

dependent variable shown in (4.1) above. As independent variables, we select underwriting characteristics known at time of loan origination, including contract interest rate, original loan-to-value ratio, loan age, and original debt coverage ratio.²⁰ We also include dummy variables representing property type, region of loan origin, and borrower type. For regressions using net loss recovery as the dependent variable, we also include time period as an additional explanatory variable. We also estimate a separate set of regressions that exclude property type and region of origin. For each model, we assume power-of-sale, retail property, other borrower type, and southeast region as our base variables. Therefore, all results should be interpreted relative to these base levels.

TABLE 7 HERE

Regression results are provided in Table 7. We first consider total time period. The coefficient on mortgage rate is found to be positive and significant in both regressions. This may result from the fact that loans foreclosed early in the cycle were generally originated in the late 1970's and early 1980's, when contract rates were high relative to later years. As discussed earlier, these early foreclosures resulted in longer overall combined holding periods. Loan age is also found to have a negative coefficient, and is also significant in both time period regressions. This negative relationship may in part be explained by the fact that the longer borrowers own a property, the less vested they become in trying to work out some non-foreclosure outcome in the event of financial distress, which may lead to less lengthy total time periods. Relative to foreclosed retail loans, the coefficient on apartment assets is negative and significant, confirming that

²⁰ Loan age is estimated as the time period between loan origination and the onset of foreclosure, as measured in years.

apartment loans are associated with shorter overall ownership periods. The coefficients on Mountain and Southwest regions are positive and significant in the full regression, reflecting the early part of the cycle over which properties in these regions were foreclosed.

We next consider combined net loss recovery. The mortgage rate is again found to be significant and negative in both equations. Total period is found to be negative and also significant in explaining combined net loss recovery in both regressions. As expected, the loss of accrued interest, and hence net recovery, is directly related to the overall period of ownership.

Finally, we consider the set of yield degradation equations. We find weak evidence to suggest that mortgage rates are positively related to yield degradation, although only in the reduced form regression. Holding other variables constant, loan age is again found to negatively related to yield degradation in both regressions. We also find a positive and significant relationship between total period and yield degradation. Relative to retail loans, apartment and office loans are found to have exhibited superior and inferior performance, respectively, as evidenced by yield degradation. We find no strong evidence to suggest that underwriting variables are associated with the overall yield degradation as a result of mortgage foreclosure and equity ownership.²¹

5. PRICING IMPLICATIONS

The above results have the following pricing implications. It has long been

²¹ This is in sharp contrast to earlier work that examines the factors associated with the probabilities of commercial mortgage default (see Vandell [1992, 1993]).

understood that the yield required on a particular security depends on its riskiness. This risk exposure, in turn, is a function of both the probability that default will occur and the size of the loan recovery in case of default. This relationship is illustrated in Figure 1.

Figure 1 depicts iso-risk curves for various combinations of the probability of default (or, more specifically, one minus the probability of default) and the size of the loan recovery if default occurs. While the position of each iso-risk curve, e , is only arbitrarily indicated, it is reasonable to expect each curve to be downward sloping and concave to the origin. The notion of the iso-risk curve is that there is a tradeoff between one minus the probability of default, $1 - p$, and the size of the loan recovery if default occurs, γ . Along each curve the risk differential to the lender is held constant. A trivial derivation verifies that this risk differential is positively related to $1 - p$, while being negatively related to γ . This fact is reflected in Figure 1, where, out of the four iso-risk curves illustrated, the highest one is associated with the lowest risk differential.

A few comments on Figure 1 may be in order. First, when either $p = 0$ or $\gamma = 1$, risk considerations are rendered irrelevant. For example, when $p = 0$ (i.e., $1 - p = 1$), the case is default free. Alternatively, when $\gamma = 1$, the complete insurance causes the default frequency to become irrelevant. Other values of $(1 - p, \gamma)$ can be analyzed in an analogous manner. Second, consider the hypothetical case in which similarly rated commercial mortgages and corporate bonds have the same yield. Since both securities have the same yield, their respective default probabilities and loan recovery characteristics will plot on the same iso-risk curve

in Figure 1. But inasmuch as corporate borrowers own a mix of tangible and intangible assets, corporate bonds should have a smaller γ (and possibly a lower p) than commercial mortgages, owing in large part to the way corporations raise money in the capital markets. This is why point C (for corporate bonds) is located to the left of point A (for commercial mortgages).

Next, let us introduce our key finding, namely, that γ for commercial mortgages is much lower than what most observers seem to think it is -- particularly in extreme conditions. In this case, the commercial mortgage should plot to the left of point A, possibly somewhere along the horizontal line between point B_1 and B_2 (as the case may be) because that is where we reach lower values of γ for a given p . Here, for the sake of illustration, we have assumed that p is independent of the various states of the world. This assumption does not affect our qualitative conclusions, however. A rise in p and a fall in γ would simply mean that the commercial mortgage would now plot inward and to the left of point A, instead of just to the left. In either case, the relative yield on the commercial mortgage should increase, as the value of the pair $(1 - p, \gamma)$ is smaller.

Turning next to the corporate bond, it is to be understood that although corporate bonds are also likely to perform poorly in extreme conditions, their performance ought to be less affected relative to commercial mortgages. The primary basis for this view is the fact that commercial real estate markets are much more dependent on bank lending and much less likely to stave off disaster

when liquidity suddenly dries up than corporate capital markets.²² This then means that commercial mortgage investors generally take on extra risk relative to corporate bond investors. Consequently, they ought to be rewarded with higher returns.

