

Experience with Variable-Rate Mortgages: The Case of the United Kingdom

David L. Cohen and Donald R. Lessard*

I. INTRODUCTION

Variable-rate mortgages have been advocated as one means to alleviate the effects of high and volatile rates of inflation and interest on the housing market and, in particular, on institutions which specialize in housing finance. The experience of the United Kingdom is especially interesting in this regard since it has employed variable-rate mortgages on a large-scale basis within an institutional structure similar to that of the United States during the current inflationary period.

The majority of U.K. mortgages are variable-interest rate, fully amortized, level-payment contracts. The dominant lending institutions, the building societies, are mutual institutions similar to U.S. savings and loan associations including the fact that their liability structure is composed almost entirely of sight and term deposits.

II. DESCRIPTION OF THE MORTGAGE CONTRACT

Individual building societies began to experiment with variable-rate clauses as far back as 1930. By 1967, more than 80 percent of all housing loans were variable-interest rate contracts and today virtually no building society will grant a fixed-rate mortgage, although they are still available on a limited basis from insurance companies and local government authorities.

The typical mortgage has a *maturity* of 20 to 25 years and is fully *amortized* on a level-payment basis. Loan-to-value ratios are typically 70-80 percent, although they go as high as 95 percent with insured mortgages.

*David L. Cohen is an Economist at the Board of Governors of the Federal Reserve System and Donald R. Lessard is an Assistant Professor of Management at Massachusetts Institute of Technology. The authors are grateful to Professor Jack Revell, University College of North Wales, and Norman Griggs, Executive Secretary, Building Societies Association, for providing numerous British sources and for responding in detail to a set of questions on the British experience. The conclusions, of course, are solely those of the authors.

The *interest rate* on U.K. variable-rate mortgages is not tied to any external reference rate, but is set at the discretion of the lender. In practice, changes in the mortgage rate as well as the rate paid on savings deposits are recommended by the Council of the Building Societies Association, the trade association of the dominant lending institutions. These rates are "sticky" relative to other interest rates, since, in order to avoid unfavorable reactions to increases, the Building Societies Association recommends increases in rates on savings and mortgages only after societies as a group experience a clearly adverse change in their flow of funds and the general movement of market rates seems certain not to reverse itself soon.

When rates are increased, borrowers traditionally have been given the option of *increasing their monthly payment* to fully amortize the loan over the remaining maturity or of maintaining the same payment by *extending the maturity of the loan*. In either case, a new annual stream of repayments (interest and principal) is computed at the new interest rate.

Although the "model clause" long recommended by the Building Societies Association gave the lender power to require an increased *payment*, in general this was not invoked until 1969. This was because between 1955 and 1965, the mortgage rate slowly climbed in steps of 1/4 and 1/2 percent from 5 percent to 6 3/4 percent. With property prices rising steadily, societies were little concerned with moderate extensions in borrowers' terms of repayment.

The sharper increases in mortgage rates since 1965 have created situations where original monthly payment levels are barely, if at all, sufficient to meet interest changes. For example, rates jumped from 6 percent in mid-1964 to 8 1/2 percent in 1969, and to 11 percent in 1973. An individual who had made all adjustments on a 25-year mortgage (closed in mid-1964) by extending the maturity would have reached a point by 1969 where amortization of principal became negative. As a result, building societies have been obliged in numerous cases to insist upon increased monthly payments.

The standard contract enables the building society to vary the rate on an outstanding mortgage after giving "reasonable notice" as specified in the original contract. When the Building Societies Association recommends a shift, the rate on new mortgages changes immediately, while there is a short lag before outstanding borrowers are affected. Until recent years the notice period was typically three months. In light of the recent trend toward larger adjustments in the deposits and mortgage rates, however, the period has been shortened to one month in most new contracts.

Statutory and Contractual Limits on Interest Rate. In earlier days, variable-rate mortgage contracts incorporated absolute limits on the rate of interest, but today, typically, they merely stipulate that the new rate shall be no higher than what the building society charges on new mortgages of a similar class. From time to time since 1920, there have been statutory bars to mortgage interest increases, but they have largely disappeared.

In general, on the giving of notice of increase, the borrower is permitted to *redeem* his mortgage within a stated period *without prepayment charges*. The Building Society Association suggests that if a society finds it necessary to levy a charge for premature redemption that it do so only if the loan has been in existence for not more than five years. If the loan is newer than that, they recommend a maximum charge of three months interest on the outstanding balance. Many societies impose no prepayment penalties at all.

The interest component of mortgage payments is *tax deductible*, although the Finance Act of 1974 has the effect of limiting the interest deduction to the first £25,000 of the loan.

III. INSTITUTIONAL STRUCTURE OF SYSTEM FOR FINANCING HOUSING

A. *Housing in Great Britain: An Overview*

Although the primary focus of this report is on the type of financing associated with owner-occupied housing, it is important to note that publicly owned rental units have for many years accounted for roughly 30 percent of all housing units, while privately owned rental housing has declined steadily from 25 percent in 1961 to 13 percent in 1972.

B. *Primary Mortgage Lenders*

The British market for home mortgages is dominated by the *Building Societies*, akin to American Savings and Loans. They ordinarily account for four-fifths, or more, of annual mortgage flows. Of the 174,000 private new houses and flats constructed in 1970, 133,000 (76 percent) were purchased with building society mortgages.

Although there exist a large number of building societies (456 at the end of 1972), a small group have branches nationwide and account for the bulk of society savings and mortgages. In 1971, the five largest accounted for over half of total assets.

Building societies are mutual institutions. In earlier days borrowers were generally also depositors in the society. More recently the granting of a mortgage was not normally conditioned on the would-be borrower previously having been a depositor. Within the last few years, however, in the face of savings flow instability, many societies have once again granted loan preference to savers.

