NBER WORKING PAPER SERIES

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Working Paper No. 2646

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
July 1988

Earlier versions of this paper were presented at an OSU Finance Seminar and the Midyear Meetings of the American Real Estate and Urban Economics Association. This research is part of NBER's research program in Financial Markets and Monetary Economics. Any opinions expressed are those of the authors not those of the National Bureau of Economic Research.

NBER Working Paper #2646
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ABSTRACT

Between the early 1980s and 1986, the share of new conforming (under $153,000 in 1986) conventional fixed-rate mortgages (FRMs) that went into Fannie Mae and Freddie Mac mortgage pools increased from under 5 percent to over 50 percent. The impact of these agencies moving from negligible participants to dominant players in this market is investigated in this study by an analysis of yields on 4,900 loans closed in California during May-June 1978 and 1,800 closed in May-June 1986.

Our analysis indicates that the loan rate depends on the loan-to-value ratio, the loan size, and, in 1986, whether the loan is far above, just above, or below the conforming loan limit. Rates on loans far above the conforming loan limit exceed those on otherwise comparable loans below the limit by 30 basis points and those on loans destined to exceed the limit within a year by 15 basis points. That is, the expanded agency securitization of conforming FRMs has significantly lowered the rates on both conforming loans and loans somewhat above the conforming limit (27 percent of nonconforming loans in 1986) relative to what they would otherwise have been.

The effects of a 30 basis point lower FRM rate are many: households are more likely to choose FRMs than ARMs, to decide to own rather than rent, and to own larger houses. Moreover, traditional mortgage portfolio lenders will have fewer ARMs to purchase and will earn lower returns on FRM investments. A few sample calculations are provided to illustrate the possble magnitudes of these effects

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The Impact of the Agencies on Conventional Fixed-Rate Mortgage Yields

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The federal agencies' role in the conventional fixed-rate mortgage market has expanded sharply in the 1980s. FNMA purchased some conventional mortgages in the 1970s, but at the end of the decade its portfolio of conventional single-family mortgages was still under $20 billion. Also, while FHLMC's pass-through program existed in the 1970s, the outstanding level of its pass-throughs was also still under $20 billion at the end of the decade. In contrast, FNMA initiated its pass-through program in 1982 and issues for both of the agencies exploded, rising to nearly $150 billion *per year* in 1986-87.

The best measure of the agencies' expanded role is the increase in the percentage of "new" conventional fixed-rate loans (generally defined as less than one year since origination) eligible for securitization that are, in fact, securitized by FHLMC and FNMA. Column 8 in Table 1 shows that the percentage of new conventional FRMs securitized by these agencies has increased from 3 to 40 percent in the 1980s. Moreover, about a quarter of FRMs, the so-called jumbo loans, cannot be securitized by the agencies because the size of these loans exceeds the conforming loan limit. Dividing column 8 by 0.75, the share of new conforming FRMs securitized in recent years is thus seen (column 9) to be in excess of 50 percent. That is, in five years the agencies have gone from a negligible participant to the dominant player in the market for conforming FRMs.

The principal hypothesis tested in this paper is that the recent dominance of the conforming FRM market by the agencies has reduced new issue yields on conforming loans relative to those on jumbo loans. The test consists of an analysis and comparison of yields on samples of conventional FRMs closed in California in May-June of 1978 (4,750) loans) and 1986 (1,875 loans), periods before and after the agency dominance. Concentrating on one state allows us to ignore many regional effects, such as variations in state foreclosure laws, on yields. Moreover, California accounts for a substantial fraction of the dollar volume of all FRMs closed, 27 percent in 1986, and of jumbo FRMs closed, 53 percent in 1986.

We begin with a discussion of the data examined, report some empirical estimates, and close by summarizing the results and drawing some implications of the results. We find that the increased securitization of the conventional fixed-rate market has lowered yields on conforming loans by about 30 basis points relative to those on large jumbo loans and yields on small jumbos (soon to be conforming) by about 15 basis points.

I. The Closed Loan Data

Each month since 1963, the FHLBB has conducted a survey of conventional loans closed (loans "approved", prior to 1973) during the first five days of the month. The loans are on single-family non-farm residential properties, both newly built and previously occupied. The loans are permanent, fully amortizing, first mortgages on properties transferred. Thus refinancings, second mortgages, and interim financing are excluded, although a small number of combination construction-purchase loans are included. The loans are those made by all major lenders (originators): savings and loans, mutual savings banks, commercial banks, and mortgage bankers. The loans have both fixed and adjustable rates.

