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The Relationship between Foreclosure Status and Apartment Price

*William G. Hardin, III**
*Marvin L. Wolverton***

***Abstract*. Empirical studies disclose that foreclosed residential properties sell at a discount from the expected market price for non-foreclosed residences. This investigation shows that prior findings on residential properties can be extended to include income-producing properties. In addition, it employs market rent to control for variation in property quality. An analysis of apartment sales in Phoenix, Arizona, demonstrates that foreclosure-status apartments sell at a 22% discount when compared to non-foreclosure apartment sales. The rationale for accepting discounted prices may be atypical seller motivations such as a need to satisfy regulatory capital requirements, to mitigate negative stock price effects, or to protect credit ratings.**

Introduction

Most definitions of real property market value include a qualifying assumption that the buyer and seller are typically motivated (e.g., Boyce and Kinnard, 1984). If an institutional seller of a foreclosed property is subjected to typical motivations, all else being equal, the sale price an institutional seller is able to negotiate for a given property in a given market should not be systematically different from a price that would be negotiated by a typically motivated seller.

Institutional sellers marketing properties obtained through foreclosure may not be typically motivated. There are forces affecting owners of foreclosed properties that could cause them to be receptive to accepting below-market prices in exchange for a reduction in time on market (Downs, 1992; Cory and Zinn, 1992). Regulatory capital requirements provide an incentive to reduce the size of a firm's nonperforming asset balance sheet category. Also, disposition of real estate owned through the sale of foreclosed properties may have a beneficial effect on a company's stock price and credit rating (Palmer, 1991; Downs, 1992).

Because institutional owners of foreclosed properties appear to be subject to atypical motivations that cause them to value some degree of reduction in time on market, and marketing time can be compressed by acceptance of a below-market price (Moore, 1987), it is reasonable to expect market prices for foreclosed properties to be systematically less than market prices for non-foreclosed properties. Therefore, if a significant price differential exists, foreclosed property sales cannot be relied upon as indicators of expected market value unless they are adjusted for the foreclosure-sale price effect.

A small amount of empirical evidence exists showing a systematic price reduction for foreclosed property sales. However, the studies are limited to residential properties

*Department of Economics and Business Administration, Morehouse College, 830 Westview Drive, Atlanta, Georgia 30314.
**Department of Finance, Insurance and Real Estate, Washington State University, Pullman, Washington 99164-4746.
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intended for owner occupancy, are unable to fully control for possible differences in quality between foreclosed and non-foreclosed properties, and are confined to two locations—Baton Rouge, Louisiana (Shilling, Benjamin and Sirmans, 1990), and Arlington, Texas (Forgey, Rutherford and VanBuskirk, 1994). This study controls for potential quality differences by utilizing market rent as an independent variable. Additionally, it widens the scope of investigation by looking into the foreclosure-sale price effect on one type of income-producing property and by geographically extending earlier findings.

Literature Review

A lack of adequate data makes it difficult to empirically test for atypical foreclosed property seller motivation. However, a body of literature exists that uncovers a corporate-level rationale for seller motivation that is atypical to that found in the real estate market in general. In addition, recent studies have demonstrated significantly lower market prices for foreclosed residential properties consistent with expected motivation. The literature review begins with a portrayal of an institutional seller not affected by atypical motives.

Kane's (1990) "efficient salvor" can be used to define the ideal role played by an institution's foreclosed property disposition department. In a study of the efficiency of the Resolution Trust Corporation in salvaging savings and loan industry assets, Kane employed the idea of an efficient salvor in order to identify the four functions of a salvor—rescue, appraisal, property management, and sale. He defined an efficient salvor as one who preserves asset values and expands markets by locating, informing and servicing parties that would not otherwise consider purchasing the asset. In this rather unconstrained environment the seller's goal is simply to maximize the present value of the asset. However, institutional sellers of foreclosed real estate do not operate in the efficient salvor's ideal, constraint-free world.