The two other mortgage lenders of any significance are the insurance companies and local (i.e., municipal) authorities.

Insurance company loans for house purchase consist mainly of loans to policy holders. A decline in building society advances during a credit squeeze is frequently met by an increase in insurance company lending to policyholders unable to secure mortgage money through normal channels. A common procedure is for the loan to be secured by an endowment life assurance policy. While the policy is in force, the holder pays premiums

on the policy plus interest on the loan. When the policy matures (or on the prior death of the holder), the proceeds are used to repay the loan.

Municipal authorities, in addition to providing housing for rent, represent a source of mortgage finance for homebuyers. Many of the loans enable tenants of authority houses to buy their homes. Much of their other lending is oriented towards second-hand, rather than new, property as the building societies shy away from older homes. Local authority lending is by its very nature subject to the vagaries of the government finance. In 1969 as part of its general economic policy the central government sharply reduced its allocation of funds to local authorities. Their mortgage advances thus dropped to £42 million that year from the £144 million of 1967.

Until the end of 1971, *commercial banks* (clearing banks) restricted themselves to home purchase loans for their own staff and short-term bridging loans to enable a customer to buy one house before he sold another. Since then, they have begun to provide normal house purchase loans to customers, but these are rarely for longer than ten years.

C. Channels for Personal Savings

Building societies attract funds primarily from households. They compete for personal savings with insurance companies; the "national savings movement" which includes trustee savings banks, post office savings banks, and government savings certificates and bonds; and with commercial banks.

D. Financial Characteristics of Building Societies

Building societies have virtually no *asset diversification* as they are required by law to advance money only on the security of a first mortgage of property within the United Kingdom. The bulk of these (97 percent in 1965) go to owner-occupied dwellings.

Cash and investments are held so societies can meet withdrawals and honor commitments to make advances even in the face of fluctuations in the inflow of funds. Investments are confined by law to certain government and municipal securities of the fixed interest type.¹

The bulk of building society *liabilities* are personal savings which fall into two categories: shares and deposits. The greater part of these are semi-permanent by nature. Their average period of turnover has been around six years.

¹To qualify for membership in the Building Societies Association and for trustee status, at least 7 1/2 percent of total assets must be in the form of cash and investments. In practice, most societies maintain a figure on the order of 15 percent for this liquidity ratio.

A *shareholder* is an investor (saver) who has agreed to certain conditions regarding the withdrawal of money. The withdrawal period of notice technically varies between societies, ranging from one to several months. In practice, the bulk of society assets are withdrawable on very short notice.

Depositors are technically creditors, having a prior claim over shareholders on a society's assets in the event of liquidation. In return for this advantage, deposit rates are usually 1/4 percent below shareholder rates. Deposits in 1972 were only £592 million compared to £13,821 million in shares.

In response to recent experiences of heavy withdrawals brought on in part by increasing savings mobility, many societies have introduced "term shares" which offer interest premiums for funds left on deposit for stipulated periods (e.g., one, two or three years). At the same time, given that larger savers tend to be quicker in shifting their money to where interest is highest, societies have recently begun a practice of offering interest premiums for balances over £5,000. By July 1974, over one-third of building society balances were in the £5,000 and greater class, compared to less than one-fifth in 1971.

Table 1 provides a percentage breakdown of the asset and liability structure of building societies in 1972.

Table 1

ASSET AND LIABILITY STRUCTURE OF BUILDING SOCIETIES — 1972			
Percentage of Total			
Assets		Liabilities	
Cash and Investments	16.6	Shares	90.7
Mortgages	82.3	Deposits	3.9
Premises	1.0	Reserves	3.6
Other	.1	Other	1.8
	100.0		100.0

Source: Jack Revell, "UK Building Societies," *OECD*, 1973, p. 12.

E. Government Intervention in the Mortgage Market

Tax Benefits to Borrowers. Borrowers are permitted to deduct the interest component of their mortgage payments from taxable income. Since individuals in lower income brackets do not pay enough taxes to realize the full benefit of this relief, the government introduced an "option scheme" in 1968. Through it, people in lower tax brackets are charged

lower mortgage rates, with the government making up the difference through a subsidy.

Tax Benefits to Savers. The interest paid to depositors and shareholders is net of personal income taxes. The building society pays these taxes according to a "composite rate." In 1974, the nominal share rate of 7.5 percent represented the "grossed up" equivalent of 11.19 percent to individuals paying the basic income tax rate of 33 percent. Meanwhile, with a composite rate of 26.25 percent, the cost of money to societies equals 10.17 percent inclusive of the tax paid by them on behalf of savers.

An important consequence of this arrangement is that building societies tend to attract the savers with tax rates above the composite rate in contrast to trustee savings banks which are oriented toward households in lower marginal tax brackets.

Government Institutions. There is no British counterpart to the FDIC that insures savings deposits nor to the FHLB system that provides regular advances to building societies.

Direct or Indirect Government Financing. As already indicated, local authorities in Britain provide a certain amount of mortgage financing. In light of the skyrocketing interest rates, a proposal was made in 1973 to establish a government-sponsored mortgage refinance agency. Its role would be to purchase standard mortgages from the building societies (recently 11 percent), and transform them into index-linked mortgages with a 5 percent real rate. Index-linked bonds could be sold to finance the process. It has been suggested that building societies could purchase some of these bonds and use them to back index-linked deposits for savers. As yet, however, there has been little serious discussion in the Building Societies Association of this idea.

