22.3	8.6	20.5
1970	50.4	3.1	58.3	75.9	45.2	22.0	9.2	20.3
71	48.6	4.2	60.3	75.0	43.0	21.8	9.8	20.3

Table A-9

MORTGAGE LOANS OUTSTANDING AND TOTAL ASSETS OF
11 TRUST COMPANIES AND 8 LOAN COMPANIES, BY COMPANY, 1970

<i>Lending Institution</i>	<i>Mortgages \$ Millions</i>	<i>Total Assets \$Millions</i>	<i>Mortgages as a % of Total Assets</i>
Trust Companies			
1. Royal	650	1,417	46.0%
2. Canada Permanent	493	683	72.2
3. Guaranty	417	653	64.0
4. National	280	558	50.2
5. Montreal	210	496	42.3
6. Victoria and Grey	350	444	79.0
7. Canada	359	467	77.0
8. Waterloo Trust and Savings	107	192	55.7
9. Crown	78	113	69.0
10. Sterling	44	56	78.6
11. Industrial Mortgage	14	23	70.0
11 Companies	3,002	5,102	59.0
Loan Companies			
1. Canada Permanent Mortgage	609	775	78.6
2. Huron and Erie Mortgage	523	710	73.7
3. Credit Foncier Franco-Canadien	217	258	84.1
4. Kinross Mortgage	291	303	96.0
5. Royal Trust Mortgage	171	203	56.4
6. Eastern Canada Savings and Loan	155	173	89.6
7. Nova Scotia Savings and Loan	79	86	92.0
8. Lambton Loan and Investment	32	39	82.1
8 Companies	2,077	2,547	81.5

Source: Compiled by CMHC.

Table A-10

MORTGAGE LOANS APPROVED¹ UNDER THE HOUSING ACTS
BY APPROVED LENDERS AND CMHC, 1935-71
\$ Millions

				Percent of Total	
	Approved Lenders	CMHC	Total	Approved Lenders	CMHC
DHA ²					
1935-1938	19,619	—	19,619	100.00	—
NHA, 1938					
1938-1945	67,519	—	67,519	100.00	—
NHA, 1944					
1945	22,511	—	22,511	100.00	—
46	37,628	18,323	55,951	67.25	32.75
47	52,120	11,100	53,230	97.91	2.09
48	96,363	7,928	104,291	92.39	7.61
49	111,979	28,851	140,830	79.51	20.49
1950	259,306	25,181	284,487	91.14	8.86
51	113,584	10,037	123,621	91.88	8.12
52	201,595	47,489	249,084	80.93	19.07
53	236,156	54,370	290,526	81.28	18.72
54	55,239	1,074	56,313	98.09	1.91
Total	1,185,032	193,802	1,378,834	85.94	14.06
NHA, 1954					
1954	378,198	20,446	398,644	94.87	5.13
55	600,658	16,518	617,176	97.32	2.68
56	387,497	19,745	407,242	95.15	4.85
57	260,976	233,012	493,988	52.83	47.17
58	510,011	372,913	882,924	57.76	42.24
59	283,008	343,159	626,167	45.19	54.81
1960	231,903	161,089	392,992	59.00	41.00
61	439,386	272,902	712,288	61.68	38.32
62	383,852	186,654	570,506	67.28	32.72
63	364,500	319,879	684,379	53.25	46.75
64	330,584	397,069	727,653	45.43	54.57
65	308,591	467,057	775,648	39.78	60.22
66	134,580	536,682	671,262	20.04	79.96
67	340,959	674,068	1,015,027	33.59	66.41
68	798,754	443,301	1,242,055	64.30	35.70
69	650,290	546,938	1,197,228	54.31	45.69
1970	816,681	903,408	1,720,089	47.47	52.53
71	1,589,944	676,255	2,266,169	70.15	29.85
Total	8,810,372	6,591,065	15,401,437	57.20	42.80
Total 1935-71	10,082,542	6,784,867	16,867,409	59.77	40.23

¹ Data are net.² Dominion Housing Act.

Source: CMHC.

Table A-11

MORTGAGE LOANS APPROVED ON NEW RESIDENTIAL CONSTRUCTION
BY LENDING INSTITUTIONS AND CMHC, 1950-71
(\$ Millions)

	<i>Lending Institutions</i>						<i>CMHC</i>	<i>Total</i>
	<i>Life Insurance Companies</i>	<i>Chartered Banks</i>	<i>Trust Companies</i>	<i>Loan Companies</i>	<i>Other</i>	<i>Total</i>		
1950	269	—	8	28	4	310	25	335
51	208	—	7	18	5	237	10	247
52	262	—	7	30	4	303	47	350
53	320	—	10	39	6	374	54	428
54	395	158	27	55	9	645	20	665
55	428	326	56	55	10	874	17	891
56	417	158	46	49	10	680	20	700
57	251	173	37	44	12	517	233	750
58	353	300	67	74	16	810	373	1183
59	352	175	64	53	6	651	343	994
1960	379	1	88	73	8	549	161	710
61	495	—	190	83	18	786	273	1059
62	533	—	199	107	24	862	187	1049
63	616	—	250	152	20	1038	320	1358
64	647	9	273	193	42	1165	397	1562
65	690	6	316	156	54	1222	467	1689
66	459	—	144	120	42	765	537	1302
67	494	128	303	137	40	1101	674	1775
68	614	333	528	222	98	1795	443	2238
69	379	284	650	268	109	1690	547	2237
1970	177	379	545	200	96	1397	903	2300
71	353	851	742	402	123	2471	676	3147

Description: NHA-insured and conventional mortgage loans approved for new single-family homes and apartments. Data compiled via surveys conducted by CMHC. Data are net.

Table A-12

MORTGAGE LOANS APPROVED ON EXISTING RESIDENTIAL PROPERTY
BY LENDING INSTITUTIONS AND CMHC, 1950-71

(\$ Millions)

	<i>Lending Institutions</i>					<i>Total</i>	<i>CMHC</i>	<i>Total</i>
	<i>Life Insurance Companies</i>	<i>Chartered Banks</i>	<i>Trust Companies</i>	<i>Loan Companies</i>	<i>Other</i>			
1950	56	—	21	37	1	115	—	115
51	54	—	20	37	3	114	—	114
52	51	—	19	44	3	118	—	118
53	48	—	24	41	3	117	—	117
54	58	—	32	49	5	144	—	144
55	76	—	38	60	8	182	—	182
56	78	—	31	58	9	176	—	176
57	57	—	37	46	10	150	—	150
58	79	—	55	63	11	208	—	208
59	95	—	55	57	9	216	—	216
1960	79	—	58	70	14	221	—	221
61	103	—	85	89	23	300	—	300
62	118	—	106	109	25	358	—	358
63	127	—	156	123	25	430	—	430
64	164	—	243	189	44	640	—	640
65	198	—	296	211	45	749	20	769
66	126	—	191	132	21	471	19	490
67	135	102	251	151	17	655	42	697
68	73	97	256	132	15	572	49	621
69	54	81	354	153	30	672	59	731
1970	39	114	347	185	38	723	31	754
71	74	253	611	385	36	1359	37	1396

Description: NHA-insured and conventional mortgage loans approved for existing single-family homes and apartments. Data compiled via surveys conducted by CMHC. Data are net.

Table A-13

MORTGAGE LOANS APPROVED ON RESIDENTIAL PROPERTY
BY LENDING INSTITUTIONS AND CMHC, 1950-71
(\$ Millions)

	Lending Institutions					Total	CMHC	Total
	Life Insurance Companies	Chartered Banks	Trust Companies	Loan Companies	Other			
1950	325	—	29	65	5	425	25	450
51	262	—	27	55	8	351	10	361
52	313	—	26	74	7	421	47	468
53	368	—	34	80	9	491	54	545
54	453	158	59	104	14	789	22	811
55	504	326	94	115	18	1056	17	1073
56	495	158	77	107	19	856	20	876
57	308	173	74	90	22	667	233	900
58	432	300	122	137	27	1018	373	1391
59	447	175	119	110	15	867	343	1210
1960	458	1	146	143	22	770	161	931
61	598	—	275	172	41	1086	273	1359
62	651	—	305	216	49	1220	187	1407
63	743	—	406	275	45	1468	320	1788
64	811	9	516	382	86	1805	397	2202
65	888	6	612	367	99	1971	487	2458
66	585	—	335	252	63	1236	556	1792
67	629	230	554	288	57	1756	716	2472
68	687	430	784	354	113	2367	492	2859
69	433	365	904	421	139	2362	606	2968
1970	216	493	892	385	134	2120	934	3054
71	426	1,104	1,354	787	159	3830	713	4543

Description: Mortgage loans approved under NHA and in the conventional sector for both new and existing single-family homes and apartments. Data compiled via surveys conducted by CMHC.

Table A-14

**MORTGAGE LOANS APPROVED ON RESIDENTIAL PROPERTY
BY LENDING INSTITUTIONS AND CMHC AND NEW ISSUES OF
CANADIAN DOLLAR BONDS AND STOCKS, 1952-71**

(\$ Millions)

		<i>Bonds and Stocks</i>							<i>Total</i>
<i>Mortgages</i>		<i>Gov't. Guar. Bonds</i>	<i>Prov. Bonds</i>	<i>Muni- cipal Bonds</i>	<i>Cor- porate Bonds</i>	<i>Other Bonds</i>	<i>Pref. Stock</i>	<i>Com- mon Stock</i>	
1952	468	827	355	189	419	31	29	223	2,073
53	545	2,033	251	221	416	3	83	206	3,213
54	811	3,400	380	340	598	39	92	147	4,996
55	1,073	1,370	371	299	688	52	171	367	3,318
56	876	1,527	420	251	812	13	190	513	3,726
57	900	2,602	632	287	802	19	132	428	4,902
58	1,391	9,200	559	355	795	15	45	287	11,256
59	1,210	2,893	562	395	432	35	99	349	4,765
1960	931	2,665	684	461	636	38	57	185	4,726
61	1,359	3,429	1,143	488	637	49	61	396	6,203
62	1,407	3,307	1,201	451	648	28	92	259	5,986
63	1,788	3,301	1,105	584	753	41	165	249	6,198
64	2,202	3,383	1,087	553	1,066	30	116	409	6,644
65	2,458	2,874	1,197	469	1,363	83	255	293	6,534
66	1,792	4,159	1,770	519	1,027	52	238	389	8,154
67	2,472	3,694	2,098	616	1,266	81	221	268	8,244
68	2,859	6,329	1,907	421	1,039	101	147	445	10,389
69	2,968	6,424	1,873	460	1,179	131	163	849	11,079
1970	3,054	4,359	2,959	615	1,803	145	130	244	10,255
71	4,543	5,208	2,959	583	2,322	112	141	176	11,501

Description: Mortgage loan approvals under NHA and in the conventional mortgage sector for both new and existing residential real estate. Data are gross. Data are for gross new security issues delivered.

Table A-15

**PERCENTAGE DISTRIBUTION OF MORTGAGE LOANS APPROVED
ON RESIDENTIAL PROPERTY BY LENDING INSTITUTIONS AND CMHC
AND NEW ISSUES OF CANADIAN DOLLAR BONDS AND STOCKS, 1952-71**

Gross New Security Issues Delivered

<i>Total Residential Mortgage Loan Approvals</i>		<i>Gov't. Guar. Bonds</i>	<i>Prov. Bonds</i>	<i>Muni- cipal Bonds</i>	<i>Cor- porate Bonds</i>	<i>Other Bonds</i>	<i>Pref. Stock</i>	<i>Com- mon Stock</i>	<i>Total</i>
1952	18.4	32.6	14.0	7.4	16.5	1.2	1.1	8.8	100.
53	14.5	54.1	6.7	5.9	11.1	.1	2.2	5.5	100.
54	14.0	58.6	6.5	5.9	10.3	.7	1.6	2.5	100.
55	24.4	31.2	8.5	6.8	15.7	1.2	3.9	8.4	100.
56	19.0	33.2	9.1	5.5	17.6	.3	4.1	11.2	100.
57	15.5	44.9	10.9	5.0	13.8	.3	2.3	7.4	100.
58	11.0	72.7	4.4	2.8	6.3	.1	.4	2.3	100.
59	20.3	48.4	9.4	6.6	7.2	.6	1.7	5.8	100.
1960	16.5	47.1	12.1	8.2	11.2	.7	1.0	3.3	100.
61	17.9	45.2	15.1	6.4	8.4	.7	.8	5.4	100.
62	19.0	44.6	16.2	6.1	8.7	.4	1.3	3.7	100.
63	22.4	41.3	13.8	7.3	9.4	.5	2.1	3.1	100.
64	24.8	38.2	12.3	6.3	12.0	.3	1.3	4.8	100.
65	27.2	31.8	13.2	5.2	15.2	.9	2.9	3.6	100.
66	17.9	41.6	17.8	5.2	10.5	.5	2.5	4.1	100.
67	22.9	34.2	19.4	5.7	11.9	.8	2.0	3.0	100.
68	21.5	47.6	14.4	3.2	7.8	.8	1.1	3.6	100.
69	21.1	45.7	13.3	3.3	8.4	.9	1.2	6.0	100.
1970	22.9	32.8	22.2	4.6	13.5	1.2	1.0	1.8	100.
71	29.0	32.5	18.4	3.6	14.5	.7	.9	1.1	100.

Table A-16

MORTGAGE AND BOND YIELDS, AND YIELD MARGINS OVER LONG-TERM CANADAS, 1951-71
(Percent)

Yields						Yield Margin over Long-term Canadas					
Mortgages			Bonds			Mortgages			McLeod, Young, Weir		
NHA		Conven- tional	Long- Term Canada	McLeod, Young, Weir		NHA		Conven- tional	Bonds		
Home ownership	Rental			20 Corporates	40	Home ownership	Rental		20 Corporates	40	
1951	5.29	5.46	3.21	3.92	3.94	2.08	2.25	0.71	0.73		
52	5.60	5.77	3.54	4.27	4.32	2.06	2.23	0.73	0.78		
53	5.75	5.97	3.77	4.43	4.41	1.98	2.20	0.66	0.64		
54	5.54	6.01	3.25	4.00	3.85	2.29	2.76	0.75	0.60		
55	5.27	5.88	3.19	3.88	3.73	2.08	2.69	0.69	0.54		
56	5.45	6.23	3.61	4.49	4.48	1.84	2.62	0.88	0.87		
57	6.00	6.85	4.12	5.29	5.26	1.88	2.73	1.17	1.14		
58	6.00	6.80	4.12	4.95	4.95	1.88	2.68	0.83	0.83		
59	6.06	6.90	5.06	5.61	5.71	1.00	1.84	0.55	0.65		
1960	6.75	7.18	5.20	5.69	5.76	1.55	1.98	0.49	0.56		
61	6.70	7.00	5.06	5.45	5.53	1.64	1.94	0.39	0.47		
62	6.50	6.97	5.11	5.43	5.47	1.39	1.86	0.32	0.36		
63	6.35	6.97	5.09	5.42	5.47	1.26	1.88	0.33	0.38		
64	6.25	6.97	5.19	5.51	5.55	1.06	1.78	0.32	0.36		
65	6.25	7.02	5.20	5.67	5.63	1.05	1.82	0.47	0.43		
66	6.83	7.63	5.68	6.50	6.41	1.15	1.95	0.82	0.73		
67	7.44	7.40	8.07	5.90	7.02	6.92	1.54	1.50	2.17	1.12	1.02
68	8.64	8.62	9.07	6.73	7.85	7.77	1.91	1.89	2.34	1.12	1.04
69	9.40	9.38	9.84	7.56	8.70	8.65	1.84	1.82	2.28	1.14	1.09
1970	10.07	10.20	10.45	7.97	9.23	9.23	2.10	2.23	2.48	1.26	1.26
71	9.04	9.43	9.43	6.95	8.41	8.29	2.09	2.48	2.48	1.46	1.34

Table A-17

MORTGAGE AND BOND YIELDS, AND YIELD MARGINS OVER LONG-TERM CANADAS, MONTHLY, 1965-71
(Percent)

		Yields					Yield Margin Over Long-Term Canadas					
		Mortgages			Bonds			Mortgages			McLeod, Young & Weir	
		NHA		Conven- tional	McLeod, Young & Weir			NHA		Conven- tional	Bonds	
		Home- Ownership	Rental		Long- Term	20 Corporate	40	Home- Ownership	Rental		20 Corporate	40
1965	Jan.	6.25	6.90	4.96	5.41	5.42	1.29	1.94	.45	.46		
	Feb.	6.25	6.85	5.03	5.38	5.41	1.22	1.82	.35	.84		
	Mar.	6.25	6.82	5.06	5.48	5.48	1.19	1.76	.42	.42		
	Apr.	6.25	6.82	5.05	5.49	5.48	1.20	1.77	.44	.43		
	May	6.25	6.83	5.12	5.52	5.52	1.13	1.71	.40	.40		
	June	6.25	6.83	5.16	5.64	5.62	1.09	1.67	.48	.46		
	July	6.25	7.02	5.28	5.74	5.74	.97	1.74	.46	.46		
	Aug.	6.25	7.13	5.35	5.77	5.76	.90	1.78	.42	.41		
	Sept.	6.25	7.15	5.32	5.84	5.85	.93	1.83	.52	.53		
	Oct.	6.25	7.25	5.37	5.84	5.86	.88	1.88	.47	.49		
	Nov.	6.25	7.29	5.40	5.90	5.91	.85	1.89	.50	.51		
	Dec.	6.25	7.40	5.40	6.03	6.00	.85	2.00	.63	.60		
1966	Jan.	6.75	7.38	5.41	5.99	5.96	1.34	1.97	.58	.55		
	Feb.	6.75	7.45	5.61	6.15	6.12	1.14	1.84	.54	.51		
	Mar.	6.75	7.46	5.58	6.19	6.17	1.17	1.88	.61	.59		
	Apr.	6.75	7.48	5.60	6.23	6.20	1.15	1.88	.63	.60		
	May	6.75	7.51	5.61	6.26	6.22	1.14	1.90	.65	.61		
	June	6.75	7.57	5.66	6.26	6.24	1.09	1.91	.60	.58		
	July	6.75	7.68	5.74	6.42	6.40	1.01	1.94	.68	.66		
	Aug.	6.75	7.80	5.94	6.76	6.72	.81	1.86	.82	.78		
	Sept.	6.75	7.84	5.75	6.75	6.71	1.00	2.09	1.00	.96		
	Oct.	6.75	7.87	5.71	6.74	6.70	1.04	2.16	1.03	.99		
	Nov.	7.25	7.91	5.91	6.82	6.75	.84	2.00	.91	.84		
	Dec.	7.25	7.95	5.76	6.77	6.72	0.99	2.19	1.01	.96		

Table A-17 (Cont'd.)