According to Cory and Zinn (1992) the "traditional orderly-reduction-in-assets" (efficient salvor) approach to removal of real estate exposure was not the most effective method for accelerating asset disposition. Banks were found to have relied on more aggressive strategies in order to facilitate faster liquidation of real estate assets. Downs (1992) identified constraints that hinder an institutional seller's ability to function as an efficient salvor and outlined several incentives for aggressive liquidation strategies. In addition to bank regulation and the resulting need to meet more stringent equity capital requirements, he noted that the stock market devaluated banks that had high proportions of their assets in real estate. Furthermore, bank credit ratings tended to decline in response to increasing exposure to real estate risk. Downs found that bank management dealt with excessive exposure to real estate by not making real estate loans and by attempting to accelerate disposition of foreclosed real estate.

In an empirical study of data from 1988 for real estate owned by institutions under Federal Savings and Loan Insurance Corporation (FSLIC) receivership; Curry, Blalock and Cole (1991) investigated the relative efficiency of public-sector (FSLIC receivership staff), quasi-public-sector (Federal Asset Disposition Association), and private-sector (private contractors) management of the disposition of distressed real estate properties. They computed a recovery rate as a means of measuring relative efficiency. Recovery rate was defined as the present value of income recovered through management and

disposition of the asset divided by the asset's initial value. Initial value was computed as the original book value of the loan less principal paid off during the loan term and less writedowns taken prior to takeover of the asset by FSLIC. The study's finding of a 64% recovery rate could indicate the presence of a systematic price reduction. No analysis was made, however, of the relationship of disposition price to expected market price at the time of disposition. In addition, differences in mean recovery rate by sector were confounded by between-group variation in local market vitality, asset management difficulty, and adequacy of the writedown prior to FSLIC receivership.

Two studies have been undertaken to investigate the extent to which foreclosed residential property disposition prices were reflective of expected market prices at the time of sale. Shilling et al. (1990) conducted a study of sixty-two residential condominium sales from Baton Rouge, Louisiana, occurring during 1985. They found that foreclosure sales by a local financial institution were, on average, 24% lower in price than non-foreclosure sales. Forgey et al. (1994) provided an extension of the Shilling et al. findings by examining a dataset consisting of 2,482 single-family residential property sales obtained from the Arlington, Texas, multiple listing service sold files over the period of July 1991 through January 1993. Foreclosure sales constituted 11.28% of the sample. They employed a log-linear regression model, similar to Shilling et al., and found a 23% reduction in price for foreclosed property sales.

The preceding empirical results appear to be contrary to the efficient salvor's goal of maximizing the present value of asset income and asset sale price. Although these results seem to reveal suboptimal behavior, Downs (1990) identified rational motives for disposition strategies that substitute liquidation speed for maximized liquidation price. If mitigation of stock market devaluations of bank securities, preservation of credit ratings, and regulatory capital requirement concerns are benefits that exceed costs associated with price discounts required to reduce time on market, then a motivation effect should be generalizable across property type, location and foreclosed-property owner. With this in mind, this study extends the Shilling et al. (1990) and Forgey et al. (1994) investigations.

Statistical Hypothesis and Model

The following statistical hypothesis is similar to Forgey et al. (1994), and was tested by use of an analysis of covariance regression model (Neter, Wasserman and Kutner, 1990):

H_o: Foreclosure-status apartments do not sell at a discount when compared to non-foreclosure apartment sales.

H_A: Foreclosure-status apartments do sell at a discount when compared to non-foreclosure apartment sales.

Ideally, an income property valuation model would be based on capitalization of net operating income. However, due to an inability to access operating expense data for each sale, the model for the apartment price function is based on capitalization of potential gross income controlling for covariates that affect gross income multipliers. Covariates fall into two categories—variables that affect net income via vacancy and the expense ratio, and variables that affect the capitalization rate applicable to net income. The valuation model employed was:

$$Apartment\ Sale\ Price = f(OREO,\ PGR;\ Y_i)\ , \tag{1}$$

where

$OREO$ = 1 if the property was a foreclosure, otherwise 0;
PGR = potential gross rent (market rent per unit at the time of sale times number of units); and
Y_i = a vector of covariates that impact the potential gross rent multiplier by either affecting net income per dollar of gross rent or the capitalization rate applicable to net income.