Interest Subsidies. In May 1973 when, to remain competitive, building societies raised shareholder rates to 6 3/4 percent, which represented the equivalent of 8.82 percent including the tax paid on the interest, they sought to increase mortgage rates to 10 percent to retain their margin. Instead, the government provided grants totaling £15 million to subsidize a 9 1/2 percent rate for three months. The hope was that after this period of time, credit conditions would have sufficiently eased so as to make a higher rate unnecessary. However, in August, the scheme expired and most building societies raised mortgage rates to 10 percent.

IV. EXPERIENCE

A. *Rate-Setting Behavior, Mortgage Flows, and Housing Starts*

Prior to World War II, mortgage and deposit rates typically were tied to the bank (rediscount) rate set by the Bank of England. By using this independent yardstick, societies could claim that the mortgage rate was not susceptible to manipulation on their part. This arrangement eventually proved unsatisfactory, however, as the bank rate was not an accurate barometer of prevailing market conditions. By the late 1940s, most societies

had switched to the present discretionary adjustment mechanism. Since the mortgage rate as well as the deposit rate is set by the building societies, they have been extremely reluctant to increase rates along with competitive rates and, in general, do not act until they experience large outflows of funds. Similarly, they avoid reducing rates as competitive rates fall, if they believe they will have to raise them again in the near future. As a consequence, they experience marked variations in the net inflow of funds as the margin varies between theirs and market rates generally. Further, there is a one-month lag between the recommendation and the change which induces further instability. Net mortgage lending follows a similar irregular pattern, with a lag of three to six months, as advances are committed on average three months prior to disbursement. (Revell analyzes this behavior in some detail.)

Increasing investor sophistication has reduced societies' flexibility as they feel more pressure to remain competitive or face heavy withdrawals. For example, when market rates soared in 1973, building societies were obliged to increase rates three times for a total of 2 1/2 percent.

One consequence of the building societies' reluctance to adjust mortgage and deposit rates is widespread credit rationing. Operating on a "cost plus" basis, they make little use of the mortgage rate as a means of influencing demand. The effect of this rationing can be seen in the pattern of mortgage advances and housing completions, summarized in Table 2. In general, deviations in advances from the growth trend accompany large differences between interest rates paid on shares and on competitive instruments. This is particularly notable in the decreases in 1965 and 1969, and the 1972-1973 surge in lending.

B. Government Intervention in Rate Setting

A large factor in the process by which building societies adjust mortgage rates is *government pressure*. With mortgages such a big item in so many family budgets, no government can be expected to welcome an increase in rates, particularly as it affects outstanding variable-rate mortgages.

As a result, when it becomes known that the Building Society Association is contemplating recommending a rate increase, the officers are invariably invited for "consultation." The government will then pressure the Association to postpone its action as long as possible and to increase rates by as little as possible. Because the Association is privileged by its exemption from such government measures of credit control as lending ceilings that have been imposed upon banks in recent years, the societies are very subject to this moral suasion.

In May 1966, when the Building Societies Association recommended that mortgage rates should be increased from 6 3/4 to 7 1/8 percent, the government expressed dissatisfaction. The Association amended its recommendation so that while rates on new mortgages rose immediately, the increase as it applied to existing borrowers was deferred until January 1967.

Table 2
HOME MORTGAGE ADVANCES AND HOUSING COMPLETIONS

Year	Building Societies	Mortgage Advances (£ millions)			Housing Completions (thousands of dwellings)		
		Local Authorities	Insurance Companies	Total	Private	Public	Total
1962	618	94	118	830	178	136	314
1963	852	119	107	1078	178	130	308
1964	1052	195	132	1379	221	162	383
1965	965	244	163	1372	217	174	391
1966	1245	134	147	1526	209	187	396
1967	1477	168	124	1769	204	211	415
1968	1587	111	168	1866	226	200	426
1969	1556	69	179	1804	186	192	378
1970	2021	157	154	2332	174	188	362
1971	2758	175	148	3082	196	168	364
1972	3649	198	149	3996	201	130	331
1973	3447	387	259	4093	191	113	304

In 1973, as general market rates rose, building societies found themselves confronting intensified government resistance in their attempts to follow suit. In March, when societies were compelled to raise shareholder rates in order to remain competitive, the government prevailed upon them to postpone any increase in mortgage rates.

In May, when investors' rates were raised once more, and societies sought a 10 percent mortgage rate, the government provided £15 million in subsidies to hold the line at 9 1/2 percent for three months. Rates were raised to 10 percent in August, however, and as credit conditions tightened even further, the government, facing elections, dreaded another mortgage increase.

In an attempt to shield the building societies from competitive pressure, the Exchequer introduced a British mini-version of Regulation Q in September. It limited the amount that banks could pay on small deposits (under £10,000). Later in the month, however, the Building Societies Association proceeded to recommend a mortgage rate increase to 11 percent, claiming that it might have been greater, but for the government's action.

The escalation of market rates continued into 1974, with building societies suffering net savings outflows in two months as withdrawals increased. While anxious to maintain the flow of housing finance, the government was determined to restrain mortgage rates from rising above 11 percent. A similar view was shared by many building societies who, in light of the 2 1/2 percent rise in 1973, were concerned whether many recent borrowers could afford yet another rate hike.

In April 1974 short-term government loans totaling £500 million were offered to the building societies so as to increase mortgage lending without altering rates. The advances, which carried a 10 1/2 percent interest rate, were made available at £100 million per month for five months. An allocation formula based upon assets limits the amount that any single building society can borrow. Acceptance carries the obligation not to raise mortgage rates for one month. Repayment of the loans began as scheduled in October 1974.

