


# Estimating the Foreclosure Discount in Financially Distressed Hotels

Amrik Singh<sup>1</sup> 

Cornell Hospitality Quarterly  
1–17  
© The Author(s) 2020  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/1938965520929652  
journals.sagepub.com/home/cqx  


## Abstract

This study investigates the magnitude of the distress sale and foreclosure sale discount in financially distressed hotels by determining the influence of financial distress conditions on hotel transaction prices. Using a hedonic pricing model and a sample of 6,340 distressed and non-distressed transaction prices from 2008 to 2016, the study's results show a significantly negative effect of financial distress on the pricing of distressed hotels. In particular, the estimated discount is 33% for an auction/trustee sale, 30% for a short sale, 42% for a foreclosure sale, and 44% for a real estate owned (REO) sale, all relative to non-distressed normal market sales.

## Keywords

lodging; financial distress; discount; CMBS; foreclosure

## Introduction

The extant real estate literature reveals that foreclosed properties trade at double-digit discounts to normal, non-distressed prices. For example, Shilling et al. (1990) observe a foreclosure discount of 24% for distressed residential condominiums relative to non-distressed properties. Similarly, Hardin and Wolverton (1996) estimate a foreclosure discount of 22% for foreclosed apartments relative to comparable non-distressed apartment sales. Estimates of foreclosure discount in prior empirical studies range between 7% and 24% depending on model and location (Clauret & Daneshvary, 2011). It is not surprising that the vast majority of these foreclosure discount studies are concentrated in the residential sector with only a few studies in the commercial real estate sector. Data availability has limited the ability of researchers to conduct further research in this area on an issue that is of considerable interest to industry. Distressed hotel research in particular is relatively scarce, with little or no attention paid to liquidation prices of distressed hotels or the characteristics that drive foreclosure discount pricing. Instead, the existing lodging literature has predominantly focused on factors influencing non-distressed hotel values (Corgel, 2007; Corgel et al., 2015; Hodari et al., 2017; O'Neill, 2004).

What is the magnitude of the foreclosure discount for a distressed hotel relative to a non-distressed hotel? How do hotel property characteristics and distress conditions influence the pricing of financially distressed hotels? The purpose of this study is to estimate the magnitude of the distressed sale and foreclosure discount and to determine whether property characteristics and distress conditions

influence distressed hotel transaction prices. Specifically, using a hedonic pricing model and a sample of distressed and non-distressed hotel transaction prices, this study investigates whether various financial distress conditions such as short sales, auction/distress sales, and real estate owned (REO) sales influence the discount pricing of financially distressed hotels.

The current study contributes to the lodging real estate literature in three important ways. First, the focus on the lodging sector is a distinguishing feature of this study from prior foreclosure discount studies. It extends the existing literature on non-distressed hotel prices by investigating the distress conditions and disposition prices of distressed hotels. Using a hedonic pricing model and a sample of 6,340 distressed and non-distressed hotel transaction price, the results of this study show the pricing of distressed hotels is significantly affected by distress conditions and property characteristics. Specifically, the results of the analysis reveal that a short sale is associated with a 30% discount, followed by an auction/trustee sale (33%), foreclosure sale (42%), and REO sale (44%), all relative to non-distressed market prices. These discounts far greater than those documented in previous research in the residential and commercial real estate sector. To the author's

<sup>1</sup>University of Denver, CO, USA

### Corresponding Author:

Amrik Singh, Associate Professor, Fritz Knoebel School of Hospitality Management, University of Denver, 244 E. Evans Ave., Denver, CO 80208, USA.

Email: Amrik.singh@du.edu

knowledge, this is the first lodging study to estimate a foreclosure discount of pricing differences between various distressed hotel conditions.

Second, the current study bridges the lodging academic literature gap by providing further insights into disposition options (short sales, auction/distress sales, REO sales) and the extent to which hotel type, location, and scale attributes are associated with discount pricing of distressed hotels. The evidence from this analysis reveal that extended-stay hotels perform better in auctions with discounts of 11%, followed by full-service hotels at 27%. By location, resorts face the lowest discounts at auctions, whereas interstate and small metro/town hotels experience significantly greater discounts in auctions and REO sales. Finally, the results indicate that a discount is nonexistent for luxury hotels. Instead, luxury hotels enjoy a premium at auctions. The findings favor the use of auctions for the disposal of larger distressed hotels, extended-stay hotels, resort, and luxury hotels.

Third, most previous foreclosure studies employ data from periods prior to the global financial crisis (GFC). The current study provides evidence of distressed hotel sales and pricing in the period from 2008 to 2016 using transactions in which hotels experience financial distress for the first time during and after the GFC. It is not surprising that among all the major commercial property types, the lodging sector was the most severely affected by the GFC. For example, the lodging sector had the highest cumulative loan default rate (22.4% of total defaults) and loss rate (36.2% of all resolved loans) among all the major property types (Kroll Bond Ratings, 2016). Moreover, Singh (2017) estimated more than 9% (over 4,700 hotels) of active U.S. hotels experienced some form of financial distress following the GFC. The large number of hotels in financial distress aftermath of the GFC motivates and justifies the need for this study.

Understanding the magnitude of the discount and why REO properties sell at a discount helps assess both the costs of financial distress and the disposition strategies of lenders. Whether a loan is recourse or nonrecourse, fixed-rate or floating rate, interest-only or amortizing, it will have an impact on the nature of the distressed sale. Financial distress that results in foreclosure is a lengthy, complex, and costly event for all parties involved in the transaction of a distressed asset. Lenders and investors in the securitized debt market take a direct loss when a loan goes into foreclosure and then liquidated. These costs, which are incurred from the time a mortgage loan becomes delinquent till liquidation, include direct and indirect costs such as lost principal and interest payments, moving expenses, maintenance, repair, and renovation costs, property management, collection and servicing fees, legal and administrative fees, and sales commissions and seller concessions (Cutts & Merrill, 2008; Frame, 2010; Mortgage Bankers Association, 2008).

Therefore, it may be financially advantageous for a lender to pursue a loss mitigating disposition strategy because it will produce a significantly smaller discount (Clauret & Daneshvary, 2011). Finally, lodging industry participants such as hotel owners, brokers, lenders, and appraisers will find the distressed discounts to be informative in making their disposition decisions, benchmarking distressed prices, and understanding the factors that drive pricing differentials between distressed and non-distressed hotels.

## Literature Review

### *Foreclosure and Disposition Options*

A borrower becomes delinquent by failing to make a payment on a loan. Delinquency is cured by making the necessary payments to bring the loan current. However, if the borrower is unable to make the periodic loan payment but intends to retain ownership of the property, the lender can modify the loan or use forbearance, which can provide some temporary relief to the borrower prior to any foreclosure filing (Clauret & Daneshvary, 2011; Richardson, 2012). If the borrower has no desire to retain ownership of the property and stops making payments, then the loan goes into financial distress, in which case the lender resorts to several options to resolve distress. The lender can authorize a pre-foreclosure short sale, permit a deed-in-lieu of foreclosure (DILF) whereby the property is voluntarily conveyed to the lender to avoid a foreclosure proceeding, or as a last resort, file for foreclosure. Foreclosure is a process by which the lender attempts to repossess the property to recoup any unpaid balance by re-acquiring and selling the property to a third party. If the lender files for foreclosure, the property could be sold during the foreclosure process via a foreclosure auction/trustee sale, or by foreclosing on the property, acquiring the title, and disposing it as an REO sale (Aroul & Hansz, 2014; Chinloy et al., 2017; Clauret & Daneshvary, 2011; Richardson, 2012). Thus, there is a sequence in the disposition options beginning with a short sale and DILF (prior to any foreclosure proceeding) followed by a foreclosure auction/trustee sale (during the foreclosure process) and ending with an REO sale (post-foreclosure).