The foregoing analysis can easily be extended to the case of commercial mortgage-backed securities (CMBSs). Suppose a lender has issued a CMBS with two types of fixed income obligations, one that carries a senior claim on the borrower's assets and one that carries a subordinated claim. Furthermore, assume that if the borrower defaults, foreclosure results and both securities are impacted. Under these conditions, both bonds will have the same value of p , such as points B_1 and B_2 in Figure 1, while the senior security (point B_1) has a larger value of γ . Notice that point B_1 is plotted on iso-risk curve e_2 , rather than e_1 , because of the risk that a much lower γ will occur in extreme conditions on commercial mortgages relative to corporate bonds. This risk, and the aversion thereto, is shared by both the senior and subordinated bondholders, unless, of course, the lender is required to provide sufficient collateral which will drastically improve γ and/or p in extreme conditions. This could entail providing both diversity and quality by securitizing a blend of small and large loans. Or it could entail providing diversity and quality by securitizing a blend of geographically diverse loans or a pool of loans made up of different property types (see Childs et al. [1996], [1997]). Diversity per se is only part of the story, however. Lumpiness or large loans may not necessarily represent or contribute incremental risk if such loans have a large value of γ . Theory would dictate that it is the combination of

²² That commercial real estate markets appear to perform poorly when the investor is most vulnerable and cares most, namely, during a macro-economic recession, when most everything else is least valuable and most exposed is suggested in recent studies by Ling and Naranjo [1998], Liu [1989], and Geltner [1990].

$(1 - p, \gamma)$ which is important in determining yield differentials on CMBS securities.

Several other points are worthy of mention. First, if the primary connection between yield differentials and $(1 - p, \gamma)$ is the one discussed in Figure 1, there are additional implications that go beyond those investigated here. If, for example, underwriting standards change over the cycle (e.g., underwriting standards become softer in competitive lending environments), and if γ is altered as a result, then yield differentials between comparable-rated commercial mortgages and corporate bonds should change over time as well. Second, the elimination of credit risk for senior CMBS securities (i.e., the complete insurance case, when $\gamma = 1$) does not necessarily mean that senior CMBS securities are without risk relative to comparable-rated corporate bonds. Simply put, if the value of the mortgaged commercial property is low enough, the commercial mortgage borrower may default and the senior CMBS security holder will experience a prepayment. Consequently, senior CMBS securities with low values of $1 - p$ should have lower prices than comparable-rated corporate bonds with relatively high values of $1 - p$, owing in part to a duration effect. Furthermore, this effect may be more important in certain property types and geographic regions than in others.

6. CONCLUSIONS

This paper examines the impact of foreclosure and equity ownership on the performance of a sample of commercial mortgages. The sample consists of 308

commercial mortgages, originated by a large life insurance company over the period 1974 through 1990. Each of these loans was foreclosed over the period 1985 through 1995 and transferred to equity. All equities were subsequently sold over the period 1986 through 1996. We construct cash flow histories for each loan over both the debt and equity periods of ownership. For each loan we estimate equity ownership periods as well as a series of recovery measures. We also estimate combined ownership periods for both debt and equity. Combined loss recoveries are also estimated, as is the combined impact of performance on yield degradation.

We find that the average equity ownership period for properties in the sample is slightly less than 28 months. Total net cash flows are found to be slightly negative, primarily as a result of significant capital expenditures and tenant improvements associated with the management of these distressed assets. Gross loss recovery during equity ownership is found to average slightly greater than 77% of transfer value, while mean net recovery including interest is reported at 51.5%. Each of these results is found to vary considerably by region of country, property type, and year in which the underlying mortgage is foreclosed.

The combined debt and equity ownership period is found to average slightly greater than 36 months, which is generally consistent with prior research. Gross recovery of the combined debt and equity performance is found to average slightly greater than 65%, while combined net recovery is found to average slightly under 40% of outstanding loan balance as of start of foreclosure. We find yield degradation; the difference between promised and realized return, to average 10.6%. Given the average contractual yield of 10.9% for all loans in the

sample, this implies that the combined debt and equity performance results in only slightly positive returns on this sample of assets. These findings are significantly lower than reported in earlier studies, and suggest that from purely a financial standpoint it may be in the lenders best interest to foreclose and sell properties quickly, as property value increases over the cycle are observed to not keep pace with the opportunity cost associated with lost interest. Finally, we note that many of the variables expected to have an impact on the performance of these assets are found to be significant in explaining total holding period, combined net loss recovery, and combined yield degradation.

An interesting avenue for future research would be to examine the performance of distressed mortgages that are not resolved through the foreclosure process, but rather are renegotiated, restructured, or result in some other financial outcome. Another avenue for future research would be to combine the results of the present study with results from frequency studies to create commercial mortgage pricing models. This would be of interest to not only originators of commercial mortgage debt, but those involved in the securitization of these assets, where security structure is based primarily on the expected performance of the underlying assets.

Bearing these points in mind, we derive here some pricing implications for both commercial mortgage and CMBS investors. These pricing implications are susceptible to empirical testing using aggregate yield spread information.

REFERENCES

Archer, W.R., Elmer, P.J., Harrison, D.M., and David C. Ling, 1999, Determinants of Multifamily Mortgage Default, working paper, University of Florida.

Childs, Paul D., Ott, Steven H., and Timothy J. Riddiough, 1996, The Value of Recourse and Cross-Default Clauses in Commercial Mortgage Contracting, Journal of Banking and Finance 20, 1996, 511-536.