The survey provides the contract interest rate, initial fees and charges, the term to maturity, the mortgage loan amount, and the purchase price of the property. The effective interest rate is officially calculated in the survey as the contract rate plus the initial fees and charges amortized over ten years; the loan-to-value ratio is the loan amount divided by purchase price. Since 1986, the base note rate (contract rate less temporary buydowns or discounts) for all loans and the interest rate adjustment-period and life-of-loan rate caps for ARMs have been reported.

The interest rate survey data are easily subdivided into conforming and jumbo loan categories. The maximum loan size eligible for agency purchase programs was set directly by statute from 1970 through 1980. Since 1980, the ceiling has been adjusted annually according to a formula incorporated in 1980 legislation. The adjustment formula increases the limit at the beginning of each year by the percentage change in the average purchase price for homes financed by conventional mortgages as reported by the FHLBB during the 12-month period ending with the previous October. Figure 1 illustrates how the maximum loan size limit (and that for FHA loans in high cost areas) has increased over time.

To minimize the effect of regional factors, particularly differences in expected default losses, we decided to choose a single state for our analysis. Given our need to include numerous jumbo loans, California was the obvious choice. To test the hypothesis that the relation between yields on conforming and jumbo loans has been changed by the expanded role of the agencies in the 1980s, we chose two dates for analysis: 1978, before the agencies expanded their activities, and 1986, by which time the agencies seemed to dominate the conforming market. Data for May, June and July, peak loan closing months, were analyzed for each year. The volumes of loans closed in these years was larger, many times larger in some cases, than the volume in the intervening years.

The basic loan sample was reduced in five ways. First, adjustable rate loans were deleted; our hypothesis relates to FRMs only (the agencies securitized less than 5 percent of new ARM originations in 1986). Second, loans by mortgage and commercial bankers were deleted. Because only a handful of loans originated by mortgage bankers were included in the 1986 California sample, they had to be deleted from both dates to keep the data comparable. Commercial banks originated such a small percentage of the loans in both years that we decided to exclude these originations also. Because no mutual savings banks exist (or were sampled) in California, savings and loans are the only originators for our sample. Third, combination construction-purchase loans were excluded. These were only one percent of the sample, and the contract rate here could easily be mismeasured. Fourth, loans with loan-to-value ratios under 70 percent were excluded to make sure that no second mortgages or mortgages with significant seller-financing buy downs built into the price (and thus the loan-to-value ratio) were included. Fifth, loans with less than 25 years term-to-maturity were excluded for similar reasons. Sixth, the 28 loans in 1986 that had a base rate below the coupon rate were deleted.

The distributions of the 1978 and 1986 data samples, broken down by loan-to-value ratio and loan size (as a percentage of the conforming loan limit), are given in Tables 2 and 3. Over seventy percent of the loans in our sample had 70 to 80 percent loan-to-value ratios (over ninety-five percent of the 80 to 84.9 percent loans are 80 percent loans), and about a fifth of all loans were jumbos. In 1978, all the jumbos had loan-to-value ratios under 85 percent; in 1986, jumbos constituted over a tenth of loans with loan-to-value ratios above 85 percent. In 1978, fifty-nine percent of the loans were less than 80 percent of the conforming limit and twenty-eight percent were between 80 and 115 percent. By 1986, these percentages had shifted to forty-seven and thirty-nine, respectively.

One additional point about the data: they are extremely "noisy." More specifically, the effective FRM rate at a given point in time for loans at or under the conforming loan limit with similar loan-to-value ratios varies by as much as 4 to 5 percentage points! To illustrate, in June 1986, the 306 loans closed with loan-to-value ratios of 75 to 80 percent had effective loan rates ranging from 7.47 to 11.67 percent (mean of 10.40, standard deviation of 0.45). For the 156 loans with loan-to-value ratios of 85 to 90 percent, the range was an even wider 8.71 to 13.97 percent (mean of 10.60, standard deviation of 0.67). While variation of up to 1½ percentage points could conceivably be rationalized (and over 95 percent of the loan rates fall within this range), owing to differences in the date the loan was originated and in loan size, the observed larger variation implies significant reporting errors.[1]

The apparent significant reporting errors suggest three things. First, a large data sample is needed so that the errors will not distort the results; the significance (and plausibility) of our estimates improved noticeably when we went from one to three months of data in each year.[2] Second, the data cells should be chosen carefully to insure ample data points. Third, our ability to "explain" the effective loan rate data will not be great.

