

prevalent interest-rate and payment adjustment caps were 2 percent and 7 percent, respectively. Seventy-one percent of all programs conformed to either FHLMC or FNMA guidelines. Interest-rate or payment caps were available in 64 programs, and 55 programs had a life-of-loan maximum on the mortgage rate (see table 1). Rates on uncapped and capped ARM programs differed only slightly, without one being consistently higher than the other when analyzed by index type. Of 18 programs that had neither interest-rate nor payment adjustment caps, only one had a life-of-loan rate maximum. Thus, in these 17 uncapped programs, borrowers would, in effect, bear 100 percent of the interest-rate risk.

In general, prices and terms of ARMs in the surveyed areas were similar. However, uncapped ARM programs—those programs without interest-rate and payment adjustment caps and life-of-loan rate maximums—were concentrated in Cleveland and Columbus. In Cincinnati, institutions that offered payment adjustment caps seemed to prefer loan extensions to negative amortization caps. In contrast, institutions in Columbus and Cleveland chose negative amortization caps. Institutions in Cleveland and Columbus also tended more than those in Cincinnati to allow ARM assumptions.

A statistical comparison of loan features by institution type (see table 2) suggests S&Ls offered ARMs with lower initial rates, lower down payments, less frequent interest-rate and payment adjustments, and lower interest-rate adjustment caps than did commercial banks. However, at

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Table 2 Selected ARM Loan Characteristics by Type of Institution

Loan variable (mean values)	Institution type	
	Commercial banks	S&Ls
Initial ARM loan rate ^a	12.15%	11.80%
Maximum loan-to-value ratio	88 ^b	92
Points	2.58%	2.73%
Frequency of interest-rate adjustment (years)	2.25	2.53
Interest-rate adjustment period cap	2.23% ^b	1.84%
Interest-rate life-of-loan maximum	4.99% ^b	5.29%
Frequency of payment adjustment (years)	2.06 ^c	2.58
Payment adjustment cap	7.5%	7.5%
Negative amortization cap	125%	125%

a. Rate applies to one-year Treasury ARM loan. Commercial banks had slightly higher average rates than S&Ls except for ARMs tied to three-year Treasury index (rates were equal) and ARMs tied to five-year and seven-year Treasuries (rates were lower).
b. Indicates that the commercial bank mean is significantly different from the S&L mean at the 10 percent level.
c. Denotes statistical significance at 10 percent level for uncapped ARMs only.

S&Ls, a borrower typically can expect to pay additional points when the loan is closed. A borrower also could pay a higher mortgage rate over the loan's duration, because S&Ls usually had a higher ceiling on their life-of-loan maximum rate. Thus, at S&Ls, borrowers are trading off better initial price and loan terms by paying higher points at loan closing and are less protected against a long-term rise in

interest rates. On the other hand, in the event of a long-term rise in interest rates, commercial banks offer relatively better protection for consumers, judging by rate caps only.

Conclusion

Although the first generation of ARMs presented mortgage borrowers as well as lenders with some problems, most ARM programs now available are designed to minimize payment shock. Despite gradual elimination of these abuses and the standardization of most ARM loan programs, however, ARM opponents insist that legislation that mandates standardized ARMs is necessary to prevent future abuses. Ironically, if such standardization were legislated, it would limit the options currently available to borrowers and inhibit lenders from responding to local market conditions. Borrowers would do well to improve their decision-making ability by informing themselves about ARMs, and would benefit if lenders provided more detailed and uniform information about their ARM loan programs.

As mortgage rates fall, fixed-rate mortgages are regaining popularity. This trend may prove unfortunate for S&Ls that are portfolio lenders, because they are risking a mismatch of asset and liability maturities if interest rates rise rapidly. It also may prove costly for home buyers, because they are paying a high premium to eliminate interest-rate risk. Perhaps mortgage borrowers in retrospect can justify high premiums on the *peace of mind* that comes with a fixed-rate mortgage.

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ECONOMIC COMMENTARY

Will Adjustable Rate Mortgages Survive?

by Thomas M. Buynak

The variety of mortgage loan programs currently available to home buyers has made choosing a mortgage loan as difficult as choosing a house. One of these mortgage loan options, the adjustable rate mortgage, became so popular in 1983-84 that it supplanted the traditional fixed-rate mortgage as the dominant type of home mortgage financing.

While many home buyers only recently became aware of the adjustable rate mortgage (ARM), this type of mortgage became available in the early 1970s, when several states authorized their state-chartered institutions to originate variable rate mortgages. In 1981, the Federal Home Loan Bank Board (FHLBB) and the Office of the Comptroller of the Currency (OCC) authorized ARMs nationwide for federally chartered depositories.