A short sale is a transaction in which the lender permits a sale of the property upon which the borrower remits the sales proceeds to the lender even if the proceeds are less than the outstanding loan balance (Aroul & Hansz, 2014; Clauret & Daneshvary, 2011; Richardson, 2012). A short sale is advantageous to the lender because additional holding and transaction costs, and legal expenses associated with foreclosure are avoided. Hence, the resolution of financial distress in a short sale is faster and less costly than an auction or REO sale (Aroul & Hansz, 2014). The disadvantage of a short sale appears to be the lack of an incentive

for the borrower to maximize the selling price (Clauret et al., 2011; Richardson, 2012). Clauret et al. (2011) estimate a discount of 5.6% for a short sale, 10.3% for properties under foreclosure, and 13.5% for REO properties, all relative to non-distressed sales.

Foreclosure auction and REO sale prices are likely to differ depending on factors such as the transaction type and details, the pool of buyers, the marketing efforts, and the method of financing (Zhou et al., 2015). Sale of the property in any one of the distressed conditions (short sale, auction/trustee sale, REO sale) will likely result in a discount since it is conducted by a motivated seller (borrower or lender) who desires a quick sale (Clauret et al., 2011).

State law usually dictates the foreclosure process of which there are two types: judicial and nonjudicial foreclosure. In a judicial foreclosure state, the lender pursues legal action against the borrower to foreclose on the property (Cutts & Merrill, 2008). The lender has to file a lawsuit to obtain a court judgment against the borrower. If the lender has a valid complaint, the court will issue a default judgment against the borrower (Cordell et al., 2015). The court will then authorize a sheriff's sale, in which the property is auctioned off to the highest bidder in a public foreclosure auction sale. A sale to a third party would transfer the property to the new owner via a sheriff's deed. If the property remains unsold or if bids were less than the asking price, then the lender will be the highest bidder and the property will be sold back to the lender where it becomes REO. A lender sale of the property after the property goes through foreclosure is an REO sale (Zhou et al., 2015).

In contrast, location in a nonjudicial foreclosure state does not require the use of court action to foreclose on the property. Instead, the power of sale clause in the deed of trust grants a third party, the trustee, to foreclose on the property in the event of default (Cordell et al., 2015; Cutts & Merrill, 2008). The lender will notify the trustee who will issue a notice of default to commence the foreclosure process. Failure by the borrower to cure the default will lead the trustee to proceed with a foreclosure auction sale. The nonjudicial public foreclosure auction process is similar to the judicial process except that a trustee's deed is the instrument used to transfer the property to a non-lender third party winning bid. Consequently, a judicial foreclosure involves more process, is more costly, and takes longer to resolve than a nonjudicial foreclosure (Cutts & Merrill, 2008).

### *Empirical Real Estate Research*

Shilling et al. (1990) proposed a hedonic regression model for estimating the net realizable value for distressed real estate properties on a sample of 62 residential condominium units that were sold in Baton Rouge, Louisiana, in

1985. Their results indicated that distressed sales of the condominium units by a local financial institution were, on average, 24% lower in price than similar non-distressed units. Forgey et al. (1994) extended the Shilling et al. (1990) study by examining a sample of 2,482 residential property sales between 1991 and 1993 in Arlington, Texas. Using the linear and log-linear functional forms of a hedonic regression model, the authors investigated whether houses in foreclosure sell at a discount when compared with non-foreclosure sales in the same local market. Their results show an average foreclosure discount of 23%, consistent with the previous findings in Shilling et al. (1990).

Carroll et al. (1997) questioned Forgey et al.'s (1994) findings, arguing that the discount rate observed in the latter study was due to a failure to adequately control for the location and neighborhood characteristics of the foreclosed properties. The authors replicated Forgey et al.'s (1994) study by using similar models to control for the effects of location and neighborhood condition in a sample of 1,974 single-family property sales between 1990 and 1993 in Las Vegas, Nevada. Dummy variables were used to distinguish between foreclosure effects and location effects. A foreclosure discount between 12.2% and 14% is estimated when location effects were ignored. After controlling for location, the foreclosure discount ranged between 8.5% and 9.7%. The findings suggested that foreclosure is a proxy for neighborhood characteristics rather than property conditions. Hardin and Wolverton (1996) extended prior findings on residential properties to include income producing properties. Their sample comprised nine foreclosed apartments out of a sample of 90 apartment sales to noninstitutional buyers that occurred between 1993 and 1994 in the Phoenix, Arizona area. Their results show that apartments in foreclosure status sell for 22% less than comparable non-foreclosure apartment sales.

Clauret et al. (2009) argued that many of the foreclosure discount estimates in prior studies were upwardly biased in magnitude because of a failure to control for neighborhood effects, property condition, and marketing time. Using a sample of 1,302 foreclosed and 8,498 non-foreclosed single-family homes sold between 2004 and 2007 in Las Vegas, Nevada, they estimated a foreclosure discount of 10% without controlling for property conditions, but only 7.9% after controlling for them. In a subsequent study, Clauret et al. (2011) obtained estimates of the discount for houses that were sold in three types of distress conditions: short sale, in-process-of-foreclosure, and REO property. They define a short sale as a transaction in which the lender allows the owner to sell the property even though the proceeds are usually insufficient to cover the loan balance. An in-process-of-foreclosure transaction is described as a property in default that is sold by the owner. Finally, an REO sale is one where the lender takes possession of the property and sells the home to a new

owner. After controlling for the property condition, their results revealed discounts of 5.6% for short sale, 10.3% for properties under foreclosure, and 13.5% for REO properties, all relative to a no-default normal market sale (Clauret & Daneshvary, 2011). The magnitude of the foreclosure effect is similar to prior findings by Carroll et al. (1997), with the magnitude of the foreclosure discount ranging between 8.5% and 9.7%.

Richardson (2012) investigated the divestiture of distressed commercial real estate in a sample of 18,751 office building transactions spanning the period from 2006 to 2010. The author estimated the price discounts for office properties sold under detrimental conditions, including the short sale, auction sale, and REO sale, relative to a control group of comparable office properties. The results indicated an ordinal ranking of price discounts when office properties are sold in distress conditions, showing a 33.8% discount for REO sales, 23.6% discount for short sales, and a 13.8% discount for auction sales, all relative to office properties sold under normal conditions. Moreover, property characteristics such as age and size, and market conditions were important factors in explaining the distress price discount.

A number of conclusions can be drawn from the literature review. First, previous research suggests that properties sold under foreclosure sell for significant discounts from market prices. Second, some studies provide mixed results on the magnitude of the foreclosure discount. Although some studies provide evidence of a foreclosure discount ranging between 22% and 24% (Forgey et al., 1994; Hardin & Wolverson, 1996; Shilling et al., 1990), other studies document a negligible and statistically insignificant price discount (Carroll et al., 1997). Third, most of the previous studies focus on the residential sector with limited research in the commercial sector. Finally, previous research has focused on the REO distress condition and ignored other distress conditions such as short sales, in-process foreclosure sales, and auction sales.

### *Lodging Real Estate Research*

The lodging real estate literature is limited with researchers using hedonic models to explain property values. For example, Corgel (1997) used hedonic models to estimate the real estate values of two publicly traded firms. His analysis of two hotel REITs finds premiums of 12% to 75% that exceed property values in 1994. In another study, Roubi and Littelljohn (2004) specified a hedonic model to explain hotel values in the United Kingdom. Their results highlighted the importance of size, local economic conditions, recreational facilities, year of sale, meeting rooms, location, and chain affiliation as important factors explaining property value.