		Yields					Yield Margin Over Long-Term Canadas					
		Mortgages			Bonds			Mortgages			McLeod, Young & Weir	
		NHA		Conven- tional	McLeod, Young & Weir			NHA		Conven- tional	Bonds	
		Home- Ownership	Rental		Long- Term	20 Corporate	40	Home- Ownership	Rental		20 Corporate	40
1967	Jan.		7.25	7.93	5.60	6.55	6.46		1.65	2.33	.95	.86
	Feb.		7.25	7.89	5.64	6.53	6.43		1.61	2.25	.89	.79
	Mar.		7.25	7.83	5.48	6.56	6.42		1.77	2.35	1.08	.94
	Apr.		7.00	7.80	5.56	6.64	6.50		1.44	2.24	1.08	.94
	May		7.00	7.77	5.72	6.85	6.75		1.28	2.05	1.13	1.03
	June		7.00	7.88	5.87	6.99	6.91		1.13	2.01	1.12	1.04
	July		7.25	8.02	5.88	7.01	6.92		1.37	2.14	1.13	1.04
	Aug.		7.25	8.05	5.99	7.15	7.05		1.26	2.06	1.16	1.06
	Sept.		7.25	8.10	6.19	7.37	7.28		1.06	1.91	1.18	1.09
	Oct.		7.79	8.49	6.36	7.49	7.40		1.43	2.13	1.13	1.04
	Nov.		7.93	8.52	6.41	7.53	7.46		1.52	2.11	1.12	1.05
	Dec.		7.90	8.52	6.54	7.52	7.47		1.36	1.98	.98	.93
1968	Jan.	8.16	8.32	8.83	6.54	7.49	7.45	1.62	1.78	2.29	.95	.91
	Feb.	8.36	8.54	8.84	6.72	7.64	7.60	1.64	1.82	2.12	.92	.88
	Mar.	8.49	8.42	8.96	6.91	7.85	7.80	1.58	1.51	2.05	.94	.89
	Apr.	8.67	8.56	9.20	6.62	7.83	7.70	2.05	1.94	2.58	1.21	1.08
	May	8.85	8.78	9.23	6.97	7.99	7.92	1.88	1.81	2.26	1.02	.95
	June	8.94	8.86	9.18	6.62	7.99	7.85	2.32	2.24	2.56	1.37	1.23
	July	8.79	8.78	9.14	6.49	7.92	7.75	2.30	2.29	2.65	1.43	1.26
	Aug.	8.81	8.76	9.12	6.43	7.76	7.65	2.38	2.33	2.69	1.33	1.22
	Sept.	8.75	8.82	9.08	6.60	7.76	7.72	2.15	2.22	2.43	1.16	1.12
	Oct.	8.54	8.12	9.01	6.83	7.90	7.84	1.71	1.29	2.18	1.07	1.01
	Nov.	8.59	8.74	9.09	6.95	7.97	7.91	1.64	1.79	2.14	1.02	.96
	Dec.	8.69	8.74	9.10	7.30	8.11	8.10	1.39	1.44	1.80	.81	.80

Table A-17 (Cont'd.)

		Yields					Yield Margin Over Long-Term Canadas					
		Mortgages			Bonds			Mortgages			McLeod, Young & Weir	
		NHA		Conven- tional	McLeod, Young & Weir			NHA		Conven- tional	Bonds	
		Home- Ownership	Rental		Long- Term	20 Corporate	40	Home- Ownership	Rental		20 Corporate	40
1969	Jan.	8.84	9.05	9.45	7.16	8.18	8.11	1.68	1.89	2.29	1.02	.95
	Feb.	9.01	9.19	9.45	7.20	8.22	8.18	1.81	1.99	2.25	1.02	.98
	Mar.	9.07	9.10	9.48	7.22	8.34	8.30	1.85	1.88	2.26	1.12	1.08
	Apr.	9.06	8.92	9.52	7.29	8.31	8.31	1.77	1.63	2.23	1.02	1.02
	May	9.12	9.27	9.50	7.48	8.51	8.46	1.64	1.79	1.98	1.03	.98
	June	9.18	9.24	9.69	7.50	8.79	8.65	1.68	1.74	2.19	1.29	1.15
	July	9.39	9.31	9.90	7.52	8.87	8.73	1.87	1.79	2.38	1.35	1.21
	Aug.	9.59	9.60	9.99	7.53	8.88	8.77	2.06	2.07	2.46	1.35	1.24
	Sept.	9.78	9.77	10.11	7.81	8.87	8.88	1.97	1.96	2.30	1.06	1.07
	Oct.	9.87	9.59	10.21	7.82	8.90	8.91	2.05	1.77	2.39	1.08	1.09
	Nov.	9.92	9.70	10.30	8.15	9.06	9.17	1.77	1.55	2.15	.91	1.02
	Dec.	9.97	9.82	10.50	8.33	9.32	9.38	1.64	1.49	2.17	.99	1.05
1970	Jan.	10.06	9.96	10.58	8.31	9.36	9.45	1.75	1.65	2.27	1.05	1.14
	Feb.	10.27	9.91	10.54	8.13	9.33	9.43	2.14	1.78	2.41	1.20	1.30
	Mar.	10.21	10.15	10.58	7.93	9.28	9.35	2.28	2.22	2.65	1.35	1.42
	Apr.	10.29	10.21	10.60	8.04	9.27	9.33	2.25	2.17	2.56	1.23	1.29
	May	10.28	10.15	10.58	8.23	9.34	9.35	2.05	1.92	2.35	1.11	1.12
	June	10.24	10.15	10.53	8.09	9.30	9.35	2.15	2.06	2.44	1.21	1.26
	July	10.03	10.32	10.38	7.91	9.18	9.22	2.12	2.41	2.47	1.27	1.31
	Aug.	9.94	10.34	10.40	8.00	9.23	9.21	1.94	2.34	2.40	1.23	1.21
	Sept.	9.97	10.37	10.36	7.88	9.21	9.18	2.09	2.49	2.48	1.33	1.30
	Oct.	9.86	10.27	10.35	7.94	9.25	9.22	1.92	2.33	2.41	1.31	1.28
	Nov.	9.83	10.16	10.28	7.50	9.09	9.03	2.33	2.66	2.78	1.59	1.53
	Dec.	9.79	10.39	10.16	6.99	8.87	8.68	2.80	3.40	3.17	1.88	1.69

Table A-17 (Cont'd.)

		Yields						Yield Margin Over Long-Term Canadas				
		Mortgages			Bonds			Mortgages			McLeod, Young & Weir	
		NHA		Conven- tional	Long- Term	McLeod, Young & Weir		NHA		Conven- tional	Bonds	
		Home- Ownership	Rental			20 Corporate	40	Home- Ownership	Rental		20 Corporate	40
1971	Jan.	9.65	10.25	9.94	6.67	8.16	7.87	2.98	3.58	3.27	1.49	1.30
	Feb.	9.47	9.91	9.72	6.85	8.33	8.17	2.62	3.06	2.87	1.48	1.32
	Mar.	8.98	9.64	9.28	6.76	8.39	8.24	2.22	2.88	2.52	1.63	1.48
	Apr.	8.84	9.33	9.20	6.97	8.49	8.35	1.87	2.36	2.23	1.52	1.38
	May	8.79	9.05	9.25	7.38	8.53	8.55	1.41	1.67	1.87	1.15	1.17
	June	8.80	9.18	9.34	7.30	8.64	8.62	1.50	1.88	2.04	1.34	1.32
	July	8.88	9.26	9.46	7.49	8.68	8.72	1.39	1.77	1.97	1.19	1.23
	Aug.	8.99	9.35	9.53	7.15	8.52	8.44	1.84	2.20	2.38	1.37	1.29
	Sept.	9.05	9.23	9.55	6.97	8.41	8.33	2.08	2.26	2.58	1.44	1.36
	Oct.	9.09	9.38	9.55	6.71	8.27	8.05	2.38	2.67	2.84	1.56	1.34
	Nov.	9.05	9.45	9.26	6.56	8.19	7.94	2.49	2.89	2.70	1.63	1.38
	Dec.	8.91	9.13	9.10	6.56	8.30	8.05	2.35	2.57	2.54	1.74	1.49

Table A-18

AVERAGE INTEREST RATES ON NHA LOANS APPROVED ON NEW CONSTRUCTION FOR HOME-OWNERSHIP
BY REGION, APPROVED LENDERS, AND MONTREAL AND TORONTO FIELD OFFICES OF CMHC
MONTHLY, 1970-71
(Percent)

		Region					Approved Lenders		CMHC Field Office		
		Atlantic	Quebec	Ontario	Prairie	B.C.	Canada	Chartered Banks	Other Lenders	Montreal	Toronto
1970	J	10.08	9.96	9.97	10.18	9.98	10.01	10.13	9.94	9.99	9.82
	F	10.21	10.06	10.27	10.37	10.19	10.25	10.05	10.36	10.04	10.36
	M	10.20	10.21	10.14	10.17	10.40	10.19	10.20	10.19	10.20	9.91
	A	10.20	10.26	10.31	10.32	10.24	10.30	10.19	10.40	10.26	10.40
	M	10.26	10.27	10.24	10.29	10.41	10.28	10.17	10.35	10.26	10.26
	J	10.16	10.20	10.23	10.21	10.35	10.23	10.15	10.30	10.15	10.30
	J	10.00	10.08	10.09	10.05	9.86	10.06	9.97	10.14	9.97	10.17
	A	9.90	9.90	9.91	9.86	10.17	9.93	9.87	10.02	9.80	9.93
	S	9.81	9.80	10.05	9.78	9.90	9.97	9.88	10.09	9.77	10.10
	O	9.78	9.77	9.88	9.80	10.04	9.87	9.77	10.09	9.71	10.02
	N	9.76	9.74	9.82	9.74	10.08	9.81	9.74	9.95	9.72	9.89
	D	9.86	9.77	9.76	9.77	9.89	9.78	9.72	9.85	9.75	9.88
1971	J	9.45	9.60	9.71	9.57	9.71	9.64	9.57	9.81	9.59	9.88
	F	9.39	9.29	9.66	9.30	9.41	9.45	9.46	9.43	9.31	9.86
	M	8.94	9.10	8.96	8.92	9.04	8.99	8.94	9.08	9.14	9.15
	A	8.97	8.87	8.85	8.77	8.97	8.85	8.80	8.91	8.85	8.92
	M	8.79	8.80	8.79	8.77	8.86	8.79	8.76	8.83	8.80	8.79
	J	8.89	8.78	8.81	8.80	8.83	8.81	8.75	8.89	8.78	8.82
	J	8.84	8.79	8.91	8.80	9.06	8.88	8.81	9.00	8.79	8.98
	A	9.08	8.84	9.06	8.94	9.11	8.99	8.91	9.14	8.11	9.15
	S	8.89	8.92	9.14	9.03	9.08	9.04	8.94	9.18	8.90	9.23
	O	9.10	8.93	9.16	9.14	9.06	9.09	8.98	9.25	8.89	9.19
	N	8.93	8.96	9.12	9.06	9.06	9.05	8.99	9.16	8.94	9.17
	D	8.93	8.90	8.91	8.90	8.94	8.91	8.86	8.99	8.91	9.01

Table A-19

SALES OF NHA-INSURED MORTGAGES
AND NHA-INSURED MORTGAGE LOANS OUTSTANDING, 1954-71

	Sales — \$ Millions		NHA Loans Outstanding \$ Millions (3)	Column (2) as % of column (3) (4)
	Initial Only (1)	Initial and Subsequent (2)		
1954	0.6	0.6	1428.0	—
55	17.4	17.4	1891.0	—
56	49.6	49.7	2314.0	0.02
57	62.2	62.2	2535.0	0.02
58	47.7	48.8	3175.0	0.02
59	42.6	42.6	3800.0	0.01
1960	27.3	27.4	4103.0	0.01
61	61.9	71.2	4573.0	0.02
62	101.6	137.9	4999.0	0.03
63	129.1	176.7	5325.0	0.03
64	150.0	216.9	5708.0	0.04
65	136.4	211.3	6086.0	0.03
66	88.4	102.3	6568.0	0.02
67	68.0	77.3	7156.0	0.01
68	43.0	47.6	7750.0	0.01
69	127.6	145.1	8619.0	0.02
1970	129.9	131.8	9703.0	0.01
71	84.1	90.3	11343.0	0.01

Source: CMHC.

Table A-20

SALES AND PURCHASES OF NHA-INSURED MORTGAGES,
BY TYPE OF TRANSACTOR, 1954-71
(\$ Millions)

Lending Institutions					Other Investors				Total
Chartered Banks	Life Insurance Com- panies	Trust Com- panies	Loan Com- panies and other	CMHC	Pen- sion Funds	Corpor- ations	Other		
Sales									
1954	0.6	—	—	—	—	—	—	0.6	
55	13.5	—	3.4	0.6	—	—	—	17.5	
56	33.3	5.1	8.2	2.5	0.6	—	—	49.7	
57	41.2	8.6	9.7	2.1	0.6	—	—	62.2	
58	32.5	7.8	4.4	1.5	1.5	—	—	47.7	
59	36.8	1.9	3.4	0.1	0.4	—	—	42.6	
1960	6.3	9.0	4.3	7.3	0.4	—	—	27.3	
61	—	—	19.3	2.6	40.0	—	—	61.9	
62	0.7	—	47.1	5.9	47.9	—	—	101.6	
63	0.2	1.0	58.9	7.9	61.1	—	—	129.1	
64	3.1	5.0	58.2	8.4	75.3	—	—	150.0	
65	0.7	0.5	52.2	2.2	80.8	—	—	136.4	
66	15.1	—	70.0	3.2	—	—	—	88.3	
67	1.6	—	65.8	0.6	—	—	—	68.0	
68	16.8	2.9	23.3	—	—	—	—	43.0	
69	39.9	17.8	65.8	4.1	—	—	—	127.6	
1970	47.9	4.3	74.9	2.8	—	—	—	129.9	
71	33.8	2.1	22.8	4.0	21.4	—	—	84.1	
Total	\$324.0	66.0	591.7	55.8	330.0	—	—	1367.5	
	% 23.7	4.8	43.3	4.1	24.1	—	—	100.0	
Purchases									
1954	—	0.3	—	—	—	0.3	—	0.6	
55	—	2.7	—	0.1	—	14.7	—	17.5	
56	—	8.6	0.5	3.0	—	35.3	2.3	49.7	
57	—	10.3	0.8	—	—	31.2	19.9	62.2	
58	—	4.6	2.3	—	—	31.2	9.6	47.7	
59	—	3.4	0.1	—	—	38.1	1.0	42.6	
1960	—	0.4	0.8	6.5	—	12.9	6.7	27.3	
61	18.3	11.5	14.7	—	—	4.6	12.8	61.9	
62	30.6	22.1	21.4	—	—	19.6	7.8	101.6	
63	49.1	15.6	24.8	3.6	—	23.3	12.3	129.1	
64	46.8	21.4	25.8	10.9	3.1	17.1	24.9	150.0	
65	31.6	25.3	30.2	7.5	—	5.7	35.5	136.4	
66	19.7	33.2	3.1	7.7	—	23.6	0.2	88.3	
67	4.9	56.3	1.7	2.2	—	2.1	0.8	68.0	
68	2.2	9.9	4.3	2.0	—	8.5	16.0	43.0	
69	0.1	50.3	—	3.0	—	59.3	14.8	127.6	
1970	0.2	66.3	1.1	0.8	—	30.5	30.9	129.9	
71	28.0	7.4	4.4	0.5	—	24.3	14.5	84.1	
Total	\$231.5	349.6	136.0	47.8	3.1	382.3	210.0	1367.5	
	% 16.9	25.6	9.9	3.5	0.2	28.0	15.4	100.0	

Data for initial sales and purchases only. Subsequent sales and purchases are excluded. Lending institutions are included under the appropriate category whether or not they are Approved Lenders under the National Housing Act.

Source: CMHC.

Table A-21

DISTRIBUTION OF TRANSACTIONS¹ IN NHA-INSURED MORTGAGES,
BY TYPE OF TRANSACTOR, 1971
(\$ Millions)

Purchaser Seller	Lending Institutions				Other Investors			Total
	Chartered Banks	Life Insurance Com- panies	Trust Com- panies	Loan Com- panies and others	Pension Funds	Corpor- ations	Other	
Chartered Banks	—	—	—	0.6	14.3	14.9	4.9	34.7
Life Insurance Companies	2.0	—	0.1	—	—	—	—	2.1
Trust Companies	6.8	5.9	4.4	—	9.3	0.3	—	26.7
Loan and Other Companies	1.8	1.5	—	—	0.7	—	0.1	4.1
CMHC	21.4	—	—	—	—	—	—	21.4
Other Firms & Institutions	1.2	—	—	0.1	—	—	—	1.3
Total	33.2	7.4	4.5	0.7	24.3	15.2	5.0	90.3

¹ Includes initial and subsequent sales.

Source: CMHC.

Table A-22

BIDS AND AMOUNTS, PRICES, AND YIELDS ON SALES
FOR CMHC AUCTIONS OF NHA-INSURED MORTGAGES, 1961-5

Date	Bids Received \$ Millions	Mortgages Sold \$ Millions	Mortgage Interest Rate %	Average Price \$	Average Yield ¹ %	Current NHA Interest %	Current Long-Term Canada Bond Yield ² %
June 19	30.00	12.50	6¾ %	101.17	6.58	6.75	5.10
Aug. 29	21.00	13.50	6¾ %	101.35	6.55	6.75	5.01
Nov. 21	30.50	15.00	6¾ %	101.79	6.49	6.50	4.84
Mar. 20	60.25	15.00	6 %	97.60	6.35	6.50	4.90
Nov. 20	57.00	30.00	6 %	97.20	6.39	6.50	4.97
			6¾ %	102.26	6.43		
Jan. 22	40.00	27.25	6 %	96.55	6.49	6.50	5.09
			6¾ %	101.97	6.47		
May 28	95.75	35.00	6 %	97.61	6.36	6.50	4.95
			6¾ %	102.70	6.39		
Feb. 25	113.25	25.00	6 %	97.69	6.36	6.25	5.18
			6¾ %	102.64	6.39		
May 20	113.25	25.00	6 %	97.85	6.33	6.25	5.21
			6½ %	100.97	6.37		
Sept. 23	115.50	25.00	6 %	99.24	6.17	6.25	5.22
			6½ %	101.00	6.36		
Dec. 15	84.50	25.00	6 %	98.24	6.27	6.25	5.04
			6½ %	100.96	6.37		
Mar. 10	119.75	30.00	6 %	98.41	6.26	6.25	5.06
			6¼ %	99.96	6.26		
May 19	135.50	26.50	6 %	98.32	6.26	6.25	5.12
			6¼ %	99.66	6.30		

¹ Based on mortgage life expectancy of one-half remaining term of mortgage.

² Average as compiled by Bank of Canada.

Sources: CMHC, Bank of Canada *Statistical Summary*.

Table A-23
ALLOTMENTS AT CMHC AUCTIONS OF NHA-INSURED MORTGAGES, 1961-5
 (\$ Millions)

	<i>1961</i>			<i>1962</i>		<i>1963</i>		<i>1964</i>				<i>1965</i>		<i>Total Sold</i>
<i>Type of Bidder</i>	<i>June</i>	<i>Aug.</i>	<i>Nov.</i>	<i>March</i>	<i>Nov.</i>	<i>Jan.</i>	<i>May</i>	<i>Feb.</i>	<i>May</i>	<i>Sept.</i>	<i>Dec.</i>	<i>Mar. 10</i>	<i>May 19</i>	
Banks ¹	5.00	6.75	2.50	—	1.50	8.00	2.25	—	2.00	16.50	—	—	—	44.50
Trust Companies	6.00	2.50	4.75	9.75	6.50	4.75	13.50	9.25	5.75	1.00	7.25	11.00	9.75	91.75
Insurance Companies	0.50	0.50	—	3.75	—	1.50	2.25	1.50	1.00	—	—	0.75	—	11.75
Investment Dealers ¹	1.00	3.75	7.75	1.50	18.50	10.00	17.00	7.25	14.00	6.00	15.50	17.75	13.00	133.00
Mortgage Companies	—	—	—	—	—	—	—	0.50	0.50	—	—	—	—	1.00
Others	—	—	—	—	3.50	3.00	—	6.50	1.75	1.50	2.25	0.50	3.75	22.75
Total	12.50	13.50	15.00	15.00	30.00	27.25	35.00	25.00	25.00	25.00	25.00	30.00	26.50	304.75

¹ Allotments on joint bids (banks and investment dealers) are shown under investment dealers.

Source: CMHC.

Table A-24

HOUSING ACT MORTGAGE TERMS FOR JOINT AND INSURED LOANS, 1935-71
SINGLE-FAMILY DWELLINGS

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
<i>Joint Loans</i>					
1935 Jan. 1	Dominion Housing Act, 1935	5.00% (Borrower) 5.66% (Lender)	80%	10 years	No limitation
1938 July 1	National Housing Act, 1938	" "	90% of 1st \$2,500 80% of remainder	"	"
1939 Dec. 31	P.C. 4020	" "	"	"	\$4,000
1943 Dec. 19	P.C. 11047	" "	90% of 1st \$3,200 80% of remainder	"	"
1944 May 11	Statement by Minister of Finance (Hon. J. L. Ilsley) House of Commons	4.50% (Borrower) 5.00% (Lender)	"	"	"
1944 Aug. 15	National Housing Act, 1944	" "	95% of 1st \$2,000 85% of next \$2,000 70% of remainder	20 years	\$6,400
1946 Aug. 31	Statutes of Canada 1946, Chapter 1	" "	"	25 years	"
1947 June 27	Statutes of Canada Chapter 40	" "	95% of 1st \$3,000 85% of next \$3,000 70% of remainder	30 years	\$7,000
1947 Oct. 10	P.C. 4089	" "	"	"	\$8,500

Table A-24 (Cont'd.)