Rent (PGR) is appropriate for inclusion as a single, observable independent variable due to the study's interest in price-related market segmentation rather than an investigation of the structure of market rent. The PGR variable captures the hedonic price (market rent) of property attributes, thereby controlling for differences in property quality. Guntermann and Norrbin (1987) confirmed this relationship for the Phoenix, Arizona, apartment market. Covarying, concomitant variables (Y_i) were included to reduce error variability by extraction of extraneous variation from the model. Appropriate covariates are vacancy of the property as of the sale date (VAC), property age on the sale date (AGE), a dummy variable signifying presence of a master electrical meter (M_METER), parking ratio (PK_RATIO), date of sale ($DATE$), and location within the Phoenix market.

Vacancy, age, master metering, and parking ratio can affect potential gross rent multiples by causing variation in the net income ratio ($NET\ INCOME \div PGR$). Vacancy affects the net income ratio by reducing the amount of property revenue available to cover operating expenses. With regard to the age effect, older properties are expected to exhibit higher maintenance costs, hence lower net income ratios. (Also, terminal capitalization rate expectations are generally higher for older properties.) At master-metered buildings property owners pay apartment utility costs, therefore operating expenses can be greater when utility costs are not fully passed through to tenants. Inadequate on-site parking is included also as a covariate because it may have an impact on a property's sustainable occupancy rate.

Date of sale and location affect potential gross rent multipliers through their effect on capitalization rates. Capitalization rates can vary by sale date as a result of varying investor perceptions and changing interest rates. Partitioning the data into submarkets accounts for geographic variation in investors' future income growth expectations, which are reflected by differing capitalization rates. For example, median household income and income growth for the Phoenix market is highest in the Scottsdale area and lowest in the south-Phoenix submarket. Market segments included in the model were central- and north-Phoenix, City of Mesa, City of Tempe, City of Scottsdale, northwest cities (Glendale and Peoria), south-Phoenix, and a variable denoting outlying property locations. Recognition of submarket segmentation in order to obtain a better measure of marginal price effects is consistent with Smith and Kroll (1989) and Palmquist (1984).

A log-linear regression model was estimated to guard against violation of the assumption of normality of unexplained dependent variable error. Another benefit of this estimation model form is the ability to easily interpret the indicated percentage difference in price for foreclosed properties (Shilling et al., 1990; Forgey et al., 1994).

The Data

Sample data was taken from apartment sales to non-institutional buyers in Phoenix, Arizona, that closed between January 1993 and November 1994. Data was obtained from Comps, Inc. of San Diego, California, a primary provider of verified market data to appraisal practitioners in the Phoenix market.

Although the dataset is relatively small compared to the 2,482-observation residential dataset examined by Forgey et al. (1994), the dataset size difference is representative of the overall scale disparity between single-family and multifamily residential markets. The dataset is, however, similar in size to the sixty-two-observation residential condominium dataset examined by Shilling et al. (1990). Of the ninety sample sales, 10% were foreclosure sales. As shown in Exhibit 1, the average property age on the sale date was 18.1 years, and ranged from 6 to 39 years. Unit count ranged from 25 to 132, with an average of just under 53. Vacancy averaged 12.4%, and it ranged from no vacancy to 100% vacancy. Potential gross rent ranged from $93,360 to $673,200. Four complexes were master-metered, indicating that the owner paid most, if not all, of the utility expense at these four observations. Average sale price was $1,029,415.

The foreclosure and non-foreclosure groups appear to be reasonably similar, based on a comparison of metric variables (see Exhibit 2). On average, the non-foreclosure group sales are slightly more recent, smaller in size and unit count, older, and exhibit marginally higher vacancy rates. Average potential gross rent for the non-foreclosure group is 13% less than average potential gross rent for the foreclosure group, however average price for the non-foreclosure group is only slightly lower (.4%).