II. The Empirical Results

Variations in effective FRM yields on conventional loans originated in a particular region of the country at a given point in time should be systematically related to two variables: the size of the loan and the loan-to-value ratio. The effective rate should decline with loan size because the costs of originating and servicing contracts per dollar of loan decrease as the loan size increases. The effective rate should rise, at an increasing rate, with the loan-to-value ratio (after it exceeds, say, 80 percent) because expected losses from default increase. (Effective rates on equal-sized loans collateralized by equal-valued houses may vary across regions because the expected losses from default may vary owing to differences in expected house price inflation/volatility and/or in state foreclosure laws.)

To test the hypothesis that the loan rate declines with loan size, we have computed the average effective rates on loans of increasing size (percent of the conforming loan limit) for loans with similar loan-to-value ratios (75 to 80 percent). This also provides a crude test of the main hypothesis that the relationship between qualifying and jumbo loan rates changed between 1978 and 1986.

The data in Table 4 provide support for both hypotheses. First, consider the declines in effective rates for both 1978 and 1986 as the loan size rises from under half the conforming limit to the limit. Second, note the sharp rate jump at the loan limit in 1986, in contrast to the leveling off in 1978. In fact, the 26 basis-point jump for loans 91-100 percent of the limit to loans equal to 101-115 percent may understate the impact of the agencies' expansion. The 101-115 percent rate may be lower in 1986 than it would be in the absence of the agency expansion because these loans would be under the limit within a year (the limit increased by 15 percent on January 1, 1987).

Table 4 also contains data on the contract loan rate and standard deviations of the effective and contract rates. The contract rates follow roughly the same pattern as the effective rate. The standard deviations are a little higher for smaller loans (under 80 percent of the conforming limit). Somewhat surprisingly, the standard deviations for the contract rate are slightly smaller than those for the effective rate; we expected that accounting for points would reduce the dispersion in contract rates.

With this encouragement, we have proceeded to a formal test of the hypotheses by running OLS regressions, for 1978 and again for 1986, of the form:

$$r_j = a_0 + a_1\text{June} + a_2\text{July} + a_3\ln L_j + \sum_i b_i LV_{ij} + a_4 C_j + \sum_k c_k G_i + a_5 N_j + \varepsilon_j. \quad (1)$$

The independent variable is the effective loan rate, r_j, for each of the 4,870 loans closed in May-July 1978 and the 1,856 loans closed in May-July 1986. The principal co-variates are the natural log of the real loan size, L_j (in 1978 dollars), dummy variables, LV_{ij}, for the three larger loan-to-value ranges listed in Table 2 (the 70 to 79.9 range is the standard against which the others are compared), and a dummy variable, C_j, for loans at or under the conforming loan limit. Other regressors include a constant term, dummies for the precise month the loan was closed (June and July, May being the standard), dummies for the various geographic subregions in California (12 in 1978 and 13 in 1986), G_k, and a dummy for loans on new properties, N_j.[3] Loans on new properties have historically been viewed as having less default risk than those on existing properties so we would expect this dummy to have a negative coefficient. A negative coefficient could also reflect preferred financing rates "purchased" by builders, where the cost of the preferred rates is not captured in the survey.[4]

The coefficient estimates and their standard errors are reported in Table 5 for effective loan rates measured in percentage points.[5] Three equations are listed for 1986; we begin by comparing the 1978 equation with the first equation for 1986. The coefficients on loan size and the loan-to-value and new-property dummies are similar for the two years and, except for the 80-84.9 percent loan-to-value dummy, are statistically different from zero with the expected signs. The loan size coefficient translates into a -0.015 percent elasticity of the interest rate with respect to the loan size. Thus a 20 percent increase in loan size, say from the 1976 mean of $60,000 to $72,000, implies roughly a 3 basis point decrease in loan rate. The loan-to-value coefficients suggest little extra charge for 80 to 85 percent loans relative to 70-79 percent loans, but roughly a 10 basis point extra charge for 90 percent loans. The average loan-to-value ratios in the 85-89.9 and 90-95 percent classes are quite close (89.4 versus 91.1 in 1978 and 89.0 versus 91.2 in 1986). This may explain the similarity of the coefficients on these two dummies. Finally, the rate for new properties is about 7 basis points less than that for existing properties.

Now for the coefficients that changed from 1978 to 1986. Of course, the intercepts and June and July dummy coefficients are different because the level and evolution of mortgage rates in the spring of the two years was different. Also different, though, is the coefficient on the conforming loan dummy. The coefficient declines from -5 basis points in 1978 to -29 basis points in 1986. That is, the expanded activities of the agencies seem to have lowered yields on conforming loans by 24 basis points relative to yields on jumbo loans.