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
1949 Dec. 10	Statutes of Canada 1949, Chapter 30	4.50% (Borrower) 5.00% (Lender)	95% of 1st \$3,000 85% of next \$3,000 70% of remainder plus 1/6 additional loan	30 years	\$9,917
1951 Feb. 5	Statement in House of Commons by Minister of Resources and Development (Hon. R. R. Winters)	" "	95% of 1st \$3,000 85% of next \$3,000 70% of remainder 1/6 additional loan suspended	"	\$8,500
1951 June 26	P.C. 3344	5.00% (Borrower) 5.50% (Lender)	"	"	"
1951 Dec. 19	P.C. 6804	" "	"	"	\$10,000
1952 Aug. 31	P.C. 3907	5.25% (Borrower) 5.75% (Lender)	"	"	"
<i>Insured Loans</i>					
1954 Mar. 22	National Housing Act, 1954	5.50%	90% of 1st \$8,000 70% of remainder	30 years	\$12,800
1955 Feb. 16	P.C. 213	5.25%	"	"	"
1956 Mar. 23	P.C. 466	5.50%	"	"	"
1957 Jan. 22	P.C. 90	6.00%	"	"	"
1957 Dec. 20	Statutes of Canada 1957-58, Chapter 18	6.00%	90% of 1st \$12,000 70% of remainder	"	\$12,800
1959 Dec. 16	P.C. 1584	6.75%	"	"	"

Table A-24 (Cont'd.)

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
1960 Aug. 4	P.C. 1063	6.75%	90% of 1st \$12,000 70% of remainder	30 years	\$12,000 (+ \$500 if fallout shelter included)
1960 Dec. 2	9 Elizabeth II, Chapter I	"	95% of 1st \$12,000 70% of remainder	35 years	"
1960 Dec. 7	P.C. 1649	"	"	"	\$14,200 (\$14,900 for four bedrooms or more, + \$500 for fallout shelter)
1961 Nov. 6	P.C. 1559	6.50%	"	"	"
1963 June 14	P.C. 914	6.25%	"	"	"
1963 June 27	P.C. 992	"	"	"	\$14,900 (\$15,600 for four bedrooms or more + \$500 for fallout shelter)
1964 June 18	Statutes of Canada 1964, Chapter 15	"	95% of 1st \$13,000 70% of remainder for new housing 85% for existing houses in Urban Renewal Areas	"	"
1965 May 6	P.C. 813	"	"	"	\$18,000 (+ \$500 for fallout shelter)
1966 Jan. 5	P.C. 6	6.75%	"	"	"

Table A-24 (Cont'd.)

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
1966 Nov. 22	P.C. 2178	7.25%	95% of 1st \$13,000 70% of remainder for new housing 85% for existing houses in Urban Renewal Areas 95% for purchase of existing house anywhere	35 years	\$18,000 (+ \$500 for fallout shelter) \$10,000 Existing house
1967 Apr. 1		7.00%	"	"	"
1967 June 1	P.C. 1273	"	"	"	\$10,000 on each ½ of existing semi-detached and duplexes
1967 July 1		7.25%	"	"	"
1967 Oct. 1	P.C. 1835	8.25%	"	"	"
1968 Jan. 1		8.625% Insured Loans 8.25% CMHC Loans	95% for purchase of existing house anywhere	"	\$18,000 (+ \$500 for fallout shelter) new \$10,000 existing \$10,000 on each ½ of existing semi-detached and duplexes
1968 Mar. 27	Statutes of Canada 1968, Chapter 39	"	" 95% of 1st \$18,000 70% of balance for new housing	"	"
1968 Apr. 1		9.125% Insured 8.75% CMHC	"	"	"
1968 July 1		8.875% Insured 8.75% CMHC	"	"	"

Table A-24 (Cont'd.)

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
1968 Oct. 1		8.75% Insured 8.50% CMHC	95% of 1st \$18,000 70% of balance for new housing	35 years	\$10,000 on each ½ of existing semi-detached and duplexes
1969 Jan. 1		9.375% Insured 9.00% CMHC	"	"	"
1969 Apr. 15	P.C. 683	"	"	5 year renewable mortgage new housing	"
1969 Apr. 22	P.C. 782	"	"	"	\$25,000 + \$500 for fallout new, \$18,000 existing
1969 June		"	"	5 year renewable extended to existing housing	"
1969 June 27	P.C. 1321	"	" 95% 1st \$20,000 80% of balance for new housing	"	"
1969 June 27	Statutes of Canada 1968-69, Chapter 45	Freed Ceiling rate removed	"	" 40 years	" and condominiums eligible for loans. Max. \$25,000

Table A-24 (Cont'd.)

RENTAL LENDING

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
<i>Joint Loans</i>					
1935 Jan. 1	Dominion Housing Act, 1935	5.00%	80%	10 years	No limitation
1939 Dec. 31	P.C. 4020	Rental Loans Suspended			
1944 Aug. 15	National Housing Act, 1938	4.50%	80%	20 years	\$4,000
1947 Jan. 1	P.C. 5238	"	"	"	\$4,400
1947 June 27	Statutes of Canada 1947 Chapter 40	"	"	30 years	"
1948 July 20	P.C. 3138	"	"	"	\$4,800
1949 Dec. 6	P.C. 6129	"	"	"	\$6,700
1952 Oct. 30	P.C. 4272	5.25%	"	"	\$7,200
<i>Insured Loans</i>					
1954 Mar. 22	National Housing Act, 1954	5.50%	80%	25 years	\$7,000 (+ 80% value of garage)
1955 Feb. 16	P.C. 213	5.25%	"	"	"
1956 Mar. 23	P.C. 466	5.50%	"	"	"
1957 Jan. 22	P.C. 90	6.00%	"	"	"

Table A-24 (Cont'd.)

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
1958 Mar. 29	P.C. 456	6.00%	80%	25 years	\$8,250
1959 Dec. 16	P.C. 1584	6.75%	"	"	"
1960 Dec. 2	9 Elizabeth II, Chapter I	"	85%	35 years	"
1960 Dec. 7	P.C. 1649	"	"	"	\$8,750
1961 Nov. 6	P.C. 1559	6.50%	"	"	"
1963 June 14	P.C. 914	6.25%	"	"	"
1963 June 27	P.C. 992	"	"	"	\$12,000
1965 June 2	P.C. 813	"	"	"	\$12,000 for multi-family dwelling; \$7,000 per person accommodated in Hostel or Dorm
1966 Jan. 5	P.C. 6	6.75%	"	"	"
1966 Nov. 22	P.C. 2178	7.25%	90%	"	"
1967 Apr. 1		7.00%	"	"	"
<i>Insured Loans</i>					
1967 July 1		7.25%	90%	35 years	\$12,000 for multi-family dwelling; \$7,000 per person accommodated in Hostel or Dorm

Table A-24 (Cont'd.)

<i>Date</i>	<i>Legislative Authority</i>	<i>Interest Rate</i>	<i>Loan-to-value Ratio</i>	<i>Term of Loan</i>	<i>Maximum Loan Amount</i>
1967 Oct. 1	P.C. 1835	8.25%	90%	35 years	\$12,000 for multi-family dwelling; \$7,000 for person accommodated in Hostel or Dorm
1968 Jan. 1		8.625% Insured Loans 8.25% CMHC Loans	"	"	"
1968 Feb. 1	P.C. 189	"	"	"	\$18,000 Apt. Dwelling
1968 Apr. 1		9.125% Insured 8.75% CMHC	"	"	"
1968 July 1		8.875% Insured 8.75% CMHC	"	"	"
1968 Oct. 1		8.75% Insured 8.50% CMHC	"	"	"
1969 Jan. 1		9.375% Insured 9.00% CMHC	"	"	"
1969 Apr. 15	P.C. 683	"	"	5 year renewable mortgage new housing	"
1969 June		"	"	"	"
				Extended to existing housing	
1969 June 27	Statutes of Canada 1968-69, Chapter 45	Freed Ceiling rate removed	"	"	"
				40 years	

Sources: J. V. Poapst, *The Residential Mortgage Market*, working paper prepared for the Royal Commission on Banking and Finance (Ottawa, 1962); and CMHC.

Table A-25

GOVERNMENT OF CANADA SECURITIES — AVERAGE YIELD ON ONE TO THREE-YEAR MATURITIES, MONTHLY, 1950-71
(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1950	1.71	1.71	1.73	1.73	1.72	1.75	1.75	1.75	1.80	1.83	2.04	2.13	1.80
51	2.18	2.23	2.72	2.52	2.38	2.48	2.48	2.45	2.43	2.39	2.39	2.33	2.41
52	2.47	2.43	2.53	2.54	2.55	2.72	2.89	3.01	3.03	3.17	3.22	3.19	2.81
53	3.04	3.09	3.12	3.12	3.13	3.06	3.29	3.42	3.36	3.35	3.26	3.26	3.21
54	3.02	2.75	2.72	2.17	2.19	2.01	2.01	1.91	1.85	1.92	1.85	1.79	2.18
55	1.55	1.65	1.59	1.72	1.84	1.91	2.21	2.32	2.48	2.60	3.17	3.25	2.19
56	3.01	3.01	3.10	3.56	3.36	3.06	3.40	3.80	3.90	4.09	4.39	4.54	3.60
57	4.77	4.18	4.20	4.27	4.70	4.79	4.71	4.84	4.87	4.46	3.92	3.84	4.46
58	3.63	3.55	3.18	3.00	2.80	3.14	2.37	2.69	3.09	3.35	4.00	4.52	3.28
59	4.32	4.66	4.72	4.95	5.06	5.21	5.33	5.54	5.75	5.04	4.78	4.96	5.03
1960	4.89	4.81	4.21	4.14	4.30	4.06	3.69	2.98	3.07	3.50	3.92	3.99	3.96
61	3.78	3.59	3.84	4.00	4.20	3.58	3.42	3.22	3.57	3.26	3.24	3.39	3.59
62	3.50	3.40	3.20	3.45	3.91	5.49	5.63	5.37	5.12	4.22	3.99	4.12	4.28
63	4.14	4.29	4.38	4.38	3.97	3.81	4.26	4.45	4.22	4.12	4.22	4.28	4.21
64	4.38	4.33	4.49	4.50	4.30	4.33	4.45	4.55	4.40	4.44	4.49	4.21	4.41
65	4.01	4.31	4.10	4.09	4.19	4.29	4.49	4.75	4.86	5.01	5.03	5.11	4.52
66	4.99	5.19	5.27	5.20	5.17	5.16	5.44	5.91	5.49	5.54	5.74	5.43	5.38
67	4.92	5.05	4.35	4.47	4.92	5.34	5.40	5.49	5.80	5.79	5.80	6.16	5.29
68	6.35	6.51	6.69	6.58	6.71	6.63	6.17	5.87	5.94	6.16	6.13	6.71	6.37
69	6.71	6.82	7.00	7.22	7.54	7.53	7.77	7.69	7.86	7.73	7.94	8.07	7.49
1970	7.95	7.66	7.09	6.83	6.78	6.52	6.44	6.52	6.47	6.36	5.37	4.89	6.57
71	5.05	5.05	4.77	4.88	4.97	5.31	5.51	5.33	5.26	4.42	4.21	4.42	4.93

Source: Bank of Canada.

Table A-26

GOVERNMENT OF CANADA SECURITIES — AVERAGE YIELD ON FIVE TO TEN-YEAR MATURITIES, MONTHLY, 1951-71
(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	2.56	2.62	2.67	2.51	2.44	2.47	2.56	2.56	2.56	2.57	2.84	2.97	2.61
52	2.96	2.99	3.02	3.02	3.14	3.23	3.38	3.44	3.44	3.42	3.43	3.43	3.24
53	3.40	3.34	3.37	3.33	3.35	3.38	3.44	3.50	3.49	3.59	3.60	3.57	3.45
54	3.46	3.19	2.71	2.74	2.72	2.58	2.52	2.48	2.27	2.46	2.46	2.43	2.67
55	2.35	2.33	2.30	2.76	2.68	2.73	2.62	2.93	3.00	3.04	3.32	3.43	2.79
56	3.21	3.21	3.31	3.69	3.66	3.42	3.62	3.83	3.97	4.14	4.47	4.56	3.76
57	4.80	4.43	4.39	4.60	4.67	4.91	4.86	4.92	4.86	4.50	3.92	3.92	4.56
58	3.64	3.72	3.41	3.36	3.17	3.46	2.66	2.82	3.42	3.62	3.93	4.42	3.47
59	4.50	4.53	4.71	4.86	4.91	4.87	4.98	5.28	5.44	5.05	4.95	5.18	4.94
1960	5.49	5.28	5.08	4.54	4.28	4.08	4.00	3.69	3.68	4.51	4.74	4.86	4.52
61	4.60	4.42	4.66	4.73	4.78	4.52	4.40	4.25	4.26	3.97	3.89	4.02	4.37
62	4.14	4.07	4.01	3.89	4.32	5.50	5.41	5.40	5.21	4.50	4.36	4.39	4.60
63	4.43	4.51	4.61	4.54	4.32	4.18	4.45	4.60	4.54	4.45	4.55	4.58	4.48
64	4.64	4.57	4.74	4.81	4.71	4.66	4.74	4.80	4.79	4.77	4.79	4.63	4.72
65	4.53	4.66	4.62	4.58	4.64	4.87	5.05	5.18	5.09	5.12	5.22	5.23	4.90
66	5.24	5.38	5.37	5.39	5.37	5.39	5.55	6.09	5.76	5.69	5.77	5.58	5.55
67	5.20	5.16	4.76	4.81	5.40	5.68	5.89	5.98	6.10	6.05	6.17	6.48	5.64
68	6.53	6.77	7.12	6.87	7.08	6.79	6.44	6.21	6.25	6.48	6.53	7.06	6.68
69	6.99	7.03	7.27	7.33	7.69	7.62	7.64	7.71	8.06	8.02	8.31	8.29	7.66
1970	8.23	8.00	7.32	7.35	7.38	7.07	6.96	7.21	7.12	7.08	6.12	5.42	7.11
71	5.37	5.54	5.19	5.52	5.86	6.02	6.46	6.00	5.63	5.04	4.94	5.09	5.56

Source: Bank of Canada.

Table A-27

GOVERNMENT OF CANADA SECURITIES — AVERAGE YIELD ON THREE TO FIVE-YEAR MATURITIES, MONTHLY, 1951-71
(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	2.87	2.91	3.10	3.07	3.00	3.00	3.09	3.09	3.09	3.09	3.30	3.33	3.08
52	3.32	3.41	3.44	3.40	3.43	3.58	3.71	3.72	3.73	3.66	3.66	3.71	3.56
53	3.64	3.52	3.53	3.54	3.57	3.64	3.68	3.72	3.71	3.72	3.66	3.63	3.63
54	3.52	3.30	2.92	2.88	2.88	2.77	2.74	2.75	2.74	2.76	2.77	2.79	2.90
55	2.68	2.64	2.62	2.65	2.70	2.70	2.75	2.90	3.00	3.01	3.32	3.41	2.86
56	3.25	3.26	3.43	3.63	3.62	3.46	3.69	3.87	3.97	4.06	4.35	4.43	3.75
57	4.52	4.23	4.28	4.46	4.54	4.69	4.69	4.76	4.59	4.30	3.82	3.83	4.39
58	3.55	3.69	3.39	3.39	3.39	3.61	3.26	3.31	3.73	4.11	4.37	4.46	3.69
59	4.48	4.64	4.73	4.86	4.96	5.00	5.04	5.44	5.60	5.45	5.35	5.62	5.10
1960	5.62	5.46	5.36	4.35	4.95	4.68	4.83	4.41	4.32	4.59	4.81	4.77	4.85
61	4.82	4.69	4.82	4.85	4.76	4.53	4.52	4.54	4.61	4.52	4.30	4.32	4.61
62	4.36	4.29	4.21	4.16	4.37	5.31	5.56	5.34	5.35	4.79	4.63	4.70	4.76
63	4.65	4.76	4.76	4.73	4.60	4.67	4.78	4.91	4.86	4.80	4.84	4.84	4.77
64	4.85	4.84	4.98	5.02	4.96	4.88	4.94	4.97	4.95	4.90	4.97	4.83	4.92
65	4.69	4.86	4.85	4.82	5.00	5.10	5.22	5.28	5.21	5.30	5.39	5.41	5.09
66	5.41	5.66	5.61	5.63	5.64	5.67	5.83	6.14	5.83	5.72	5.94	5.77	5.74
67	5.50	5.57	5.25	5.34	5.75	5.94	6.03	6.11	6.24	6.41	6.52	6.63	5.94
68	6.71	6.89	7.24	6.95	7.22	6.83	6.58	6.41	6.51	6.69	6.81	7.32	6.85
69	7.21	7.17	7.29	7.37	7.68	7.79	7.80	7.79	8.01	8.01	8.42	8.53	7.76
1970	8.54	8.36	7.76	7.71	7.92	7.64	7.48	7.56	7.50	7.51	6.74	6.27	7.58
71	6.04	6.12	5.83	6.14	6.46	6.45	6.81	6.44	6.17	5.88	5.74	5.76	6.15

Source: Bank of Canada.

Table A-28

GOVERNMENT OF CANADA SECURITIES — AVERAGE YIELD ON TEN YEARS AND OVER MATURITIES, MONTHLY, 1950-71
(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1950	2.83	2.81	2.82	2.82	2.81	2.83	2.93	2.81	2.84	2.82	2.96	3.01	2.86
51	3.00	3.01	3.22	3.23	3.24	3.24	3.23	3.23	3.24	3.24	3.42	3.49	3.23
52	3.48	3.52	3.53	3.50	3.46	3.54	3.61	3.65	3.65	3.61	3.60	3.61	3.56
53	3.68	3.67	3.68	3.69	3.73	3.76	3.75	3.77	3.77	3.70	3.65	3.61	3.70
54	3.55	3.39	3.11	3.15	3.14	3.12	3.09	3.08	3.11	3.12	3.12	3.13	3.18
55	3.13	3.06	3.02	3.06	3.06	3.05	2.89	3.19	3.22	3.22	3.34	3.40	3.14
56	3.30	3.28	3.41	3.54	3.52	3.40	3.60	3.79	3.88	3.88	3.93	3.97	3.62
57	4.13	3.97	3.99	4.06	4.21	4.27	4.34	4.38	4.34	4.11	3.78	3.78	4.11
58	3.82	3.91	3.86	3.85	3.76	3.98	4.17	4.22	4.26	4.38	4.52	4.61	4.11
59	4.65	4.73	4.84	4.87	4.93	5.02	5.01	5.30	5.49	5.30	5.30	5.45	5.07
1960	5.56	5.42	5.31	5.30	5.20	5.02	5.10	4.81	4.80	5.07	5.32	5.31	5.17
61	5.24	5.08	5.18	5.22	5.17	4.95	4.96	4.98	5.01	4.93	4.90	4.93	5.05
62	4.97	4.94	4.86	4.79	4.99	5.30	5.44	5.40	5.38	5.11	5.08	5.10	5.11
63	5.05	5.11	5.09	5.00	4.94	4.96	5.12	5.28	5.11	5.09	5.15	5.15	5.09
64	5.17	5.17	5.25	5.24	5.21	5.20	5.22	5.23	5.21	5.16	5.11	5.03	5.18
65	4.96	5.03	5.06	5.05	5.12	5.16	5.28	5.35	5.32	5.37	5.40	5.40	5.21
66	5.41	5.61	5.58	5.60	5.61	5.66	5.74	5.94	5.75	5.71	5.91	5.76	5.69
67	5.60	5.64	5.48	5.56	5.72	5.87	5.88	5.99	6.19	6.36	6.41	6.54	5.94
68	6.54	6.72	6.91	6.62	6.97	6.62	6.49	6.43	6.60	6.83	6.95	7.30	6.75
69	7.16	7.20	7.22	7.29	7.48	7.50	7.52	7.53	7.81	7.82	8.15	8.33	7.58
1970	8.31	8.13	7.93	8.04	8.23	8.09	7.91	8.00	7.88	7.94	7.50	6.99	7.91
71	6.67	6.85	6.76	6.97	7.38	7.30	7.49	7.15	6.97	6.71	6.56	6.56	6.95

Source: Bank of Canada.