Using only the descriptive data, an observed difference in potential gross rent multiple (*PGRM*) provides a preliminary indication of below-market price performance for the

Exhibit 1
Descriptive Statistics

Variable	Mean	Std Dev.	Minimum	Maximum
PRICE	1,029,415	605,797	225,000	3,400,000
DATE	9.7333	6.1823	0	22
OREO	.10	.3017	0	1
PHX	.60	.4926	0	1
MESA	.1778	.3845	0	1
TEMPE	.10	.3017	0	1
S_DALE	.0444	.2072	0	1
NW_CITY	.0444	.2072	0	1
S_PHX	.0111	.1054	0	1
OTHER	.0222	.1482	0	1
SIZE	40,444	19,876	14,500	117,480
PGR	242,119	117,146	93,360	673,200
VAC	12.4444	15.0670	0	100
UNITS	52.9889	21.9798	25	132
AGE	18.1111	9.6168	6	39
PK_RATIO	1.4009	.3945	.40	2.51
M_METER	.0444	.2072	0	1
N=90				

Source: derived by authors from sample data

Exhibit 2
Comparison of Group Means

Variable	Non-Foreclosure Group Mean (N=81)	Foreclosure Group Mean (N=9)
Metric Variables:		
PRICE	1,028,962	1,033,481
DATE	9.2	14.4
SIZE	39,502	48,920
UNITS	51.6	65.6
PK_RATIO	1.4	1.4
AGE	18.8	11.9
VAC	12.6	11.1
PGR	238,455	275,099
PGRM	4.2	3.7
Indicator Variables:		
PHX	.59	.67
MESA	.19	.11
TEMPE	.11	0
S_DALE	.05	0
NW_CITY	.04	.11
S_PHX	.01	0
OTHER	.01	.11
M_METER	.05	0

Source: derived by authors from sample data

foreclosure group. The mean potential gross rent multiplier ($PRICE \div PGR$) was 4.24 for the non-foreclosure group versus 3.68 for the foreclosure group. However, variables other than foreclosure status (i.e., covariates) may be accounting for this observed difference. The following section investigates whether or not the difference in price is statistically significant and due to foreclosure status by controlling for subgroup variation in the covariates.

Empirical Results

An analysis of covariance, log-linear, OLS regression model was employed to investigate the relationship between foreclosure status and sale price. The following regression equation was used, with a central- or north-Phoenix location serving as the base case:

$$\text{LOG}PRICE = f(OREO, PGR; MESA, TEMPE, S\_DALE, NW\_CITY, S\_PHX, OTHER, DATE, VAC, AGE, PK\_RATIO, M\_METER), \quad (2)$$

where

LOG$PRICE$ = natural logarithm of the sale price;
$OREO$ = 1, if a foreclosure sale, 0 otherwise;

PGR = potential gross rent at date of sale;
$MESA$ = 1, if in the City of Mesa, 0 otherwise;
$TEMPE$ = 1, if in the City of Tempe, 0 otherwise;
S_DALE = 1, if in the City of Scottsdale, 0 otherwise;
NW_CITY = 1, if in Cities of Glendale or Peoria, 0 otherwise;
S_PHX = 1, if in south Phoenix, 0 otherwise;
$OTHER$ = 1, if in an outlying suburb, 0 otherwise;
$DATE$ = closing date, in months prior to November 1994;
VAC = vacancy rate at the property at date of sale;
AGE = age of the property in years as of the sale date;
PK_RATIO = on-site parking spaces divided by number of units;
M_METER = 1, if master-metered, 0 otherwise.