A similar study by O'Neill (2004) estimated a price equation for U.S. hotels that includes both hotel financial performance variables and local market controls. He

confirmed that net operating income (NOI), average daily rates (ADR), and occupancy rate are the most important determinants of hotel prices. However, other property characteristics such as hotel type, location, year open, property age, and year of sale were found to be insignificant predictors. Hotel renovations are also important in countering obsolescence (Corgel, 2007). In contrast to O'Neill's (2004) findings, published room rate, property age, location, chainscale, and year of sale were important determinants of hotel prices in Corgel's (2007) study.

Liu et al. (2012) introduced the hedonic pricing model as one of three metrics to monitor hotel transaction prices on a quarterly basis. The authors regress the transaction prices on hotel attributes such as the number of units, the hotel's age, the number of floors, and the location. The indices were constructed using data from CoStar and Real Capital Analytics (RCA), providing benchmarks for tracking hotel prices as well as enabling a comparison of hotel performance relative to other property types. Unfortunately, the indices track only movements in non-distress transaction prices. In another study, Blal and Graf (2013) investigated the effects of physical characteristics of lodging properties on price discounts estimated from the standardized residuals of a hedonic valuation model of 10,722 lodging transactions in the United States from 1980 to 2008. Their results indicated that physical characteristics (number of rooms, amenities, and meeting space) were significant determinants of price discounts with significance of the normative characteristics varying across hotel segments. Although their study used a sample of non-distressed hotel transactions, the authors also failed to quantify the magnitude of the price discounts from market prices. More recently, Corgel et al. (2015) tested two hedonic pricing models to evaluate the relative contributions of property, city, and capital market determinants in a sample of hotel transactions spanning the period from 2005 to 2010, concluding that the inclusion of variables measuring city and capital market effects added little to the explanatory power of the hedonic model. Finally, Hodari et al. (2017) employed a hedonic valuation model to investigate the effect of hotel management and lease agreements on market value in a sample of 442 hotel transactions in the United Kingdom between 2000 and 2015. Their results show that hotels encumbered by hotel management agreements and lease agreements sell at a premium relative to unencumbered properties with varying effects across geographic areas and economic periods.

It is clear that although there are a number of lodging research studies on hotel valuation and pricing, little research exists on lodging financial distress. None of the above-mentioned lodging studies focus on hotels in any distress conditions or their discount pricing. The current study contributes to the academic literature by extending prior lodging real estate research to investigate distress hotel

pricing, the magnitude of the foreclosure discount, and the characteristics that influence these transaction prices.

## Method

### Hedonic Model Specification

Multiple regression provides the framework for regressing the transaction price on property characteristics such as the number of rooms, hotel age, scale, and location. Each hotel characteristic and distress condition has a market of its own and hence a hedonic price (Liu et al., 2012). Consistent with prior research, the current study employs a log-linear hedonic pricing model for the empirical analysis. Hotel sales price is specified as a function of property and location characteristic with the dependent variable defined as the natural logarithm of the transaction sales price.

Following prior research (Clauret & Daneshvary, 2011; Richardson, 2012), the current study uses indicator variables to designate three distress hotel conditions: short sale, auction/distress sale, and REO sale. A short sale is defined as the sale of a hotel in distress prior to any foreclosure filing. An auction/distress sale defines a hotel sale prior to or following the initiation of foreclosure proceedings, or during the foreclosure process. This definition includes hotels sold by the borrower through an auction sale prior to any foreclosure filing or sold during the foreclosure process, either to a third party prior or in a public foreclosure auction. Finally, an REO sale defines the sale of a financially distressed hotel after the lender has foreclosed on the property and taken the title to it (Clauret & Daneshvary, 2011). Distinguishing between these financially distressed conditions (short sale, auction/trustee sale, and REO sale) will permit a comparison of distress prices and the magnitude of the foreclosure discount relative to a control group of non-distress hotel sales. Since judicial foreclosure is costlier and takes longer to resolve in a judicial state, a dummy variable that is equal to 1 indicates the location of the hotel in a judicial foreclosure state; otherwise, it is located in a nonjudicial state.

To examine whether different hotel attributes influence the price discount, the current study includes several proxies for hotel type, location, and segment. Hotel size is measured as the log of the number of rooms to control for size effects. Hotel age is measured from the year the hotel was built until the sale or disposal date. Prior research shows that hotels securitized by commercial mortgage-backed security (CMBS) are valued significantly higher than non-CMBS hotels (Singh, 2017). A dummy variable captures hotel securitization. Researchers have used hotel location and chain-scale to explain variations in hotel market values (Corgel, 2007; O'Neill, 2004). The current study employs indicator variables to capture hotel location and hotel quality following Smith Travel Research's (STR) well-established

definitions for these characteristics. For example, a luxury hotel indicates a higher quality hotel with a higher rate, whereas an economy hotel indicates a lower quality hotel with a lower rate. Moreover, hotels in the luxury and upper upscale class tend to be full-service while those in the upscale, midscale, and economy class are generally classified as limited service, select service, or extended-stay hotels. Indicator variables in the empirical model designate each of these different hotel types to capture hotel quality. An additional indicator of hotel condition is still in operation or is permanently closed after it is sold. Closed hotels are more likely subject to neglect by the hotel owner. A hotel is permanently closed if it is to be demolished to make way for other development or converted to some other highest and best use. In these cases, there is no incentive for the owner to address any deferred maintenance or make the necessary investments in capital improvements to retain value if the property is to be demolished.

In the empirical model specification, transaction prices are regressed on distress conditions (short sale, auction/distress sale, and REO) and hotel characteristics such as hotel size, age, location, and scale. More specifically, the multiple regression model takes the following functional form:

$$\begin{aligned} \text{Ln}(\text{Price}) = & \beta_0 + \beta_1 \text{Size} + \beta_2 \text{Age} + \sum \beta_4 \text{Condition}_i \\ & + \sum \beta_4 \text{Type} + \beta_5 \text{CMBS} + \beta_6 \text{Judicial} \\ & + \beta_7 \text{Closed} + \sum \beta_7 \text{Location}_i + \sum \beta_9 \text{Scale}_i \\ & + \sum \beta_{10} \text{Market}_i + \sum \beta_{11} \text{Year}_i + \sum \beta_{12} \text{Qtr}_i + \varepsilon \end{aligned}$$

where *Price* is the natural log of sales price and *Size* is the hotel size measured as the natural log of the number of rooms. *Age* is the natural log of property age measured as the difference between the year the hotel is built and the year it is sold. *Hotel Type* is defined as follows: full service, limited service (omitted group), select service, and extended-stay. *Condition* defines the various states of financial distress with the following types: non-distress sale (omitted group), auction/distress sale, REO sale, and short sale. As an alternative variable to capture the magnitude of the foreclosure discount, the distress condition is replaced with a foreclosure variable with the following indicators: non-distressed sale (omitted group), auction/distress sale in the absence of foreclosure, and auction/distress sale in the presence of foreclosure (including REO sales). *CMBS* is a dummy control for the effect of securitization that is equal to 1 if a hotel is collateralized by CMBS; otherwise, it is equal to 0. *Judicial* represents a dummy variable that is equal to 1 for a property located in a judicial foreclosure state; otherwise, it is 0 for a nonjudicial state. *Closed* is a dummy variable that is equal to 1 if a hotel is permanently closed; otherwise, it is 0 for a property that is still operating as a hotel after a sale. *Hotel location* as defined by STR include the following categories: small metro/town, interstate, resort, airport, suburban (omitted group), and

urban. Hotel *scale* as defined by STR include the following segments: independents (omitted group), economy, midscale, upper midscale, upscale, upper upscale, and luxury. Additional indicator variables control for 158 markets (*Market*) across the United States in which the properties are located. Finally, fixed-effects control for time include the year (*Year*) and quarter (*Qtr*) of sale, and  $\varepsilon$  is the error term.

