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THE IMPACT OF FIXED USURY CEILINGS ON MORTGAGE LENDING: FURTHER EVIDENCE

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There has been an accumulation of evidence over the past decade suggesting that mortgage usury ceilings imposed by states are largely ineffective at achieving the purpose for which they were designed: helping prospective home owners obtain mortgage credit at "reasonable" rates. Instead, research suggests that mortgage usury ceilings that conflict with free market rates reduce the level of single family home construction [8,10], decrease the volume of mortgage lending [3,6], and trigger the imposition of noninterest loan terms that increase the effective cost of credit to the borrower and/or reduce the lender's risk to a satisfactory level in view of the yield attainable [5,6].

The available evidence, however, remains tentative, beset by problems of scope, measurement and methodology, and - at points - conflicting.

The purpose of this paper is to report the results of additional empirical testing of the impact of fixed mortgage usury ceilings on the availability, cost, and terms of mortgage credit.

Previous Research

A 1974 study by Phillip Robins [9] used data from 77 SMSA's during the "credit crunch" year 1970 to measure the effect of usury ceilings on new, single-family housing starts. Robins found that housing starts in usury-impacted areas were about 28 percent below those in SMSA's not so impacted. Yandle and Proctor [12] in a 1978 study focused on the 1970 and 1974 "credit crunch" years. Using one SMSA from each of the fifty states and the District of Columbia, they concluded that building permit activity was adversely affected as interest rates approached the usury ceiling.

The first empirical work on the effect of usury ceilings on the mortgage market per se was apparently the 1976 study by James Oastas [6]. Using quarterly data for the period 1965 through 1970 from 15 large SMSA's, Oastas used linear regression to measure the relationship between the pressure exerted against usury ceilings by the open market rate and each of four independent variables: (1) the volume of mortgage lending as proxied by building permits, (2) the fees and points imposed by lenders on new mortgage loans, (3) the percentage down payment required, and (4) the average maturity of new loans made. With the exception of loan maturity, all regression coefficients had the theoretically expected sign and were significant at the .05 level.

A 1979 study by James McNulty [3] examined the impact of state usury ceilings in the state of Georgia on new, single-family housing starts and on lending activity. He found a statistically significant relationship between mortgage lending and the spread between the free market rate and the usury ceiling. Contrary to earlier studies, however, he found no relationship between building permits and the spread variable.

None of the work cited has measured directly and unambiguously the effect of usury ceilings on the dollar volume of mortgage lending. Oastas used building permits as a proxy for mortgage lending, while McNulty's results are tainted by the inclusion of usury-constrained SMSA's in his sample of areas used to estimate the free market rate of interest on residential mortgage loans. In addition, the use of building permits or housing starts as a proxy for mortgage lending activity omits the impact of mortgage loans for the purchase of existing residential structures.

Some additional ambiguity arises from the use of constraints on the measure of "pressure" exerted by the usury ceiling. This pressure has generally been handled in one of two ways: (1) the studies limit the observations tested to those where the free market rate of interest exceeded the usury ceiling [12], or (2) the values of the observations were constrained to reflect an ***a priori*** assumption that ceilings do not impact mortgage lending when the free market rate is below the usury ceiling by some amount selected by the investigator [3, 6, 9]. Robins, for example, found that usury ceilings affected mortgage lending activity when the free market rate was within 100 basis points below the usury ceiling. The structure of his model, though, hampered pursuit of the issue, and he defined an area as usury constrained if the ceiling was less than 100 basis points above the free market rate.

The analysis that follows will examine the relationship between the Texas mortgage usury ceiling and the dollar volume of mortgage lending for both new and existing residential structures. Further, the analysis uses an uncontrained spread variable as well as testing the impact on mortgage lending when the spread variable is constrained to various ranges.

The Model

The model assumes the existence of sufficient competitive conditions in major urban mortgage markets for rates in each market to remain close to national average mortgage rates over time [2, 4]. It is assumed, further, that in any one market, there exists a range of mortgage interest rates reflecting the characteristics of the borrower and of the mortgaged property [1].

Given these assumptions, it would be expected that as free market rates on mortgage loans approach the usury ceiling in a usury constrained market, some marginal loan applicants would be rationed out of the market, and overall mortgage lending in that market would decline. We would expect, further, that lenders would

utilize noninterest loan terms (including discount points, down payment requirements, and loan maturities) in a way to achieve a satisfactory risk-yield "package" on the loans made.