_____, 1997, Pricing Multi-Tranche Commercial Mortgage-Backed Securities, Journal of Financial and Quantitative Analysis, 254-272.

Ciochetti, Brian, 1997, Loss Characteristics of Commercial Mortgage Foreclosures, Real Estate Finance 14, 53-69.

_____ and Timothy J. Riddiough, 1988, Timing, Loss Recovery, and Economic Performance of Foreclosed Commercial Properties, working paper, University of North Carolina.

Clauret, T.M., 1987, The Impact of Interstate Foreclosure Cost Differences and Value of Mortgages on Default Rates, Journal of the American Real Estate and Urban Economics Association 15, 152-167.

_____, State Foreclosure Laws, Risk Shifting, and the Private Mortgage Insurance Industry, Journal of Risk and Insurance 56, 1989, 544-554.

Curry, Timothy, Joseph Blalock and Rebel Cole, 1991, Recoveries of Distressed Real Estate and the Efficiency of Public vs. Private Management, AREUEA Journal 19, 495-515.

Episcopos, A., Pericli, A., and Jianxun Hu, 1998, Commercial Mortgage Default: A Comparison of Logit with Radial Basis Function Networks, Journal of Real Estate Finance and Economics 17, 163-178.

Follain, J. R., and Jan Ondrich, 1999, Stay, Pay, or Walk Away: A Hazard Analysis of FHA-Insured Multifamily Mortgage Terminations, working paper.

Goldberg, L., and Charles A. Capone, 1999, Multifamily Mortgage Credit Risk: Lessons From Recent History, Cityscape: A Journal of Housing and Urban Development 4, 93-113

Geltner, David, 1989, Estimating Real Estate's Systematic Risk from Aggregate Level Appraisal Based Returns, AREUEA Journal 17, 463-481.

Ling, D. and A. Naranjo, 1997, Economic Risk Factors and Commercial Real Estate Returns, Journal of Real Estate Finance and Economics, 15: 295-305.

Liu, Crocker H., David J. Hartzell, Terry V. Grissom, and Wylie Grieg, 1990, The Composition of the Market Portfolio and Real Estate Investment

Performance, AREUEA Journal 18, 49-74.

Parkus, Richard and John Tierney, 1999, The Conduit Loan Market: A Statistical Analysis of Default Activity, working paper, Deutsche Bank.

Snyderman, Mark P., 1994, Update on Commercial Mortgage Defaults, The Real Estate Finance Journal, Summer, 22-32.

Vandell, Kerry D., 1992, Predicting Commercial Mortgage Foreclosure Experience, AREUEA Journal 20, 55-88.

Vandell, Kerry D., Walter Barnes, David Hartzell, Dennis Kraft and William Wendt, 1993, Commercial Mortgage Defaults: Proportional Hazards Estimation Using Individual Loan Histories, AREUEA Journal 21, 451-480.