The second equation for 1986 in Table 5 tests a more sophisticated hypothesis: agency activities lowered the rates on jumbo loans just above the loan limit as well as those on loans below the loan limit. Because the limit was raised by 15 percent on January 1, 1987, only six to eight months after the loans were closed in May-July, a dummy variable was created for all loans between 100 and 115 percent of the 1986 conforming limit. This range encompasses 27 percent of jumbo loans closed. The addition of the just-over-the-limit dummy has a negligible impact on the coefficients for loan size and the loan-to-value and new-property dummies. However, the coefficient on the just-over-the-limit dummy is statistically different from zero, and the coefficient on the conforming loan dummy increases by 7 basis points in absolute value. According to these estimates, the expanded securitization of the agencies lowered the loan rates on qualifying loans by roughly 35 basis points and those on "soon to be" qualifying loans by 20 basis points.

This hypothesis can be refined even further. While the loan limit increased by 15 percent on January 1, 1987, this increase was not known when the loans closed in May-July 1986 were originated. Nonetheless, such an increase was highly likely because the index had risen at a 22 percent annual rate over the first half of the adjustment period, October 1985 to March 1986. On the other hand, a loan-rate impact could well exist on loans just above 115 percent of the conforming limit because a reasonable possibility existed that these loans would fall under the limit in 1987 or if not then in 1988. To allow for this further impact, a dummy for loans between 115 and 130 percent of the loan limit was added (this range includes another 20 percent of the jumbo loans.) The third equation for 1986 does not indicate a significant loan-rate impact for these loans.

The effective loan rates shown in Table 4 and explained in Table 5 are likely measured with substantial error. These rates were calculated as

$$r_j = c_j + ADJ_j, \qquad (2)$$

where $ADJ_j = PT_j/PVAF10_j$, the ratio of the up-front points and fees to the present value annuity factor using r_j as the discount rate and a 10 year assumed mortgage life. This is an incorrect adjustment for two reasons. First, the loans might be expected to prepay in more or less than 10 years (probably less in California).[6] Second, some of the up-front charges just cover the costs of origination and thus do not add to the yield. A more appropriate adjustment would be:

$$ADJ_j^* = (PT_j - COST_j/L_j)/PVAFX_j, \qquad (3)$$

where $COST_j$ is the dollar cost of originating loan L_j and X_j is the actual mortgage life expectation. Unfortunately, neither $COST_j$ nor X_j is observable.

In our first experiment, we treat X_j as constant across loans and assume $COST_j$ to be a constant. Thus the adjusted effective rate, r_j^*, can be expressed as

$$r_j^* = c_j + a_1 PT_j - a_2/L_j + \eta_j, \qquad (4)$$

where $a_1 = 1/PVAFX$, $a_2 = COST/PVAFX$, and η_j is the remaining measurement error. If, for example, PVAFX = 5 and COST = \$500, then $a_1 = 0.2$ and $a_2 = \$100$. In this framework, lenders are assumed to offer households alternative combinations of c_j and PT_j for a given r_j^*, and households select their preferred combination.

A formal test of the hypotheses consists of regressing r_j^* on the various covariates (loan-to-value ratio, loan size, etc.) discussed above. Because a_1 and a_2 are unknown, we instead regress c_j on PT_j, $1/L_j$, and the variables specified in equation (1). Implausibly large (negative) values of a_2 led us to reject this framework.

As an alternative, we presume that lenders set points so as to cover origination costs ($PT_j = COST_j/L_j$). In this case, c_j should be regressed on the covariates of r_j^* only. These results are reported in Table 6.[7] The coefficients on the loan-to-value and new-loan dummies change little from those in Table 5, but that on loan size is about halved and the conforming-loan dummy coefficients decline slightly. Except for the latter, the coefficients are remarkable similar in 1978 and 1986.[8] We note that the R^2 are roughly 10 percent higher when the coupon rates, rather than effective rates, are explained, and, more importantly, the equation standard errors are 15 to 20 percent lower. On these grounds we prefer the estimates in Table 6 to those in Table 5.

By these estimates, the agencies have lowered yields on conforming and just-above conforming loans by 30 and 15 basis points, respectively, relative to yields on large jumbo loans. The 30 basis point spread between yields on large-jumbo and conforming loans is at the low end of the observed spread between yields on private and agency pass-through securities (Woodward, 1987). Thus, yields on large jumbo loans may be being set by the private securitizers, rather than by traditional portfolio lenders.

