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Federal Reserve
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FRBSF Weekly Letter

Mortgage Controversies

Few fields in finance today are changing as rapidly as the mortgage market. Various types of mortgage instruments have proliferated, while traditional mortgage lenders have been joined in the marketplace by various "creative" financiers, including homeowners themselves. The most vigorous debates, however, have centered around the trend toward variable rate mortgages, and also around recent court decisions regarding mortgage "assumability," whereby an outstanding mortgage can be passed from one owner of a property to subsequent owners.

Consumer groups have opposed variable-rate instruments on the grounds that they unfairly shift risk to individual households. Lenders, on the other hand, feel that they need just such a shift if they are to survive in today's volatile interest-rate environment. Meanwhile, consumer groups and realtors alike have argued for the assumability of old fixed-rate mortgages as a means of keeping the housing market alive. Yet, lenders worry that assumability tends to slow down the turnover of their mortgage portfolio—and in addition, are offended by the courts' retroactive "rewriting" of contract terms.

These differences of opinion are understandable, since the issues involved are complex and much uncertainty prevails concerning future interest-rate trends. Some simple economic analysis can, however, illuminate some of the points of controversy.

Options and mortgages

One useful analytical device in this regard is the theory of options. Traditionally, we think of options as distinct securities—such as the options on corporate stock that have been widely traded on exchanges since 1973. But in its most general form an option is simply a contract—or stipulation within a contract—that gives the owner the right to trade in some asset at a defined price any time on or before a given exercise date. From this perspective, many mortgage features actually represent options.

Consider, for example, the prepayment option. Typically, mortgage terms permit the borrower to terminate his obligation to the lender by paying off the remaining principal if he wishes. In options terminology, the *borrower* is the owner of a *call* option because he has the right to acquire ("call away") an underlying security—namely the mortgage—from the lender who is the option writer. The exercise price of this option is the remaining principal (plus, typically, prepayment penalties.)

Mortgages also typically contain "due-on-sale" clauses, which give the lender the right to demand immediate repayment of the outstanding principal at time of sale of the real estate securing the loan. This clause (which is at the heart of the "assumability" debate) also creates an option. In this case the *lender* is the owner of a *put* option because he has the right to demand that the borrower purchase the underlying mortgage security. (The lender can "put" the mortgage to the borrower.)

Finally, even fixed-rate and variable-rate features can be related to options, although the relationship is a bit more complex. In its purest form, a variable-rate mortgage (VRM) carries an effective rate which changes every period with short-term interest rates; at any point in time, therefore, the market value of the loan is equal to the remaining principal, so that the mortgage would "sell at par" in the secondary market. In a sense, the VRM and a simple fixed-rate mortgage (FRM) are similar for downside interest-rate movements because the borrower can refinance an FRM (ignoring prepayment penalties and transaction costs). But for upside rate movements, the VRM in essence gives the lender an option to compel the borrower to refinance. Thus a VRM is similar to an FRM which contains a put option *owned* by the lender

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and *written* by the borrower. (Actually, the VRM option is a sequence of options, a complexity we need not go into here.)

The theory of options on debt securities thus permits us to identify the factors that affect the value of options. This in turn permits us to analyze mortgages in a simplified fashion. Options theory indicates, for example, that an unexpired option will have positive value. Although the options implicit in mortgages are not bought and sold on exchanges, they should have value to the parties involved. An option will thus influence a mortgage's effective yield and/or the fees charged to obtain the mortgage.

Options theory also suggests that uncertainty about the future value of the underlying security should influence the value of the option. Such uncertainty typically arises out of uncertainty about future interest-rate movements, so that option values tend to be positively linked to interest-rate uncertainty. The greater the uncertainty about interest-rate movements, the more valuable becomes an option on any debt security such as a mortgage.

FRMs vs. VRMs

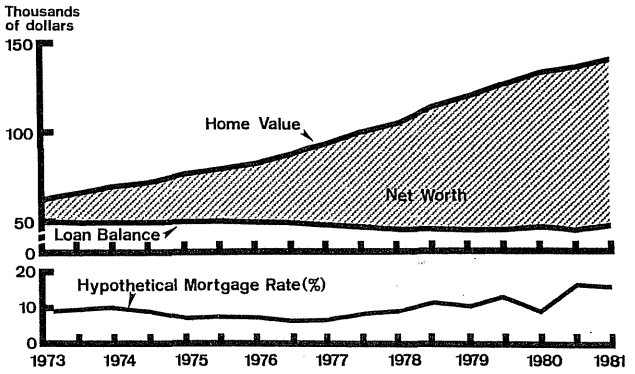
These notions can be used to focus the debate between borrowers and lenders concerning the apparent trend toward variable-rate mortgages. In this approach, the VRM may not be the consumer disaster suggested by its critics. As we have seen, the lender with a VRM obtains ownership to an option. A borrower will require compensation for writing this option, in the form of a lower cost for VRMs than for FRMs; thus the market interest rate on a simple FRM will always be greater than a VRM rate. Options theory suggests that, in case of uncertainty about future interest rates, the option's value will be large—and the differential between VRM and FRM borrowing costs will be correspondingly large. Although writing options is risky—the VRM does indeed "pass risk" to individual households—the cost of a VRM should be sufficiently lower than the FRM to compensate for this risk.