Table A-29

McLEOD, YOUNG, WEIR — AVERAGE YIELD ON FORTY BONDS, MONTH ENDS, 1951-71
(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951	3.48	3.47	3.71	3.86	3.95	4.00	3.99	4.00	4.02	4.03	4.34	4.43	3.94
52	4.35	4.32	4.30	4.27	4.24	4.27	4.32	4.31	4.35	4.39	4.39	4.38	4.32
53	4.38	4.39	4.39	4.41	4.42	4.45	4.46	4.47	4.46	4.42	4.38	4.34	4.41
54	4.32	4.24	3.95	3.83	3.78	3.77	3.75	3.73	3.71	3.71	3.72	5.71	3.85
55	3.72	3.69	3.66	3.65	3.64	3.64	3.64	3.71	3.74	3.75	3.91	3.95	3.73
56	3.95	3.91	4.00	4.30	4.30	4.25	4.37	4.56	4.87	4.97	5.15	5.17	4.48
57	5.19	5.12	5.16	5.22	5.27	5.32	5.35	5.52	5.53	5.42	5.07	4.95	5.26
58	4.89	4.86	4.79	4.81	4.79	4.86	4.93	4.97	5.09	5.09	5.12	5.22	4.95
59	5.23	5.26	5.29	5.31	5.50	5.61	5.66	5.93	6.21	6.15	6.13	6.23	5.71
1960	6.30	6.24	6.01	5.91	5.86	5.64	5.59	5.42	5.35	5.44	5.68	5.68	5.76
61	5.69	5.59	5.66	5.72	5.63	5.48	5.45	5.45	5.47	5.41	5.35	5.38	5.52
62	5.41	5.34	5.25	5.22	5.44	5.77	5.89	5.78	5.71	5.51	5.46	5.43	5.52
63	5.41	5.43	5.45	5.38	5.32	5.34	5.49	5.66	5.54	5.51	5.53	5.52	5.47
64	5.57	5.59	5.59	5.57	5.55	5.56	5.59	5.56	5.54	5.51	5.51	5.48	5.55
65	5.42	5.41	5.48	5.48	5.52	5.62	5.74	5.76	5.85	5.86	5.91	6.00	5.67
66	5.96	6.12	6.17	6.20	6.22	6.24	6.40	6.72	6.71	6.70	6.75	6.72	6.41
67	6.46	6.43	6.42	6.50	6.75	6.91	6.92	7.05	7.28	7.40	7.46	7.47	6.92
68	7.45	7.60	7.80	7.70	7.92	7.85	7.75	7.65	7.72	7.84	7.91	8.07	7.77
69	8.11	8.18	8.30	8.31	8.46	8.65	8.73	8.77	8.88	8.91	9.17	9.38	8.65
1970	9.45	9.43	9.35	9.33	9.35	9.35	9.22	9.21	9.18	9.22	9.03	8.68	9.23
71	7.97	8.17	8.24	8.35	8.55	8.62	8.72	8.44	8.33	8.05	7.94	8.05	8.29

Source: McLeod, Young, Weir.

Table A-30

CHARTERED BANKS PRIME BUSINESS LOAN RATE, MONTHLY, 1951-71
(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
52	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
53	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
54	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
55	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
56	4.50	4.50	4.50	5.00	5.00	5.00	5.00	5.25	5.25	5.50	5.50	5.50	5.04
57	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.75	5.75	5.75	5.75	5.50	5.58
58	5.50	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.27
59	5.25	5.25	5.50	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.65
1960	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
61	5.75	5.75	5.75	5.75	5.75	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.60
62	5.50	5.50	5.50	5.50	5.50	5.50	6.00	6.00	6.00	6.00	5.75	5.75	5.71
63	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
64	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
65	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	6.00	5.77
66	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
67	6.00	6.00	6.00	5.75	5.75	5.75	5.75	5.75	5.75	6.00	6.00	6.50	5.92
68	6.50	7.00	7.00	7.00	7.25	7.25	7.00	7.00	6.75	6.75	6.75	6.75	6.92
69	7.00	7.00	7.50	7.50	7.50	8.00	8.50	8.50	8.50	8.50	8.50	8.50	7.96
1970	8.50	8.50	8.50	8.50	8.50	8.50	8.00	8.00	8.00	8.00	7.50	7.50	8.17
71	7.00	7.00	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.25	6.00	6.00	6.48

Source: Bank of Canada.

Table A-31

TRUST AND LOAN COMPANIES — INTEREST RATE ON TERM LIABILITIES OF ONE YEAR, MONTHLY, 1951-71
(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951			2.69			2.66			2.66			2.75	2.69
52			2.83			2.88			2.88			2.96	2.89
53			2.97			2.97			2.91			3.00	2.96
54			2.98			2.97			2.94			2.80	2.92
55			2.80			2.78			2.79			2.85	2.81
56			3.28			3.71			3.77			3.96	3.68
57			4.37			4.29			4.73			4.71	4.53
58			4.27			3.97			3.90			4.00	4.04
59			4.96			5.27			5.52			5.75	5.38
1960			5.04			4.73			4.38			4.37	4.63
61	4.50	4.50	4.44	4.44	4.44	4.25	4.25	4.25	4.25	4.25	4.12	4.00	4.31
62	4.00	4.00	4.00	4.00	4.15	4.85	5.20	5.60	5.40	5.15	4.95	5.05	4.70
63	5.00	4.90	4.80	4.65	4.30	4.25			4.40			4.57	4.61
64	4.66	4.58	4.63	4.63	4.63	4.63	4.66	4.79	4.79	4.79	4.83	4.83	4.70
65	4.83	4.83	4.83	4.96	5.00	5.00	5.08	5.27	5.27	5.47	5.56	5.62	5.14
66	5.72	5.65	5.65	5.73	5.78	5.78	5.79	5.86	5.97	5.97	6.02	6.02	5.83
67	6.02	6.00	5.90	5.60	5.61	5.73	6.08	6.15	6.21	6.40	6.50	6.50	6.06
68	6.46	6.52	6.57	6.84	6.88	6.91	6.93	6.95	6.89	6.75	6.87	6.94	6.79
69	7.18	7.18	7.21	7.21	7.29	7.38	7.67	7.86	7.93	8.17	8.46	8.55	7.67
1970	8.59	8.59	8.46	8.13	8.02	8.00	7.96	7.96	7.84	7.71	7.20	7.04	7.96
71	6.97	6.71	5.94	5.39	5.50	5.71	5.79	5.95	6.00	5.98	5.77	5.53	5.94

Source: Bank of Canada.

Table A-32

MAXIMUM NHA-INSURED MORTGAGE INTEREST RATES, MONTHLY, 1951-71

(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951	5.00	5.00	5.00	5.00	5.00	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.29
52	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.75	5.75	5.75	5.75	5.75	5.60
53	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
54	5.75	5.75	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.54
55	5.50	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.27
56	5.25	5.25	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.46
57	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
58	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
59	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.75	6.06
1960	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75
61	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.50	6.50	6.71
62	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
63	6.50	6.50	6.50	6.50	6.50	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.35
64	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
65	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25	6.25
66	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	7.25	7.25	6.833
67	7.25	7.25	7.25	7.00	7.00	7.00	7.25	7.25	7.25	8.25	8.25	8.25	7.438
68	8.625	8.625	8.625	9.125	9.125	9.125	8.875	8.875	8.875	8.75	8.75	8.75	8.844
69	9.375	9.375	9.375	9.375	9.375	9.375	9.350*	9.595	9.775	9.730	9.810	9.895	9.534
1970	10.010	10.090	10.180	10.250	10.215	10.195	10.175	10.140	10.170	10.065	9.995	10.090	10.131
71	9.950	9.690	9.310	9.085	8.920	8.990	9.070	9.170	9.140	9.235	9.250	9.020	9.236

Source: CMHC.

Description: From 1951 to March, 1954, maximum NHA rate to the lenders.

From 1954 to June, 1969, maximum NHA rate on insured loans.

NHA maximum abolished in June, 1969.

*From July 1969, the rate is calculated by averaging NHA Home-ownership and Rental market rates.

Table A-33

CONVENTIONAL MORTGAGE INTEREST RATES, MONTHLY, 1951-71
(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951	5.00	5.00	5.00	5.25	5.50	5.50	5.62	5.62	5.75	5.75	5.75	5.75	5.46
52	5.70	5.70	5.70	5.70	5.80	5.80	5.85	5.85	5.75	5.80	5.80	5.80	5.77
53	5.90	5.90	5.90	5.90	5.90	5.95	5.95	5.95	6.05	6.05	6.10	6.10	5.97
54	6.05	6.05	6.05	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.01
55	6.00	6.00	6.00	6.00	5.75	5.75	5.75	5.70	5.80	5.90	5.95	5.95	5.88
56	5.95	5.95	6.00	6.00	6.00	6.05	6.15	6.35	6.40	6.55	6.65	6.65	6.23
57	6.70	6.75	6.75	6.75	6.75	6.85	6.85	6.90	7.00	7.00	7.00	6.95	6.85
58	6.95	6.90	6.80	6.75	6.75	6.75	6.75	6.75	6.75	6.80	6.80	6.80	6.80
59	6.85	6.85	6.85	6.80	6.80	6.85	6.85	6.95	7.20	7.20	7.25	7.25	6.98
1960	7.30	7.30	7.30	7.30	7.25	7.25	7.15	7.15	7.10	7.00	7.00	7.00	7.18
61	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
62	7.00	7.00	7.00	6.90	6.80	6.95	7.00	7.00	7.00	7.00	7.00	7.00	6.97
63	7.00	7.00	7.00	6.94	6.91	6.91	6.91	7.00	7.00	7.00	7.00	7.00	6.97
64	7.00	7.00	7.00	6.95	6.88	6.88	6.88	7.00	7.00	7.00	7.00	7.00	6.97
65	6.90	6.85	6.82	6.82	6.83	6.83	7.02	7.13	7.15	7.25	7.29	7.40	7.02
66	7.38	7.45	7.46	7.48	7.51	7.57	7.68	7.80	7.84	7.87	7.91	7.95	7.66
67	7.93	7.89	7.83	7.80	7.77	7.88	8.02	8.05	8.10	8.49	8.52	8.52	8.07
68	8.83	8.84	8.96	9.20	9.23	9.18	9.14	9.12	9.08	9.01	9.09	9.10	9.06
69	9.45	9.45	9.48	9.52	9.50	9.69	9.90	9.99	10.11	10.21	10.30	10.50	9.84
1970	10.58	10.54	10.58	10.60	10.58	10.53	10.38	10.40	10.36	10.35	10.28	10.16	10.45
71	9.94	9.72	9.28	9.20	9.25	9.34	9.46	9.53	9.55	9.55	9.26	9.10	9.43

Source: CMHC.

Description: From 1951 to 1964, average of prime conventional interest rates of 6 life companies (Royal Commission on Banking & Finance Appendix, p. 237).

Since 1964, average of prime conventional interest rates quoted to CMHC Regional Economists.

Table A-34

TRUST AND LOAN COMPANIES — INTEREST RATES ON CHEQUABLE
DEPOSITS, QUARTERLY, 1951-71

(Percent)

	<i>Mar.</i>	<i>June</i>	<i>Sept.</i>	<i>Dec.</i>	<i>Average</i>
1951	1.95	1.95	1.95	1.95	1.95
52	2.00	2.00	2.00	2.00	2.00
53	2.09	2.09	2.09	2.09	2.09
54	2.36	2.41	2.41	2.41	2.40
55	2.52	2.52	2.54	2.56	2.54
56	2.67	2.67	2.73	2.94	2.75
57	3.09	3.14	3.14	3.16	3.13
58	3.19	3.17	3.16	3.16	3.17
59	3.20	3.21	3.25	3.25	3.23
1960	3.29	3.29	3.33	3.33	3.31
61	3.33	3.33	3.33	3.33	3.33
62	3.33	3.67	3.67	3.67	3.59
63	3.67	3.67	3.67	3.67	3.67
64	3.67	3.67	3.67	3.87	3.72
65	3.87	3.87	3.87	3.90	3.88
66	4.00	4.00	4.00	4.00	4.00
67	4.00	4.00	4.00	4.00	4.00
68	4.00	4.00	4.00	4.00	4.00
69	4.00	4.00	4.00	4.00	4.00
1970	4.00	4.00	4.00	4.00	4.00
71	4.00	3.50	3.50	3.50	3.63

Source: Bank of Canada.

Table A-35
**CHARTERED BANKS — INTEREST RATES ON CHEQUABLE
 ACCOUNTS, QUARTERLY, 1951-71**
(Percent)

	<i>Mar.</i>	<i>June</i>	<i>Sept.</i>	<i>Dec.</i>	<i>Average</i>
1951	1.50	1.50	1.50	1.50	1.50
52	1.50	1.50	1.50	1.50	1.50
53	1.50	1.50	1.50	1.75	1.56
54	2.00	2.00	2.00	2.00	2.00
55	2.00	2.00	2.00	2.00	2.00
56	2.00	2.00	2.25	2.50	2.19
57	2.625	2.75	2.75	2.75	2.72
58	2.75	2.75	2.75	2.75	2.75
59	2.75	2.75	2.75	2.75	2.75
1960	2.75	2.75	2.75	2.75	2.75
61	2.75	2.75	2.75	2.75	2.75
62	2.75	2.75	2.875	3.00	2.85
63	3.00	3.00	3.00	3.00	3.00
64	3.00	3.00	3.00	3.00	3.00
65	3.00	3.00	3.00	3.00	3.00
66	3.00	3.00	3.00	3.00	3.00
67	3.00	3.00	3.50	3.50	3.25
68	3.50	3.50	3.50	3.50	3.50
69	3.50	3.50	3.50	3.50	3.50
1970	3.50	3.50	3.50	3.00	3.38
71	3.00	3.00	3.00	2.75	2.94

Source: Bank of Canada.

Table A-36

CHARTERED BANKS — INTEREST RATES ON NINETY-DAY DEPOSIT RECEIPTS AND ON NON-CHEQUABLE SAVINGS DEPOSITS, MONTHLY, 1961-71

(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
90-Day Deposit Receipts													
1961	3.50	3.25	3.50	3.50	3.50	3.00	3.00	3.00	3.00	3.00	2.75	3.00	3.17
62	3.25	3.25	3.25	3.25	3.38	4.50	4.75	4.75	4.75	5.00	4.00	4.00	4.01
63	4.00	4.00	4.00	4.00	3.50	3.38	3.50	3.75	3.75	3.88	3.88	3.88	3.79
64	4.00	4.00	4.00	4.00	4.00	3.75	3.75	4.00	4.00	4.00	4.00	4.25	3.98
65	4.25	4.25	4.25	4.25	4.25	4.38	4.50	4.50	4.50	4.50	4.75	4.88	4.44
66	4.88	4.88	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.13	5.09
67	5.13	5.13	4.75	4.75	4.50	5.40	5.40	5.60	5.06	5.50	5.75	5.75	5.23
68	5.88	6.75	7.00	7.00	7.00	7.00	6.63	6.50	6.00	6.00	6.25	6.50	6.54
69	6.75	6.75	6.75	6.75	6.75	7.00	7.50	7.50	7.50	7.50	7.50	7.50	7.15
1970	7.50	7.50	7.50	7.50	7.50	7.00	7.00	7.00	6.50	6.50	6.00	5.80	6.94
71	5.88	5.80	3.31	3.79	4.19	4.31	4.67	5.09	5.09	5.43	4.79	4.62	4.75
Non-Chequable Savings Deposits													
1967					4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
68	4.50	4.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.92
69	5.00	5.25	5.25	5.50	5.50	6.00	6.50	6.50	6.50	6.50	6.50	6.50	5.96
1970	6.50	6.50	6.50	6.50	6.50	6.50	6.00	6.00	6.00	6.00	5.50	5.50	6.17
71	5.50	5.00	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.00	4.00	4.54

Source: Bank of Canada.

Table A-37

INSURED LOANS FOR HOME OWNERSHIP — MARGIN OF AVERAGE INTEREST RATE
OVER YIELDS ON OTHER SELECTED INSTRUMENTS, MONTHLY, 1969-71

(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
<i>Gov't. of Can.</i>												
1 to 3 yrs.												
1969	2.13	2.19	2.07	1.84	1.58	1.65	1.62	1.90	1.92	2.14	1.98	1.90
70	2.11	2.61	3.12	3.46	3.50	3.72	3.59	3.42	3.50	3.50	4.46	4.90
71	4.60	4.42	4.21	3.96	3.82	3.49	3.37	3.66	3.79	4.67	4.84	4.49
3 to 5 yrs.												
1969	1.85	1.98	1.80	1.73	1.43	1.56	1.75	1.88	1.72	1.85	1.61	1.68
70	1.83	2.27	2.89	2.94	2.90	3.17	3.07	2.73	2.85	2.78	3.71	4.37
71	4.28	3.93	3.79	3.32	2.93	2.78	2.42	2.99	3.42	4.05	4.11	3.82
5 to 10 yrs.												
1969	1.63	1.84	1.78	1.69	1.44	1.39	1.59	1.80	1.77	1.86	1.50	1.44
70	1.52	1.91	2.45	2.58	2.36	2.60	2.55	2.38	2.47	2.35	3.09	3.52
71	3.61	3.35	3.15	2.70	2.33	2.35	2.07	2.55	2.88	3.21	3.31	3.15
10 yrs. & over												
1969	1.68	1.91	1.85	1.77	1.64	1.68	1.87	2.06	1.97	2.05	1.77	1.64
70	1.75	2.14	2.28	2.25	2.05	2.15	2.12	1.94	2.09	1.92	2.33	2.80
71	2.98	2.62	2.22	1.87	1.41	1.50	1.39	1.84	2.08	2.38	2.49	2.35

Table A-37 (Cont'd.)

Chartered Banks

Prime Rate

1969	1.84	2.01	1.57	1.56	1.62	1.18	0.89	1.09	1.28	1.37	1.42	1.47
70	1.56	1.77	1.71	1.79	1.78	1.74	2.03	1.94	1.97	1.86	2.33	2.29
71	2.65	2.47	2.48	2.34	2.29	2.30	2.38	2.49	2.55	2.84	3.05	2.91

90-Day Deposits

1969	2.09	2.26	2.32	2.31	2.37	2.18	1.89	2.09	2.28	2.37	2.42	2.47
70	2.56	2.77	2.71	2.79	2.78	3.24	3.03	2.94	3.47	3.36	3.83	3.99
71	3.77	3.67	5.67	5.05	4.60	4.49	4.21	3.90	3.96	3.66	4.26	4.29

Non-Cheq. Dep.

1969	3.84	3.76	3.82	3.56	3.62	3.18	2.89	3.09	3.28	3.37	3.42	3.47
70	3.56	3.77	3.71	3.79	3.78	3.74	4.03	3.94	3.97	3.86	4.33	4.29
71	4.15	4.47	4.48	4.34	4.29	4.30	4.38	4.49	4.55	4.59	5.05	4.91

Chequable Accts.

1969			5.57			5.68			6.28			6.47
70			6.71			6.74			6.47			6.79
71			5.98			5.80			6.05			6.16

Trust and Loan

1 yr. Liab.

1969	1.66	1.83	1.86	1.85	1.83	1.80	1.72	1.73	1.85	1.70	1.46	1.42
70	1.47	1.68	1.75	2.16	2.26	2.24	2.07	2.08	2.13	2.15	2.63	2.75
71	2.68	2.76	3.04	3.45	3.29	3.09	3.09	3.04	3.05	3.11	3.28	3.38

Chequable Dep.