### Sample Data

Lodging transaction prices for distressed and non-distressed hotels are obtained from RCA and CoStar, two of the largest sources of commercial real estate information. The sample spans the period from 2008 through the first quarter of 2016. Both firms track commercial property investment trends and transactions including performance and resolution of distressed commercial mortgage loans. Consistent with Liu et al. (2012), bulk and portfolio sales, observations with missing sales price, allocated, appraised, and street talk prices were excluded from the analysis. Information obtained from these sources include the sales price, distressed condition (short sale, distress sale, auction/distress sale, REO sale), property size (rooms), year built, date of sale, disposition method, CMBS deal, franchise company, and service type. A number of asset dispositions are classified by CoStar as distress sales. Some of these properties were subject to foreclosure, whereas others were disposed prior to any initiation of foreclosure. Distress sales are combined with auction sales in the current study. Nevertheless, alternative model specifications test the robustness of these classifications.

Distressed and non-distressed property physical addresses are individually matched with STR's Census database to obtain information on individual hotel characteristics such as location and region and indicators to determine whether a hotel is closed or no longer in operation. A hotel is permanently closed when it ceases operating as a hotel. It is common for hotel buyers to switch brands, go from branded to independent or vice versa, or upgrade/downgrade to a higher/lower segment upon acquiring a hotel property. Therefore, to determine the hotel chainscale at the time of sale, STR's annual publication of chain scales classifies hotel brands into their respective chainscale segment. The initial sample comprised 6,538 observations. Consistent with prior research and to reduce the influence of outliers (Corgel, 2007), hotels with less than 20 rooms and transaction with prices less than US\$500,000 were excluded from the analysis. The final sample includes 6,340 hotels. The sample does not contain any repeat sales transactions, which simplifies the comparison of distressed prices relative to market prices and in estimating the magnitude of the price discount. Therefore, the distress discount is captured when the hotel falls into financial distress for the first time during and after the GFC.

**Table 1.**  
Hotel Frequency Statistics ( $n = 6,340$ ).

Property Characteristics	No.	Percent
Non-distressed	3,961	62.5
Distressed	2,379	37.5
Auction/Trustee/Distress sale	1,053	16.6
REO sale	1,290	20.3
Short sale	36	0.6
Foreclosure	1,831	28.9
Judicial foreclosure state	2,515	39.7
Nonjudicial foreclosure state	3,825	60.3
CMBS	1,231	19.4
Non-CMBS	5,109	80.6
Limited service	4,026	63.5
Full service	1,345	21.2
Select service	636	10.0
Extended stay	333	5.3
Airport	449	7.1
Interstate	553	8.7
Resort	682	10.8
Small metro/Town	958	15.1
Suburban	2,732	43.1
Urban	966	15.2
Independents	1,691	26.7
Economy	919	14.5
Midscale	904	14.3
Upper midscale	1,616	25.5
Upscale	711	11.2
Upper upscale	401	6.3
Luxury	98	1.5
East North Central	686	10.8
East South Central	302	4.8
Middle Atlantic	478	7.5
New England	280	4.4
Mountain	603	9.5
Pacific	1,225	19.3
South Atlantic	1,645	26.0
West North Central	325	5.1
West South Central	796	12.6

Note. REO = real estate owned; CMBS = commercial mortgage-backed security.

## Empirical Results

### Descriptive Statistics

Out of 6,340 hotels, 3,961 hotels or 63% of the sample comprised non-distressed hotels, whereas the remaining 2,379 or 38% represent the distressed hotel sample. Of the distressed hotels, 1,053 properties (17%) were disposed via an auction/distress sale and the remaining 1,290 (20%) hotels via an REO sale. As shown in Table 1, short sales represent less than 1% of the overall sample, which is a relatively low observation. Aside from REOs, 541 of

**Table 2.**  
**Sample Descriptive Statistics.**

Variables	N	M	Median	SD	Minimum	Maximum
<b>Panel A: Total</b>						
Sales price (\$mil)	6,340	15.26	5.00	38.81	0.50	717
Price/key (US\$)	6,340	90,479	54,516	121,690	1,745	1,857,143
Size (no. of rooms)	6,340	140	103	142	20	2,955
Age (years)	6,340	27	24	22	1	261
Condition	6,340	0.83	0	1.22	0	4
Type	6,340	0.57	0	0.87	0	3
CMBS	6,340	0.19	0	0.40	0	1
Judicial	6,340	0.40	0	0.49	0	1
Closed	6,340	0.08	0	0.27	0	1
Location	6,340	1.8	1	1.89	0	5
Scale	6,340	2.05	2	1.65	0	6
Region	6,340	3.63	4	2.54	0	8
<b>Panel B: Price/key</b>						
Non-distressed	3,961	107,319	67,532	130,997	4,274	1,857,143
All distressed	2,379	62,441	34,340	98,183	1,745	1,428,571
Auction/Trustee sale	1,053	77,837	39,130	120,759	1,745	1,428,571
REO sale	1,290	50,279	31,112	74,129	2,324	945,946
Short sale	36	47,878	37,861	38,458	9,434	173,611
Foreclosure sale	1,831	57,228	32,782	88,486	1,745	953,947

Note. Price/key is measured as sales price/number of rooms. Condition defines the distress condition as non-distress, auction/trustee sale, REO sale, and short sale. Type defines hotel type as limited service, full service, select service, and extended stay. CMBS equals 1 if a hotel is securitized otherwise 0. Judicial is equal to 1 if a hotel is located in a judicial foreclosure state; otherwise, it is a nonjudicial state. Location includes six categories: interstate, resort, small metro/town, airport, suburban, urban. Scale defines the hotel chainscale into seven segments as independent, economy, midscale, upper midscale, upscale, upper upscale, and luxury. Market includes 158 U.S. markets across the United States. Panel B provides a breakdown of the price per key by distress condition. Foreclosure sale defines a distress sale in the presence of foreclosure (including REO sales). CMBS = commercial mortgage-backed security; REO = real estate owned.

the 1,053 properties sold via an auction/distress sale are in the process of foreclosure. Hence, a total 1,831 properties or 77% of the distressed hotel sample are subject to foreclosure. The data indicate that 8% of the hotels sold have permanently closed or ceased operations for unknown reasons and the remaining 92% are still operating as hotels. Of the 510 hotels that ceased operations, 271 or 53.1% were distressed. More than half of the sample hotels (60%) are located in nonjudicial states with the remaining 40% of hotels located in judicial foreclosure states. Almost 20% of hotels are collateralized by CMBS with the remaining 80% non-securitized.

It is not surprising that limited service hotels make up almost two thirds (64%) of the sample hotels, followed by full-service hotels (21%), select service (10%), and extended-stay hotels (5%). Close to half (43%) of the sample hotels are located in suburban areas followed by urban (15%) and small metro/town (15%) locations. Independent hotels and hotels in the upper midscale segment account for more than 50% of the sample. Of the 1,691 independent hotels, 704 are distressed and the remaining 987 non-distressed. Similarly, 551 hotels in the upper midscale segment and 298 hotels in the midscale segment are distressed.

