

THE EFFECT OF FULLY FLEXIBLE MORTGAGES ON CONSUMERS

by Patricia M. Rudolph

In March 1981 the Federal Home Loan Bank Board changed its regulations to allow federal savings and loan associations and mutual savings banks to make fully flexible mortgages.¹ These regulations place no restriction on the size or frequency of the adjustments made in the contract rate, or on the payment or the maturity, nor are there limits on the level of negative amortization.



Residential mortgage lenders view this increased flexibility as necessary, while prospective homebuyers express concern that the increased uncertainty effectively will bar them from the housing market. Both consumers and real estate professionals have difficulty assessing the impact of the fully flexible mortgages on the consumer.

No historical experience on which to base predictions exists. Yet borrowers and lenders will soon be faced with the task of choosing among the different

types of flexible mortgages. In order to demonstrate the effect that the more flexible mortgage instruments will have on the consumer, two types of mortgages with unlimited interest rate flexibility will be compared with the traditional mortgage, as if they had been available in the past.

The payments, interest paid, loan outstanding and internal rate of return (IRR) for a fully variable rate mortgage are computed and compared with the traditional fixed-rate, equal payment mortgage and with another variable rate loan — the Wachovia-type mortgage. These computations are based on the average new home purchased in 1976 and the economic conditions which prevailed over the next five years. It is assumed that the house was sold in 1980 at a price reflecting the average increase in the price of existing houses over the period 1976 to 1980. This time period should illustrate some of the worst effects of the fully flexible mortgages, since in periods of high and rising interest rates the consumer is most adversely affected by the fully flexible rate loans.

Description Of The Mortgage Loans

The fully variable rate loan is compared with the traditional fixed-rate, equal payment loan and a Wachovia-type loan. The fully variable rate loan used here ties its interest rate to the Treasury bill rate with a 300 basis point spread. The payment is recalculated each month based on the current interest rate, the new loan outstanding and the number of months to maturity. No limitation is placed on the size of the change in the payment from month to month.

The Wachovia-type mortgage has a floating interest rate, 300 basis points above the 90-day Treasury bill rate. The interest rate is adjusted every three months; however, the payment is fixed for the first five years. The adjustment in the interest rate will affect only the division of the payment between interest and loan amortization. At five-year intervals the payment can

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be adjusted by a maximum of 25 percent. At year twenty-five the payment can be adjusted by any amount necessary to repay the loan by year thirty. In year thirty if the loan has not been paid off, the borrower may refinance.

Assumptions

The comparison of the three loans is based on the following scenario. In 1976, the consumer buys a house for the average price of a new home, \$48,400. The down payment is \$12,500, which implies a loan outstanding of \$35,900. It is assumed that the buyer will sell the house for \$82,900 at the end of 1980. The selling price of the house was calculated by taking the percentage change in the average price of existing homes sold and applying it to the 1976 average price of \$48,400.

In this description, several factors are not included such as any discussion of the tax effects on buyers in different tax brackets. Also ignored are loan initiation fees and commission costs, which are assumed to be the same for each of the loans.

A Comparison Of Cash Flows

Table 1 contains a comparison of the payments, interest paid and the loan outstanding for the three types of loans in each year. For the first two years, 1976 and 1977, when interest rates were relatively stable, the differences among the three are small. The initial payments of the fully variable rate and the Wachovia-type loans are lower than the fully amortized loan. This is not surprising since the short term

rate was well below the long term rate at that time. The variability in the payment of the fully variable rate loan in 1976 and 1977 is relatively small. The difference between the highest and lowest payment is eighteen dollars in the first year and forty-four dollars in the second year. In the first two years, the flexible loans have an advantage over the fixed-rate loan. The loan outstanding at the end of 1977 and total interest paid are less for the flexible loans than for the fixed-rate loan.