1969			5.07			5.18			5.78			5.97
70			6.21			6.24			5.97			5.79
71			4.98			5.30			5.55			5.41

Conv. Mortgages

1969	-0.61	-0.44	-0.41	-0.46	-0.38	-0.51	-0.51	-0.40	-0.33	-0.35	-0.40	-0.54
70	-0.57	-0.29	-0.39	-0.30	-0.30	-0.30	-0.32	-0.47	-0.39	-0.48	-0.47	-0.38
71	-0.30	-0.27	-0.29	-0.35	-0.46	-0.53	-0.58	-0.54	-0.51	-0.46	-0.21	-0.19

Table A-38

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE YIELD
ON ONE TO THREE-YEAR GOVERNMENT OF CANADA SECURITIES, MONTHLY, 1951-71

(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	2.82	2.77	2.28	2.73	3.12	3.02	3.14	3.17	3.32	3.36	3.36	3.42	3.05
52	3.23	3.27	3.17	3.16	3.25	3.08	2.96	2.84	2.72	2.63	2.58	2.61	2.96
53	2.86	2.81	2.78	2.78	2.77	2.89	2.66	2.53	2.69	2.70	2.84	2.84	2.76
54	3.03	3.30	3.33	3.83	3.81	3.99	3.99	4.09	4.15	4.08	4.15	4.21	3.83
55	4.45	4.35	4.41	4.28	3.91	3.84	3.54	3.38	3.32	3.30	2.78	2.70	3.69
56	2.94	2.94	2.90	2.44	2.64	2.99	2.75	2.55	2.50	2.46	2.26	2.11	2.63
57	1.93	2.57	2.55	2.48	2.05	2.06	2.14	2.06	2.13	2.54	3.08	3.11	2.39
58	3.32	3.35	3.62	3.75	3.95	3.61	4.38	4.06	3.66	3.45	2.80	3.28	3.52
59	2.53	2.19	2.13	1.85	1.74	1.64	1.52	1.41	1.45	2.16	2.47	2.39	1.95
1960	2.41	2.49	3.09	3.16	2.95	3.19	3.46	4.17	4.03	3.50	3.08	3.01	3.22
61	3.22	3.41	3.16	3.00	2.80	3.42	3.58	3.78	3.43	3.74	3.76	3.61	3.41
62	3.50	3.60	3.80	3.45	2.89	1.46	1.37	1.63	1.88	2.78	3.01	2.88	2.69
63	2.86	2.71	2.62	2.56	2.94	3.10	2.65	2.55	2.78	2.88	2.78	2.72	2.76
64	2.62	2.67	2.51	2.45	2.58	2.55	2.43	2.45	2.60	2.56	2.51	2.79	2.56
65	2.89	2.54	2.72	2.73	2.64	2.54	2.53	2.38	2.29	2.24	2.26	2.29	2.50
66	2.39	2.26	2.19	2.28	2.34	2.41	2.24	1.89	2.35	2.33	2.11	2.52	2.28
67	3.01	2.84	3.48	3.33	2.85	2.54	2.62	2.56	2.30	2.70	2.72	2.36	2.78
68	2.48	2.33	2.27	2.62	2.52	2.55	2.97	3.25	3.09	2.85	2.96	2.93	2.69
69	2.74	2.63	2.48	2.30	1.92	2.16	2.13	2.30	2.25	2.48	2.36	2.43	2.35
1970	2.63	2.88	3.49	3.77	3.80	4.01	3.94	3.88	3.89	3.99	4.91	5.27	3.88
71	4.89	4.67	4.51	4.32	4.28	4.03	3.95	4.20	4.29	5.13	5.05	4.68	4.50

Table A-39

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE YIELD
ON THREE TO FIVE-YEAR GOVERNMENT OF CANADA SECURITIES, MONTHLY, 1951-71

(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	2.46	2.38	2.33	2.74	3.06	3.03	3.05	3.06	3.19	3.18	2.91	2.18	2.85
52	2.74	2.71	2.68	2.68	2.66	2.57	2.47	2.41	2.31	2.37	2.37	2.37	2.53
53	2.50	2.56	2.53	2.57	2.55	2.57	2.51	2.45	2.56	2.46	2.50	2.53	2.52
54	2.59	2.86	3.34	3.26	3.28	3.42	3.48	3.52	3.73	3.54	3.54	3.57	3.34
55	3.65	3.67	3.70	3.24	3.07	3.02	3.13	2.77	2.80	2.86	2.63	2.52	3.09
56	2.74	2.74	2.69	2.31	2.34	2.63	2.53	2.52	2.43	2.41	2.18	2.09	2.47
57	1.90	2.32	2.36	2.15	2.08	1.94	1.99	1.98	2.14	2.50	3.08	3.03	2.29
58	3.31	3.18	3.39	3.39	3.58	3.29	4.09	3.93	3.33	3.18	2.87	2.38	3.33
59	2.35	2.32	2.14	1.94	1.89	1.98	1.87	1.67	1.76	2.15	2.30	2.07	2.04
1960	1.81	2.02	2.22	2.76	2.97	3.17	3.15	3.46	3.42	2.49	2.26	2.14	2.66
61	2.40	2.58	2.34	2.27	2.22	2.48	2.60	2.75	2.74	3.03	3.11	2.98	2.63
62	2.86	2.93	2.99	3.01	2.48	1.45	1.59	1.60	1.79	2.50	2.64	2.61	2.37
63	2.57	2.49	2.39	2.40	2.59	2.73	2.46	2.40	2.46	2.55	2.45	2.42	2.49
64	2.36	2.43	2.26	2.14	2.17	2.22	2.14	2.20	2.21	2.23	2.21	2.37	2.25
65	2.37	2.19	2.20	2.24	2.19	1.96	1.97	1.95	2.06	2.13	2.07	2.17	2.12
66	2.14	2.07	2.09	2.09	2.14	2.18	2.13	1.71	2.08	2.18	2.14	2.37	2.11
67	2.73	2.73	3.07	2.99	2.37	2.20	2.13	2.07	2.00	2.44	2.35	2.04	2.43
68	2.30	2.07	1.84	2.33	2.15	2.39	2.70	2.91	2.78	2.53	2.56	2.04	2.38
69	2.46	2.42	2.21	2.19	1.77	2.07	2.26	2.28	2.05	2.19	1.99	2.21	2.18
1970	2.35	2.54	3.26	3.25	3.20	3.46	3.42	3.19	3.24	3.27	4.16	4.74	3.34
71	4.57	4.18	4.09	3.68	3.39	3.32	3.00	3.53	3.92	4.51	4.32	4.01	3.87

Table A-40

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE YIELD
ON FIVE TO TEN-YEAR GOVERNMENT OF CANADA SECURITIES, MONTHLY, 1951-71
(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	2.13	2.09	1.90	2.18	2.50	2.50	2.53	2.53	2.66	2.66	2.45	2.42	2.38
52	2.38	2.29	2.26	2.30	2.37	2.22	2.14	2.13	2.02	2.14	2.14	2.09	2.21
53	2.26	2.38	2.37	2.36	2.33	2.31	2.27	2.23	2.34	2.33	2.44	2.47	2.34
54	2.53	2.75	3.13	3.12	3.12	3.23	3.26	3.25	3.26	3.24	3.23	3.21	3.11
55	3.32	3.36	3.38	3.35	3.05	3.05	3.00	2.80	2.80	2.89	2.63	2.54	3.02
56	2.70	2.69	2.57	2.37	2.38	2.59	2.46	2.48	2.43	2.49	2.30	2.22	2.48
57	2.18	2.52	2.47	2.29	2.21	2.16	2.16	2.13	2.41	2.70	3.18	3.12	2.46
58	3.40	3.21	3.41	3.36	3.36	3.14	3.49	3.44	3.02	2.69	2.43	2.34	3.11
59	2.37	2.21	2.12	1.94	1.84	1.85	1.81	1.51	1.60	1.75	1.90	1.63	1.88
1960	1.68	1.84	1.94	2.95	2.30	2.67	2.32	2.74	2.78	2.41	2.19	2.23	2.33
61	2.18	2.31	2.18	2.15	2.24	2.47	2.48	2.46	2.39	2.48	2.70	2.68	2.39
62	2.64	2.71	2.79	2.74	2.43	1.64	1.44	1.66	1.65	2.21	2.37	2.30	2.21
63	2.35	2.24	2.24	2.21	2.31	2.24	2.13	2.09	2.14	2.20	2.16	2.16	2.20
64	2.15	2.16	2.02	1.93	1.92	2.00	1.94	2.03	2.05	2.10	2.03	2.17	2.05
65	2.21	1.99	1.97	2.00	1.83	1.73	1.80	1.85	1.94	1.95	1.90	1.99	1.93
66	1.97	1.79	1.85	1.85	1.87	1.90	1.85	1.66	2.01	2.15	1.97	2.18	1.92
67	2.43	2.32	2.58	2.46	2.02	1.94	1.99	1.94	1.86	2.08	2.00	1.89	2.13
68	2.12	1.95	1.72	2.25	2.01	2.35	2.56	2.71	2.52	2.32	2.28	1.78	2.21
69	2.24	2.28	2.19	2.15	1.78	1.98	2.10	2.20	2.10	2.20	1.88	1.97	2.08
1970	2.04	2.18	2.82	2.89	2.66	2.89	2.90	2.84	2.86	2.84	3.54	3.89	2.87
71	3.90	3.60	3.45	3.06	2.79	2.89	2.65	3.09	3.38	3.67	3.52	3.34	3.28

Table A-41

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE YIELD
ON TEN YEARS AND OVER GOVERNMENT OF CANADA SECURITIES, MONTHLY, 1951-71

	(Percent)												
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951	2.00	1.99	1.78	2.02	2.26	2.26	2.39	2.39	2.51	2.51	2.33	2.26	2.23
52	2.22	2.18	2.17	2.20	2.34	2.26	2.24	2.20	2.10	2.19	2.20	2.19	2.21
53	2.22	2.23	2.22	2.21	2.17	2.19	2.20	2.18	2.28	2.35	2.45	2.49	2.27
54	2.50	2.66	2.94	2.85	2.86	2.88	2.91	2.92	2.89	2.88	2.88	2.87	2.83
55	2.87	2.94	2.98	2.94	2.69	2.70	2.86	2.51	2.58	2.68	2.61	2.55	2.74
56	2.65	2.67	2.59	2.46	2.48	2.65	2.55	2.56	2.52	2.67	2.72	2.68	2.61
57	2.57	2.78	2.76	2.69	2.54	2.58	2.51	2.52	2.66	2.89	3.22	3.17	2.74
58	3.13	2.99	2.94	2.90	2.99	2.77	2.58	2.53	2.49	2.42	2.28	2.19	2.69
59	2.20	2.12	2.01	1.93	1.87	1.83	1.84	1.65	1.71	1.90	1.95	1.80	1.91
1960	1.74	2.06	1.99	2.00	2.05	2.23	2.05	2.34	2.30	1.93	1.68	1.69	2.01
61	1.76	1.92	1.82	1.78	1.83	2.05	2.04	2.02	1.99	2.07	2.10	2.07	1.95
62	2.03	2.06	2.14	2.11	1.81	1.65	1.56	1.60	1.62	1.89	1.92	1.90	1.86
63	1.95	1.89	1.91	1.94	1.97	1.95	1.79	1.72	1.89	1.91	1.85	1.85	1.88
64	1.83	1.83	1.75	1.71	1.67	1.68	1.66	1.77	1.79	1.84	1.89	1.97	1.79
65	1.94	1.82	1.76	1.77	1.71	1.67	1.74	1.78	1.83	1.88	1.89	2.00	1.81
66	1.97	1.84	1.88	1.88	1.90	1.91	1.94	1.86	2.09	2.16	2.00	2.19	1.97
67	2.33	2.25	2.35	2.24	2.05	2.01	2.14	2.06	1.91	2.13	2.11	1.98	2.13
68	2.29	2.12	2.05	2.58	2.26	2.56	2.65	2.69	2.43	2.18	2.14	1.80	2.31
69	2.29	2.25	2.26	2.23	1.98	2.19	2.38	2.46	2.30	2.39	2.15	2.17	2.26
1970	2.27	2.41	2.65	2.56	2.35	2.44	2.47	2.40	2.48	2.41	2.78	3.17	2.54
71	3.27	2.87	2.52	2.23	1.87	2.04	1.97	2.38	2.58	2.84	2.70	2.54	2.48

Table A-42

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE PRIME BUSINESS LOAN
RATE OF CHARTERED BANKS, MONTHLY, 1951-71

(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
1951	0.50	0.50	0.50	0.75	1.00	1.00	1.12	1.12	1.25	1.25	1.25	1.25	0.96
52	1.20	1.20	1.20	1.20	1.30	1.30	1.35	1.35	1.25	1.30	1.30	1.30	1.27
53	1.40	1.40	1.40	1.40	1.40	1.45	1.45	1.45	1.55	1.55	1.60	1.60	1.47
54	1.55	1.55	1.55	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.51
55	1.50	1.50	1.50	1.50	1.25	1.25	1.25	1.20	1.30	1.40	1.45	1.45	1.38
56	1.45	1.45	1.50	1.00	1.00	1.05	1.15	1.10	1.15	1.05	1.15	1.15	1.19
57	1.20	1.25	1.25	1.25	1.25	1.35	1.35	1.15	1.25	1.25	1.25	1.45	1.27
58	1.45	1.65	1.55	1.50	1.50	1.50	1.50	1.50	1.50	1.55	1.55	1.55	1.53
59	1.60	1.60	1.35	1.05	1.05	1.10	1.10	1.20	1.45	1.45	1.50	1.50	1.33
1960	1.55	1.55	1.55	1.55	1.50	1.50	1.40	1.40	1.35	1.25	1.25	1.25	1.43
61	1.25	1.25	1.25	1.25	1.25	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.40
62	1.50	1.50	1.50	1.40	1.30	1.45	1.00	1.00	1.00	1.00	1.25	1.25	1.26
63	1.25	1.25	1.25	1.19	1.16	1.16	1.16	1.25	1.25	1.25	1.25	1.25	1.22
64	1.25	1.25	1.25	1.20	1.13	1.13	1.13	1.25	1.25	1.25	1.25	1.25	1.22
65	1.15	1.10	1.07	1.07	1.08	1.08	1.27	1.38	1.40	1.50	1.54	1.40	1.25
66	1.38	1.45	1.46	1.48	1.51	1.57	1.68	1.80	1.84	1.87	1.91	1.95	1.66
67	1.93	1.89	1.83	2.05	2.02	2.13	2.27	2.30	2.35	2.49	2.52	2.02	2.15
68	2.33	1.84	1.96	2.20	1.98	1.93	2.14	2.12	2.28	2.26	2.34	2.35	2.14
69	2.45	2.45	1.98	2.02	1.96	1.69	1.40	1.49	1.61	1.71	1.80	2.00	1.88
1970	2.08	2.04	2.08	2.10	2.08	2.03	2.38	2.40	2.36	2.35	2.78	2.66	2.28
71	2.94	2.72	2.78	2.70	2.75	2.84	2.96	3.03	3.05	3.30	3.26	3.10	2.95

Table A-43

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE INTEREST RATE ON
NINETY-DAY DEPOSIT RECEIPTS AND NON-CHEQUABLE SAVINGS DEPOSITS OF CHARTERED BANKS, MONTHLY, 1961-71
(Percent)

	<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>	<i>Average</i>
90-Day Deposit Receipts													
1961	3.50	3.75	3.50	3.50	3.50	4.00	4.00	4.00	4.00	4.00	4.25	4.00	3.83
62	3.75	3.75	3.75	3.65	3.42	2.45	2.25	2.25	2.25	2.00	3.00	3.00	2.96
63	3.00	3.00	3.00	2.94	3.41	3.53	3.41	3.25	3.25	3.12	3.12	3.12	3.18
64	3.00	3.00	3.00	2.95	2.98	3.13	3.13	3.00	3.00	3.00	3.00	2.75	2.99
65	2.65	2.60	2.57	2.57	2.58	2.45	2.52	2.63	2.65	2.75	2.54	2.52	2.58
66	2.50	2.57	2.33	2.35	2.38	2.44	2.55	2.67	2.71	2.74	2.78	2.82	2.57
67	2.80	2.76	3.02	3.05	3.27	2.48	2.62	2.45	3.04	2.99	2.77	2.77	2.84
68	2.95	2.09	1.96	2.20	2.23	2.18	2.51	2.62	3.03	3.01	2.84	2.60	2.52
69	2.70	2.70	2.73	2.77	2.71	2.69	2.40	2.49	2.61	2.71	2.80	3.00	2.69
1970	3.08	3.04	3.08	3.10	3.08	3.53	3.38	3.40	3.86	3.85	4.28	4.36	3.51
71	4.06	3.92	5.97	5.41	5.06	5.03	4.79	4.44	4.46	4.12	4.47	4.48	4.68
Non-Chequable Savings Deposits													
1968	4.33	4.34	3.96	4.20	4.23	4.18	4.14	4.12	4.03	4.01	4.09	4.10	4.14
69	4.45	4.20	4.23	4.02	3.96	3.69	3.40	3.49	3.61	3.71	3.80	4.00	3.86
1970	4.08	4.04	4.08	4.10	4.08	4.03	4.38	4.40	4.36	4.35	4.78	4.66	4.28
71	4.44	4.72	3.78	4.70	4.75	4.84	4.96	5.03	5.05	5.05	5.26	5.10	4.89

Table A-44

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST
RATE OVER AVERAGE INTEREST RATE ON CHEQUABLE ACCOUNTS
OF CHARTERED BANKS, QUARTERLY, 1951-71

(Percent)

	<i>Mar.</i>	<i>June</i>	<i>Sept.</i>	<i>Dec.</i>	<i>Average</i>
1951	3.50	4.00	4.25	4.25	3.96
52	4.20	4.30	4.25	4.30	4.27
53	4.40	4.45	4.55	4.35	4.41
54	4.05	4.00	4.00	4.00	4.01
55	4.00	3.75	3.80	3.95	3.88
56	4.00	4.05	4.15	4.15	4.04
57	4.12	4.10	4.25	4.20	4.13
58	4.05	4.00	4.00	4.05	4.05
59	4.10	4.10	4.45	4.50	4.23
1960	4.55	4.50	4.35	4.25	4.43
61	4.25	4.25	4.25	4.25	4.25
62	4.25	4.20	4.13	4.00	4.12
63	4.00	3.91	4.00	4.00	3.97
64	4.00	3.88	4.00	4.00	3.97
65	3.82	3.83	4.15	4.40	4.02
66	4.46	4.57	4.84	4.95	4.66
67	4.85	4.88	4.60	5.02	4.82
68	5.46	5.68	5.53	5.60	5.56
69	5.98	6.19	6.61	7.00	6.34
1970	7.08	7.03	6.86	7.16	7.07
71	6.28	6.34	6.55	6.35	6.49

Table A-45

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST
RATE OVER AVERAGE INTEREST RATE ON CHEQUABLE DEPOSITS
OF TRUST AND LOAN COMPANIES, QUARTERLY, 1951-71

(Percent)

	<i>Mar.</i>	<i>June</i>	<i>Sept.</i>	<i>Dec.</i>	<i>Average</i>
1951	3.05	3.55	3.80	3.80	3.51
52	3.70	3.80	3.75	3.80	3.77
53	3.81	3.86	3.96	4.01	3.88
54	3.69	3.59	3.59	3.59	3.61
55	3.48	3.23	3.26	3.39	3.34
56	3.33	3.38	3.67	3.71	3.48
57	3.66	3.71	3.86	3.79	3.72
58	3.61	3.58	3.59	3.64	3.63
59	3.65	3.64	3.95	4.00	3.75
1960	4.01	3.96	3.77	3.67	3.87
61	3.67	3.67	3.67	3.67	3.67
62	3.67	3.28	3.33	3.33	3.38
63	3.33	3.24	3.33	3.33	3.30
64	3.33	3.21	3.33	3.13	3.25
65	2.95	2.96	3.28	3.50	3.14
66	3.46	3.57	3.84	3.95	3.66
67	3.83	3.88	4.10	4.52	4.07
68	4.96	5.18	5.03	5.10	5.06
69	5.48	5.69	6.11	6.50	5.84
1970	6.58	6.53	6.36	6.16	6.45
71	5.28	5.84	6.05	5.60	5.80