III. Summary and Implications

Our analysis of conventional FRMs closed in California in May-July of 1978 and 1986 suggests that the loan rate depends on the loan-to-value ratio, the loan size, and in 1986, whether the loan is far above, just above, or below the conforming loan limit. Loans with loan-to-value ratios of 90 percent have rates 10 basis points higher than loans with 80 percent ratios, and $60,000 loans (in 1986) have rates 10 basis points higher than $130,000 loans. Moreover, in 1986 the rates on loans far above the conforming loan limit exceed those on otherwise comparable loans below the conforming loan limit by 30 basis points and those on loans destined to exceed the limit within a year by 15 basis points. That is, the expanded agency securitization of conventional FRMs has significantly lowered the rates on both conforming loans and loans somewhat above the conforming limit (27 percent of jumbo loans in 1986) relative to what they would otherwise have been. While the analysis was restricted to California, this state accounted for roughly one-quarter of the dollar volume of all conventional FRMs closed in 1986 and over half of all jumbos closed.

Of interest is when this conforming loan-rate impact first occurred. The data in Table 1 suggest that the agencies' share of the new origination market for conforming FRMs did not exceed fifty percent until 1986, but conceivably the thirty-six percent share in 1985 was sufficient to determine prices. A brief examination of rates on loans closed in May-July 1985 suggests that this was not the case. Yields on conforming 75 to 80 percent loan-to-value loans exceeded those on similar jumbo loans. Thus 1986 seems to be the first year of the agency impact on FRM rates.

The effects of a 30 basis point lower FRM rate are many, and some of them could be significant in magnitude. Households are more likely to choose FRMs than ARMs, to decide to own rather than rent, and to own larger houses. Traditional mortgage portfolio lenders will have fewer ARMs to purchase and will earn lower returns on FRM investments. We conclude our paper with a few sample calculations to illustrate the possible magnitudes of some of these effects.

Brueckner and Follain (1988) and Dhillon, Shilling and Sirmans (1987) have recently estimated equations explaining the household FRM/ARM decision. Using the Brueckner-Follain estimates, a 30 basis point decline in the FRM rate, at spring 1986 interest rate levels, would have lowered the ARM share from 65 percent to 29 percent.[9] In the 1988 environment of a wider FRM-ARM rate spread (assumed 50 basis-point lower ARM rate), the same FRM rate decrease would lower the ARM share from 95 to 75 percent. Using the Dhillon-Shilling-Sirmans estimates gives impacts about half as large. These seem more plausible to us. Thus we conclude that the lower FRM rate induced by the agencies probably lowered the ARM share of new originations in recent years by 10 to 20 percentage points.

A 30 basis point decline in the FRM rate would have a large negative long-run impact on returns to traditional FRM portfolio investors. To illustrate, say that such investors could expect to earn a 15 percent pretax return, in the absence of the 30 basis point FRM rate decline, by investing 96 cents of debt and 4 cents of equity in a dollar of mortgages. A 30 basis point decline in the FRM rate would halve the expected return on equity (to below the return on Treasuries). Moreover, the tilt in households toward FRMs would reduce the ARMs available for portfolio investment.

Finally, a lower FRM rate would raise homeownership and the quantity of housing demanded by owners. This impact is not large, however. For example, if the elasticity of housing demand with respect to the user cost is negative unity, then housing demand would increase by less than 2 to 2½ percent.[10] Because most price-elasticity estimates are closer to -0.5 (Mayo, 1981 and Goodman, 1988), the expected increase in demand is closer to one percent.

The above is not meant to be either a full list of potential effects of a lower FRM rate or a full analysis of the effects considered. For example, a relatively lower FRM rate likely means a higher level of other interest rates and thus (slightly) less nonhousing capital. The analysis should indicate, however, that a 30 basis point lower FRM rate is not a trivial matter.

Footnotes

1. For jumbo loans, more variation might be expected. Borrowers of such loans can be highly desirable customers for whom lenders may lower the borrowing rate in order to establish an ongoing relationship. For example, the effective rate on a jumbo loan may be reduced depending on the size and number of certificates of deposit placed in the lender's institution by the borrower. Further, without the agencies' standardization and the general discipline of an active secondary market, underwriting standards may vary significantly, and some local oligopoly power may exist.

2. Initially some attempts were made to "clean up" the data by deleting loans with interest rates that were "too low". This did not significantly alter the empirical estimates.

3. The 1978 survey also reported the month the loan was originated. Dummy variables for the origination month were included in the 1978 regression.