Figure 1.
Iso-Risk Curves

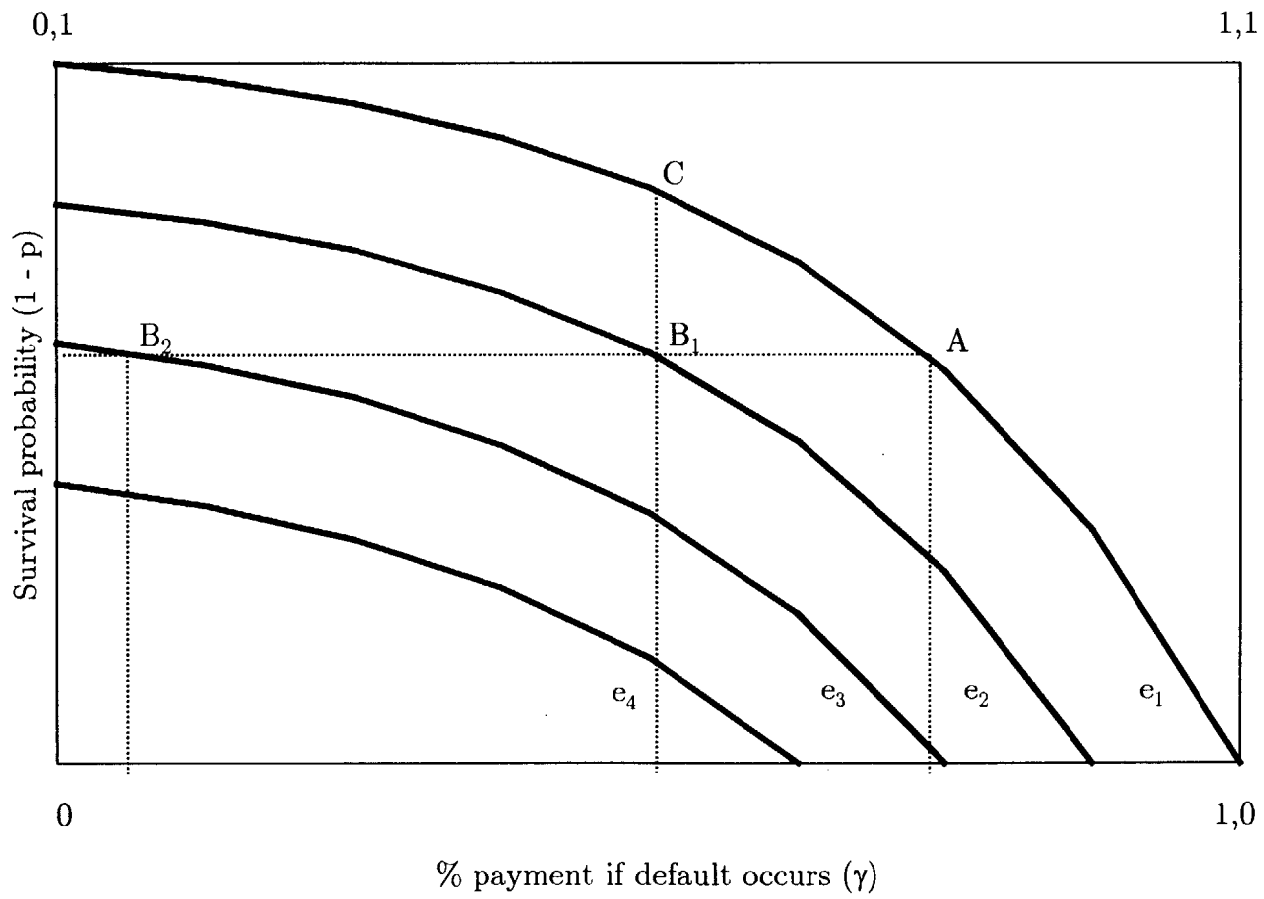


TABLE 1
NUMBER OF LOANS BY YEAR OF ORIGINATION
AND YEAR OF FORECLOSURE / EQUITY SALE

Year of Foreclosure : Equity Sale Year													
YEAR ORIG	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996*	TOTAL
1974	0:0	0:0	0:0	1:0	1:0	0:1	0:1	1:0	0:1	0:0	0:0	--:0	3:3
1975	0:0	0:0	1:0	0:0	0:1	1:0	1:0	1:2	1:0	0:2	0:0	--:0	5:5
1976	0:0	0:0	0:0	1:0	0:1	0:0	1:0	1:0	1:2	0:1	0:0	--:0	4:4
1977	0:0	2:1	0:1	0:0	3:0	0:0	2:2	1:2	1:1	0:2	0:0	--:0	9:9
1978	0:0	0:0	2:2	3:0	0:2	2:2	0:0	4:1	1:4	0:1	0:0	--:0	12:12
1979	0:0	1:0	3:0	3:1	2:5	1:1	3:0	2:2	0:4	0:2	0:0	--:0	15:15
1980	0:0	1:0	1:0	1:0	2:2	4:2	3:3	2:0	2:6	2:5	0:0	--:0	18:18
1981	0:0	1:0	0:0	0:0	2:0	2:1	0:2	0:0	1:1	0:2	0:0	--:0	6:6
1982	1:0	3:0	3:1	0:1	1:2	0:0	0:2	0:0	0:2	0:0	0:0	--:0	8:8
1983	1:0	6:0	8:0	2:1	5:9	3:6	4:2	1:4	4:8	0:3	0:0	--:1	34:34
1984	0:0	3:0	3:0	4:1	2:2	2:2	2:1	2:2	3:7	0:6	0:0	--:0	21:21
1985	0:0	2:0	5:0	6:0	9:3	5:4	14:2	10:5	5:24	9:19	0:8	--:0	65:65
1986	0:0	0:0	1:0	5:0	6:2	7:1	10:4	9:4	2:14	1:14	0:2	--:0	41:41
1987	0:0	0:0	0:0	0:0	2:0	2:0	8:0	14:3	9:12	3:21	1:3	--:0	39:39
1988	0:0	0:0	0:0	0:0	0:0	1:0	7:2	5:2	7:5	2:13	1:0	--:1	23:23
1989	0:0	0:0	0:0	0:0	0:0	0:0	1:0	3:1	0:1	0:2	0:0	--:0	4:4
1990	0:0	0:0	0:0	0:0	0:0	0:0	0:0	1:0	0:0	0:1	0:0	--:0	1:1
TOTAL	2:0	19:1	27:4	26:4	35:29	30:20	56:21	57:28	37:92	17:94	2:13	--:2	308:308

* Note: Foreclosure study period ends in 1995

TABLE 2
EQUITY SALES BY REGION AND PROPERTY TYPE

Foreclosure Process			
	FORECLOSURE	MOD- FORECLOSURE	TOTAL
<u>Region</u>			
East North Central	25	--	25
Mideast	18	1	19
Mountain	26	8	34
Northeast	38	3	41
Pacific	14	3	17
Southeast	30	9	39
Southwest	70	32	102
West North Central	31	--	31
TOTAL	252	56	308
<u>Property Type</u>			
Apartment	51	20	71
Hotel	9	4	13
Industrial	28	5	33
Office	128	20	148
Other	4	--	4
Retail	32	7	39
TOTAL	252	56	308

TABLE 3**EQUITY SALES BY YEAR OF SALE AND REGION**

YEAR of SALE	Region								TOTAL
	ENC	ME	MTN	NE	PAC	SE	SW	WNC	
1986	0	0	0	0	0	0	1	0	1
1987	0	0	0	0	0	0	4	0	4
1988	0	0	0	0	0	0	4	0	4
1989	0	0	3	0	2	1	22	1	29
1990	0	0	4	0	1	0	12	3	20
1991	2	2	7	0	1	2	6	1	21
1992	2	1	1	3	2	6	7	6	28
1993	3	7	13	14	4	16	24	11	92
1994	14	9	6	17	7	14	18	9	94
1995	4	0	0	5	0	0	4	0	13
1996	0	0	0	2	0	0	0	0	2
TOTAL	25	19	34	41	17	39	102	31	308

TABLE 4
COMPONENTS OF EQUITY OWNERSHIP
(Mean Statistics)