Table A-46

CONVENTIONAL MORTGAGE LOANS — MARGIN OF AVERAGE INTEREST RATE OVER AVERAGE INTEREST RATE ON
ONE-YEAR LIABILITIES OF TRUST AND LOAN COMPANIES, MONTHLY, 1951-71

(Percent)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951			2.31			2.84			3.09			3.00	2.77
52			2.87			2.92			2.87			2.84	2.88
53			2.93			2.98			3.14			3.10	3.01
54			3.07			3.03			3.06			3.20	3.09
55			3.20			2.97			3.01			3.10	3.07
56			2.72			2.34			2.63			2.69	2.55
57			2.38			2.56			2.27			2.24	2.32
58			2.53			2.78			2.85			2.80	2.76
59			1.89			1.58			1.68			1.50	1.60
1960			2.26			2.52			2.72			2.63	2.55
61	2.50	2.50	2.56	2.56	2.56	2.75	2.75	2.75	2.75	2.75	2.88	3.00	2.69
62	3.00	3.00	3.00	2.90	2.65	2.10	1.80	1.40	1.60	1.85	2.05	1.95	2.27
63	2.00	2.10	2.20	2.29	2.61	2.66			2.60			2.43	2.36
64	2.34	2.42	2.37	2.32	2.25	2.25	2.22	2.21	2.21	2.21	2.17	2.17	2.27
65	2.07	2.02	1.99	1.86	1.83	1.83	1.94	1.86	1.88	1.78	1.73	1.78	1.88
66	1.66	1.80	1.81	1.75	1.73	1.79	1.89	1.94	1.87	1.90	1.89	1.93	1.83
67	1.91	1.89	1.93	2.20	2.16	2.15	1.94	1.90	1.89	2.09	2.02	2.02	2.01
68	2.87	2.32	2.39	2.36	2.35	2.27	2.21	2.17	2.14	2.26	2.22	2.16	2.27
69	2.27	2.27	2.27	2.31	2.17	2.31	2.23	2.13	2.18	2.04	1.84	1.95	2.17
1970	1.99	1.95	2.12	2.47	2.56	2.53	2.42	2.44	2.52	2.64	3.08	3.12	2.49
71	2.97	3.01	3.34	3.81	3.75	3.63	3.67	3.58	3.55	3.57	3.49	3.57	3.49

Appendix B

Practitioner Model of a Variable Terms Mortgage

by W. Peter Carter¹

1. The rate of interest may be changed as often as required during the life of the loan, but no change may come into force any earlier than six months after the latest change. There is little point in tying changes to the anniversary date of the loan, as this could create hardships for either the lender or the borrower, depending upon whether an increase or decrease should take place.²
2. The amortization period should remain unchanged. Otherwise, it would be difficult to provide with any clarity in the deed the extent to which the change in the amortization period should be related to the interest rate, and there is little hope that the average borrower would fully comprehend the basis of the amortization and of any change therein. Moreover, a maximum period of amortization would have to be stipulated, which would further complicate the wording of the deed whenever the maximum was reached, and the rate of interest then would have to result in a change in the installments.
3. The term of the loan will not vary from that stipulated in the initial contract.
4. The rate of interest in the loan must be tied to a reference rate published regularly in a specified publication of the Government of Canada. It is suggested that the reference rate be the average yield on long-term Canada bonds as published in the Bank of Canada *Statistical Summary*. This raises three questions:
 - a) From the point of view of lenders as well as of borrowers, the reference rate should be the same for everyone, and any proposed legislation or amendment to the Interest Act should so stipulate by designating the reference rate, preferably the one suggested above.
 - b) In fairness to the borrower, the publication of the Bank of Canada *Statistical Summary* must be made readily available to all borrowers. A manner in which this could be achieved practically is by making it an obligation of the lender to post the publication at the lender's place of business

¹ With the aid of counsel.

² See "Remarks" on p. 173.

within a few days from receipt thereof by the lender from the Bank of Canada. The legislation should so stipulate, and it will, of course, become necessary for the Bank of Canada or its agent (for example, CMHC) to distribute the *Summary* to all lenders who demand it in as many copies as they require. The lender should be bound to notify the borrower in writing of any change in the rate of interest and in the amount of the monthly installments, although the borrower's obligation to pay in accordance with the change would exist from the very date on which the change took place.

c) So far, the *Statistical Summary* gives the average yield of long-term Canada bonds on a weekly basis. While this might not be too serious an impediment, the publication of an average yield on a calendar month basis would facilitate the required stipulations in a deed of loan.

The lender will be free to set the margin between his interest rate and the reference rate at whatever level he chooses and specifies in the deed of loan.

5. No increase or decrease in the rate of interest would be made for any fraction less than one-quarter of one percent per annum.
6. The mortgage would stipulate a specified amount by which the monthly installments would be increased or decreased for each increase or decrease of one-quarter of one percent per annum in the rate of interest chargeable.
7. In the event that the rate of interest were increased, the borrower would have the right to prepay the loan in whole (without penalty or bonus) within a specified time after he had received notice of the increase but not earlier than a specified number of days following such notice, and subject to paying the interest up to the date of prepayment.
8. It is considered that lenders would find objectionable any reborrowing provisions; experience of the last few years in mortgage loan administration would indicate that the tendency of home owners to borrow a high amount in contemplation of the eventual resale of a house no longer exists.
9. In the Province of Quebec, the upward variations in the interest rate would be secured by additional hypothec stipulated in the initial contract.

Remarks.

These revised provisions leave one particular problem unsolved. Should the reference rate, in the course of any six-month period, vary by at least one-quarter of one percent in different directions, which rate will be applicable at the end of the six months? Should the stipulation be that the parties to the deed of loan would look to the rate of interest at the end of the last of the six months? This may not be fair, in many cases. One way of solving the problem would be the following:

a) The law would provide for the publication twice yearly of the reference rate, giving the average rate (the average yield of Canada bonds) on a six-month basis.

b) The law (possibly by way of amendment to the Interest Act) would provide for automatic application of the reference rate (subject to the margin stipulated in the deed) to all mortgage loans made at a variable interest rate.

The result of this formula would be to have, across Canada, a semi-annual date of revision of interest rates on mortgage loans and, thus, a semi-annual date of revision of monthly installments.

Appendix C

Summary of Findings of Interview Survey of Lending Institutions on Variable Terms Residential Mortgage

Conducted in October and November 1970

by J. V. Poapst and M. J. Boyd

Summary by Roger Simard

In October 1970, a questionnaire on a Variable Interest Rate Residential Mortgage proposal as a financial mechanism to augment the private supply of funds in the residential mortgage market was submitted to ten major lending institutions, including four chartered banks, five trust companies, and one life insurance company. These institutions were interviewed in October and November, and their answers and comments were recorded for future compilation. Since the questionnaire was prepared to obtain qualified answers, or counter-proposals, it is not possible to summarize the interview results in box-score format. This appendix restates the questions and summarizes the results.

QUESTIONNAIRE AND SUMMARY RESULTS

The variable interest rate mortgage loan essentially is a loan wherein the rate of interest may be changed repeatedly over the life of the loan, in accordance with some predetermined arrangement.

Q. 1) Has the subject of making variable interest rate mortgage loans been explored in your lending institution?

If yes:

- a) How extensively was it explored?
- b) What level of personnel were involved?
- c) What is the current stage of the work on the subject?

If no:

- a) Is it your intention to examine this subject in the near future?

Only two banks have made some extensive study at a senior level; one is still interested in the subject, but the other has not followed it up, being aware of bad press comments from borrowers in other countries. The other two banks have kept themselves informed on the subject but are looking at other financial mechanisms.

One trust company has explored the subject at a senior level, but all others opted for the five-year roll-over about six or seven years ago. They were concerned with administrative costs and mechanical complications in VTM financing.

The life company had only a casual interest.

Q. 2) There are several ways to provide for changing the interest rate in a variable interest rate mortgage. Considering the viewpoint of both your lending institution and the position of borrowers for home ownership, would you comment upon the relative merits of the following ways of making changes in the interest rate:

- a) rate is tied at some specified margin over some specified market interest rate, such as a six-month Canada treasury bill, and changed annually or semi-annually in multiples of 25 basis points in accordance with the change in the rate on the federal government obligation;
- b) as in (a), except that the rate to which the loan rate is tied is a rate controlled by the lender, e.g. the rate on savings deposits;
- c) as in (a), except that the lender is free at the outset to set the margin in relation to the specified market rate;
- d) as in (b), except that the lender is free at the outset to set the margin in relation to some specified rate controlled by him at whatever level he wishes;
- e) changes in the rate can be made at the discretion of the lender;
- f) some other provision for changing the rate which you wish to specify.

All institutions were reluctant to accept what they called a pegged rate, for many reasons. Government obligations, whether short or long, have an artificial and sometimes distorted rate. Banks favor "supply-and-demand" at somewhere near 2 percent over the prime rate.

One trust company would accept the McLeod, Young, Weir long-term bond rate, but all others would favor a rate related to their money cost — that is, a G.I.C. rate. The life company agreed to a rate tied to the money cost.

There were no specific comments on the freedom of the lender to set the margin above the specified rate, or on the frequency of changes.

Q. 3) A change in the interest rate on a variable interest rate mortgage would alter the monthly payments by the borrower unless there is an offsetting change in the amortization period. Considering the viewpoint of both your lending institution and

the position of borrowers for home ownership, would you comment upon the relative merits of the following alternative requirements:

- a) keep the amortization period fixed so that changes in interest rates change monthly payments;
- b) subject to limits imposed by sound lending practice, change the amortization period to offset changes in the interest rate so that monthly payments remain constant;
- c) allow the choice of (a) or (b) to be settled by agreement between lender and borrower;
- d) some other provision which you wish to specify.

On the choice of varying the amortization schedule or the monthly payment, there is a division. Banks would accept either of the two variations by agreement between lender and borrower. Two trusts would vary the monthly payments, while keeping in mind the GDS to income ratio. Three trusts would prefer a variable schedule and keep payments constant for smooth operations.

Q. 4) In loans for home ownership it is common practice to require the borrower to pay a charge equal to three months' interest if the loan is prepaid. On the other hand, in their current loans where banks are free to alter the rate of interest, prepayment charges do not apply. Considering the viewpoint of both your lending institution and the position of the home owner borrower, would you comment on the relative merits of the following prepayment provisions:

- a) borrower has the option to prepay the loan in part or in full within thirty days of notice of an increase in the rate of interest, subject to a prepayment charge equal to three months' interest on the amount prepaid calculated at the rate applicable before the increase;
- b) as in (a), with no charge for prepayment;
- c) as in (a), but the borrower is permitted to prepay in part or in full on any monthly payment date;
- d) as in (a), with the borrower permitted to prepay in part or in full on any monthly payment date with no charge for prepayment;
- e) some other provision which you wish to specify.

Three banks would waive the penalty on prepayment if this was done at the time of a change in rate. One bank and five trusts would maintain a three-month interest charge to cover origination cost and loss of income before reinvestment. The life company had no comment.

Q. 5) From your standpoint as a lender do you foresee that a variable interest rate mortgage would require materially different provisions respecting other terms and conditions of lending for home ownership? E.G. in maximum loan and loan-to-value ratio, (initial) amortization period, ratio of initial gross debt service to applicant's income, insurance fee for NHA loans? If so, would you elaborate? If not, would you elaborate?

All institutions could see no reason to require different provisions for VIRM's, provided that it is understood that the schedule of payments can be extended to meet GDS limitations. One bank suggested that clients would be screened for VIRM and FIRM so that lower income groups or borrowers with less stable incomes could be directed to FIRMS.

Q. 6) What types of costs would be encountered by lenders in administering variable interest rate mortgages for home ownership, and approximately how large might

they be expected to be? E.G. (i) accounting costs (ii) costs of notifying borrowers of changes in rate.

For all interviewees, the major increase in cost would be due to notification of changes and to the time spent on answering queries and hearing complaints. Accounting cost would increase only nominally if proper programming were implemented. One bank estimated that the increase would represent 2 basis points. A trust company estimated a \$10 to \$15 charge for each change in rate. For these reasons, one trust believes that the rate will not be any lower than for the five-year roll-over loan.

- Q. 7) It has been said that variable interest rate loans for home ownership could not enjoy widespread popularity because when it is generally expected that interest rates will decline lenders would not wish to make such loans, and when it is generally expected that interest rates will rise borrowers would not wish to obtain such loans. Would you comment on this view both from the standpoint of lenders and from the standpoint of borrowers?

The question was labeled as academic or hypothetical by most interviewees. Some were not concerned that this attitude would exist in normal times or after an initial period of familiarization.

- Q. 8) One feature which might materially affect the attractiveness of the variable interest rate mortgage from the home owner's standpoint is a provision which would enable him not only to make prepayments on his debt, but to *re-borrow* his prepayments should he wish to do so. Thus a borrower who reduced his indebtedness below the amount required by the amortization schedule for his loan would have the right to raise the amount of the debt up to the scheduled level if he wished to do so. But at no time would his balance owing exceed the amount which would apply had he made no prepayments.

A loan of this kind would enable the borrower who could reduce his indebtedness to do so without concern over lowering the marketability of his house. Also he would have less need for holding savings in the form of, say, marketable securities which earn a lower rate of return than the rate of interest being paid on the mortgage. The borrower's financial position is simplified. The potential of the mortgage to serve as a savings vehicle is increased. Meanwhile a line of credit is established for further borrowing should the need arise.

It is recognized that re-borrowing could involve significant legal costs to establish the priority of a prospective advance. If such costs could not be avoided or kept low the attractiveness of this type of provision would be reduced, but could still be significant.

Would you comment on the advantages and problems that might arise from making variable interest rate mortgages which included this type of provisions assuming alternatively that (i) legal costs on re-borrowing cannot be avoided, and (ii) that such costs can be avoided.

Banks fear that the open mortgage establishes a line of credit for the mortgagor and so would compete with other borrowers' needs. One bank suggests that prepayments be posted as a savings deposit to show true figures for assets and growth. In any case, some of them feared some legal problem.

Two trust companies can see this as favoring the borrower to the extent that he could earn mortgage-rate interest on his prepayment so that the lender could not operate profitably. One trust felt that prepayments are insignificant and so the system is academic. One trust favors the plan which would consolidate all home improvements on old houses.

The life company fears lenders' resistance, having experienced the policy-loan squeeze.

- Q. 9) If variable interest rate mortgage loans were to be authorized on a permissive basis under the National Housing Act what difference in interest rates would it be reasonable to expect between a lender's prevailing rate for fixed interest rate loans for home ownership and the initial rate he would charge for a variable interest rate loan for home ownership? For example, if the fixed rate currently charged were 9½%, what would the initial rate be on a variable interest rate mortgage? In making your comments would you specify the other provisions of the variable interest rate loan which you are assuming, as well as whether tight or easy money conditions are assumed to prevail in the capital market.

Would you comment on the effect, if any, of changes in the assumed provisions of the loan (e.g. inclusion of a prepayment penalty, exclusion of the re-borrowing provision), and the effect, if any, of opposite conditions prevailing in the capital market.

Two banks agreed that there would be a reduction of one-quarter of one percent to one-half of one percent. The others were reluctant to answer or felt this was a hypothetical question.

One trust did not say, but four others felt that there would be no saving for the borrower and in one case it was claimed that handling costs would make it higher by one-quarter to one-half of one percent.

The life company was uncertain because of the cost factor, but would guess at a one-quarter of one percent reduction in rate.

No one elaborated as to what conditions would exist, such as prepayment charges or reborrowing privileges.

- Q. 10) The preceding questions were confined to loans for home ownership. Would you comment on the feasibility of making variable interest rate mortgages for rental housing.

All institutions think that the owner-builder will be very reluctant to use a VIRM because he cannot project his cost unless he can tie a VIRM with a variable rent, and this may not be acceptable by the lessee. It is not certain whether such leases can be legally drawn.

- Q. 11) Are there other points of interest, or comments which you wish to make, on the subject of variable interest rate mortgages which have not been covered in your previous remarks?

It would be difficult to summarize the varied comments of the interviewees, but we can select some noteworthy comments. One bank was convinced that the VIRM should be implemented now. Another was more concerned with checking inflation and government spending, than with improving the supply of mortgage money. Two others felt that the VIRM had too many drawbacks — cost, servicing, borrower's fear.

Trusts were non-committal and more concerned with other financing problems. In general, they felt that the five-year roll-over was a well-accepted mechanism that could be matched with one to five-year deposits and that the VIRM would be of greater interest to banks. One feared the trend to refinance at a lower rate through the VIRM.

The life company could not foresee that it would implement such a proposal, but the interviewee stated that he was biased.

Appendix D

Background Data for Chapter 5

by George Rich and Stephen O'Connor

Table D-1

HISTORICAL DATA — MORTGAGE RATES

<i>January of</i>	<i>Conventional Mortgage Rate</i>	<i>NHA Mortgage Rate</i>
1956	5.95	5.25
1957	6.70	6.00
1958	6.95	6.00
1959	6.85	6.00
1960	7.30	6.75
1961	7.00	6.75
1962	7.00	6.50
1963	7.00	6.50
1964	7.00	6.25
1965	6.90	6.25
1966	7.38	6.75
1967	7.93	7.25
1968	8.83	8.17
1969	9.45	8.93
1970	10.58	10.01

Source: Appendix A.

Table D-2

HISTORICAL DATA — ANCHOR RATES

<i>Sept./Oct. Averages</i>	<i>Anchor Rate (1)</i>	<i>Anchor Rate (2)</i>	<i>Anchor Rate (3)*</i>	<i>Anchor Rate (4)†</i>
1955	2.54%	4.50%	2.00%	2.79%
1956	4.00	5.38	2.25	3.77
1957	4.67	5.75	2.75	4.73
1958	3.22	5.25	2.75	3.90
1959	5.40	5.75	2.75	5.52
1960	3.29	5.75	2.75	4.38
1961	3.42	5.50	2.75	4.25
1962	4.67	6.00	2.88	5.28
1963	4.17	5.75	3.00	4.40
1964	4.42	5.75	3.00	4.79
1965	4.94	5.75	3.00	5.37
1966	5.52	6.00	3.00	5.97
1967	5.80	5.88	3.50	6.31
1968	6.05	6.75	3.50	6.82
1969	7.80	8.50	3.50	8.05

Anchor Rate 1: Government of Canada one to three-year bond yield.

Anchor Rate 2: Chartered banks' prime business loan rate.

Anchor Rate 3: Chartered banks' deposit rate on chequable accounts.

Anchor Rate 4: Trust and loan companies' one-year term liabilities.

* The data for this rate are quarterly; these figures are from the third quarter.

† For the years 1955–1960 and for the year 1963, the data are quarterly.

Tables D-3 to D-6

The tables illustrate the maximum variation in mortgage rates between the first and second years.

Given a mortgage of \$1,000 and a stated amortization period, an assumed range of mortgage rates for the first year was selected. This enabled the computation of the monthly payment and the principal outstanding on December 31 of the first year for each value within the selected range. It was then possible to calculate the maximum mortgage rates for the second year which were consistent with the established monthly payments and did not violate the ceiling placed on the amortization period. An increase in the mortgage rate to a level higher than the computed maximum would necessitate an adjustment to the monthly payment.

It should be noted that the calculated maximum variable rate does not generally result in an amortization period equivalent to the ceiling value; rather, because of the discontinuity of possible values for the variable rate (the range selected was 5 to 10 percent with increments of one-quarter of one percent within the range), the amortization period for the maximum rate varies.