Taken together, these three chainscale segments account for 69% of total financially distressed hotels. As most of the independent hotels are in the lower price class, the data indicate that financial distress predominantly affects hotels in the economy (660), midscale (434), and upper midscale (636) segments, representing 73% of the total distressed hotels. Finally, 45% of hotels are located in Pacific and South Atlantic regions. The top five states represent 44% of all distressed hotels led by Florida (367), California (323), Georgia (142), Texas (137), and Arizona (85).

Descriptive statistics on the overall sample are presented in Panel A of Table 2, whereas Panel B highlights the average price per key for distressed hotels while also providing some preliminary guidance on the average discount relative to market prices. The average hotel has 140 rooms and 27 years of age at the time of sale. It traded at a price of US\$15.26 million or US\$90,479 per key. A breakdown of the distress conditions reveals some interesting findings. Non-distressed hotels transacted at an average price of US\$107,319 per key. Using this price as a benchmark for market prices, the magnitude of the price discount can be easily determined using the median values. Distressed hotels traded at an average discount of 41.8%

**Table 3.**  
Average Price/Key by Selected Distress Condition and Year.

Year	N	Non-Distress Sale	N	REO Sale	REO Discount	N	Foreclosure Sale	Foreclosure Discount
2008	539	92,740	16	67,837	26.9	26	54,712	41.0
2009	219	76,954	58	34,340	55.4	90	39,977	48.1
2010	262	110,149	147	39,928	63.8	238	55,979	49.2
2011	370	114,584	245	47,909	58.2	380	57,897	49.5
2012	461	105,869	259	50,316	52.5	342	55,962	47.1
2013	573	108,043	208	47,476	56.1	314	58,302	46.0
2014	716	110,009	206	49,610	54.9	262	51,013	53.6
2015	766	115,470	135	66,980	42.0	158	71,452	38.1
2016	55	164,795	16	125,463	23.9	21	111,451	32.4
Ave.	3,961	107,319	1,290	50,279	53.2	1,831	57,228	46.7

Note. Excludes short sales due to limited number of observations. Data for 2016 are limited to first quarter only. Foreclosure sale includes REO sales and auction/trustee/distress sales with foreclosure. Discount percent is computed as  $1 - (\text{REO sale or foreclosure sale price per key} / \text{non-distress sale price per key})$ . REO = real estate owned.

( $1 - (62,441/107,319)$ ). The average discount per key for an auction/distress sale is substantially lower than an REO sale (53.1%) when compared with a non-distressed sale. Similarly, an REO property trades at a 35.4% discount relative to an auction/distress sale. The number of short sales limits the ability to draw any meaningful insights other than the observation that median short sales per key are higher than REO sales per key but lower than auction/distress sales per key. The presence of foreclosure in distressed sales indicates an average foreclosure discount of 46.7% relative to non-distressed sales. The magnitude of this discount is substantially higher than the discount reported in existing studies in commercial and residential real estate sectors. Moreover, the magnitude of these discounts is consistent with numbers reported in the STR HOST Almanac from 2012 to 2015. For example, in the 2015 HOST Almanac, it was reported that the average distressed price of a distressed asset was US\$114,000 per key, whereas the price of a performing asset was US\$239,000 per key (STR Analytics, 2012–2015). Based on these numbers, one can conclude that a distressed asset sold at a discount of 52.3% ( $1 - 114,000/239,000$ ) relative to the market price of a non-distressed asset.

Table 3 reports the variations in these discounts from the onset of the GFC in 2008 through the first quarter of 2016. The magnitude of the foreclosure (including REO sales) discount rose from 41% in 2008 to reach a peak of 54% in 2014 before trending lower to reach 32% in early 2016. Even more notable is the REO discount, which increased dramatically from 27% in 2008 to a high of 64% in 2010 before starting to trend lower thereafter.

### Probit Model Regression

The empirical analysis in this section considers the use of a probit model to test for significant differences between

financially distressed and non-distressed properties. The binary dependent variable equals 1 for a distress sale and 0 for a non-distress sale. This dependent variable is regressed on a set of control variables that proxy for property characteristics. A significantly positive (negative) coefficient indicates that an increase in the predictor will lead to an increase (decrease) in the predicted probability of distress. Table 4 presents the results of this analysis. In place of the regression coefficients, average marginal effects coefficients are presented to ease interpretation. The likelihood ratio chi-square indicates that the model is statistically significant at the 1% level, that is, it fits significantly better than a model with no predictors. Even though descriptive analysis indicates that distressed hotels are larger and older than non-distressed hotels, the results indicate no significant differences in hotel size. However, hotel age appears to be a significant determinant of distress. A one-unit increase in the age of hotel increases the probability of distress by 4.2%. Similarly, the probability of distress is 6.7% higher than a limited service hotel. Although select service and extended-stay hotels face slightly higher probability of distress, the probabilities are insignificant. Hotels secured by CMBS and hotels that are slated for closure or permanently closed also face significantly higher probability of distress (13.2% and 9.9%, respectively) relative to non-CMBS and hotels still in operation. By location, resort hotels and hotels located in urban areas face significantly lower probability of distress. Specifically, the probability of distress is 9% and 10% less for an urban and resort hotel, respectively, when compared with a suburban hotel. Finally, the results indicate significantly lower probability of distress for all hotel segments except economy hotels. The lower probability of distress varies between 5.6% for a midscale hotel to 10.4% for an upper upscale hotel relative to independent hotels.



**Table 4.**  
**Probit Regression of Distressed Hotel Prices.**

Dependent Variable	Marginal Effects
	Distress
Independent variables	
Constant	0.375***
Ln(Size)	0.010
Ln(Age)	0.042***
Hotel type	
Full service	0.067***
Select service	0.026
Extended stay	0.031
CMBS	0.132***
Judicial	0.021
Closed	0.099***
Location	
Interstate	0.005
Resort	-0.102***
Small metro/Town	0.002
Airport	0.004
Urban	-0.088***
Scale	
Economy	0.003
Midscale	-0.056***
Upper midscale	-0.068***
Upscale	-0.069**
Upper upscale	-0.104***
Luxury	-0.060***
Market: 158 markets	Yes
Year: 9 years	Yes
Qtr: 4 quarters	Yes
N	6,340
Pseudo R <sup>2</sup>	.167
Wald $\chi^2$	1,155***

Note. Dependent variable is equal to 1 if a hotel is financially distressed, otherwise 0. Hotel size and age are logged. Coefficients represent average marginal effects. All other variables are defined in the footnote of Table 2. Results for market, year, and qtr are suppressed to conserve space. Fixed-effects controls for time include year and quarter of sale. CMBS = commercial mortgage-backed security.

\*Significance at 10% levels. \*\*Significance at 5%. \*\*\*Significance at 1% (respectively, based on heteroscedasticity-robust standard errors).

### Multiple Regression Analysis

Results of the multiple regression analysis are reported in Table 5. The natural log of the sales price is regressed on property characteristics and distress conditions. The models are estimated using heteroskedasticity-robust standard errors. Multicollinearity is a nonissue given variance inflation factors (VIF) less than 5 for various model specifications. In the interest of conserving space, the results for market and time are suppressed. Model 1 serves as the primary model of interest.