In mid-1983, ARMs accounted for one-third of total monthly mortgage originations, but this level had risen to approximately two-thirds by June 1984. For 1983 and 1984 together, ARM volume could total \$172 billion, representing 13 percent of the projected \$1.3 trillion of outstanding one- to four-family mortgages by year-end 1984.¹

One reason for the rapid growth of ARMs was that their initial rate was much lower than those on fixed-rate mortgages. During the current economic expansion, long-term rates have been higher than short-term rates. ARM rates are typically tied to short-term interest rates. According to FHLBB data, the difference, or spread, between initial rates on commitments for fixed- and adjustable-rate mortgages exceeded 2 percent by mid-year 1984.

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The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

Another reason for the growing popularity of ARMs was the aggressive marketing of mortgage lenders, especially savings and loan associations (S&Ls). The financial condition of S&Ls, whose business previously had been confined to home finance, deteriorated substantially during the 1981-82, recession because rates paid on their short-term liabilities eclipsed the low, less responsive return on their long-term, fixed-rate assets. In 1982, Congress enacted the Garn-St Germain Act, which allowed S&Ls to originate various non-mortgage products, including consumer loans and, to some extent, commercial loans. With their liabilities sensitive to market interest rates, S&Ls had two options for shortening the maturity structure of their asset portfolios: embark on new business activities or extend mortgage loans more sensitive to market rates, such as ARMs.

Since S&Ls have a comparative advantage in the mortgage lending business, most of them have chosen to originate ARMs. In late 1983, many lenders began to offer discounted introductory ARM rates, or *teaser rates*. One purpose of such discounts was to overcome borrower resistance to an adjusting rate mortgage. But the pervasiveness of ARM discounting also reflects competition among S&Ls for this type of asset. After late 1982, S&Ls vied for deposits and recouped in less than six months deposit losses that exceeded \$40 billion during the preceding two years; these large deposit inflows enabled S&Ls to originate a large volume of mortgages.

ARMs' Features

Under the ARM regulations of the FHLBB and the OCC, a mortgage lender has wide discretion to set the price and terms of an ARM loan. A lender may choose the index to which the ARM rate adjusts and may set the terms of interest rate and payment adjustments, including the frequency and amount of adjustment. A lender may also include options such as whether the loan's term can be lengthened, or whether it can be converted to a fixed-rate mortgage by the borrower or assumed by another purchaser.

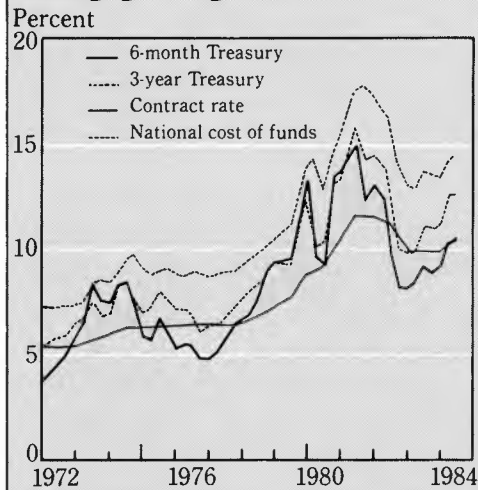
In principle, ARMs offer advantages to both lenders and borrowers, particularly in today's deregulated financial environment. To lenders, ARMs represent a method by which asset portfolios can be restructured, allowing lenders to match interest-rate-sensitive assets with interest-rate-sensitive liabilities. For borrowers, ARMs brighten the prospects of owning a house by improving housing affordability, which deteriorated substantially because of inflated housing prices in the 1970s and high, real interest rates in the 1980s. ARMs seem particularly suited to people who expect to sell their house in a few years and to young, first-time home buyers whose incomes typically are low. Also, borrowers who have a high income and a tolerance for interest-rate risk can get, in return, a lower initial mortgage rate and, possibly, a lower total loan cost. By allowing borrowers to choose greater risk, lenders benefit because the rate sensitivities of assets and liabilities can

1. See Brian J. Fabbri and Joseph Hu, "The ARM Squeeze: How Much and How Soon," Salomon Brothers, Inc., July 20, 1984, p. 1.

be aligned, even if a lender's liabilities are particularly rate-sensitive.

Unlike the traditional fixed-rate mortgage, an ARM allows the interest rate to vary according to an index (see chart 1). Mortgage lenders usually index the ARM rate to rates on Treasury securities, the FHLBB average mortgage contract rate, or the cost of funds to S&Ls.² To calculate the interest rate paid by the borrower, a lender adds a *margin* that, at a minimum, reflects lending expenses and profit. Generally, deter-

Chart 1 Index Rates for Adjustable Rate Mortgage Programs



SOURCES: Statistical Release G.13, "Selected Rates and Bond Prices," Board of Governors of the Federal Reserve System; and "ARM Index Rates," Federal Home Loan Bank Board.

mining which index is most suitable for a borrower involves a trade-off between the initial interest rate and interest-rate risk. If the mortgage rate is tied to an index such as a five-year Treasury, the borrower may face less frequent and less volatile payment adjustments than if the mortgage rate is linked to a short-term rate such as a six-month Treasury. However, because an ARM with less frequent interest-rate adjustments is less interest-rate sensitive, a lender typically extracts a premium (that is, charges a higher margin) to compensate for assuming relatively higher interest-rate risk. Also, in choosing a long-run index, a borrower may give up the opportunity for reduced monthly payments because of lower, short-term interest rates.