Table D-3

25-YEAR MORTGAGE

<i>Mortgage Rate for first year</i>	<i>Maximum Mortgage Rate for second year</i>
5.00%	6.25%
5.25	6.50
5.50	6.75
5.75	7.00
6.00	7.00
6.25	7.25
6.50	7.50
6.75	7.75
7.00	8.00
7.25	8.25
7.50	8.50
8.00	8.75*
8.50	9.25*
9.00	9.75*
9.50	over 10.00
10.00	over 10.00

Table D-4

20-YEAR MORTGAGE

<i>Mortgage Rate for first year</i>	<i>Maximum Mortgage Rate for second year</i>
5.00%	7.00%
5.25	7.25
5.50	7.50
5.75	7.75
6.00	8.00
6.25	8.00
6.50	8.25
6.75	8.50
7.00	8.75*
7.25	9.00
7.50	9.25*
8.00	9.50
8.50	10.00
9.50	over 10.00
9.50	over 10.00
10.00	over 10.00

* Because of gaps in the mortgage rate tables, it was necessary to obtain estimates for these rates. The estimates assumed a linear relationship.

Table D-5

15-YEAR MORTGAGE

<i>Mortgage Rate for first year</i>	<i>Maximum Mortgage Rate for second year</i>
5.00%	8.75% *
5.25	9.00
5.50	9.00
5.75	9.25 *
6.00	9.50
6.25	9.75 *
6.50	10.00
6.75	↓ over 10.00 ↑
7.00	
7.25	
7.50	
8.00	
8.50	
9.00	
9.50	
10.00	

Table D-6

10-YEAR MORTGAGE AND
5-YEAR MORTGAGE

<i>Mortgage Rate for first year</i>	<i>Maximum Mortgage Rate for second year</i>
5.00%	↓ over 10.00 ↑
5.25	
5.50	
5.75	
6.00	
6.25	
6.50	
6.75	
7.00	
7.25	
7.50	
8.00	
8.50	
9.00	
10.00	
10.00	

* Because of gaps in the mortgage rate tables, it was necessary to obtain estimates for these rates. The estimates assumed a linear relationship.

Tables D-7 to D-9

Tables D-7 to D-9 outline the procedure followed in Chapter 5 to obtain the variable mortgage rates for the examples considered.

Two series of variable rates are generated, one starting with a base rate using the conventional mortgage rate and the other with a base rate using the NHA mortgage rate. Within each of the series, there are four sets of variable rates corresponding to the four possible anchor rates.

The variation in the mortgage rate is based on the annual changes occurring in the September–October average of the anchor rate.¹ This procedure yields a set of variable mortgage rates where any given variable rate is dependent upon both the actual variable rate calculated for the previous year and the change in the September–October average of the anchor rate during the past year.

The entire series of variable rates is then subjected to a process of rounding down and rounding up to the quarter percentage levels. This procedure facilitates the use of mortgage rate tables for the computational aspects of the examples.

¹ For data on mortgage rates and anchor rates, see tables D-1 and D-2.

Table D-7

CALCULATION OF INITIAL INTEREST RATES ON VTM's

1) Conventional Mortgage Rates		NHA Mortgage Rates	
January 1958:	6.95%	January 1958:	6.00%
January 1966:	7.38%	January 1966:	6.75%
2) 1958 Variable Rates			
The variable rates were obtained by deducting one-quarter of one percent from the above fixed rates. Thus,			
Conventional-based variable rate:		6.70%	
NHA-based variable rate:		5.75%	
3) 1966 Variable Rates			
The variable rates were calculated as follows:			
Fixed rate — one-quarter of one percent — factor reflecting expectations.			
To take account of expectations, we assumed that the difference between the yields on five-year and one-year Government of Canada bonds reflected expected changes in short-term rates. Thus, calculating this difference, we obtained a factor reflecting expectations. We then assumed that the difference between the fixed (five-year) and the variable (one-year) mortgage rates consisted of the factor reflecting expectations plus one-quarter of one percent. Unfortunately, the calculation of the expectations factor raised certain difficulties. Since the yields on one-year and five-year bonds were not known, we estimated these yields, using the yield curves plotted in <i>Figure 5-1</i> , Chapter 5. The data underlying the yield curves refer to the last Wednesday of the years 1957 and 1965.			
For the last Wednesday of 1965, we obtained:			
Five-year bond yield		5.23%	
One-year bond yield		4.88%	
Factor reflecting expectations		0.35%	
The variable rates for January 1966 were calculated by deducting $0.25 + 0.35 = 0.60\%$ from the corresponding fixed rates. Thus,			
Conventional-based variable rate		6.78%	
NHA-based variable rate		6.15%	

Table D-8

VARIABLE MORTGAGE RATES

(Conventional Rate Based)

Date	(1)	(2)	(3)	(4)
Jan. 1, 1958	6.70%	6.70%	6.70%	6.70%
1959	5.35	6.20	6.70	5.87
1960	7.53	6.70	6.70	7.49
1961	5.41	6.70	6.70	6.35
1962	5.54	6.45	6.70	6.22
1966	6.78	6.78	6.78	6.78
1967	7.36	7.03	6.78	7.38
1968	7.64	6.91	7.28	7.72
1969	7.89	7.78	7.28	8.23
1970	9.64	9.53	7.28	9.46

Anchor Rates:

- (1) Government of Canada one to three-year bond yields.
- (2) Chartered banks' prime business loan rate.
- (3) Chartered banks' deposit rate on chequable accounts.
- (4) Trust and loan companies' one-year term liabilities.

Table D-9

VARIABLE MORTGAGE RATES
(NHA rate based)

Date	(1)	(2)	(3)	(4)
Jan. 1,				
1958	5.75%	5.75%	5.75%	5.75%
1959	4.40	5.25	5.75	4.92
1960	6.58	5.75	5.75	6.54
1961	4.46	5.75	5.75	5.40
1962	4.59	5.50	5.75	5.27
1966	6.15	6.15	6.15	6.15
1967	6.73	6.40	6.15	6.75
1968	7.01	6.28	6.65	7.09
1969	7.26	7.15	6.65	7.60
1970	9.01	8.90	6.65	8.83

Anchor Rates:

- (1) Government of Canada one to three-year bond yields.
- (2) Chartered banks' prime business loan rate.
- (3) Chartered banks' deposit rate on chequable accounts.
- (4) Trust and loan companies' one-year term liabilities.

Table D-10

AVERAGE RATES OF RETURN ON VTMs

Average rates of return (R) on VTMs, over a five-year period, were calculated by means of the following formula:

$$(1 + R/2)^{10} = (1 + r_1/2)^2 \cdot (1 + r_2/2)^2 \dots (1 + r_5/2)^2$$

where r_1, r_2, \dots, r_5 stand for the variable rates in year 1, 2, \dots 5 respectively. The formula is based on the assumption that interest is compounded semi-annually.

We obtain the following results:

		Anchor Rates*			
		(1)	(2)	(3)	(4)
I 1958-1962					
a) Conventional mortgage rate based	rounded down	6.00	6.36	6.50	6.36
	rounded up	6.26	6.60	6.76	6.60
b) NHA mortgage rate based	rounded down	5.06	5.56	5.76	5.50
	rounded up	5.26	5.56	5.76	5.70
II 1966-1970					
a) Conventional mortgage rate based	rounded down	7.56	7.56	7.06	7.76
	rounded up	7.80	7.80	7.30	8.06
b) NHA mortgage rate based	rounded down	7.16	6.86	6.30	7.20
	rounded up	7.40	7.10	6.50	7.40

* For an explanation of the anchor rates, see Table D-9.

Tables D-11 to D-14

VTM: Calculation of Monthly Payments and Amortization Periods, 1958–1962.

Table D-11

GOVERNMENT OF CANADA ONE TO THREE-YEAR BOND YIELD

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage	Jan. 1/58	6.50%	\$6.70	25 years
rate based	/59	5.25	5.98	24
b) adjusted monthly	/60	7.50	7.26	23
payments	/61	5.25	6.02	22
c) data rounded down	/62	5.50	6.14	21
a) as above	Jan. 1/58	6.75%	\$6.86	25 years
b) as above	/59	5.50	6.12	24
c) data rounded up	/60	7.75	7.41	23
	/61	5.50	6.16	22
	/62	5.75	6.29	21
a) as above	Jan. 1/58	6.50%	\$6.70	25 years
b) adjusted amortization	/59	5.25	6.70	19 6/12
period	/60	7.50	6.70	28 4/12
c) data rounded down	/61	5.25	6.70	18 2/12
	/62	5.50	6.70	17 8/12
a) as above	Jan. 1/58	6.75%	\$6.86	25 years
b) adjusted amortization	/59	5.50	6.86	19 5/12
period	/60	7.75	6.86	28 5/12
c) data rounded up	/61	5.50	6.86	18 3/12
	/62	5.75	6.86	17 7/12
a) NHA mortgage	Jan. 1/58	5.75%	\$6.26	25 years
rate based	/59	4.25	5.43	24
b) adjusted monthly	/60	6.50	6.64	23
payments	/61	4.25	5.46	22
c) data rounded down	/62	4.50	5.58	21
a) and b) as above	Jan. 1/58	5.75%	\$6.26	25 years
c) data rounded up	/59	4.50	5.56	24
	/60	6.75	6.79	23
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
	/61	4.50	5.59	22
	/62	4.75	5.71	21

Table D-12

CHARTERED BANKS' PRIME BUSINESS LOAN RATE

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage rate based	Jan. 1/58	6.50%	\$6.70	25 years
	/59	6.00	6.41	24
b) adjusted monthly payments	/60	6.50	6.69	23
	/61	6.50	6.69	22
c) data rounded down	/62	6.25	6.56	21
a) and b) as above	Jan. 1/58	6.75%	\$6.86	25 years
c) data rounded up	/59	6.25	6.55	24
	/60	6.75	6.84	23
	/61	6.75	6.84	22
	/62	6.50	6.70	21
a) as above	Jan. 1/58	6.50%	\$6.70	25 years
b) adjusted amortization period	/59	6.00	6.70	21 10/12
	/60	6.50	6.70	22 9/12
c) data rounded down	/61	6.50	6.70	21 9/12
	/62	6.25	6.70	19 11/12
a) and b) as above	Jan. 1/58	6.75%	\$6.86	25 years
c) data rounded up	/59	6.25	6.86	21 9/12
	/60	6.75	6.86	22 8/12
	/61	6.75	6.86	21 1/12
	/62	6.50	6.86	19 10/12
a) NHA mortgage rate based	Jan. 1/58	5.75%	\$6.26	25 years
	/59	5.25	5.97	24
b) adjusted monthly payments	/60	5.75	6.24	23
	/61	5.75	6.24	22
c) data rounded down	/62	5.50	6.11	21
a) and b) as above	Jan. 1/58	5.75%	\$6.26	25 years
c) data rounded down	/59	5.25	5.97	24
	/60	5.75	6.24	23
	/61	5.75	6.24	22
	/62	5.50	6.11	21
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) adjusted amortization period	/59	5.25	6.26	22
	/60	5.75	6.26	22 10/12
c) data rounded down	/61	5.75	6.26	21 10/12
	/62	5.50	6.26	20
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) adjusted amortization period	/59	5.25	6.26	22
	/60	5.75	6.26	22 10/12
c) data rounded up	/61	5.75	6.26	21 10/12
	/62	5.50	6.26	20

Table D-13

CHARTERED BANKS' DEPOSIT RATE ON CHEQUABLE ACCOUNTS

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage	Jan. 1/58	6.50%	\$6.70	25 years
rate based	/59	6.50	6.70	24
b) adjusted monthly	/60	6.50	6.70	23
payments	/61	6.50	6.70	22
c) data rounded down	/62	6.50	6.70	21
a) as above	Jan. 1/58	6.75%	\$6.86	25 years
b) as above	/59	6.75	6.86	24
c) data rounded up	/60	6.75	6.86	23
	/61	6.75	6.86	22
	/62	6.75	6.86	21
a) as above	Jan. 1/58	6.50%	\$6.70	25 years
b) adjusted amortization	/59	6.50	6.70	24
period	/60	6.50	6.70	23
c) data rounded down	/61	6.50	6.70	22
	/62	6.50	6.70	21
a) as above	Jan. 1/58	6.75%	\$6.86	25 years
b) adjusted amortization	/59	6.75	6.86	24
period	/60	6.75	6.86	23
c) data rounded up	/61	6.75	6.86	22
	/62	6.75	6.86	21
a) NHA mortgage	Jan. 1/58	5.75%	\$6.26	25 years
rate based	/59	5.75	6.26	24
b) adjusted monthly	/60	5.75	6.26	23
payments	/61	5.75	6.26	22
c) data rounded down	/62	5.75	6.26	21
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) as above	/59	5.75	6.26	24
c) data rounded up	/60	5.75	6.26	23
	/61	5.75	6.26	22
	/62	5.75	6.26	21
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) adjusted amortization	/59	5.75	6.26	24
period	/60	5.75	6.26	23
c) data rounded down	/61	5.75	6.26	22
	/62	5.75	6.26	21
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) adjusted amortization	/59	5.75	6.26	24
period	/60	5.75	6.26	23
c) data rounded up	/61	5.75	6.26	22
	/62	5.75	6.26	21

Table D-14

TRUST AND LOAN COMPANIES' ONE-YEAR TERM LIABILITIES

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage rate based	Jan. 1/58	6.50%	\$6.70	24 years
	/59	5.75	6.26	24
b) adjusted monthly payments	/60	7.25	7.12	23
	/61	6.25	6.56	22
c) data rounded down	/62	6.00	6.43	21
a) as above	Jan. 1/58	6.75%	\$6.86	25 years
b) as above	/59	6.00	6.41	24
c) data rounded up	/60	7.50	7.28	23
	/61	6.50	6.71	22
	/62	6.25	6.58	21
a) as above	Jan. 1/58	6.50%	\$6.70	25 years
b) adjusted amortization period	/59	5.75	6.70	21
	/60	7.25	6.70	26 10/12
c) data rounded down	/61	6.25	6.70	21 1/12
	/62	6.00	6.70	19 4/12
a) as above	Jan. 1/58	6.75%	\$6.86	25 years
b) adjusted amortization period	/59	6.00	6.86	20 11/12
	/60	7.50	6.86	26 10/12
c) data rounded up	/61	6.50	6.86	21
	/62	6.25	6.86	19 3/12
a) NHA mortgage rate based	Jan. 1/58	5.75%	\$6.26	25 years
	/59	4.75	5.70	24
b) adjusted monthly payments	/60	6.50	6.66	23
	/61	5.25	5.98	22
c) data rounded down	/62	5.25	5.98	21
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) as above	/59	5.00	5.83	24
c) data rounded up	/60	6.75	6.80	23
	/61	5.50	6.12	22
	/62	5.50	6.12	21
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) adjusted amortization period	/59	4.75	6.26	20 4/12
	/60	6.50	6.26	26 3/12
c) data rounded down	/61	5.25	6.26	20 2/12
	/62	5.25	6.26	19 2/12
a) as above	Jan. 1/58	5.75%	\$6.26	25 years
b) adjusted amortization period	/59	5.00	6.26	21 1/12
	/60	6.75	6.26	28 2/12
c) data rounded up	/61	5.50	6.26	21 2/12
	/62	5.50	6.26	20 2/12

Tables D-15 to D-18

VTM: Calculation of Monthly Payments and Amortization Periods, 1966–1970.

Table D-15

GOVERNMENT OF CANADA ONE TO THREE-YEAR BOND YIELDS

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage rate based	Jan. 1/66 /67	6.75% 7.25	\$6.86 7.16	25 years 24
b) adjusted monthly payments	/68 /69	7.50 7.75	7.30 7.45	23 22
c) data rounded down	/70	9.50	8.45	21
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) as above	/67	7.50	7.31	24
c) data rounded up	/68 /69 /70	7.75 8.00 9.75	7.46 7.61 8.62	23 22 21
a) as above	Jan. 1/66	6.75%	\$6.86	25 years
b) adjusted amortization period	/67 /68	7.25 7.50	6.86 6.86	27 27 11/12
c) data rounded down	/69 /70	7.75 9.50	6.86 7.83	29 1/12 31
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) adjusted amortization period	/67 /68	7.50 7.75	7.01 7.01	27 2/12 28 2/12
c) data rounded up	/69 /70	8.00 9.75	7.01 8.02	29 5/12 31
a) NHA mortgage rate based	Jan. 1/66 /67	6.00% 6.50	\$6.40 6.69	25 years 24
b) adjusted monthly payments	/68 /69	7.00 7.25	6.98 7.12	23 22
c) data rounded down	/70	9.00	8.11	21
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) as above	/67	6.75	6.85	24
c) data rounded up	/68 /69 /70	7.25 7.50 9.25	7.14 7.28 8.28	23 22 21
a) as above	Jan. 1/66	6.00%	\$6.40	25 years
b) adjusted amortization period	/67 /68	6.50 7.00	6.40 6.40	26 10/12 29 8/12
c) data rounded down	/69 /70	7.25 9.00	6.40 7.48	31 1/12 31
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) adjusted amortization period	/67 /68	6.75 7.25	6.55 6.55	26 11/12 29 11/12
c) data rounded up	/69 /70	7.50 9.25	6.55 7.66	31 6/12 31

Table D-16

CHARTERED BANKS' PRIME BUSINESS LOAN RATE

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage rate based	Jan. 1/66	6.75%	\$6.86	25 years
	/67	7.00	7.00	24
b) adjusted monthly payments	/68	6.75	6.85	23
	/69	7.75	7.42	22
c) data rounded down	/70	9.50	8.43	21
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) as above	/67	7.25	7.16	24
c) data rounded up	/68	7.00	7.01	23
	/69	8.00	7.58	22
	/70	9.75	8.61	21
a) as above	Jan. 1/66	6.75%	\$6.86	25 years
b) adjusted amortization period	/67	7.00	6.86	25 4/12
	/68	6.75	6.86	23 1/12
c) data rounded down	/69	7.75	6.86	28
	/70	9.50	7.74	31
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) adjusted amortization period	/67	7.25	7.01	25 6/12
	/68	7.00	7.01	23 3/12
c) data rounded up	/69	8.00	7.01	28 6/12
	/70	9.75	7.93	31
a) NHA mortgage rate based	Jan. 1/66	6.00%	\$6.40	25 years
	/67	6.25	6.54	24
b) adjusted monthly payments	/68	6.25	6.54	23
	/69	7.00	6.96	22
c) data rounded down	/70	8.75	7.95	21
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) as above	/67	6.50	6.70	24
c) data rounded up	/68	6.50	6.70	23
	/69	7.25	7.12	22
	/70	9.00	8.11	21
a) as above	Jan. 1/66	6.00%	\$6.40	25 years
b) adjusted amortization period	/67	6.25	6.40	25 4/12
	/68	6.25	6.40	24 4/12
c) data rounded down	/69	7.00	6.40	27 9/12
	/70	8.75	7.21	31
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) adjusted amortization period	/67	6.50	6.55	25 4/12
	/68	6.50	6.55	24 4/12
c) data rounded up	/69	7.25	6.55	27 11/12
	/70	9.00	7.40	31

Table D-17

CHARTERED BANKS' DEPOSIT RATE ON CHEQUABLE ACCOUNTS

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage	Jan. 1/66	6.75%	\$6.86	25 years
rate based	/67	6.75	6.86	24
b) adjusted monthly	/68	7.25	7.14	23
payments	/69	7.25	7.14	22
c) data rounded down	/70	7.25	7.14	21
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) as above	/67	7.00	7.01	24
c) data rounded up	/68	7.50	7.30	23
	/69	7.50	7.30	22
	/70	7.50	7.30	21
a) as above	Jan. 1/66	6.75%	\$6.86	25 years
b) adjusted amortization	/67	6.75	6.86	24
period	/68	7.25	6.86	25 8/12
c) data rounded down	/69	7.25	6.86	24 8/12
	/70	7.25	6.86	23 8/12
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) adjusted amortization	/67	7.00	7.01	24
period	/68	7.50	7.01	25 9/12
c) data rounded up	/69	7.50	7.01	24 9/12
	/70	7.50	7.01	23 9/12
a) NHA mortgage	Jan. 1/66	6.00%	\$6.40	25 years
rate based	/67	6.00	6.40	24
b) adjusted monthly	/68	6.50	6.69	23
payments	/69	6.50	6.69	22
c) data rounded down	/70	6.50	6.69	21
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) as above	/67	6.25	6.55	24
c) data rounded up	/68	6.75	6.84	23
	/69	6.75	6.84	22
	/70	6.75	6.84	21
a) as above	Jan. 1/66	6.00%	\$6.40	25 years
b) adjusted amortization	/67	6.00	6.40	24
period	/68	6.50	6.40	25 6/12
c) data rounded down	/69	6.50	6.40	24 6/12
	/70	6.50	6.40	23 6/12
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) adjusted amortization	/67	6.25	6.55	24
period	/68	6.75	6.55	25 7/12
c) data rounded up	/69	6.75	6.55	24 7/12
	/70	6.75	6.55	23 7/12