The independent variables explain 76% of the variation in the dependent variable, the natural log of the sales price. Hotel size is positive and significant. A 10% increase in the number of rooms is associated with a 6.9% ( $1.1^{0.066} - 1 = 0.066$ ) increase in price. In contrast, hotel age is negative and significant. A 10% increase in hotel age is associated with a 2.2% decline in price. Older hotels may require greater expenditures on capital improvements. The key variable of interest is the distress condition, measured with indicator variables for an auction/distress sale, an REO sale, and a short sale. The results show significant and negative coefficients for all distress conditions. The estimated discount is 32.6% ( $\exp(-0.395) - 1$ ) for an auction/distress sale, 44.1% for an REO sale, and 29.7% for a short sale, all relative to a non-distress sale. The spread between an REO sale and auction sale or short sale is about 12%. The magnitude of these discounts relative to market values are economically significant and significantly higher than previous findings in the commercial real estate literature. A Wald test of the equality of the coefficients shows no significant difference ( $F = 0.19, p = .6608$ ) between an auction/trustee sale and a short sale. The null hypothesis of the equality of the coefficients between an auction sale and REO sale ( $F = 44.9, p = .0000$ ) and between a short sale and REO sale ( $F = 5.6, p = .0181$ ) is rejected at the 1% and 5% levels, respectively. These results suggest that short sales and auctions have the lowest discounts relative to an REO sale and appear to be the most effective disposal methods for distressed hotels.

The coefficients for hotel type are positive and significant. Full-service, select service, and extended-stay hotels trade at significantly higher prices than limited service hotels. Full-service hotels, on average, sell at a premium of 64.9% ( $\exp(0.500) - 1$ ) over a limited service hotel, followed by extended stay-hotel and select service hotels with premiums of 23.4% and 17%, respectively. Full-service hotels tend to be larger, provide more amenities, and are more complex to operate, whereas extended stay and select service hotels are more efficient and profitable (Mandelbaum, 2017; O'Neill, 2004). The results also show that hotels collateralized by CMBS sell at a premium of 15.8% relative to non-CMBS hotels. On the other hand, hotels located in judicial foreclosure states sell at a discount of 16.1%. Hotel that were closed permanently transacted at an 12.5% discount relative to hotels that were still operating.

The sales price of hotels located on interstates are significantly lower (9.2% discount) relative to suburban hotels; whereas hotels in resort and urban areas are sold at significantly higher values (58.6% and 42.5% premiums, respectively) over suburban hotels. Hotel scale captures the quality of the hotel relative to independent hotels. The indicator variables for hotel scale is significant at the 1% level for all hotel segments except upper midscale. The results show

**Table 5.**  
**Regression Analysis of Distressed Hotel Prices.**

Dependent Variable	Model 1	Model 2	Model 3	Model 4
	Ln(Price)	Ln(Price)	Ln(Price)	Ln(Price)
Independent variables				
Constant	13.637***	13.646***	13.376***	13.637***
Ln(Size)	0.704***	0.703***	0.670***	0.704***
Ln(Age)	-0.232***	-0.233***	-0.309***	-0.232***
Condition				
Auction/Trustee	-0.395***			-0.393***
Distress sale				-0.405***
REO	-0.582***		-0.220***	-0.582***
Short sale	-0.352***		-0.042	-0.352***
Foreclosure				
No foreclosure		-0.355***		
With foreclosure		-0.539***		
Hotel type				
Full service	0.500***	0.500***	0.524***	0.500***
Select service	0.157***	0.157***	0.160**	0.156***
Extended stay	0.210***	0.203***	0.311***	0.210***
CMBS	0.147***	0.145***	0.111***	0.147***
Judicial	-0.175**	-0.178**	-0.651***	-0.175**
Closed	-0.133***	-0.131***	-0.183***	-0.133***
Location				
Interstate	-0.097***	-0.096***	-0.188***	-0.097***
Resort	0.461***	0.460***	0.521***	0.461***
Small metro/Town	0.032	0.028	-0.100**	0.032
Airport	-0.021	-0.024	0.032	-0.021
Urban	0.354***	0.356***	0.388***	0.354***
Scale				
Economy	-0.325***	-0.321***	-0.379***	-0.325***
Midscale	-0.190***	-0.192***	-0.189***	-0.190***
Upper midscale	-0.024	-0.023	0.034	-0.024
Upscale	0.221***	0.222***	0.235***	0.222***
Upper upscale	0.441***	0.444***	0.507***	0.441***
Luxury	0.988***	0.981***	10.235***	0.989***
Market: 158 markets included	Yes	Yes	Yes	Yes
Year: 9 years included	Yes	Yes	Yes	Yes
Qtr: 4 quarters included	Yes	Yes	Yes	Yes
N	6,340	6,340	2,379	6,340
R <sup>2</sup>	.757	.756	.677	.757
F value	93***	93***	69***	92***
VIF	1.71	1.71	2.08	1.70

Note. Dependent variable is the natural log of the sales price. Hotel size and age are logged. All other variables are defined in the footnote of Table 2. Results for market, year, and qtr are suppressed to conserve space. VIF is the variance inflation factor as an indicator of multicollinearity. Fixed-effects controls for time include year and quarter of sale. REO = real estate owned; CMBS = commercial mortgage-backed security.

\*Significance at 10% levels. \*\*Significance at 5%. \*\*\*Significance at 1% (respectively, based on heteroscedasticity-robust standard errors).

that economy and midscale hotels trade at a discount relative to independent hotels, whereas upscale, upper upscale, and luxury hotels sell at a premium relative to independent hotels. The discount is highest for an economy hotel and the premium is highest for a luxury hotel consistent with the observation that prices increase with hotel quality. Although

the coefficients for market and time are omitted for brevity from Table 5, the unreported results indicate that relative to the year 2008, the coefficient for the time trend for all years except 2014 are significant at the 5% level of significance. The data show a significant discount from 2009 to 2013, no significant difference in 2014, and a significant premium in

2015 and 2016. The discount shows a downward trend from a high of 21.5% in 2009 to a low of 7.4% in 2013, all relative to 2008.

The auction/distress sales proxy in Model 1 include properties that were in the process of foreclosure as well as properties that sold prior to any filing of foreclosure. To investigate the magnitude of the foreclosure discount, distressed sales in Model 1 were separated into two groups: those in the process of foreclosure (including REO sales) and those not subject to foreclosure. This foreclosure proxy replaces the distress condition variables in Model 1. The results of this foreclosure proxy are reported in Model 2 in Table 5. The coefficient estimates of the control variables for property and location attributes are relatively unchanged from Model 1. More importantly, the coefficient estimates for the foreclosure indicator variables are statistically significant and negative at the 1% level. The discount is 30% for hotels without foreclosure and 42% for hotels in the process of foreclosure (including REO sales), all relative to non-distressed sales. The null hypothesis that both coefficients are equal is rejected at the 1% level of significance ( $F = 29.9, p = .0000$ ). Thus, the magnitude of the foreclosure discount is significantly higher for hotels subject to foreclosure (including REO sales) relative to the sale of distressed hotels prior to any foreclosure filing.

Finally, Model 1 is re-estimated by removing non-distressed hotels from the sample and using only a subset of distressed hotels. The results are presented as Model 3. With the exception of short sales and hotels located in small towns, the results for the control variables are largely consistent with those in Model 1. Again, there is a statistically significant difference between an REO sale and an auction/trustee sale (reference group), but no significant difference between a short sale and an auction/trustee sale. The estimated REO discount spread is 20% relative to an auction/trustee sale.

### *Sensitivity Analysis of Distress Condition*

Some of the sample hotel transactions are labeled as “distress” sales. The majority of these distress sales occurred prior to any foreclosure proceeding and a few were subject to foreclosure. There is no additional information on the disposal method for these properties. Consequently, in estimating Model 1, these distressed sales were grouped with auction sales. To test whether the results are driven by error in classifying these properties, Model 1 is re-estimated by introducing an additional indicator variable to represent distress sales as a separate category. Model 4 reports the results of this analysis, showing the short sales discount (29.7%) to be the lowest relative to non-distress sales, followed by auction/trustee sales (32.5%), distress sales (33.3%), and REO sales (44.1%). However, a test of the equality of the coefficients in Model 3 produced no significant differences

between auction sales, distress sales, and short sales. On the other hand, the coefficients between REO sales and all other distress conditions are significantly different at the 1% level. These results suggest that, with the exception of REO sales, any of the disposition methods are viable alternatives for the disposal of distressed hotels.