	FORECLOSED						MODIFIED-FORECLOSED						ALL EQUITIES					
	Own. Pd. (Mo.)	Total Rev. (%)	Total Exp. (%)	Net Inc. (%)	Net CF. (%)	N	Own. Pd. (Mo.)	Total Rev. (%)	Total Exp. (%)	Net Inc. (%)	Net CF. (%)	N	Own. Pd. (Mo.)	Total Rev. (%)	Total Exp. (%)	Net Inc. (%)	Net CF. (%)	N
Region																		
Enc	29.4	49.2	38.5	10.7	-0.7	25	--	--	--	--	--	--	29.4	49.2	38.5	10.7	-0.7	25
Me	24.2	23.2	15.1	8.1	2.3	18	26.5	30.4	17.4	13.0	10.5	1	24.4	23.5	15.2	8.3	2.7	19
Mtn	36.3	31.2	24.9	6.3	-6.1	26	23.8	24.2	19.8	4.4	-10.9	8	33.4	29.6	23.7	5.9	-7.2	34
Ne	18.9	21.0	14.9	6.2	1.2	38	14.0	22.4	-1.0	23.4	10.5	3	18.6	21.1	13.7	7.4	1.9	41
Pac	18.7	26.9	20.7	6.2	-2.1	14	25.4	25.6	12.4	13.2	1.6	3	19.9	26.7	19.2	7.5	-1.5	17
Se	24.2	29.9	21.1	8.8	7.0	30	17.8	28.2	25.2	3.0	-5.5	9	22.7	29.5	22.0	7.5	4.1	39
Sw	35.8	43.6	35.1	8.6	-1.5	70	25.0	53.0	40.9	12.1	-2.6	32	32.4	46.6	36.9	9.7	-1.8	102
Wnc	28.1	44.8	35.1	9.7	4.4	31	--	--	--	--	--	--	28.1	44.8	35.1	9.7	4.4	31
Total	28.6	35.6	27.4	8.2	0.5	252	23.1	41.4	31.2	10.2	-3.1	56	27.6	36.7	28.1	8.6	-0.2	308
Property Type																		
Apt	23.6	33.9	27.1	6.8	1.9	51	15.8	30.2	25.1	5.1	-3.0	20	21.4	32.9	26.5	6.4	0.5	71
Hotel	33.3	110.0	106.9	3.1	-1.8	9	31.8	166.4	140.5	25.9	1.3	4	32.9	127.3	117.2	10.1	-0.8	13
Indus	28.7	29.0	14.1	14.8	4.8	28	15.1	13.0	3.1	9.9	4.7	5	26.7	26.5	12.4	14.1	4.8	33
Office	30.3	33.9	26.8	7.1	-1.4	128	32.7	40.8	28.7	12.1	-9.7	20	30.6	34.9	27.1	7.8	-2.5	148
Other	19.0	19.8	16.2	3.6	4.3	4	--	--	-	--	--	--	19.0	19.8	16.2	3.6	4.3	4
Retail	29.3	32.0	21.1	10.8	2.0	32	17.8	23.7	13.2	10.5	7.3	7	27.3	30.5	19.7	10.8	2.9	39
Total	28.6	35.6	27.4	8.2	0.5	252	23.1	41.4	31.2	10.2	-3.1	56	27.6	36.7	28.1	8.6	-0.2	308
State Law																		
Judicial	27.7	36.5	28.2	8.3	2.1	82	20.6	32.1	27.3	4.8	-7.0	11	26.9	36.0	28.1	7.9	1.0	93
Pwr Sale	29.0	35.2	27.0	8.1	-0.3	170	23.7	43.7	32.1	11.5	-2.1	45	27.9	36.9	28.1	8.9	-0.7	215
Total	28.6	35.6	27.4	8.2	0.5	252	23.1	41.4	31.2	10.2	-3.1	56	27.6	36.7	28.1	8.6	-0.2	308

TABLE 4 (Continued)
COMPONENTS OF EQUITY OWNERSHIP
(Mean Statistics)