Beginning in 1978 as interest rates rise, the flexible loans become less attractive. The payments on the fully variable rate loan in 1979 vary from a high payment of \$440 to a low payment of \$367. Between 1978 and 1979 the loan outstanding on the Wachovia-type note actually increases. The payment is fixed and not sufficient to cover the interest as rates rise.

By 1980 the fully amortized fixed-rate loan is extremely attractive relative to other types of loans. The high payment on the fully variable rate mortgage during 1980 is \$534. The fully variable rate payment which started out slightly below the fixed-rate loan payment is \$251 above it by the end of 1980. The loan outstanding on the Wachovia-type note increases again to \$38,227 — more than the initial loan. Comparing total interest paid over the five years, the fixed-rate loan is the lowest at \$15,534. The fully variable rate loan comes second at \$18,664, and the Wachovia-type loan has the highest interest paid over the five years — \$18,831.

TABLE 1
Loan Comparison

	Fully Amortized Equal Payment Fixed-Rate Loan			Wachovia-type Loan			Fully Variable Rate Loan			
	Loan Payment	Interest Paid	Loan Outstanding	Loan Payment	Interest Paid	Loan Outstanding	High Payment	Low Payment	Interest Paid	Loan Outstanding
1976	\$283	\$3,138	\$35,642	\$275	\$2,943	\$35,542	\$275	\$257	\$2,883	\$35,604
1977	283	3,115	35,361	275	2,802	35,043	292	248	2,881	35,287
1978	283	3,090	35,055	275	3,411	35,153	355	290	3,494	35,042
1979	283	3,061	34,720	275	4,431	36,285	440	367	4,481	34,881
1980	283	3,031	34,355	275	5,244	38,227	534	317	4,925	34,725
Total Interest Paid		\$15,435			\$18,831				\$18,664	
Net Proceeds From Sale			\$48,545			\$44,673				\$48,175

TABLE 2
Cash Outflows

	Fixed-Rate			Wachovia			Fully Variable Rate		
	Interest Paid	Principal Reduction	Cash Outflow	Interest Paid	Principal Reduction	Cash Outflow	Interest Paid	Principal Reduction	Cash Outflow
1976	\$3,138	\$258	\$-3,396	\$2,942	\$ 348	\$-3,300	\$2,883	\$296	\$3,178
1977	3,115	281	-3,396	2,801	499	-3,300	2,881	317	3,198
1978	3,090	306	-3,396	3,300	-110	-3,300	3,494	245	3,739
1979	3,061	335	-3,396	3,300	-1,132	-3,300	4,481	161	4,642
1980	3,031	365	-3,396	3,300	-1,942	-3,300	4,925	156	5,081

In Table 2 the annual division of cash flows between interest and principal is presented. The annual cash flows are constant for the fixed-rate and Wachovia-type loans. For the Wachovia-type loan in 1978, 1979 and 1980 the interest accrued is greater than the payment, causing the loan outstanding to increase. This excess of interest over the payment is seen as the negative principal reduction for the Wachovia-type note. The fully variable rate mortgage does not experience this negative amortization but the cash outflow increases drastically in 1979 and 1980.

If, as assumed, the house sells at the end of 1980 for \$82,900, the net proceeds of the sale (sale price less loan outstanding) will differ for the three types of mortgages based on the loan outstanding at the time of sale. Net proceeds from the sale for the Wachovia-type loan are lowest because negative amortization has occurred. The net proceeds from the sale will be only \$44,673 for the Wachovia-type loan, compared to \$48,175 for the fully variable rate loan and \$48,545 for the fixed-rate loan.

The IRR Compared

To evaluate the effect of the different types of mortgages on the rate of return on residential investment, the IRR is calculated for each of the three mortgages. In each case the down payment is \$12,500, the cash flows are as presented in Table 2 and the net proceeds from the sale, as in Table 1. The difference in the IRR on the three types of mortgages is small. The fixed-rate loan has the highest IRR at 15.33 percent, and the Wachovia-type and the fully variable rate loans are close at 13.18 percent and 13.17 percent, respectively.