C. Rate Changes and Building Society Operating Margins

In general, the recommended mortgage rate and the deposit rate are changed simultaneously in order to maintain the desired margin between the two, but on one recent occasion the mortgage rate lagged the deposit rate. Further, as rates have risen, external pressures have kept the building societies from increasing mortgage rates sufficiently to maintain normal operating margins. This is easily seen in Table 3 which lists the margins, prior to operating expenses, provided by the various mortgage and share rate changes. In this table, the margin is computed between the mortgage rate and the gross cost which includes the tax paid by the building society. The interest paid to depositors and shareholders is net of personal income taxes. The building society pays the tax on their behalf

Table 3

BUILDING SOCIETY SHARE RATE, MORTGAGE RATE, AND OPERATING MARGIN

Building Society Share Rate			Mortgage Rate		Operating Margin (3) — (2)
Applied to Shares From	Net Rate (1)	Gross Cost % (2)*	Applied to Existing Mortgages From	Applied to New Mortgage From	
July 1960	3.50	4.77	September 1960	June 1960	1.23
October 1961	3.75	5.14	October 1961	July 1961	1.36
April 1963	3.50	4.80	April 1963	February 1963	1.20
February 1965	3.75	5.42	May 1965	February 1965	1.33
January 1967	4.25	6.18	January 1967	June 1966	.95
May 1968	4.50	6.63	August 1968	May 1968	1.00
April 1969	5.00	7.38	July 1969	April 1969	1.12
January 1972	4.75	6.88	January 1972	November 1971	1.12
October 1972	5.25	7.61	November 1972	October 1972	.89
February 1973	5.60	7.32	—	—	1.18
April 1973	6.30	8.24	—	—	.26
May 1973	6.75	8.82	June 1973	May 1973	.68
September 1973	6.75	8.82	October 1973	September 1973	1.18
October 1973	7.50	9.80	November 1973	October 1973	1.20
April 1974	7.50	10.17	—	—	.83

*Gross cost is net rate plus tax paid by building society at composite rate which applied for the year.

**This figure does not include the 1/2% subsidy paid by the government to building societies for a three month period.

Source: Jack Revell, "Flexibility in Housing Finance," *OECD*, April 1974, p. 23.

under a special arrangement with the government. The tax is paid according to a "composite rate" related to the average marginal basic tax rate of all investors of the society. The narrowness of this margin under current conditions is illustrated by the distribution of the 11 percent mortgage interest which was as follows:

Mortgage rate	11.00
Less	
Interest received	
by investors	7.50
Income tax on interest	2.67
Gross margin	.83
Less	
Management expenses	.73
Corporation tax	.04
Surplus	.06

D. Mortgage Rates and the Cost of Housing

The combination of rising interest rates and rapidly rising house prices has, in recent years, led to an extraordinary and politically intolerable increase in the monthly carrying cost of owner-occupied housing.

This is illustrated in Table 4, where indexes of hypothetical monthly repayments are computed for an average price house financed by a 25-year mortgage. Over the 10 years from 1963 to 1973, the monthly cost of buying a home has risen almost five times, more than double the increase in the general price index.

In reaction to this staggering price situation, numerous proposals have been put forward to enable families to afford adequate housing. These include subsidy schemes, a variety of "low-start" mortgages with graduated payment streams, mortgages in which the lender participates in the increase in the value of the house, and price-level-adjusted mortgages. In all cases, the objective is to modify the payment stream so that it will more nearly match the behavior of the standard mortgage under non-inflationary conditions.

The "low-start" schemes involve nominal, variable-rate mortgages with payments computed using a relatively low interest rate in early years, increasing to the current rate within five years. At that point, payments are recomputed over the remaining term to fully amortize the principal, which include the accumulated interest shortfall, on a level-payment basis. In general, these plans provide the borrower with tax deductions equivalent to the total interest rate rather than the rate used to compute early payments.

At least one indexed scheme, currently being offered by an insurance company, links increases in principal to increases in the value of the mortgaged property. This plan is funded by participation certificates in the pool of mortgages. Other plans call for complete price-level indexing. Objections to these innovations appear to center on three points. On the one

Table 4

"RENTAL" COST OF NEW HOUSING

Year	Consumer Price Index (1)	House Price Index (2)	Mortgage Rate % (3)	Monthly Payment Index (4)*	"Rental" Index (2) X (4) (5)	Relative Index (5) / (1) (6)
1963	100	100	6.00	100	100	100
1964	103	107	6.00	100	107	104
1965	109	118	6.75	107	126	116
1966	113	126	6.75	107	135	119
1967	115	134	7.125	111	149	129
1968	121	141	7.625	116	164	135
1969	127	151	8.50	125	189	149
1970	135	161	8.50	125	201	149
1971	148	181	8.50	125	226	153
1972	157	231	8.50	125	289	184
1973	172	317	11.00	152	481	280

*(4) is an index of the monthly payment on a new 25-year mortgage, per unit of principal.

hand, given the experience of 1972, where house prices rose in an apparent reaction to the surge in mortgage lending, there is a widespread fear that a sudden change in mortgage terms could lead to another round of rapid increase in house prices. A second and more general objection, however, appears to be the conviction that contracts which allow nominal principal to build up are bad for the borrower. Although this may appear to be irrational in a society which has been experiencing inflation at an annual rate in excess of 15 percent, it nevertheless is the most common source of opposition. Finally, there are those who claim that any such innovation is an admission that inflation is permanent and therefore should be resisted.

V. SUMMARY AND CONCLUSIONS

The level-payment variable interest rate mortgage, at least as employed in the United Kingdom, has not provided a satisfactory solution of either of the two key inflation-related difficulties in housing finance — those related to the ability of financial institutions, through matching of assets and liabilities, to maintain a steady flow of funds and an acceptable operating margin and those related to the distortion of the stream of real payments from the perspective of the borrower.