	FORECLOSED						MODIFIED-FORECLOSED						ALL EQUITIES					
	Own. Pd. (Mo.)	Total Rev. (%)	Total Exp. (%)	Net Inc. (%)	Net CF. (%)	N	Own. Pd. (Mo.)	Total Rev. (%)	Total Exp. (%)	Net Inc. (%)	Net CF. (%)	N	Own. Pd. (Mo.)	Total Rev. (%)	Total Exp. (%)	Net Inc. (%)	Net CF. (%)	N
Yr. Of Fclsr.																		
1985	58.0	42.0	36.5	5.5	5.5	2	--	--	--	--	--	--	58.0	42.0	36.5	5.5	5.5	2
1986	48.6	43.1	36.8	6.3	-5.4	19	--	--	--	--	--	--	48.6	43.1	36.8	6.3	-5.4	19
1987	39.0	47.3	41.5	5.9	-1.9	27	--	--	--	--	--	--	39.0	47.3	41.5	5.9	-1.9	27
1988	37.3	52.8	42.1	10.8	0.6	23	49.2	167.2	125.3	41.9	29.8	3	38.6	66.0	51.7	14.4	4.0	26
1989	36.7	53.5	39.3	14.2	0.1	24	35.1	58.9	49.0	9.9	-19.5	11	36.2	55.2	42.4	12.8	-6.1	35
1990	30.4	37.4	28.8	8.6	-3.2	24	31.0	42.1	34.5	7.6	-3.6	6	30.5	38.3	29.9	8.4	-3.3	30
1991	28.8	34.3	23.8	10.6	2.8	50	22.0	38.8	31.1	7.6	-1.5	6	28.0	34.8	24.5	10.3	2.3	56
1992	17.0	20.9	14.7	6.2	3.7	43	21.0	33.2	21.4	11.8	-2.3	14	17.9	23.9	16.3	7.6	2.2	57
1993	13.3	20.6	14.8	5.8	0.8	27	11.1	16.3	11.7	4.7	-0.3	10	12.7	19.4	14.0	5.5	0.5	37
1994	8.7	18.2	16.8	14.1	0.2	11	6.5	9.3	3.6	5.6	2.9	6	7.9	15.1	12.2	2.9	1.1	17
1995	9.7	13.4	7.6	5.8	1.4	2	--	--	--	--	--	--	9.7	13.4	7.6	5.8	1.4	2
Total	28.6	35.6	27.4	8.2	0.5	252	23.1	41.4	31.2	10.2	-3.1	56	27.6	36.7	28.1	8.6	-0.2	308
Loan Size																		
< \$1 Million	28.1	45.4	41.5	3.8	-8.8	10	24.8	26.6	24.3	2.3	30.1	2	27.6	42.3	38.7	3.6	-2.4	12
\$1 - \$2 MM	24.9	26.2	27.4	-1.2	-6.6	26	25.9	45.6	39.3	6.4	-9.3	3	25.0	28.2	28.6	-0.4	-6.9	29
\$2 - \$4 MM	27.1	32.4	22.5	9.9	0.9	50	16.3	30.8	25.4	5.4	-8.8	13	24.9	32.1	23.1	9.0	-1.1	63
\$4 - \$7.5 MM	28.3	35.4	28.2	7.2	0.2	74	18.8	31.5	23.9	7.5	-4.2	13	26.9	34.8	27.5	7.3	-0.5	87
\$7.5 - \$10 MM	27.6	39.6	30.4	9.2	2.6	22	30.5	44.7	34.3	10.4	-16.9	7	28.3	40.8	31.3	9.5	-2.1	29
\$10 - \$25 MM	32.0	37.0	25.8	11.3	4.2	54	29.6	60.3	42.3	18.0	4.9	16	31.5	42.4	29.6	12.8	4.4	70
> \$25 MM	30.4	45.6	32.3	13.3	2.1	16	13.0	20.1	10.8	9.3	1.1	2	28.4	42.7	29.9	12.8	2.0	18
Total	28.6	35.6	27.4	8.2	0.5	252	23.1	41.4	31.2	10.2	-3.1	56	27.6	36.7	28.1	8.6	-0.2	308

TABLE 5
EQUITY OWNERSHIP LOSS RECOVERY ESTIMATES

(Mean Statistics)

	FORECLOSED				MODIFIED-FORECLOSED				ALL EQUITIES			
	Gross Rcvy (%)	Net Rcvy W/o Int. (%)	Net Rcvy Incl. Int. (%)	N	Gross Rcvy (%)	Net Rcvy W/o Int. (%)	Net Rcvy Incl. Int. (%)	N	Gross Rcvy (%)	Net Rcvy W/o Int. (%)	Net Rcvy Incl. Int. (%)	N
Region												
Enc	64.6	63.9	37.3	25	--	--	--	--	64.6	63.9	37.3	25
Me	71.7	73.9	52.8	18	38.4	48.9	25.7	1	70.0	72.6	51.4	19
Mtn	69.9	63.8	27.4	26	90.4	79.5	58.7	8	74.7	67.5	34.8	34
Ne	82.8	84.0	68.1	38	98.7	109.2	96.9	3	84.0	85.8	70.2	41
Pac	80.6	78.5	61.6	14	91.8	93.3	68.8	3	82.6	81.1	62.9	17
Se	72.2	79.2	58.5	30	79.5	74.0	57.2	9	73.9	78.0	58.3	39
Sw	74.9	73.3	38.9	70	87.3	84.7	61.3	32	78.7	76.9	45.9	102
Wnc	80.9	85.3	59.9	31	--	--	--	--	80.9	85.3	59.9	31
Total	75.1	75.5	49.1	252	86.5	83.4	62.0	56	77.1	77.0	51.5	308
Property Type												
Apt	91.7	93.6	70.8	51	99.1	96.2	82.4	20	93.8	94.4	74.0	71
Hotel	79.7	78.0	44.8	9	108.8	110.1	78.5	4	88.7	87.9	55.2	13
Indus	81.0	85.8	58.7	28	89.5	94.2	81.1	5	82.3	87.1	62.1	33
Office	67.9	66.6	38.8	128	72.4	62.7	31.7	20	68.5	66.0	37.8	148
Other	75.5	79.8	63.1	4	--	--	--	--	75.5	79.8	63.1	4
Retail	70.3	72.3	47.0	32	75.6	82.9	66.9	7	71.3	74.2	50.6	39
Total	75.1	75.5	49.1	252	86.5	83.4	62.0	56	77.1	77.0	51.5	308
State Law												
Judicial	71.4	73.4	48.6	82	82.2	75.2	56.1	11	72.7	73.6	49.5	93
Pwr Sale	76.8	76.5	49.4	170	87.5	85.4	63.4	45	79.1	78.4	52.3	215
Total	75.1	75.5	49.1	252	86.5	83.4	62.0	56	77.1	77.0	51.5	308

TABLE 5 (Continued)

EQUITY OWNERSHIP LOSS RECOVERY ESTIMATES

(Mean Statistics)