Specifically, the model is designed to test the proposition that as free market rates approach the usury ceiling in a constrained market:

1) the dollar volume of mortgage lending declines;
2) the discount points charged borrowers increase;
3) the loan-to-value ratio on new loans declines; and,
4) the average maturity of new mortgage loans declines.

These propositions are summarized in equations (1) through (4) below:

$$L = f_0 + f_1 (r_u - r_e) \quad (1)$$

$$P = g_0 - g_1 (r_u - r_e) \quad (2)$$

$$L/V = h_0 + h_1 (r_u - r_e) \quad (3)$$

$$M = z_0 + z_1 (r_u - r_e) \quad (4)$$

where,

L = dollar volume of new loans closed;

P = discount points imposed on the borrower;

L/V = loan-to-value ratio of mortgage loans closed;

M = the average maturity of mortgage loans closed;

r_u = the maximum legal contract rate of interest on mortgage loans in the usury constrained area; and,

r_e = the free market yield on mortgage loans in areas unconstrained by usury limits.

The expression $(r_u - r_e)$ is the spread variable, measured as the difference between the usury ceiling and the average yield on single family residential mortgage loans in areas unaffected by usury ceilings. The spread variable serves as a measure of the pressure exerted against the usury ceiling as free market rates approach the ceiling. The larger the spread variable, the weaker the pressure against the usury ceiling. The "spread" narrows as the open market rate approaches the ceiling, and the spread variable becomes negative when the free market rate exceeds the usury ceiling.

Equation (1) states that there is a direct relationship between the spread variable and the volume of new residential mortgage lending, i.e., as the free market rate approaches the usury limit (the spread narrows), the dollar volume of residential mortgage lending declines. This proposition simply expresses the profit maximizing behavior of mortgage lenders who are unwilling to commit funds at rates less than the equilibrium rate for the level of risk perceived.

Equation (2) posits an inverse relationship between the spread variable and the number of discount points imposed on new mortgage loans, i.e., as the spread narrows, marginal borrowers are accommodated by the imposition of points which increase the effective yeild on the loan over the contract rate.

Equation (3) states that the loan-to-value ratio of new mortgage loans is directly related to the spread variable, i.e., as the spread narrows, lenders tend to impose higher down payment requirements. Equation (4) states that there is a direct relationship between the spread variable and the maturity of new loans made, i.e., lenders tend to reduce the average maturity of new mortgage loans as the free market rate approaches the usury ceiling. Both of these propositions may be understood as attempts by mortgage lenders to achieve equilibrium yields by reducing the risk on new loans to a level appropriate for the yield attainable.

The Data

The dollar volume of loans made are state of Texas totals for mortgage loans made by savings and loan associations on both new and existing 1 - 4 family residential structures.[1] Noninterest loan terms are those associated with conventional first mortgage loans made by savings and loan associations of new and existing single-family residential properties.

The test period covers 38 quarters, beginning with the first quarter of 1970 and ending with the second quarter of 1979.[2] During this period, Texas was subject to a 10 percent ceiling on conventional mortgage loans.

The dollar volume of loans closed is from the *Monthly Statistical Series for the Ninth District*, Federal Home Loan Bank of Little Rock. Data for noninterest loan terms are from the Federal Home Loan Bank Board's *Mortgage Interest Rate Survey*, and are based on pooled observations from the Dallas-Fort Worth SMSA and the Houston-Galveston SCSA. The Federal Home Loan Bank Board furnishes data on these two areas as representative of state-wide noninterest loan terms. The use of pooled data from the two areas was acceptable based on covariance tests of the slopes of the two series.

The free market (equilibrium) rate of interest on conventional residential mortgage loans in areas unconstrained by usury ceilings, r_e, was estimated as the unweighted average of mortgage rates in four SMSA's whose usury limits were 12 percent or higher for the period studied. The four areas were: Boston-Lawrence-Lowell SCSA,

Detroit-Ann Arbor SCSA, Denver-Boulder SMSA, and Seattle-Tacoma SCSA.