Although in theory the variable-rate nature of both mortgages and deposits should allow the building societies to adjust quickly to changes in market forces, their behavior is characterized by “sticky” rate setting which often lags market adjustments for considerable periods. This, in turn, leads to fluctuations in inflows which is translated directly to fluctuations in mortgage advances. Thus we see credit rationing even in the absence of official rate ceilings and other ingredients to market clearing. Further, pressure on the rate-setting process has narrowed operating margins. These problems, notwithstanding, the building societies have fared relatively better than U.S. institutions since rates on both assets and liabilities can be adjusted, even if with a lag.

Payment streams clearly have been distorted. With an 11 percent mortgage rate and a 10 percent rate of inflation the real payment in the first year of a 25-year mortgage is 1.6 times the real payment in year five and 10.8 times the real payment in year 25. This problem has been recognized and is being addressed by numerous proposals for change. The inflation-induced distortion of the payment stream, particularly its translation into very high initial monthly payments, is undoubtedly one of the major reasons why the political mechanism has felt obliged to intervene in mortgage markets. In turn, this intervention has vitiated one of the major potential benefits of variable interest rate contracts — the ability to provide a steady flow of funds by matching competitive interest rates. Therefore, we conclude that variable-rate mortgages are unlikely to be totally effective unless they are combined with some mechanism which reduces the distortion of mortgage payment streams and thereby do not impose intolerable increases in housing carrying costs. From the discussion in the United Kingdom press, it appears that many observers share this conclusion.

Discussion

Robert M. Fisher*

I have been asked to discuss and reflect upon the relevance and implications for the United States of experience abroad with alternative types of mortgages, with special reference to the papers — prepared for the MIT Mortgage Study — which provide an essentially descriptive review of developments in certain foreign countries.

One conclusion to be drawn from experience abroad is that efforts have been under way for some time in numerous countries to devise alternative financial arrangements to the traditional level-payment mortgage that bears a fixed rate of interest. In addition to Brazil, Canada, Finland, Israel, Sweden, and the United Kingdom which are listed in Professor Lessard's useful table, such countries as Belgium, Columbia, Denmark, France, the Netherlands, Norway, Switzerland, and West Germany have already put into practice plans under which traditional mortgage repayment patterns have been altered to some extent.¹ These efforts abroad have often reflected concerns, among others, about the disruptive impact of inflation on mortgage borrowers, mortgage lenders, or both. Such efforts have led to arrangements which attempt to tailor mortgage payments more closely to the course of prices, interest rates, borrower incomes, and/or lender cash-flow needs.

What I find missing in most discussions of nonconventional mortgages either here or abroad is much analysis of experience with nonconventional arrangements in our own country. Contrary to what has been asserted elsewhere, we have accumulated a good deal of such domestic experience already, although much of it remains to be studied formally. Despite familiar economic, social, legal and political obstacles to innovation, data from the Survey of Residential Finance indicate that by 1970 about one in every eight — or several million — mortgaged residential properties in the United States carried first-mortgage loans on which

*Assistant Adviser, Division of Research and Statistics, Board of Governors of the Federal Reserve System. The comments set forth are those of the discussant and do not necessarily indicate concurrence by other members of the System's research staffs, by the Board of Governors, or by the Federal Reserve Banks.

¹Details about plans in a number of these countries appear in *Housing Finance, Present Problems* (Paris: OECD, 1974).

the interest rate could be changed in some manner during the life of the loan.² In addition, we have recorded nearly four decades of experience with our federally aided public housing program in merchandising space in apartments under the conditions of short-term financial arrangements geared to the user's ability to pay in nominal terms.

I suggest, indeed, that we may already have a mine of experience with certain types of nonconventional mortgages here at home that should be explored further. This includes a close monitoring of the foray just announced by four large West Coast savings and loan associations into the variable-rate loan market, and the recent issuance by a number of life insurance companies of variable-rate farm loans, apparently in response to similar lending practices of the Farm Credit Administration.

Foreign experience amply documents the widespread extent abroad of practices designed to shift some of the risks of rising market interest rates from mortgage lenders to mortgage borrowers. Experience in numerous foreign countries, including Brazil, Israel, and the United Kingdom, suggests, however, that there are practical limits on how far these risks can be shifted at times of rising interest rates, especially when inflation is strong and governments attempt to enforce stringent income and price stabilization policies. Unfortunately, analysis of the character and level of such limits is often lacking — an oversight that needs attention. But it appears that the shifting of interest risks to mortgage borrowers from mortgage lenders has worked out with least difficulty in periods of minimal changes in prices and mortgage interest rates — when, of course, there is less pressing need to restructure financial arrangements in this manner.

Experience abroad also indicates that these practical limits have been breached for one reason or another in various countries during recent years of accelerated inflation. As a result, more of the incidence of interest-rate risk has been shifted one step further on to the government and hence the taxpayers. With the greater socialization of this risk has come, understandably, more public controls, whose implications for so-called private mortgage and capital markets, as well as for government budgets, have not always been spelled out fully.