Table D-18

TRUST AND LOAN COMPANIES' ONE-YEAR TERM LIABILITIES

<i>Assumptions</i>	<i>Date</i>	<i>Mortgage Rate</i>	<i>Monthly Payment</i>	<i>Amortization Period</i>
a) conventional mortgage rate based	Jan. 1/66	6.75%	\$6.86	25 years
	/67	7.25	7.15	24
b) adjusted monthly payments	/68	7.50	7.30	23
	/69	8.00	7.59	22
c) data rounded down	/70	9.25	8.32	21
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) as above	/67	7.50	7.31	24
c) data rounded up	/68	7.75	7.46	23
	/69	8.25	7.75	22
	/70	9.50	8.48	21
a) as above	Jan. 1/66	6.75%	\$6.86	25 years
b) adjusted amortization period	/67	7.25	6.86	27
	/68	7.50	6.86	27 11/12
c) data rounded down	/69	8.00	6.86	31 11/12
	/70	9.25	7.68	31
a) as above	Jan. 1/66	7.00%	\$7.01	25 years
b) adjusted amortization period	/67	7.50	7.01	27 2/12
	/68	7.75	7.01	28 2/12
c) data rounded up	/69	8.25	7.03	32
	/70	9.50	7.85	31
a) NHA mortgage rate based	Jan. 1/66	6.00%	\$6.40	25 years
	/67	6.75	6.84	24
b) adjusted monthly payments	/68	7.00	6.99	23
	/69	7.50	7.27	22
c) data rounded down	/70	8.75	7.98	21
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) as above	/67	6.75	6.85	24
c) data rounded up	/68	7.25	7.14	23
	/69	7.75	7.42	22
	/70	9.00	8.14	21
a) as above	Jan. 1/66	6.00%	\$6.40	25 years
b) adjusted amortization period	/67	6.75	6.40	28 9/12
	/68	7.00	6.40	29 11/12
c) data rounded down	/69	7.50	6.52	32
	/70	8.75	7.34	31
a) as above	Jan. 1/66	6.25%	\$6.55	25 years
b) adjusted amortization period	/67	6.75	6.55	26 11/12
	/68	7.25	6.55	29 11/12
c) data rounded up	/69	7.75	6.69	32
	/70	9.00	7.50	31

Tables D-19 to D-22

In these tables, a method is developed that allows us to calculate the gains accruing to borrowers from using VTMs as a saving device. Suppose that a borrower wishing to save part of his income may avail himself of two devices: (1) he may use his savings to purchase Canada Savings Bonds, or (2) he may decide to prepay his mortgage. For the sake of simplicity, we assume that he prepays his mortgage once a year — that is, on January 1. Moreover, if he uses the alternative saving device, we assume that he purchases Canada Savings Bonds once a year, probably on November 1. It is also assumed that the borrower wishes to save \$1 per year.

To compare the two saving devices, we make the further assumption that all interest on the \$1 investment is reinvested. This assumption raises certain difficulties if saving takes the form of prepaying the mortgage. Suppose that a borrower obtained a \$1,000 mortgage on January 1, 1958. After one year, he decided to prepay his

mortgage; that is, he reduced the principal of his mortgage by \$1. If in 1958 the mortgage rate was 5.75 percent, the principal outstanding on January 1, 1959, would be \$981.22. Thus, as a result of his prepayment, the amount of principal would be reduced to \$980.22. Now assume that on January 1, 1959, the variable mortgage rate was reduced from 5.75 percent to 4.25 percent. Given a principal of \$981.22, the monthly payments would be \$5.43. If the amount of principal was reduced by \$1, the monthly payments would fall to \$5.42; that is, the borrower would benefit from a reduction of 12¢ in his total monthly payments for 1959. Of course, the reduction in the monthly payments would reflect a reduction in interest payments (5¢), as well as a reduction in payments toward principal (7¢). Finally, if the borrower did not make a prepayment on January 1, 1959, the amount of principal outstanding on January 1, 1960, would be \$956.93. With a prepayment of \$1, the corresponding figure would amount to \$956.00. The difference between the two figures would no longer be \$1, but \$1 minus the 7¢ reduction in the monthly payment going toward principal. In other words, if the difference between the two figures were to remain at \$1 — that is, if the borrower were to maintain the value of his \$1 investment — he would have to reinvest the 7¢ reduction in the monthly payment going toward principal.

The implications of our assumption about reinvestment of interest payments are now clear. The assumption implies that on January 1, 1960, the borrower would have prepaid \$1 plus the total reduction of 12¢ in the monthly payments for 1959. Similarly, on January 1, 1961, the prepayment would have amounted to \$1 plus the difference between the actual monthly payments for 1960 and the payments that would have been made in the absence of any prepayments. It is not suggested here that the borrower would actually behave in this manner. For a comparison of the two saving devices to be useful, however, the assumptions underlying our calculations must be uniform.

Our comparison of the two saving devices is based on an examination of the rates of return on investments in Canada Savings Bonds as opposed to the rates of return on investments in VTMs. Consider the case of VTMs. If the borrower prepaid \$1 on January 1, 1959, 1960, 1961, and 1962, the value of his investments (x) on January 1, 1963, would be

$$x = \sum_{i=59}^{62} (1 + r_i/2)^2 + \sum_{i=60}^{62} (1 + r_i/2)^2 + \sum_{i=61}^{62} (1 + r_i/2)^2 + (1 + r_{62}/2)^2 \quad (1)$$

where r_i stands for the variable mortgage rate in year i . In order to calculate an average rate of return on the borrower's investments, we determine a constant interest rate (R) yielding x on January 1, 1963. R can be calculated from equations (1) and (2):

$$x = (1 + R/2)^8 + (1 + R/2)^6 + (1 + R/2)^4 + (1 + R/2)^2 \quad (2)$$

Unfortunately, the formula is so unwieldy that it does not permit easy calculation of R . Only a small error is introduced, however, if a much simpler version of the formula is used. Combining and rewriting the two equations, we obtain:

$$4 + 10R + A = 4 + r_{59} + 2r_{60} + 3r_{61} + 4r_{62} + B \quad (3)$$

Solving for R , we can see that

$$R = (r_{59} + 2r_{60} + 3r_{61} + 4r_{62})/10 + (B - A)/10 \quad (4)$$

Note that the A and B terms involve products of interest rates. Moreover, A and B are positive and of the same order of magnitude. Therefore, $(B - A)/10$ is very small

and can be ignored. These arguments allow us to base the calculation on a simple formula:²

$$R = (r_{59} + 2r_{60} + 3r_{61} + 4r_{62})/10 \quad (5)$$

Equation (5) is simply an average of the four mortgage rates, each rate being weighted by the borrower's cumulative investments in that particular year.

The calculation of an average rate of return on investments in Canada Savings Bonds can be based on the same principles. We assume that every year the borrower purchases Canada Savings Bonds worth \$1 plus the interest received during the preceding year.³ In our calculations, we ignore the fact that the Canada Savings Bonds are normally purchased on November 1 rather than January 1. In other words, we assume that, say, a 1958 Canada Savings Bond was purchased on January 1, 1959.

Consider the value of the borrower's investments (x) on January 1, 1963. The calculation of x is complicated by the fact that a Canada Savings Bond may feature different coupon yields in different years. Therefore, let ${}_{59}r_{60}$ be the coupon yield in 1960 on a bond issued on January 1, 1959. Also note that x consists of the January 1962 holdings of various types of bonds plus the interest earned during the year 1962. Therefore, we calculate the January 1962 value of each type of bond plus interest earned in 1962. For the bonds purchased on January 1, 1959, we obtain:

$$1 + {}_{59}r_{62}$$

The value of bonds purchased on January 1, 1960, is equal to \$1 plus the interest earned in 1959, or $1 + {}_{59}r_{59}$. Adding interest earned on these bonds in 1962, we obtain:

$$(1 + {}_{59}r_{59})(1 + {}_{60}r_{62}) \sim 1 + {}_{59}r_{59} + {}_{60}r_{62}$$

The expression can be simplified if we ignore products of interest rates.

For the bonds purchased on January 1, 1961, we obtain:

$$[1 + {}_{59}r_{60} + (1 + {}_{59}r_{59}) {}_{60}r_{60}](1 + {}_{61}r_{62}) \sim 1 + {}_{59}r_{60} + {}_{60}r_{60} + {}_{61}r_{62}$$

Finally, for bonds purchased on January 1, 1962, we derive:

$$\{1 + {}_{59}r_{61} + (1 + {}_{59}r_{59}) {}_{60}r_{61} + [1 + {}_{59}r_{60} + (1 + {}_{59}r_{59}) {}_{60}r_{60}] {}_{61}r_{61}\} \\ (1 + {}_{62}r_{62}) \sim 1 + {}_{59}r_{61} + {}_{60}r_{61} + {}_{61}r_{61} + {}_{62}r_{62}$$

Adding up the expressions for the four types of bonds, it can be seen that

$$x \sim 4 + 10 \text{ coupon yields}$$

Moreover, from equation (3) it is clear that the average rate of return on the investments (R) is given by $x \sim 4 + 10R$. Thus,

$$R = (1/10) (10 \text{ coupon yields}) \quad (6)$$

That is, R is a simple average of the 10 coupon yields.⁴

Using equations (5) and (6), we calculate average rates of return on investments in Canada Savings Bonds and VTMs. The rates refer to the periods January 1, 1959 – January 1, 1963, and January 1, 1967 – January 1, 1971. The results for the VTMs depend, of course, on the nature of the anchor rates used. The figures can be found in *tables D-21 and D-22*.

² Although it is difficult to calculate the exact size of the error arising from this simplification, we are able to compute the error for a somewhat different example. Consider *Table 5-2*, Chapter 5. In this table, we report data on the average rates of return on VTMs. For example, for an NHA VTM we obtain 5.06 percent. The calculation of this rate of return could be simplified in the same manner as was outlined above — that is, we could take a simple average of the five annual rates. The simple average is 5.05 percent. Thus, the error is small.

³ In this analysis, we ignore the fact that Canada Savings Bonds are issued only in certain denominations. For example, in 1971, the minimum denomination was \$50.

⁴ For example, as reported in *tables D-19 and D-20*.

Table D-19

COUPON YIELDS ON CANADA SAVINGS BONDS, 1959-1962

Bonds Issued on:	Coupon Yield Effective in			
	1959	1960	1961	1962
	(percent)			
Nov. 1, 1958	3½	4¼	4¼	4¼
Nov. 1, 1959		4	4¼	4½
Nov. 1, 1960			4	4¼
Nov. 1, 1961				4¼

Source: Bank of Canada Research Department.

Table D-20

COUPON YIELDS ON CANADA SAVINGS BONDS, 1967-1970

Bonds Issued on:	Coupon Yield Effective in			
	1967	1968	1969	1970
	(percent)			
Nov. 1, 1966	5	5	5	5
Nov. 1, 1967		5¼	5¼	5¼
Nov. 1, 1968			5¾	6½
Nov. 1, 1969				7

Source: Bank of Canada Research Department.

Table D-21

AVERAGE RATES OF RETURN, 1959-1962

	Percent
Canada Savings Bonds	4.15
VTMs	
Anchor Rates	
1. Government of Canada one to three-year bond yield	
a) Conventional mortgage rate based	
(i) rounded down	5.95
(ii) rounded up	6.20
b) NHA mortgage rate based	
(i) rounded down	4.95
(ii) rounded up	5.20
2. Chartered banks' prime business loan rate	
a) Conventional mortgage rate based	
(i) rounded down	6.28
(ii) rounded up	6.53
b) NHA mortgage rate based	
(i) rounded down	5.53
(ii) rounded up	5.53
3. Trust and loan companies' one-year term liabilities	
a) Conventional mortgage rate based	
(i) rounded down	6.33
(ii) rounded up	6.58
b) NHA mortgage rate based	
(i) rounded down	5.43
(ii) rounded up	5.68

Table D-22

AVERAGE RATES OF RETURN, 1967-1970

	<i>Percent</i>
Canada Savings Bonds	5.50
VTMs	
Anchor rates	
1. Government of Canada one to three-year bond yield	
a) Conventional mortgage rate based	
(i) rounded down	7.65
(ii) rounded up	7.90
b) NHA mortgage rate based	
(i) rounded down	7.05
(ii) rounded up	7.30
2. Chartered banks' prime business loan rate	
a) Conventional mortgage rate based	
(i) rounded down	7.33
(ii) rounded up	7.58
b) NHA mortgage rate based	
(i) rounded down	6.65
(ii) rounded up	6.90
3. Trust and loan companies' one-year term liabilities	
a) Conventional mortgage rate based	
(i) rounded down	7.68
(ii) rounded up	7.93
b) NHA mortgage rate based	
(i) rounded down	7.18
(ii) rounded up	7.33

Appendix E

Questionnaire for Survey of House Builders on Variable Terms Mortgages

Prepared and Conducted by Larry M. Agranove

SURVEY OF HOUSE BUILDERS ON VARIABLE TERMS MORTGAGES
CMHC, JULY 1971

Interview No:
 Company:
 Address:
 Person interviewed:
 Interviewed by:
 Date:

Since you come into daily contact with home buyers and we don't, we would like you to think about this series of questions from their point of view. In other words, how do you feel *borrowers* would respond to VTMs?

1. Would borrowers want to choose between VTMs and FTMs?
 - Yes
 - No, because they would always prefer VTMs
 - No, because they would always prefer FTMs
2. What is the minimum rate spread between VTMs and FTMs, at the time the loan is made, that would be required to induce borrowers to switch to VTM loans?
 - $\frac{1}{8}$ percent
 - $\frac{1}{4}$ percent
 - $\frac{1}{2}$ percent
 - $\frac{3}{4}$ percent
 - 1 percent
 - Other (please specify)
 - No spread
3. Which method of changing the interest rate on VTMs would be more acceptable to borrowers:
 - Changes in the monthly payments?
 - Changes in the amortization period to stabilize monthly payments as much as possible?
4. a) VTMs could also be equipped with various kinds of prepayment privileges. Do you think a VTM with a clause allowing prepayment without penalty would be important to borrowers?
 - Yes, they'd like that very much
 - Some borrowers might feel it's worth having
 - There would be no real enthusiasm
 - It wouldn't matter

Comments

.....

.....
- b) If VTMs had a full prepayment clause, without penalty, would borrowers accept a higher rate in return for this clause than on a VTM without such a clause?
 - Yes, $\frac{1}{8}$ percent higher rate
 - $\frac{1}{4}$ percent higher rate
 - $\frac{1}{2}$ percent higher rate

$\frac{3}{4}$ percent higher rate
 1 percent higher rate
 Yes, other premium (please specify)
 No, no premium rate

5. a) Do you think a clause in a VTM allowing borrowers to re-borrow to bring the mortgage up to or near the original balance would be important to borrowers?

Yes, they'd like that very much
 Some borrowers might feel it's worth having
 There would be no real enthusiasm
 It wouldn't matter

Comments

- b) Do you think borrowers would pay a higher interest rate in return for this re-borrowing clause than on a VTM without such a clause?

Yes, $\frac{1}{8}$ percent higher rate
 $\frac{1}{4}$ percent higher rate
 $\frac{1}{2}$ percent higher rate
 1 percent higher rate
 Yes, other premium (please specify)
 No, no premium rate

6. a) Do you think a clause in a VTM allowing borrowers to vary their monthly payments up or down (even without a change in interest rates), thus varying the amortization period, would be important to borrowers?

Yes, they'd like that very much
 Some borrowers might feel it's worth having
 There would be no real enthusiasm
 It wouldn't matter

Comments

- b) Do you think borrowers would pay a higher interest rate in return for this clause as compared with a VTM without such a clause?

Yes, $\frac{1}{8}$ percent higher rate
 $\frac{1}{4}$ percent higher rate
 $\frac{1}{2}$ percent higher rate
 1 percent higher rate
 Yes, other premium (please specify)
 No, no premium rate

7. Now, to sum up how you think your customers would feel about the various features of VTMs, could you show on this table how you think they would rate the various possible features in comparison with each other. Put a number from 1 (for the most important) to 5 (for the least important) beside each feature to show how you would rank them in the order of estimated importance to your

customers. However, if you think that two or more features rank equally, please group them together.

<i>Feature</i>	<i>Ranking</i>
Variable interest rates	
Variable amortization period — conditional upon change in interest rate	
Variable monthly payments — <i>not</i> conditional upon change in interest rate	
Prepayment provision	
Re-borrowing privilege	

We have asked how you think your customers would feel about VTMs. Now, please, just a few questions about how you feel about them.

8. Would VTMs make it any easier for you to sell houses?

Yes

No

No opinion

Comments, please?

.....

.....

.....

.....

9. Do you think VTMs would make more mortgage funds available?

Yes

No

No opinion

If yes, how?

.....

.....

.....

10. Do you think VTMs would make the supply of mortgage funds more stable?

Yes

No

No opinion

If yes, how?

.....

.....

11. Do you think VTMs would help keep interest rates on the houses in your inventory in line with rates prevailing in the market?

Yes

No

No opinion

If yes, how?

.....

.....

12. If both VTM and FTM loans were available, when must the choice of VTM or FTM be made?

Before the house is built

After the house is built, but before it is sold

After the house is sold

Please give your reasons

.....

.....

13. Do you feel VTMs would be suitable for some types of borrowers more than others?

Some types only

Suitable for all types

No answer

If you think VTMs are particularly suitable for some types of borrowers please comment:

.....

.....

.....

.....

Classification Information (*Confidential*)

Now, to assist us in coding our questionnaires, a couple of final questions:

14. How many houses did you build during the last three years?

Under 50

50-100

100-200

200-500

500-1000

Over 1000

15. What was the price range of these houses *excluding* land?

.....

16. What was the *average* price, excluding land?

.....

Thank You!

Appendix F

Members of Special Project Team on New Financing Mechanisms and Institutions

EXECUTIVE

<i>M. J. C. Boyd</i>	<i>Leader</i>
<i>J. V. Poapst</i>	<i>Research Director</i>
<i>T. F. Tyson</i>	<i>Coordinator and Study Leader</i>

STUDY LEADERS

E. D. L. Miller
George Rich

RESEARCH CONTRIBUTORS AND ADVISERS

<i>Larry M. Agranove</i>	<i>M. F. Harris</i>
<i>L. E. Barlow</i>	<i>W. G. Howland</i>
<i>H. H. Binhammer</i>	<i>C. P. Keeley</i>
<i>Mrs. H. Boschen</i>	<i>E. P. Neufeld</i>
<i>Mrs. Nancy L. Carnwath</i>	<i>Stephen O'Connor</i>
<i>W. Peter Carter</i>	<i>J. S. Peterson</i>
<i>Michael B. Davies</i>	<i>C. C. Potter</i>
<i>J. Harold Deason</i>	<i>R. Simard</i>
<i>J. A. Galbraith</i>	<i>E. Sussman</i>
<i>P. W. Gauthier</i>	<i>W. R. Waters</i>
<i>G. A. Golden</i>	<i>H. Weitz</i>
<i>C. W. Goldring</i>	<i>R. M. Wingfield, C.A.</i>
<i>Paul Halpern</i>	<i>W. Woloshyn</i>

SECRETARIAL STAFF

Mrs. Audrey Balzer
Mrs. Ann Wright