The criticism that VRMs force households into housing "gambles" also appears misdirected. First, viewed from a portfolio standpoint, a household with a house and a VRM loan is unlikely to suffer a net loss in wealth if interest rates rise. Over time, interest rates tend to rise because of rising inflation expectations. These same expectations cause housing prices to rise, so that with a given VRM indebtedness, the household's net-worth position in housing (that is, the value of housing minus the value of mortgage debt) is not likely to fall. Second, although the payments required on a VRM loan may rise sharply enough to cause "cash flow" problems, this largely can be overcome by a VRM which permits increases in the loan balance ("negative amortization") rather than sharp changes in payment size. Over time, property-value movements can be expected to offset the rising indebtedness, so that net wealth probably would not decline for any household whose fixed nominal income requires negative amortization to offset payment increases. During the recent period of rapidly rising interest rates—1973 to the present—a fixed-income household's net worth in housing would have risen every year, even with such negative amortization (see chart).

Whereas consumers may be overly pessimistic about VRMs, lenders may be overly optimistic. It is not reasonable, for example, to expect variable-rate instruments *per se* to improve earnings. Indeed, as argued earlier, a properly priced FRM should always provide the lender with a higher *expected* yield than a VRM. Of course, if rates rise unexpectedly, *ex post* the lender would have been better off holding the option implicit in the VRM; and if rates fall, he would have been better off with an FRM because he would not then have "paid" for the option. But *ex ante* the VRM cannot be relied upon to improve earnings simply because of its ability to reduce risk.

Wellenkamp and assumability

Options analysis also offers some insight into the effects of a 1978 (recently reaffirmed)



California court decision regarding mortgage assumability. The California Supreme Court's decision in the case of *Wellenkamp v. Bank of America et. al.* voided the due-on-sale clause in mortgages, thereby permitting a home buyer to assume a seller's existing fixed-rate mortgage. The court reasoned that, in an environment of rising market rates, the seller's inability to offer the new buyer the old rate of interest could have "an inhibitory effect" on the sale of the house, because the seller could be forced to "(absorb a) loss with the resulting reduction in his equity." The court in turn saw this as a violation of Section 711 of the California code, which prohibits unreasonable restraints on "alienation" of property.

The court's decision cannot be defended in terms of options theory, however. The due-on-sale clause is a put option owned by the lender; since options have positive value, loans with such clauses will be offered in competitive markets at lower rates than loans without such clauses. In effect, the borrower (Wellenkamp) had already received compensation for the risk of any "inhibitory" effect such a clause might have had on the net sales proceeds of the real estate.

Since the Wellenkamp decision applied retroactively to outstanding mortgages, it effectively took away the ownership of an option with positive value, and represented a one-time transfer of wealth from the lender to the original borrower. The borrower could capture this windfall by being able to sell the property for more than would have been possible without the attendant low-cost financing. In the long run, however, Wellenkamp will raise nominal mortgage rates (or mortgage-origination fees), since lenders can no longer "buy" the option implicit in the due-on-sale clause and must, therefore, assume increased lending risk.

Future mortgages

Despite widespread predictions about the death of the fixed-rate mortgage, options theory suggests no reason to expect a single set of mortgage features to dominate the marketplace. Markets could exist for all of the various "options" that distinguish mortgage instruments because of differing individual circumstances, similar to the multiple options now available for trading on individual corporate stocks.

We have seen, for example, that both the VRM and the FRM have their respective virtues and liabilities. The VRM is riskier for the household than the FRM, and without negative amortization, may pose more onerous cash-flow problems as well; it is unattractive to the borrower without a considerably lower rate than the FRM. The VRM is less risky for the lender than the FRM; but it may pose cash-flow problems for the lender if accompanied by restrained payment changes (negative amortization), since the lender's deposit payouts are not similarly restrained. The comparative importance of these diverse types of mortgages will depend upon borrowers' and lenders' comparative tastes for risk, institutional constraints and transaction costs.

According to the usual argument, financial intermediaries are better able to bear risk than households, because of their ability to diversify portfolios and because of their relatively superior financial expertise. Lenders also may have potentially better access to capital markets and futures markets, so that they can overcome cash-flow constraints and pass on risk to speculators more easily than households can. Lenders thus may profit from offering FRMs and constructing portfolio hedges against interest-rate risk (to the extent permitted by regulations) rather than eliminating risk by making only (lower yielding) VRMs. Similarly, lenders' comparative ability to deal with cash-flow problems would suggest the use of those VRMs that restrain payment changes (negative amortization), in order to offer households relief from the cash-flow problems posed by conventional VRMs.

Randall J. Pozdena

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 8/19/81	Change from 8/12/81	Change from year ago Dollar	Change from year ago Percent
Loans (gross, adjusted) and investments*	151,337	145	12,535	9.0
Loans (gross, adjusted) — total#	130,453	303	13,372	11.4
Commercial and industrial	39,369	− 208	5,594	16.6
Real estate	53,719	110	6,231	13.1
Loans to individuals	23,118	37	− 744	− 3.1
Securities loans	1,364	30	461	51.1
U.S. Treasury securities*	5,965	− 171	− 349	− 5.5
Other securities*	14,919	13	− 484	− 3.1
Demand deposits — total#	39,553	− 686	− 4,331	− 9.9
Demand deposits — adjusted	26,921	−1,860	− 4,875	−15.3
Savings deposits — total	29,799	− 140	230	0.8
Time deposits — total#	85,854	688	22,898	36.4
Individuals, part. & corp.	77,742	760	23,014	42.1
(Large negotiable CD's)	35,427	421	12,050	51.5

Weekly Averages of Daily Figures	Week ended 8/19/81	Week ended 8/12/81	Comparable year-ago period
Member Bank Reserve Position			
Excess Reserves (+)/Deficiency (−)	n.a.	60	38
Borrowings	32	60	36
Net free reserves (+)/Net borrowed(−)	n.a.	0	2

* Excludes trading account securities.

Includes items not shown separately.

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