In the period between 1976 and 1980, the largest part of the return on residential housing was in the form of price appreciation. Since the type of financing is not as important as expected, the variable rate loans are not disadvantageous to the consumer as they would seem. From the buyer's perspective, the preferred loan would be the fixed-rate loan; the higher IRR (15.33 percent) reflects the low locked-in interest rate. However, this type of loan may not be available in the future. The use of flexible mortgages

would decrease the return on residential housing investment, but they may not imply an unacceptably low IRR.

Risks Associated With Flexible Mortgages

The difference between the return on the investment financed by the two flexible mortgages is only one basis point. In deciding between the two types of loans, one should consider not only the return but also the risks.

The Wachovia-type loan has the advantage of a fixed payment for five years and limits the size of the payment adjustment for the first 25 years; however, this fixed payment and limited adjustment introduce the possibility of negative amortization. The rising loan balance will reduce the net proceeds from the sale. This is not a serious problem so long as the price of the house rises at least as fast as the loan grows. During the five years used in this comparison, the price appreciation more than compensates for the rising loan balance. In the future there is no guarantee that prices will continue to rise fast enough.

The fully variable rate loan does not permit negative amortization but it does introduce uncertainty into the cash outflows involved in homeownership. To explain the impact of the payment changes on the consumer, Table 3 contains the payment for each mortgage expressed as a percentage of the median income in the United States. The percentage of income needed to make the fixed payments of the fixed-rate and the Wachovia-type mortgages declines steadily over the five years. The percentage of income which is used to meet house payments for the fully variable rate loan varies widely from a low of 18.6 percent in 1977 and 1980 to a high in 1980 of 31.3 percent. The increasing burden of making the highest payment along with the uncertainty introduced by the variable payment make the fully variable rate mortgage unattractive.

Conclusions

Comparing the fixed-rate loan with a Wachovia-type loan and a fully variable rate loan as if they had been

TABLE 3
Mortgage Payment as a Percentage
of Monthly Median Income

Fully Amortized			Wachovia-type		Fully Variable Rate Loan			
Payment	Payment as % of Income		Payment	Payment as % of Income	High Payment	High Payment as % of Income	Low Payment	Low Payment as % of Income
1976	\$283	22.7%	\$275	22.1%	\$275	22.1%	\$257	20.6%
1977	283	21.2	275	20.6	292	21.9	248	18.6
1978	283	19.3	275	18.7	355	24.1	290	21.7
1979	283	17.3	275	16.8	440	26.8	367	22.4
1980	283	16.6	275	16.1	534	31.3	317	18.6

available in 1976 clearly indicates that consumers have cause to prefer the fixed-rate loan. The fixed rate implies a higher rate of return on the investment and the fixed payment implies a decreasing burden of debt as income rises. However, the fixed-rate loan is likely to become less and less common. Consumers may be faced not with the choice of fixed vs. flexible loans but rather with different types of flexible loans. Although the flexible loans reduce the return on residential investment, they do not appear to make the return unacceptably small. In the example the IRR is 13.8 for the fully variable rate loan and 13.7 for the Wachovia-type.

Each of the variable rate mortgages which are used here has its own risks. The Wachovia loan implies the possibility of negative amortization while keeping the payments flat for at least five years, and limiting the size of the payment adjustment. The fully variable

rate loan will not permit negative amortization but does imply highly variable cash flows. Given that price increases in the housing market are likely to outpace the rate of negative amortization, the Wachovia-type loan seems more attractive.

Although the numbers presented are not real numbers since the flexible mortgages have not been available, the examples do convey a feeling for the impact these types of mortgages are likely to have on consumers if interest rates continue to behave as they have in the past five years.

NOTE

1. David Seider, "Changing Patterns of Housing Finance," *Federal Reserve Bulletin* 67 (June 1981), 468-469.