I must confess that a review of experience abroad has given me a deeper appreciation of several basic features of the old-time level-payment fixed interest rate mortgage — features whose absence in nonconventional mortgage arrangements poses some difficult practical problems. First, the old-time mortgage avoids the problem of selecting an appropriate index to use as a peg to shift the risk of interest-rate changes from lenders to borrowers — hopefully in an equitable and efficient manner, and without

²U.S. Bureau of the Census, Census of Housing: 1970, Vol. V, *Residential Finance* (Washington, D.C.: U.S. Government Printing Office, 1973), Tables 5a and 5. For properties with conventional (i.e., not federally underwritten) first mortgages, the incidence of changeable-rate loans was one in every six.

producing redistributive consequences that are deemed to be undesirable. In the search for an appropriate index, foreign experience emphasizes that it is extremely important to choose the right one, although it often offers no firm guidelines about how to be sure that a correct choice has been made. That what may initially be thought to be a proper index may not always stand the test of time is illustrated perhaps most graphically by the fate of mortgages in Israel on which payments were linked to the dollar in the United States. As Professor Cukierman points out in his paper, "at the February 1962 devaluation [of the Israeli pound], borrowers [in Israel] with dollar-linked mortgages saw the value [i.e., the unpaid balance] of their [mortgage] obligations increased by 66 percent overnight. This unleashed an outcry which brought about a revision in the terms of both existing and new mortgages."³

Along these lines, the current difficulties of real estate investment trusts in the United States that specialize in short-term construction and development loans caution further that the tying of both assets and liabilities of a financial institution to the same index (in this case, the bank prime rate) may not resolve all financial problems, either. One thing that REIT experience suggests to me is that one needs to look beyond the index formula itself to examine the likelihood that the financial institution's debtors (in this case, builders) will themselves be in a position to meet their obligations to it promptly when due. This, in turn, poses the broader issue of what I am tempted to call the IIR — the index infinite regress; that is, once one type of financial obligation has been indexed, how far must you go toward indexing other types of obligations, incomes, or capital values, too, in an effort to keep the indexing system afloat?

Second, judging from foreign experience with nonconventional mortgages, the old-time loans have the advantage of avoiding the need to "educate" borrowers to commit themselves to the largest of all household financial obligations on terms under which the ultimate cost, the full amount, or both, of the debt remains uncertain until the obligation has been retired. On this point, Professor Cukierman offers a recommendation spiced with a political insight that is rather sobering. It is that "the home buyer should be able to choose between an unlinked mortgage at a high interest rate and an indexed one at a lower interest rate. If this alternative had existed in Israel when indexed mortgages were offered, many people would have blamed themselves rather than the Government when the time to pay [increased] indexation charges arrived."⁴ Third, the old-time mortgage contracts have the advantage of incorporating no arbitrary assumption that the income of the borrower, or the value of the property

³Alex Cukierman, "Index-Linked Mortgages in Israel," prepared for the Sloan School Mortgage Study, p. 2.

⁴*Ibid.*, p. 27.

pledged as collateral, will inevitably change in some predetermined fashion. Here again, Professor Cukierman notes that "the lack of synchronization between wage increases and indexation increases in mortgages seems to have been at the root of the wide resistance [in Israel] to mortgage indexation which eventually caused its abolition."⁵

On this point, census data for the United States clearly document the fact that during a period when average incomes and average property values rise sharply, incomes of individual borrowers as well as values of individual residential properties may vary either downward or upward. Not all households, for example, shared in the gains in income experienced by the typical homeowner during the 1960s. The census figures show that of all homeowners with incomes of \$15,000 or more in 1959 who still lived in the same dwelling in 1970, approximately 15 percent reported that they earned less in 1970 than they had 11 years earlier.⁶

Furthermore, of all the same one-family dwellings valued at between \$17,500 and \$19,999 in 1960 that were still owner-occupied in 1970, about 11 percent were reported to be in a lower-value bracket in 1970 than a decade before.⁷ Clearly, indexed mortgages issued to these borrowers, or on these properties, which might have called for increasing debt-service payments over time or which might have involved a building-up rather than a retirement of principal in the early years of the life of the loans, would quite possibly have spelled trouble.

I must confess, too, that most reviews of foreign experience appear to me to be limited insofar as presenting a comprehensive evaluation of the full costs and benefits of various nonconventional mortgage arrangements. Complex as such an evaluation must be, I believe that it should give some attention to a number of subjects that are usually overlooked.

One neglected feature in most reviews of foreign experience is much reference to what in the United States has become the most dynamic — and most destabilizing element — of the private housing market — namely, multifamily properties. Here is a market where, presumably, borrowers should be more sophisticated and perhaps more willing than single-family homeowners to gamble on a nonconventional financing arrangement as a trade-off for a lower initial interest rate, a larger loan, or a lower annual percent constant. I suspect that if we had more information than is now available about lending practices on multifamily mortgages in the United

⁵ *Ibid.*, p. 24.

⁶ Based on unpublished tabulations of the U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, from the 1970 Components of Inventory Change Survey.

⁷ U.S. Bureau of the Census, Census of Housing: 1970, *Components of Inventory Change*, Final Report HC(4)-1, United States and Regions (Washington, D.C.: U.S. Government Printing Office, 1973), Tables 2, 3, and S-4.

States, it would confirm the existence of a wide variety of non-conventional contracts. Insofar as foreign experience sheds light on this issue, only the paper on Canada offers any comment. It concludes that "in the case of multifamily housing, fixed mortgages matching the amortization period continue to be favored. Apparently, borrowers prefer the fixed contracts due to fears that rent increases will not match interest and price level increases, which has been the case in recent years, and the dominant lenders for large scale projects, life insurance companies, prefer the longer-term contracts."⁸

Another neglected feature of experience abroad which seems even more regrettable is any analysis of the impact on house prices of non-conventional mortgage arrangements which may allow borrowers (at least initially) to service more debt with a given monthly payment than would be possible with a traditionally structured mortgage. I look in vain to the students of foreign experience to give us some clues about the conditions under which, and the extent to which, the special terms of non-conventional mortgages have been capitalized in higher house prices rather than enabled borrowers to obtain better houses for the same price. Lacking such clues, I remain skeptical about statements that (as in Sweden), "the mortgage 'package' incorporates a rising schedule of payments which further increases the amount of housing that households can afford."⁹

Finally, I see a problem encountered by lenders both here and abroad in trying to match the maturities of their assets with the maturities of their liabilities, no matter whether conventional or nonconventional mortgages are involved. On either type of mortgage arrangement, it needs to be recognized that periodic payments of scheduled principal, prepaid principal, and interest create a variable pattern of cash flow that is generated by no other type of capital market instrument, and belies the flat simplistic statement that to lend on fixed-rate level-payment mortgages is to lend long.¹⁰ This unique pattern of cash flow — which provides a fluctuating stream of funds that must be reinvested continually — poses a special problem for asset and liability management that goes beyond the need to match contractual or effective maturities, despite such comments that, as in Canada, "the bulk of deposits [of trust companies] are for five years to match the roll-over mortgages."