	FORECLOSED				MODIFIED-FORECLOSED				ALL EQUITIES			
	Gross Rcvy (%)	Net Rcvy W/o Int. (%)	Net Rcvy Incl. Int. (%)	N*	Gross Rcvy (%)	Net Rcvy W/o Int. (%)	Net Rcvy Incl. Int. (%)	N*	Gross Rcvy (%)	Net Rcvy W/o Int. (%)	Net Rcvy Incl. Int. (%)	N*
Yr. Of Fclsr.												
1985	79.1	84.6	12.6	2	--	--	--	--	79.1	84.6	12.6	2
1986	68.4	63.0	12.9	19	--	--	--	--	68.4	63.0	12.9	19
1987	73.6	71.8	32.7	27	--	--	--	--	73.6	71.8	32.7	27
1988	76.2	76.8	42.4	23	77.6	107.4	58.7	3	76.4	80.4	44.3	26
1989	76.1	76.2	43.7	24	81.6	62.0	29.1	11	77.8	71.8	39.1	35
1990	74.5	71.3	45.0	24	83.3	79.8	49.9	6	76.3	73.0	46.0	30
1991	67.3	70.1	45.0	50	74.0	72.5	51.8	6	68.1	70.4	45.7	56
1992	77.6	81.3	67.2	43	94.0	91.7	73.6	14	81.6	83.8	68.8	57
1993	78.0	78.8	66.5	27	82.3	82.1	72.6	10	79.2	79.7	68.1	37
1994	96.4	96.6	88.5	11	104.5	107.4	101.2	6	99.2	100.4	92.9	17
1995	115.5	116.8	108.8	2	--	--	--	--	115.5	116.9	108.8	2
Total	75.1	75.5	49.1	252	86.5	83.4	62.0	56	77.1	77.0	51.5	308
Loan Size												
< \$1 Million	69.4	60.5	33.9	10	68.5	98.7	78.5	2	69.2	66.9	41.3	12
\$1 - \$2 MM	70.0	63.4	40.9	26	90.5	81.3	57.9	3	72.1	65.2	42.6	29
\$2 - \$4 MM	80.3	81.2	55.8	50	99.6	90.8	76.5	13	84.3	83.2	60.0	63
\$4 - \$7.5 MM	78.3	78.5	52.0	74	92.2	88.0	70.3	13	80.4	79.9	54.7	87
\$7.5 - \$10 MM	78.8	81.3	56.5	22	71.4	54.5	25.0	7	77.0	74.8	48.9	29
\$10 - \$25 MM	68.0	72.3	43.2	54	81.2	86.1	58.8	16	71.0	75.4	46.8	70
> \$25 MM	73.8	76.0	48.1	16	70.7	71.8	57.4	2	73.5	75.5	49.1	18
Total	75.1	75.5	49.1	252	86.5	83.4	62.0	56	77.1	77.0	51.5	308

TABLE 6
COMBINED DEBT AND EQUITY PERFORMANCE
(Mean Statistics)

	Total Period (Mo.)	Gross Recovery Without Interest (%)	Net Recovery Without Interest (%)	Net Recovery Including Interest (a) (%)	Net Recovery Including Interest (b) (%)	N*	Debt Yield Degrdsn. (%)	Combined Yield Degrdsn. (%)	N*
Region									
Enc	41.9	48.1	42.7	32.2	10.2	24	7.1	14.5	24
Me	37.6	61.0	63.6	51.8	33.7	19	7.7	10.8	18
Mtn	45.0	53.8	47.8	36.9	10.3	34	8.9	13.1	31
Ne	27.0	53.4	56.1	48.9	38.0	41	7.3	11.4	41
Pac	33.8	70.5	69.0	56.6	40.1	17	6.1	9.3	16
Se	30.5	64.1	67.1	60.4	43.5	39	4.8	10.3	36
Sw	37.4	77.4	74.5	70.1	40.1	102	4.9	8.9	92
Wnc	41.6	65.9	72.0	60.0	36.8	31	8.4	9.8	30
Total	36.6	65.1	64.4	56.5	33.9	307	6.5	10.6	288
Property Type									
Apt	29.4	85.8	85.9	78.9	60.3	71	3.6	6.3	64
Hotel	47.0	63.0	55.9	44.4	19.2	12	13.7	17.4	11
Indus	35.6	61.1	67.1	59.2	37.8	33	5.7	10.5	31
Office	39.8	58.0	55.6	47.4	21.7	148	7.9	12.7	140
Other	31.8	52.5	55.2	39.7	29.1	4	8.4	9.9	4
Retail	35.8	59.2	60.5	53.4	33.5	39	4.4	8.2	38
Total	36.6	65.1	64.4	56.5	33.9	307	6.5	10.6	288
State Law									
Judicial	38.7	56.7	57.6	47.3	27.1	92	7.0	11.7	87
Pwr Sale	35.7	68.6	67.4	60.5	36.8	215	6.2	10.1	201
Total	36.6	65.1	64.4	56.5	33.9	307	6.5	10.6	288

* Count reflects loans lacking adequate information with which to estimate statistic
(a) Includes accrued interest during foreclosure period
(b) Includes accrued interest during foreclosure period and equity ownership period

TABLE 6 (Continued)

COMBINED DEBT AND EQUITY PERFORMANCE

(Mean Statistics)