4. We thank Michael Carliner for pointing out this possibility.

5. The coefficients on the geographic dummies are not listed. The maximum difference between the coefficients was 16 basis points for 1978 and 25 basis points for 1986.

6. The ten-year assumption is especially suspect in periods when the term-structure is downward sloping (much of 1980-82). When we recomputed the effective loan rate based on an assumed seven-year mortgage life and used this rate as the dependent variable, the coefficient estimates were virtually identical to those in Table 5.

7. When points are added to these equations, the points coefficient is positive (and significantly different from zero in 1978), not negative as might be expected.

8. If the agencies dominate the market and do not pay lower prices for riskier high loan-to-value loans, then one might think loan rates would not vary with the loan-to-value ratio. However, originator/servicers will still require a higher coupon (high price from agencies) to offset lower servicing value owing to greater expected default.

9. These calculations assume a 10.60 percent FRM rate (before the 30 basis point decline), an 8.15 percent ARM rate, a $40,000 income level, and the mean values of the other variables in the Brueckner-Follain paper. With these parameters, the values computed from their equation (2) are 0.382 before the 30 basis point decline and -0.563 afterwards. Assuming a standard normal error term, these values translate into the ARM percentages given in the text.

10. Taking the "typical" owner to be in a 25 percent tax bracket, a 30 basis point lower FRM rate lowers the after-tax rate (and thus the user cost) by 22 basis points. With an initial user cost of 10 percent, demand rises by 2.2 percent.

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Figure 1: Comparison of FNMA/FHLMC and FHA Loan Purchase Limits, 1970–1988

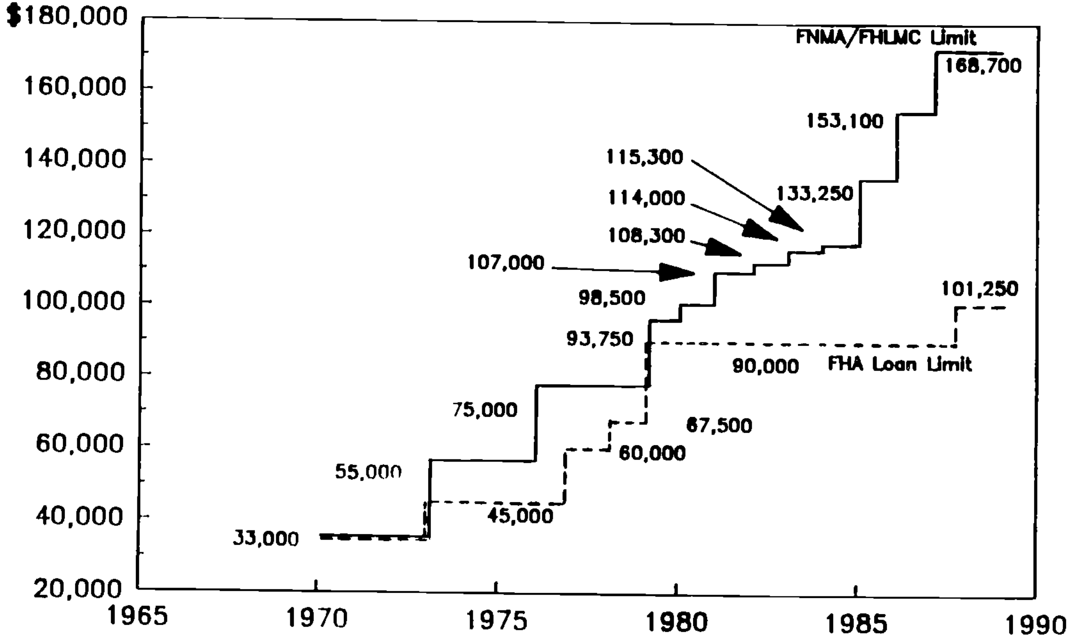

Table 1: The Agency Domination of the Conforming FRM Market

A. Pass-throughs Issued by FHLMC and FNMA ($ bil.)

		Pass-Throughs Backed-By		
	1 Total Issues	2 Seasoned FRMs	3 New ARMs, Multis, and FHA/VAs	4=1-2-3 New FRMs
1977-81	4.6	0.6	-	4.0
1982	38.2	28.8	-	9.4
1983	33.0	17.1	1.8	14.1
1984	32.2	17.7	3.7	10.8
1985	62.3	25.5	5.1	31.7
1986	160.1	29.7	10.7	119.7
1987	138.2	24.4	18.4	95.4