2. See "ARMS: A Study of Adjustable Rate Mortgages Being Made at Savings Institutions," United States League of Savings, 1984, p. 12.

Box 1 Mortgage Insurance and Secondary Mortgage Markets

Mortgage insurance enables mortgage lenders to limit their risk in the event that the mortgage loan is foreclosed. This permits some borrowers to receive a higher loan-to-value ratio—that is, a smaller initial down payment—than otherwise would have been the case. Typically, mortgage insurance is required when the loan-to-value ratio exceeds 80 percent. In 1983, approximately 55 percent of all home buyers made a down payment of less than 20 percent.³ When lenders originate loans such as ARMs, mortgage insurers develop underwriting standards for them.

Secondary mortgage markets, which are also rapidly altering the traditional mortgage financing system, serve as a conduit between mortgage lenders and institutional investors, such as S&Ls, pension funds, and insurance companies.

Two federally-sponsored institutions are the dominant participants in the secondary mortgage markets for conventional mortgages: the Federal Home Loan Mortgage Corporation (FHLMC), known as Freddie Mac, and the Federal National Mortgage Association (FNMA), known as Fannie Mae. After purchasing mortgage loans from lenders, Freddie Mac and Fannie Mae issue mortgage-backed securities as well as debt to replenish the supply of loanable funds to lenders. An objective of Fannie Mae and Freddie Mac is to attract capital to the housing sector by standardizing mortgage loan programs for investors.

a. See "Homeownership: Celebrating the American Dream," United States League of Savings Institutions, 1984, p. 17.

Even if borrowers choose more volatile, short-run indexed ARMs, they can partially stabilize monthly payments if the lender limits, or *caps*, the interest-rate or payment adjustment. An *interest-rate cap*, which limits the percentage change in the interest rate, may apply both to periodic adjustments and over the life of the loan. A *payment cap* sets a limit on the percentage change in the payment level and becomes binding when it restricts the rise in the monthly payment from fully reflecting the interest-rate rise. This results in *negative amortization*, or *deferred interest*, which increases the outstanding loan balance. Negative amortization can be prevented or minimized if the term of the loan is extended, but this would increase the mortgagor's total interest cost. Although caps limit a borrower's interest-rate exposure, they are not cost-free options. Typically, a lender will charge a higher margin, because caps can inhibit the lender from adjusting loan terms to reflect rising cost of funds.

ARM Abuses

In July 1984, congressional attention focused on ARMs because of growing public concern that lenders were shifting too much interest-rate risk to borrowers.³ Borrowers' inexperience with ARMs was perceived as

3. See *Adjustable Rate Mortgages (ARM's)*, Hearings before the Subcommittee on Housing and Community Development of the Committee on Banking, Finance, and Urban Affairs., 98 Cong. 2 Sess. Washington, DC: U.S. Government Printing Office, June 21, July 31, and August 1, 1984.

a major problem. Many consumers chose an ARM over a fixed-rate mortgage, because lenders offered attractive introductory discount rates. In a few instances, unfortunately, discounts were as large as 7 percent below the program rate, which could create a situation of *payment shock*—a very sharp rise in monthly payments when the discount expires that could lead to loan delinquency and foreclosure. If a deeply discounted ARM is uncapped, it may adjust more rapidly (usually within a year) to market rates than a capped ARM with a similar adjustment period, and the borrower may be saddled with a monthly payment increase of 20 percent or more.

ARMs also were unfamiliar instruments to mortgage lenders. Because ARM competition intensified so rapidly, many mortgage lenders simply applied their fixed-rate mortgage underwriting criteria to ARMs. In fixed-rate mortgage underwriting, it is presumed that payment burdens will ease as a borrower's income grows, and a borrower's equity will accumulate as the loan amortizes and the house price appreciates. However, since neither criterion is necessarily valid for ARMs, using fixed-rate mortgage underwriting criteria for ARMs is tantamount to increasing credit risk. As ARM competition intensified,

some lenders allegedly relaxed their mortgage underwriting requirements and qualified borrowers for ARMs by using the initial discount rate. As a result, borrowers who otherwise might have been excluded as being too risky were able to obtain mortgages.