⁸Donald R. Lessard, "Roll-over Mortgages in Canada," prepared for the Sloan School Mortgage Study, p. 18.

⁹David L. Cohen and Donald R. Lessard, "Mortgage Innovation to Facilitate Investment in Housing: The Case of Sweden," prepared for the Sloan School Mortgage Study, p. 1.

¹⁰For further details, see Robert Moore Fisher, "Mortgage Repayments as a Source of Loanable Funds" (Federal Reserve Staff Economic Study, 1971).

In conclusion, it seems to me that foreign experience provides a useful summary of the features of a far greater variety of nonconventional mortgage contract experiments than we could ever hope to test in the United States during any brief period of time — or in some cases might ever want to test. Here I am thinking of such schemes as the United Kingdom's variable-rate mortgage arrangement which operates with a constant mark-up between the cost of funds to the building societies and the rates which these dominant home mortgage lenders charge on new and outstanding mortgage loans. That is hardly a plan which commends itself to public policy, since the fixed mark-up offers no incentive to improve the efficiency of the intermediation process over time.

Foreign experience also suggests a good deal about the nature of many of the likely costs and benefits associated with certain types of non-standard mortgage contracts. Often lacking, however, is a comprehensive presentation and a careful weighing of advantages versus disadvantages, in some cases because data are fragmentary or because nonconventional lending arrangements have been adopted only recently.

Having extracted these insights from experience abroad that has occurred within a variety of social, economic, political, and legal environments, I suggest that what we need to do now is to look inward more deeply to ponder the lessons of domestic experience with nonconventional mortgage arrangements within the context of our own particular institutional structure. This effort should help us see whether and how we might best adopt the fruits of both foreign and domestic experience, tempered by the keen insights derived from work going on here at MIT and elsewhere, to our own on-going system of mortgage finance.

Discussion

Hirsh Tadman*

Don Lessard has done an excellent job of describing the Canadian mortgage instrument and the institutional structure of the residential mortgage market. Therefore, I do not propose to go into a lot of repetitive detail. What I propose to do is to briefly describe our mortgage instrument and how it has worked in Canada, provide a comparison between the institutional framework of the residential mortgage markets in the United States and Canada including some basic capital markets differences, and briefly describe some of the options open to the small "saver" in Canada.

In general, one could argue that Canada is much more committed to a mixed economy than is the United States. However, especially when one looks at that portion of the capital markets which affect the mortgage market, we have fewer restrictions than you do in the United States. Our capital markets are freer to operate in response to market, rather than administered, forces. We have no such thing as usury laws. We do have a Small Loans Act which regulates loans up to \$1,500, but this Act has no applicability to the mortgage market. So we find that in the Canadian mortgage market, interest rates are more freely determined by market forces than they are in the United States. Historically, this has tended to make the cost of housing — due to higher mortgage servicing costs — more expensive in Canada. Another factor which has tended to make housing more expensive in Canada is that we do not have income tax deductibility of mortgage interest. So we are talking about a substantially higher cost of home ownership in Canada relative to the United States.

Let us take a brief look at some of the institutional differences. We have a much more uniform residential mortgage interest rate across the country, partly due to competitive reasons and the institutional structure of our market. We generally do not have comparable restrictions on our thrift institutions as far as lending radii are concerned (there are some exceptions with respect to credit unions and caisses populaires) such as are imposed on your savings and loan associations. But this is not the major

*Chief, Financial Institutions, Capital Markets Division, Department of Finance of Canada.

institutional difference. The biggest difference is that whereas if you look at the total number of commercial banks, savings and loan associations and mutual savings banks in the United States, the number must total some twenty thousand. We have ten banks in Canada with the five largest banks controlling over 90 percent of the total bank assets. They do, however, have 6,500 branches across the country. Our thrift institutions most closely comparable to your savings and loan associations and mutual savings banks — trust companies and mortgage loan companies — total no more than about 125. Large ones total no more than 15. Thus, we are talking effectively of about 20 large institutions with thousands of branches across the country, with much greater opportunity for funds to flow from surplus areas to deficit areas, leading to a much smoother distribution of funds.

Let me move now to a brief discussion of our mortgage instrument characterized by Don Lessard as a five-year roll-over instrument. If we want to put this in the context of yesterday's discussion, I guess our mortgage instrument was not really included in the spectrum of instruments described by Rich Cohn. We do not have too much trouble on the supply of funds side. We have taken care of the credit rationing problem to a large degree in comparison with the U.S. situation. This can be rated as good to excellent. You might want to criticize us a little more heavily on the demand side — the demand for funds by borrowers for housing — and I will get into that shortly.

Our mortgage instrument has been called a five-year roll-over mortgage. Most residential mortgage contracts are written with a 20-30 year amortization period but with a five-year term. The rate is market determined and generally uniform across the country. An individual can walk into a financial institution for a mortgage and the contract will be written with, say, a 25-year amortization period. He will pay the then current market rate of interest for the mortgage. At the end of the five-year term the contract is rewritten at the then current market rate for a further five-year term but now amortized over 20 years. It is in effect a form of variable-rate mortgage. This instrument is not restricted to conventional mortgages but also to our government-guaranteed mortgages, which some people find unique.