Regression Methodology and Results

Mortgage loan data were subjected to a polynomial smoothing process. A logarithmic trend line was fitted to the smoothed data, and seasonal adjustment factors were computed by the ratio-to-moving average method. The raw data were then adjusted for trend and seasonality . The other three series displayed no significant trend or seasonality, and were used unadjusted.

Each of the four series was then subjected to linear, least-squares regression analysis against the spread variable. The results of the four first-stage regressions are summarized in Table 1.

The dollar volume of mortgage lending and points and fees imposed on new mortgage loans showed regression coefficients significant at the .05 level and displayed the expected sign on the regression coefficient. Both the loan-to-value ratio and average maturity, however, showed unexpected negative signs on the regression coefficients. The regression coefficient for average loan maturity was significant at the .05 level, but the "t" statistic for the loan-to-value ratio was not large enough to reject the null hypothesis that the regression coefficient was zero.

The Durbin-Watson statistic for all four regressions suggested the presence of systematic disturbances in the error terms.

A plot of the loan residuals showed a clear, linear trend, indicating that the original log trend adjustment had not removed all of the time-related trend from the data. A least-squares trend line was fitted to the residuals, and the loan data were adjusted for the additional trend. Loans, adjusted in this manner, were regressed against the spread variable yielding:

$$L = .587 + \underset{(5.4721)}{.0051}\,(r_u - r_e).$$

$$R^2 = .801 \quad D.W. = 1.6186$$

The regression coefficient is significant at the .05 level, and changes in the spread variable were able to explain about 80 percent of the movement in loan volume. The value of the Durbin-Watson statistic allows us to accept the null hypothesis of serial independence of the error terms, and the Goldfeldt-Quandt test [7, pp. 104-105] yields no suggestion of hetero- scedasticity.

The residuals of the other three equations displayed no such clearly-defined pattern, and the equations were subjected to a transformation of the form:

$$(y_t - \rho y_{t-1}),\ (x_t - \rho x_{t-1})$$

where $\rho \cong 1 - \frac{D.W.}{2}$ [11, pp.94-95].

TABLE I

FIRST STAGE REGRESSION RESULTS

Equation No.	Dependent	Intercept	Independent Variable
(1)	L	= .703	+ .00416(r_u - r_e)*
			(4.917)
		R^2 = .653	D.W. = .8595
(2)	P	= 194.32	- .276(r_u - r_e)*
			(4.083)
		R^2 = -.346	D.W. = .7349
(3)	L/V	= 81.2	- .00311(r_u - r_e)
			(1.167)
		R^2 = -.035	D.W. = .2120
(4)	M	= 29.25	- .0108(r_u - r_e)*
			(3.053)
		R^2 = -.237	D.W. = .1436

Notes: "t" statistics are in parentheses.

*Significant at the .05 level.

The regression results, using the transformations, are summarized in Table II. Note that the "quasi-differencing" process is able to eliminate autoregressive disturbances in the error terms, but only equation (2) remains significant at the .05 level.

Discussion

The regression results are consistent with propositions (1) and (2): that the dollar volume of residential mortgage lending declines and lenders impose higher fees and discount points on new loans as the free market rate of interest approaches the usury ceiling.

One might argue, of course, that the correlation between constraint pressure and loan volume is spurious: that the decline in mortgage lending simply reflects a decline in demand for mortgage credit as the cost of such credit increases. This argument has been dealt with elsewhere on a theoretical basis [6, p. 824].[3] Empirically, Robins [9] has shown that loan volume declines relative to that in unconstrained areas as free market rates approach the ceiling rate in a usury constrained market.

As a further test, the spread variable was constrained within various ranges and regressed against mortgage lending with the results shown in Table III.

When the free market rate is 200 basis points or more below the ceiling, there is no significant relationship between interest rate changes and loan volume. The relationship is significant at the .05 level between 100 and 200 basis points below the ceiling, however, and the relationship strengthens as free market rates move within 100 basis points of the ceiling. While these effects might be explainable in terms of changing demand elasticities, the weight of the evidence certainly points toward reduced willingness to lend.

The tests show no significant relationship between down payment required or loan maturity and the spread variable. Oastas, it will be recalled, found a significant relationship between loan-to-value ratio and constraint pressure.