B. Percentage of New 1-4 Family Conventional Originations Securitized

	5 Total Origin- ations ($bil)	6 Fraction Fixed Rate	7=5x6 FRM Origin- ations ($bil)	8=4/7 % New FRMs Securitized	9=8/0.75 % New Conforming FRMs Securitized
1977-81	125.0	1.00	125.0	3	4
1982	77.8	0.64	49.8	19	25
1983	154.2	0.70	107.9	13	17
1984	176.0	0.48	84.5	13	17
1985	204.6	0.57	116.6	27	36
1986	357.1	0.78	278.5	43	57
1987	369.2	0.66	243.7	39	52

Sources:

Columns 1 and 5 from DataBase, Secondary Mortgage Markets, FHLMC.
Column 2 except 1987, Diamond (1988).
Columns 3,6, and 1987 column 2, Thomas Lawler (FNMA) and Frank Nothaft (FHLMC).

Table 2

Distribution of Sample by Loan-to-Value, 1978 and 1986

Loan-to-Value Categories (in percent)	1978						1986					
	May	June	July	Total	New Loans (%)	Jumbo Loans (%)	May	June	July	Total	New Loans (%)	Jumbo Loans (%)
70.0-79.9	686	730	338	1754	25.3	22.8	183	234	203	620	17.4	22.3
80.0-84.9	898	992	455	2345	14.6	23.0	230	240	244	714	8.3	20.9
85.0-89.9	118	136	50	304	24.0	0	67	78	57	202	20.4	11.4
90.0 and over	163	219	85	467	19.0	0	106	104	82	292	10.1	11.0
Total	1865	2077	928	4870	19.4	19.3	586	656	586	1828	13.0	18.7

Source: FHLBB monthly survey.

Table 3

Distribution of Sample by Percent of Conforming Loan Limit, 1978 and 1986

	1978					1986				
	May	June	July	Total	Fraction of Total (%)	May	June	July	Total	Fraction of Total (%)
0-50.0	273	276	117	666	13.7	67	59	61	187	10.2
50.1-67.0	423	484	213	1120	23.0	83	120	86	289	15.8
67.1-80.0	431	473	204	1108	22.7	106	149	126	381	20.8
80.1-90.0	206	230	113	549	11.3	84	107	88	279	15.3
90.1-100.0	179	209	99	487	10.0	125	112	113	350	19.2
100.1-115.0	119	128	60	307	6.3	30	29	32	91	5.0
115.1-130.0	68	85	41	194	4.0	30	18	27	75	4.1
130.1-145.0	49	69	31	149	3.0	21	19	15	55	3.0
Over 145.0	117	123	50	290	6.0	40	43	38	121	6.6
Total	1865	2077	928	4870	100.0	586	656	586	1828	100.0

Source: FHLBB monthly survey.

Table 4

Effective Loan Rates for California FRMs with Loan-to-Value Ratios of 75 and 80 Percent by Loan Size, 1978 and 1986

Percent of Conforming Loan Limit	1978 Number of Observations	1978 Effective Loan Rate* (in percent)	1978 Contract Loan Rate* (in percent)	1986 Number of Observations	1986 Effective Loan Rate* (in percent)	1986 Contract Loan Rate* (in percent)
0.0-50.0	446	10.12 (0.27)	9.85 (0.23)	108	10.65 (0.44)	10.30 (0.34)
50.1-67.0	736	10.04 (0.24)	9.80 (0.21)	179	10.53 (0.41)	10.23 (0.39)
67.1-80.0	749	9.97 (0.20)	9.75 (0.19)	228	10.51 (0.43)	10.24 (0.31)
80.1-90.0	389	9.97 (0.17)	9.76 (0.16)	155	10.40 (0.34)	10.13 (0.34)
90.1-100.0	371	9.95 (0.19)	9.75 (0.17)	208	10.36 (0.32)	10.11 (0.31)
100.1-115.0	272	9.94 (0.18)	9.74 (0.17)	54	10.62 (0.37)	10.36 (0.30)
115.1-130.0	169	9.97 (0.18)	9.77 (0.17)	55	10.65 (0.28)	10.38 (0.31)
130.1-145.0	131	9.95 (0.22)	9.76 (0.18)	46	10.70 (0.36)	10.44 (0.33)
Over 145.0	242	9.94 (0.19)	9.74 (0.17)	96	10.70 (0.31)	10.41 (0.34)
<u>Overall Average</u>						
Conforming	2691	10.01 (0.23)	9.78 (0.20)	878	10.48 (0.40)	10.19 (0.35)
Jumbo	814	9.95 (0.19)	9.75 (0.18)	251	10.67 (0.35)	10.40 (0.34)

Source: FHLBB monthly survey.