Not all borrowers were negatively affected by teaser-rate mortgages, however. In some markets, aggressive ARM marketing led to imprudently large rate concessions to borrowers. From a lender's point of view, a discount is imprudent, or the loan is *mispriced*, when the loss of income to the lender exceeds the value of the reduced risk. Mispricing, as well as delinquencies and defaults resulting from inadequate underwriting, could exacerbate the fragile financial condition of S&Ls.

ARMs Respond to Market Pressures

There have been strong pressures from mortgage insurers, secondary market institutions, trade groups, and regulatory agencies to correct some of the problems with ARMs (see box 1). As ARM abuses have come to the attention of the public, the mortgage finance industry has recognized that this new kind of loan should be more standardized. In response, the industry developed uniform ARM underwriting guidelines for lenders who sell these loans in the secondary markets. These guidelines would prevent lenders from assuming excessive credit risk, yet give them freedom to react to local market demand and to design ARM programs that fit a variety of portfolio management strategies. To illustrate: Freddie Mac recently established ARM guidelines for lenders that set maximums on periodic interest rate and monthly payment adjustments and that specify a ceiling on negative amortization. Under the guidelines, if the ARM loan allows negative amortization, then a mortgage's loan-to-value ratio cannot exceed 90 percent. Also, borrowers must be qualified on the non-discounted index rate. The second action was the development of disclosure guidelines on ARMs that explain the many features of the ARM loan and give advice about ARM options.⁴

4. For two excellent guides, see "What You Should Know About ARMs: A Consumer Guide to Adjustable Rate Mortgages," Mortgage Bankers Association of America, August 1984; and "Consumer Handbook on Adjustable Rate Mortgages," Federal Reserve Board and Federal Home Loan Bank Board.

Table 1 ARM Program Rates and Selected Terms

Type ^a	Number ^b	Rate (mean)	Range of rates	Payment cap	Negative Amortization cap	Life-of-loan on maximum interest rate
1-yr Treasury Capped	24	11.9	10.75-13.5	2	2	22
Uncapped	0	—	—	—	—	—
3-yr Treasury Capped	16	13.15	12.5-14.3	2	2	14
Uncapped	4	13.38	13.0-13.75	0	—	1
5-yr Treasury Capped	5	13.78	13.0-14.5	1	1	4
Uncapped	6	13.46	12.75-14.0	0	—	1
7-yr Treasury Capped	4	13.75	13.5-14.25	1	1	4
Uncapped	1	14.0	—	0	—	0
FHLBB average contract rate						
Capped	6	12.73	12.0-13.5	0	—	4
Uncapped	1	12.75	—	0	—	0
FHLBB national or district cost of funds						
Capped	7	12.34	11.5-13.5	1	0	5
Uncapped	5	12.2	11.1-13.3	0	—	0

a. Capped programs include those with either interest-rate or payment adjustment caps.
b. We excluded three programs that used an institution-specific index; two of these programs offered interest-rate caps.

According to a number of surveys, lenders are indeed constructively redesigning ARM programs. In August 1983, Freddie Mac surveyed 750 mortgage lenders nationwide and found that 82 percent of them offered ARM products.⁵ A wide range of initial prices were available, but 55 percent of ARMs had interest-rate or payment caps. In June 1984, the U.S. League of Savings Institutions, a trade organization, surveyed 1,100 S&Ls, or approximately one-third of its members.⁶ Ninety-seven percent of ARM programs had either annual interest-rate or annual payment caps, and more than 80 percent of ARMs had a lifetime cap that was 5 percent or less. Although more than one-half of the ARMs qualified borrowers at the discounted rate, the majority of such programs had interest-rate or payment caps or applied more stringent underwriting standards.

Ohio Survey

In a telephone survey of ARM loan programs offered by banks and S&Ls

5. See "What Makes an ARM Successful?: A Report on the Market for Adjustable Rate Mortgages," Federal Home Loan Mortgage Corporation, undated.

6. See "ARMS: A Study of Adjustable Rate Mortgages..."

in Ohio, we found that mortgage lenders are designing ARM loans to forestall payment shock.⁷ The sample included 50 depositories from Cincinnati, Cleveland, and Columbus, whose deposits range from under \$10 million to over \$500 million. There were 82 ARM programs available; 61 percent of S&Ls offered more than one ARM program, compared with 38 percent of commercial banks. Six depositories offered only ARMs, while three had only fixed-rate mortgages. On average, institutions whose deposit size ranged from \$100 million to \$250 million offered multiple ARM programs. Of seven ARM programs (at five institutions) that had initial discounted rates, only four ARM programs (at three institutions) qualified borrowers at the discounted rate.

The most common ARM indexes were rates on Treasury securities, particularly one- and three-year rates. As a result, one- and three-year interest-rate and payment adjustments represented approximately three-fourths of all programs. Only three programs had semi-annual or monthly interest-rate adjustments. The most

7. This survey was conducted during the last week of September and the first week of October 1984.