How can our thrift institutions underwrite such mortgages? They can do so because they do not have major problems in matching assets and liabilities. Our trust and mortgage loan companies have a wide range of liabilities. Unlike your S&Ls, they do issue demand deposits which are checkable. They also issue passbook savings accounts and term deposits ranging from under 30 days to 5 years. The bulk of their liabilities are in five-year term certificates and since their assets are largely in five-year term mortgages, they are more or less matched and operate on the spread. I wish I could say that we developed this system because we have such brilliant insight into how the market was going to work, and that we looked at your market and foresaw the disintermediation problems. But it did not work out that way. Perhaps it was just a quirk of fate or because

of some visionaries of many decades ago when our Interest Act was written. One of the clauses of this Act says that for noncorporate mortgages, whatever the term of the contract, the borrower has the right to repay the loan at any time after five years with no more than a three-month interest penalty. I assume that our institutions developed the five-year term mortgage so as to avoid the potential problem of being faced with repayment at any time after a mortgage has been in existence for five years. Conventional mortgages have been written with a five-year term since 1931 without any major problems. Government-guaranteed mortgages have been written on this basis since 1969. Don Lessard pointed out that we are about to be faced with the first test of the roll-over of government-guaranteed mortgages. So far, we have not had many complaints from borrowers. But as he rightly pointed out, the mortgage market back in 1969 was relatively high, ranging from 9 1/4 percent to 9 3/4 percent. Currently rates are well over 11 percent but falling. We may not face the test until 1976 or even beyond because the mortgage rate in 1970 was 10 percent. Moreover, individual homeowners have benefited by the substantial capital appreciation of their houses.

What happens at the maturity date of a five-year term? What obligation is there on the part of the lending institution to renew the loan for a further five-year term? We would be in quite a bind if an individual, having received notification of the expiration of the contract, was informed that a balloon payment is due and that the institution is requiring repayment of the loan. Although there is nothing fixed in the law which says that an institution must renew a mortgage loan, experience has shown that they do renew these loans. There is a pretty big moral obligation on their behalf to renew them. I am not sure though what would happen if we were faced with a massive credit crunch.

The mortgage renewal generally takes place without any problems. The borrower does not face any new closing costs with a straight renewal. At the five-year date he can repay any portion of his loan without penalty. He generally can also shorten the remaining amortization period. If however he wishes to extend the amortization period or increase the loan amount, he will be faced with additional costs.

As I pointed out earlier, our mortgage rates are market determined and this can mean relatively high rates. They did reach a peak a few months ago about 12 1/4 to 12 1/2 percent. On the other hand our savers also get market-determined rates. Our institutions were paying up to 11 percent on five-year certificates a few months ago. So our small saver is not faced with the disadvantages of Regulation Q. Professor Modigliani asked me yesterday about the small saver who does not want to tie himself up for five years. He has a whole range of alternatives from five-year term deposits on down to passbook savings accounts. At the height of the market these passbook accounts were paying 9 1/4 percent, with no minimum deposit requirements and no time restrictions other than the necessity to maintain the deposit for the entire month in order to earn interest for that month.

Getting back to the mortgage market, the supply side problems are less in Canada than in the United States. But what about the demand side? Obviously, as I mentioned earlier, our homeowner is faced with a much higher cost of funds and no income tax deduction for mortgage interest. But we have come around to assisting the homeowner over some of demand side problems — the initial down-payment problem and the monthly payment problem. Some of the solutions arose out of the unusual economic conditions that we were faced with in early 1974. The first quarter of 1974 was extremely strong in Canada. We ended the year with close to 4 percent real growth in GNP, most of it due to the strong first quarter. The demand for funds for housing, as for other purposes, was quite large. One of the things that was put into place to try and temper the demand for funds for housing was what became known as a registered home ownership savings plan. This plan allows individuals who do not currently own homes to deduct from their taxable income up to \$1,000 per year, and to a maximum of \$10,000. These savings plus the earnings on them accumulate, tax free, provided that when they are withdrawn, they are used for the purchase of a home or for home furnishings. This plan was developed to try and temper some of the demand for housing and to enable individuals to more easily save for the down-payment for a house.

Another program was established to try and temper the monthly payment problem for lower-income earners. Depending on the region in which an individual lives, and depending on his income, and depending on regional house price ceilings, the government will subsidize an individual's monthly mortgage payment up to \$50 per month. The commitment on the part of the government is for a five-year term after which the subsidy is re-evaluated. This program applies not only to home purchasers but also to renters.

A third program introduced by the government was to give grants of \$500 to those purchasers of new homes who qualified on the basis of regional house price limits and of income.

I wish to conclude with a few brief comments on indexation and the price level adjusted mortgage. I cannot recollect any Canadian experience with an indexed mortgage instrument and, given the balance sheet structure of our thrift institutions, I am not sure that the pure PLAM makes much sense unless one can also introduce some form of indexation on the liability side of the balance sheet also. I am also concerned about the impact of such an instrument on the rest of the capital market and on the pricing of indexed capital market liabilities. As Professor Grebler asked yesterday, how would you price them? Would you auction them? Would you put them in the market and ask how much over par one would be willing to pay for such an instrument? I think these problems need to be explored in some depth before a PLAM can be introduced. I am also concerned about how a PLAM would be traded in secondary markets. None of these comments, of course, are meant to detract from the excellent work done to date on the PLAM and other nonstandard mortgages.