	Total Period (Mo.)	Gross Recovery Without Interest (%)	Net Recovery Without Interest (%)	Net Recovery Including Interest (a) (%)	Net Recovery Including Interest (b) (%)	N*	Debt Yield Degrdsn. (%)	Combined Yield Degrdsn. (%)	N*
Yr. Of Fclsr.									
1985	59.5	66.5	66.6	65.3	6.2	2	8.4	14.4	2
1986	53.7	66.4	59.6	54.7	8.9	19	5.1	13.3	16
1987	43.9	72.3	70.7	66.2	30.0	27	2.8	11.9	26
1988	47.9	68.7	69.6	61.0	26.4	26	10.9	11.4	25
1989	47.8	90.7	84.3	73.9	38.8	35	9.9	12.8	28
1990	43.9	60.4	58.0	46.1	24.1	30	7.1	10.2	24
1991	35.0	55.4	56.4	50.4	30.4	56	5.2	11.3	55
1992	28.6	65.6	67.8	58.6	46.4	57	5.8	9.0	57
1993	21.3	52.9	54.0	46.4	38.2	37	5.9	9.3	37
1994	16.6	57.9	59.0	51.3	47.1	16	7.6	7.9	16
1995	12.6	65.4	69.9	67.5	61.4	2	4.9	4.4	2
Total	36.6	65.1	64.4	56.5	33.9	307	6.5	10.6	288
Loan Size									
< \$1 Million	35.8	158.2	147.8	140.4	69.7	12	4.0	5.9	11
\$1 - \$2 MM	32.2	62.5	54.0	47.9	28.8	29	3.2	6.1	28
\$2 - \$4 MM	33.6	67.4	66.0	58.2	38.7	63	3.8	7.9	54
\$4 - \$7.5 MM	35.2	66.9	67.5	60.2	39.1	87	5.7	10.1	81
\$7.5 - \$10 MM	37.5	61.4	61.1	53.1	32.6	29	10.2	12.7	29
\$10 - \$25 MM	41.9	50.0	53.3	44.4	22.5	69	8.9	14.1	67
> \$25 MM	39.4	53.5	53.4	42.9	21.5	18	9.1	14.5	18
Total	36.6	65.1	64.4	56.5	33.9	307	6.5	10.6	288

* Count reflects loans lacking adequate information with which to estimate statistic

(a) Includes accrued interest during foreclosure period

(b) Includes accrued interest during foreclosure period and equity ownership period

TABLE 7

REGRESSION RESULTS

DEPENDENT VARIABLE

INDEPENDENT VARIABLE	TOTAL TIME PERIOD ₁		NET LOSS RECOVERY ₂		YIELD DEGRADATION ₃	
INTERCEPT	-15.021 (35.916)	-51.441 (36.422)	1.183 (0.866)	1.152 (0.846)	-0.031 (0.142)	-0.093 (0.140)
MORTRATE	196.456 (88.043)**	357.781 (85.921)**	-5.296 (2.142)**	-4.725 (2.047)**	0.445 (0.356)	0.573 (0.343)*
LTV	0.401 (0.308)	0.502 (0.316)	-0.001 (0.007)	0.001 (0.007)	0.001 (0.001)	0.001 (0.001)
LOANAGE	-2.620 (0.290)**	-2.431 (0.297)**	0.001 (0.007)	-0.001 (0.007)	-0.009 (0.001)**	-0.009 (0.001)**
DCR	8.184 (9.861)	21.146 (10.013)**	0.072 (0.238)	0.021 (0.233)	-0.011 (0.038)	0.018 (0.038)
JDSALE	8.038 (2.770)**	2.663 (2.234)	-0.009 (0.067)	-0.075 (0.051)	-0.001 (0.011)	0.012 (0.008)
TOTAL PERIOD	--	--	-0.009 (0.001)**	-0.010 (0.001)**	0.002 (0.001)**	0.003 (0.001)**
P-APT	-12.358 (3.502)**		0.233 (0.086)**		-0.028 (0.013)**	
P-HOTEL	-1.631 (5.901)		0.060 (0.142)		0.035 (0.023)	
P-INDUSTRIAL	-4.849 (4.084)		0.073 (0.098)		-0.002 (0.016)	
P-OFFICE	-1.051 (3.150)		-0.019 (0.076)		0.020 (0.012)**	
P-OTHER	-6.652 (8.850)		-0.047 (0.213)		0.001 (0.034)	
R-ENC	5.826 (4.570)		-0.141 (0.110)		0.020 (0.018)	
R-ME	9.041 (4.820)*		-0.016 (0.116)		-0.001 (0.019)	
R-MTN	15.196 (4.434)**		-0.099 (0.109)		-0.004 (0.018)	
R-NE	-6.250 (3.819)		-0.039 (0.092)		-0.006 (0.015)	
R-PAC	7.149 (5.200)		0.038 (0.125)		-0.025 (0.020)	
R-SW	14.609** (3.651)		0.025 (0.090)		-0.007 (0.015)	
R-WNC	6.509 (4.086)		0.082 (0.099)		-0.032 (0.016)**	
N	307	307	307	307	288	288
R ²	.37	.25	.34	.27	.42	.34
F-VALUE	10.18**	20.65**	8.20**	18.51**	10.98**	23.99**

Notes for Table VIII: Dependent variables are (1) Total time period between start of foreclosure and equity sale date, (2) Net recovery as a percent of outstanding loan balance at onset of foreclosure less foreclosure costs plus operating profits plus accrued interest over the total time period, (3) Yield degradation as measured by the difference between the contractual rate of return and the realized rate of return over the total time period. Independent variables prefaced with a P indicate alternative property types, those prefaced with an R indicate region. Base variables are power-of-sale state, retail property type and the southeast region. Values shown in parentheses are standard errors. * indicates significance at the 10 percent level and ** indicates significance at the 5 percent level.