Aside from introducing a separate indicator variable for distress sales, one could also argue that some of these distress sales are in fact short sales since the transactions occurred prior to any foreclosure process. Again, to test the sensitivity of the results, distress sales prior to foreclosure are combined with short sales, whereas distress sales that occur during the foreclosure process are grouped with auction sales. The unreported results of this analysis are relatively unchanged. The auction/distress discount is 32.5%, whereas the short sale discount is 32.7%. A test of the equality of the coefficients between auction/trustee sales and short sales is insignificant ( $F = 0.00, p = .9577$ ).

Finally, the foreclosure process is incorporated into Model 1. Aside from indicators for short sales and REO sales, auction/distress sales were separated into two categories: with and without foreclosure. The unreported results of this analysis are relatively unchanged from the main analysis in Model 1. A test of the equality of the coefficients again finds significant differences in the discount between REO sales and the other three distress conditions. Notable in these findings is the significant difference in the coefficients between REO sales and auction/distress sales subject to foreclosure. That is, hotels in the process of foreclosure that were disposed via an auction/distress sale transacted at lower discounts (35.3%) than hotels disposed via an REO sale (44.2%). The spread between these two distress conditions is an estimated 9%, which suggests an additional “stigma” effect of foreclosure. These results are robust to alternative specifications of the distress condition variable, confirming a lower discount for an auction/distress or short sale, and a significantly higher discount for an REO sale.

### *Supplementary Analysis*

Although the main results provide evidence of the effect of hotel characteristics on distress pricing, there is no indication how the discount influences hotel characteristics such as property size, age, hotel type, location, and scale. Therefore, the current study is extended by investigating whether hotel characteristics influence the discount pricing of distressed hotels. The regression analysis is performed with interactions between the distressed conditions and property characteristics, based on Model 1 in Table 5. The interactions are explored in separate models to properly assess the relationship between discount pricing and property characteristics. Due to the limited number of observations, short sales are combined with auction/trustee sales. Excluding them does not change the results of the analysis.

**Table 6.**  
Influence of Distress Condition and Property Characteristics on Distressed Pricing.

Dependent Variable	Model 5	Model 6	Model 7
	Ln(Price)	Ln(Price)	Ln(Price)
Independent variables			
Constant	13.651***	13.509***	13.630***
Ln(Size)	0.699***	0.707***	0.705***
Ln(Age)	-0.232***	-0.196***	-0.233***
Condition			
Auction/Trustee	-0.719***	-0.075	-0.378***
REO	-0.350**	-0.140	-0.561***
Hotel type			
Full service	0.499***	0.494***	0.500***
Select service	0.160***	0.156***	0.158***
Extended stay	0.212***	0.206***	0.212***
CMBS	0.149***	0.141***	0.145***
Judicial	-0.174**	-0.175**	-0.171**
Closed	-0.131***	-0.121***	-0.025
Location			
Interstate	-0.097***	-0.095***	-0.097***
Resort	0.458***	0.461***	0.463***
Small metro/Town	0.029	0.031	0.032
Airport	-0.020	-0.023	-0.019
Urban	0.353***	0.351***	0.353***
Scale			
Economy	-0.326***	-0.334***	-0.330***
Midscale	-0.193***	-0.195***	-0.193***
Upper midscale	-0.026	-0.021*	-0.025
Upscale	0.217***	0.233***	0.218***
Upper upscale	0.442***	0.443***	0.439***
Luxury	0.988***	0.982***	0.985***
Condition × Size interaction			
Auction/Trustee × Size	0.068*		
Condition × Age interaction			
Auction/Trustee × Age		-0.102***	
REO × Age		-0.143***	
Condition × Close interaction			
Auction/Trustee × Close			-0.178**
REO × Close			-0.228***
Market: 158 markets included	Yes	Yes	Yes
Year: 9 years included	Yes	Yes	Yes
Qtr: 4 quarters included	Yes	Yes	Yes
N	6,340	6,340	6,340
R <sup>2</sup>	.757	.758	.757
F value	93***	94***	92***
VIF	2.85	2.07	1.72

Note. Dependent variable is the natural log of the sales price. Hotel size and age are logged. All other variables are defined in the footnote of Table 2. Results for market, year, and qtr are suppressed to conserve space. VIF is the variance inflation factor as an indicator of multicollinearity. Fixed-effects controls for time include year and quarter of sale. REO = real estate owned; CMBS = commercial mortgage-backed security.

\*Significance at 10% levels. \*\*Significance at 5%. \*\*\*Significance at 1% (respectively, based on heteroscedasticity-robust standard errors).

Interactions with proxies for CMBS and judicial foreclosure produced no significant interactions, and therefore these results have been omitted. The relationship between

distress condition with hotel size, hotel age, and closure is shown in Table 6 (Models 5–7), whereas Table 7 (Models 8–10) explores the relationship between pricing and hotel

**Table 7.**  
**Influence of Distress Condition and Property Characteristics on Distressed Pricing.**

Dependent Variable	Model 8	Model 9	Model 10
	Ln(Price)	Ln(Price)	Ln(Price)
Independent variables			
Constant	13.654***	13.637***	13.677***
Ln(Size)	0.702***	0.700***	0.707***
Ln(Age)	-0.233***	-0.230***	-0.237***
Condition			
Auction/Trustee	-0.449***	-0.368***	-0.438***
REO	-0.574***	-0.557***	-0.730***
Hotel type			
Full service	0.490***	0.501***	0.490***
Select service	0.139***	0.158***	0.154***
Extended stay	0.135***	0.212***	0.217***
CMBS	0.149***	0.147***	0.139***
Judicial	-0.167**	-0.172**	-0.163**
Closed	-0.134***	-0.139***	-0.123***
Location			
Interstate	-0.098***	-0.029	-0.093***
Resort	0.461***	0.419***	0.457***
Small metro/Town	0.032	0.077**	0.039
Airport	-0.021	-0.027	-0.025
Urban	0.355***	0.365***	0.352***
Scale			
Economy	-0.326***	-0.324***	-0.346***
Midscale	-0.193***	-0.197***	-0.251***
Upper midscale	-0.028	-0.028	-0.091***
Upscale	0.225***	0.219***	0.147***
Upper upscale	0.443***	0.440***	0.399***
Luxury	0.987***	0.980***	0.800***
Condition × Type interaction			
Auction/Trustee × Full service	0.131**		
Auction/Trustee × Extended stay	0.330***		
Condition × Location interaction			
Auction/Trustee × Interstate		-0.257***	
Auction/Trustee × Resort		0.146*	
Auction/Trustee × Small metro/Town		-0.139*	
REO × Interstate		-0.126*	
REO × Small metro/Town		-0.122**	
Condition × Scale interaction			
Auction/Trustee × Luxury			0.450**
REO × Midscale			0.234***
REO × Upper midscale			0.238***
REO × Upscale			0.251***
REO × Upper upscale			0.165*
REO × Luxury			0.574***
Market: 158 markets included	Yes	Yes	Yes
Year: 9 years included	Yes	Yes	Yes
Qtr: 4 quarters included	Yes	Yes	Yes
N	6,340	6,340	6,340
R <sup>2</sup>	.758	.758	.758
F value	91***	89***	90***
VIF	1.73	1.74	1.78

Note. Dependent variable is the natural log of the sales price. Hotel size and age are logged. All other variables are defined in the footnote of Table 2. Results for market, year, and qtr are suppressed to conserve space. VIF is the variance inflation factor as an indicator of multicollinearity. Fixed-effects controls for time include year and quarter of sale. REO = real estate owned; CMBS = commercial mortgage-backed security.