Exhibit 3 shows the OLS regression result. The model accounts for approximately 88% of the sample's variation in apartment project price. Variables *OREO* and *PGR* and covariates *S_DALE, OTHER, VAC, AGE,* and *M_METER* are significant at the 10% level. Signs on the variables and significant covariates are as expected. The positive sign on *PGR* indicates an increase in value as rent increases. The Scottsdale location sign reveals the submarket's expected positive influence on the capitalized value of rent. Vacancy, age and master metering all show negative signs, indicating lower values for more vacant, older and master-metered properties. There is no a priori expectation, however, regarding the sign of the *OTHER* coefficient.

Exhibit 3
Regression Results

Variable	Coefficient	*t*-Statistic	*p*-Value	VIF
Intercept	12.809754	91.176	.0001	.000
OREO	**−.251231**	**−2.999**	**.0037**	**1.265**
PGR	.000004	20.518	.0001	1.130
MESA	.078846	1.179	.2422	1.318
TEMPE	.103692	1.216	.2278	1.311
S_DALE	.268576	2.372	.0202	1.090
NW_CITY	−.006578	−.058	.9542	1.110
S_PHX	−.333308	−1.533	.1294	1.040
OTHER	.382965	2.236	.0175	1.081
DATE	−.005100	−1.305	.1958	1.156
VAC	−.003015	−1.934	.0568	1.090
AGE	−.009430	−3.384	.0011	1.423
PK_RATIO	.082509	1.169	.2462	1.537
M_METER	−1.97424	−1.704	.0925	1.142

Dependent Variable: LOG*PRICE*
R^2=.8801
Adjusted R^2=.8596
F-ratio=42.913
p-value=.0001
N=90
Source: derived by authors from sample data

The significant *p*-value of .0037 and negative coefficient for *OREO* indicates that the null hypothesis of no discount in price for foreclosure apartments is rejected, and it supports a conclusion that foreclosure apartments do sell for less than non-foreclosure apartments. Also, as indicated by the variance inflation factors (VIF) shown in Exhibit 3 (Neter et al., 1990), the model is not excessively multicollinear. In addition, the model does not appear to be heteroskedastic based on White's (1980) test (*p*-value = .7218).

The coefficient on *OREO* can be transformed into an indication of the percentage of price reduction for foreclosed properties by using the relationship $PERCENT\ DISCOUNT = 100\ [e^{-251231} - 1]$ or -22.2% (Halvorsen and Palmquist, 1980).[1] The indicated price discount of 22.2% is compatible with the Forgey et al. (1994) finding of a 20.4% discount for single-family residences in Arlington, Texas, and the 21.3% residential condominium discount found by Shilling et al. (1990) in Baton Rouge, Louisiana.[2]

Conclusion

This effort was undertaken to integrate prior findings of systematically discounted foreclosure property sale prices by Forgey et al. (1994) and Shilling et al. (1990) with explanations that rationalize this behavior. Rationalizations found in the literature are that foreclosed property owners appear to be motivated by satisfaction of regulatory capital requirements, control over negative stock price effects, and protection of credit ratings. As a consequence, this class of property sellers does not fit the market value definition of a typically motivated seller, and they have a rationale for accepting reduced market prices in exchange for a quick sale. Additionally, the study broadens the empirical findings by inclusion of a differing product category (income-producing), property type (apartments) and location (Phoenix, Arizona), while controlling for possible differences between foreclosed and non-foreclosed property quality.

The empirical results are consistent with prior studies, and they confirm that prices are systematically lower when the apartment project seller is a foreclosed property owner. This finding corroborates Forgey et al.'s (1994) cautionary remarks regarding the use of foreclosure sales as comparable sales in appraisal. In addition, this stream of research should help owners of foreclosure properties to quantify the cost of a liquidation sale, in terms of discount from market price, versus the offsetting benefits they stand to derive from a quick sale of a foreclosed real estate asset.

Notes

[1]The authors gratefully acknowledge an anonymous reviewer who provided this citation and pointed out that the dummy variable coefficient is not a direct indication of the percentage difference.

[2]These two studies reported discounts of 22.8% and 24%, respectively. The reported discounts were adjusted using the Halvorsen and Palmquist (1980) methodology resulting in reductions in indicated discounts to 20.4% and 21.3%.

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