Over the period studied, loan-to-value ratios and average loan maturities in Texas have, in fact, increased, albeit not in any systematic way with changes in constraint pressure. The explanation seems to lie instead in the sharp rise in the cost of new homes. Rising home costs have made it necessary for lenders generally to reduce down payments and lengthen maturities in order to reduce the purchaser's monthly payments and avoid pricing some home buyers out of the market.

Disintermediation, as measured by the net change in savings deposits for each quarter, was unable to explain any of the variation in loan volume on either a coincidental or a one-quarter lagged basis. The coefficients of determination were -0.020 and -0.034, respectively, and neither regression was significant at the .05 level.

Conclusions and Policy Implications

The Depository Institutions Deregulation and Monetary Control Act of 1980 preempted state usury laws on residential mortgage

TABLE II

REGRESSION RESULTS USING "QUASI-DIFFERENCED" VARIABLES

Equation No.	Dependent Variable	Intercept	Independent Variable
(2)	P	= 24.47	- .31 $(X_t - \rho X_{t-1})$* (3.191)
		R^2 = -.236	D.W. = 1.4607
(3)	L/V	= 1.240	- .00521$(X_t - \rho X_{t-1})$ (0.723)
		R^2 = -.016	D.W. = 1.7365
(4)	M	= .058	- .0026$(X_t - \rho X_{t-1})$ (0.649)
		R^2 = -.013	D.W. = 1.6811

Notes: "t" statistics are in parentheses
* significant at the .05 level.
The Goldfeldt - Quandt test yields no suggestion of heteroscedasticity in equation (2).

TABLE III

REGRESSION RESULTS MORTGAGE LOANS VS. SPREAD VARIABLE

Constrained Spread Variable	Regression Equation
All Values	$L = .587 + .0051(r_u - r_e)^*$ (5.4721)
	$R^2 = .801$ D.W. = 1.6186
$(r_u - r_e) \geq 200$	$L = .688 + .0049(r_u - r_e)$ (0.8596)
	$R^2 = .082$ D.W. = 2.0376
$200 > (r_u - r_e) \geq 100$	$L = .776 + .0032(r_u - r_e)^*$ (2.1959)
	$R^2 = .480$ D.W. = 2.1466
$(r_u - r_e) < 100$	$L = .668 + .0046(r_u - r_e)^*$ (3.5538)
	$R^2 = .790$ D.W. = 1.7757

Notes: "t" statistics are in parentheses.
* significant at the .05 level.

loans until April 1, 1983, unless overriden by state laws. Thus, some forty-six states that had mortgage usury ceilings of one type or another will now have to consider whether to pass new legislation to reestablish those ceilings.

The findings of this study support the proposition that fixed usury ceilings reduce the flow of funds into residential mortgages. Using data on residential mortgage lending by savings and loan associations in Texas over the period 1970 through the second quarter of 1979, results show that a fixed usury ceiling acts to constrict the flow of mortgage funds when the free market rate moves to within 200 basis points of the ceiling and that the effect becomes stronger within 100 basis points of the ceiling.

The results indicate, further, that lenders increase the fees and discount points imposed on new loans as the free market rate of interest approaches the usury ceiling, thus increasing the effective cost of mortgage funds. There is no indication that lenders, during the period studied, used down payment requirements or loan maturity to adjust risk as constraint pressure increased.

The policy implications seem clear. Evidence continues to accumulate that fixed usury ceilings simply do not work if their purpose is to assure the availability of mortage credit at "reasonable" rates, where "reasonable" is understood to mean some statutory rate less than the rate that would prevail in an unhampered market.

Some rationale might be found for mortgage usury limits in rural areas where competition is limited or nonexistent. Even in these cases, however, a fixed usury ceiling is probably too inflexible. A provision linking rates in rural areas to competitive rates in major urban mortgage markets would protect prospective borrowers from unfair administered rates in areas where competition is ineffective.

Results suggest, too, that any usury ceiling should be specified in terms of effective rates rather than contract rates to avoid circumvention of the ceiling by the imposition of points and fees.

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NOTES

[1]The FHLB Little Rock *Monthly Statistical Series* did not report single family and 2 - 4 family residential mortgages seperately until January 1976. For the period reported, 2 - 4 family residential structures were an insignificant part of the total 1 - 4 family loan volume.

[2]Texas converted to a floating usury ceiling in August 1979.

[3]See also the references cited there.

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