* Standard deviations are reported in parentheses.

Table 5

Explanation of California FRM Effective Loan Rates, 1978 and 1986*

Independent Variables		Equation** (1) 1978***	(2) 1986	(3) 1986	(4) 1986
L	Log of Loan Size in 1978 Dollars	-0.149 (0.011)	-0.177 (0.038)	-0.205 (0.038)	-0.214 (0.039)
LV_i	Loan-to-Value Categories:				
	80.0%-84.9%	0.000 (0.000)	0.017 (0.025)	0.016 (0.024)	0.014 (0.024)
	85.0%-89.9%	0.101 (0.014)	0.089 (0.035)	0.092 (0.035)	0.092 (0.035)
	90.0% and over	0.127 (0.011)	0.119 (0.031)	0.124 (0.031)	0.124 (0.031)
C	Conforming Loan Limit Dummy	-0.050 (0.011)	-0.294 (0.035)	-0.363 (0.041)	-0.389 (0.047)
A	Just-Above Conforming Loan Limit:				
	Dummy for 100 to 115% of Conforming Loan Limit in 1986			-0.182 (0.054)	-0.204 (0.058)
	Dummy for 115 to 130% of Conforming Loan Limit in 1986				-0.065 (0.061)
N	New Loan Dummy	-0.077 (0.008)	-0.057 (0.031)	-0.057 (0.031)	-0.054 (0.031)
a_0	Intercept	11.607 (0.129)	12.512 (0.432)	12.891 (0.445)	13.021 (0.459)
a_1 x June		0.093 (0.016)	0.225 (0.024)	0.226 (0.024)	0.225 (0.024)
a_2 x July		0.285 (0.014)	0.506 (0.025)	0.508 (0.025)	0.508 (0.025)
Summary Statistics:					
	N	4870	1828	1828	1828
	R^2	0.270	0.230	0.235	0.235
	SEE	0.047	0.183	0.182	0.182

* Dependent variable is the effective interest rate for California FRMs with terms to maturity greater or equal to 25 years (measured in percent).

** Standard errors are reported in parentheses. All equations include a set of dummy variables for metropolitan areas (11 in 1978 and 12 in 1986).

*** Also includes a set of dummy variables for the month the interest rate was determined. This month was not requested in the 1986 survey.

Table 6

Explanation of California FRM Contract Loan Rates, 1978 and 1986*

Independent Variables		Equation** (1) 1978***	(2) 1986	(3) 1986	(4) 1986
L	Log of Loan Size in 1978 Dollars	-0.092 (0.010)	-0.066 (0.035)	-0.087 (0.035)	-0.091 (0.036)
LV_i	Loan-to-Value Categories:				
	80.0%-84.9%	0.004 (0.006)	0.010 (0.021)	0.009 (0.022)	0.008 (0.023)
	85.0%-89.9%	0.107 (0.012)	0.071 (0.032)	0.073 (0.032)	0.073 (0.032)
	90.0% and over	0.113 (0.010)	0.110 (0.028)	0.114 (0.028)	0.114 (0.028)
C	Conforming Loan Limit Dummy	-0.032 (0.010)	-0.238 (0.032)	-0.288 (0.037)	-0.031 (0.043)
A	Just-Above Conforming Loan Limit:				
	Dummy for 100 to 115% of Conforming Loan Limit in 1986			-0.133 (0.050)	-0.145 (0.053)
	Dummy for 115 to 130% of Conforming Loan Limit in 1986				-0.034 (0.056)
N	New Loan Dummy	-0.080 (0.007)	-0.073 (0.028)	-0.073 (0.028)	-0.072 (0.028)
a_0	Intercept	10.724 (0.113)	10.954 (0.397)	11.228 (0.409)	11.291 (0.422)
a_1 x June		0.093 (0.014)	0.198 (0.022)	0.198 (0.023)	0.198 (0.022)
a_2 x July		0.293 (0.012)	0.511 (0.023)	0.513 (0.023)	0.513 (0.023)
Summary Statistics:					
	N	4870	1828	1828	1828
	R^2	0.296	0.257	0.261	0.261
	SEE	0.036	0.155	0.154	0.154

* Dependent variable is the contract interest rate for California FRMs with terms to maturity greater or equal to 25 years (measured in percent).

** Standard errors are reported in parentheses. All equations include a set of dummy variables for metropolitan areas (11 in 1978 and 12 in 1986).

*** Also includes a set of dummy variables for the month the interest rate was determined. This month was not requested in the 1986 survey.