\*Significance at 10% levels. \*\*Significance at 5%. \*\*\*Significance at 1% (respectively, based on heteroscedasticity-robust standard errors).

type, location, and scale. To conserve space, only significant interactions are presented (omitted are insignificant) in the tables.

In Model 5, the interaction between auction/distress sale and size is positive and marginally significant at the 10% level. For example, the discount for a 100-room hotel is 33.3% when it is sold at auction. However, for a 200-room (300-room) hotel, the auction discount is lower at 30% (28%).<sup>1</sup> To provide further insights into the effect of size on discounts, the regression was re-estimated with hotel size converted into a categorical variable with the following indicators: less than 100 rooms, between 100 and 200 rooms, and room size greater than 200. Two notable observations are made from the analysis (results omitted). First, the interaction between auction/distress and hotel size is positive and significant at the 1% level for hotel size between 100 and 200 rooms. Second, the interaction between REO sales and hotel size is negative and significant at the 1% level for hotel size larger than 200 rooms. Moreover, the two interaction coefficients are not equal ( $F = 16.9, p = .0000$ ). In particular, the auction/distress discount for hotel size between 100 and 200 rooms is 27.4% relative to 38.2% for size less than 100 rooms. However, the REO discount is 52.8% for hotel size greater than 200 rooms relative to 42.9% for size less than 100 rooms. This additional finding leads to the conclusion that larger hotels are discounted less at auction but subject to greater discounts when sold as REO. Thus, the results on the effect of distress condition and size on pricing favor the sale of larger distressed hotels at auction.

In Model 6, the interaction between distress condition and hotel age is negative and significant at the 1% level for both, auction/distress sale and REO sale. The results suggest that older hotels are sold at greater discounts when they are sold as REO than at auction. For example, a 20-year-old hotel sold at an auction/distress sale is likely to face an estimated discount of 31.7% relative to a discount of 43.3% if sold as REO. Similarly, the REO discount for a 30-year-old hotel is 46.5% relative to a 34.5% discount at auction. To provide further information on the effect of hotel age and distress condition on pricing, the age proxy is converted into a set of indicators with the following categories: age less than 15 years, between 15 and 29 years, and 30 years or more. The results of this analysis (results omitted) indicate an average discount of 26.5% (38.5%) for an auction/distress (REO) sale for hotels less than 15 years of age. For an auction/distress sale, the interaction coefficients are negative and significant at the 10% and 1% levels, respectively, for hotels between 15 and 29 years and older hotels (more than 30 years). However, for an REO sale, the interaction coefficient is negative and significant at the 1% level only for older hotels (more than 30 years). These results suggest that auction/distress sale discounts are lower for newer hotels and higher for older hotels. In particular, the auction/distress discount is 37.2% for older hotels (more than 30 years) and this coefficient is significantly different from the

51.4% discount for an REO sale for an older hotel (more than 30 years). Not only is the age discount lower for newer hotels at auction but the age discount is also significantly lower for an auction/distress sale relative to an REO sale.

The interaction between distress condition and hotel closing in Model 7 is negative and significant at the 5% level for auction/distress and REO sales. The auction sale discount is 31.5% for an active hotel but 42.7% for a closed hotel. On the other hand, the REO discount is 42.9% for an active hotel but 54.6% for a closed hotel. The substantially high REO discount for a closed hotel is indicative of neglect and the deteriorated property quality and condition. Moreover, hotels permanently closed after an REO sale are usually slated for demolition to make way for other developments.

In Model 8 of Table 7, the interaction between hotel type and distress condition is significant only for full-service hotels and extended-stay hotels. The auction/distress discount is 27.2% for a full-service hotel relative to 36.2% for a limited service hotel. However, the extended-stay hotel discount is even less at 11.2% relative to a limited service hotel, an indication that auctions favor extended-stay hotels. The interaction between distress condition and hotel location in Model 9 shows hotels located in small metro/towns and along interstates face the greatest difficulties. The auction/distress sale discount is 46.4% and 39.8%, respectively, for a hotel located along an interstate or in a small metro/town relative to a 30.8% discount for a suburban hotel. It appears that hotels in small metro/towns perform better at auctions than hotels located along interstates. On the other hand, the REO sale discount is much higher at 49.5% and 49.3%, respectively, for these locations relative to a 42.7% discount for a suburban hotel. These results suggest that hotels located in these areas should be sold at auctions rather than as REO. Even resorts fare better with lower auction/distress discounts estimated at 19.8% relative to suburban hotels. Significant interactions are also reported for several hotel segments in Model 10. First, the auction/distress sale of luxury hotels is associated with a premium of 1.2% instead of a discount, compared with a 35.5% discount for an independent hotel. Second, the REO sale discounts are 39.1%, 38.9%, and 38%, respectively, for the midscale, upper midscale, and upscale segments relative to a 51.8% discount for an independent hotel. Economy hotels are also subject to a 48.9% REO discount; however, the interaction coefficient for this segment is insignificant. Finally, the REO discount for a luxury hotel is significantly lower at 14.5% relative to the REO discount for an independent hotel.

Finally, to address concerns that the foreclosure discounts could be high, a paired sales analysis was conducted in which the price differentials (percentage changes in price per key) were assessed for multiple sales of the same hotels over the sample period. The analysis identified 635 pairs of observations. Of this total, 463 observations represented transactions in which a non-distressed sale is followed by a non-distressed sale of the same hotel, whereas

**Table 8.**  
Paired Sales Analysis of Changes in Median Price/Key for Same Hotel.

Variables	N	%	N	Percent (excl. Flips)
Non-distressed	463	25.9	381	30.0
Distressed	172	-41.8	140	-44.3
REO sale	100	-44.0	78	-48.3
Auction/Distress	69	-40.0	59	-40.4
Foreclosure	140	-42.5	115	-45.4
Short sale	3	-34.7	3	-34.7

Note. The last transaction price is a non-distressed. Change in price is computed as (first transaction price/key – Last transaction price/key)/Last transaction price/key. Flip sales are transactions with holding periods of a year or less. REO = real estate owned.

172 observations involved a non-distressed sale followed by a distressed sale. These 172 observations provide the basis for capturing the magnitude of the distress discount off a non-distressed price for the same hotel. Given the relatively small size of the sub-sample, there is substantial variation in the data, so median prices were utilized to estimate the discounts. The percentage change in price/key is measured as the difference between the first and last transaction price divided by the last transaction price. The results of this analysis are shown in Table 8.

The results in Table 8 reveal that repeat sales of non-distressed hotels increased by 26% over the sample period. If flip sales (hotels sold within a year) are excluded from the analysis, transaction prices increase by a median of 30%. More importantly, the results show a median discount of 42% when a hotel goes from non-distressed to a distressed condition. The magnitude of this discount is greater when a hotel faces foreclosure especially when it is REO. The REO discount of 44% is identical to the hedonic model results in Table 5. Excluding flip sales, the magnitude of the REO discount approaches 50%. Thus, the results of this analysis, framed within the context of the GFC, provide support for the hedonic model results. Moreover, it alleviates concern that the magnitude of the foreclosure discounts may be too high.

## Summary and Conclusions

This study estimates the magnitude of the distress sale and foreclosure discount by determining the influence of financial distress conditions on hotel transaction prices. In addition, the study investigates whether the relationship between the distress condition and property characteristics drives the pricing of financially distressed hotels. Using a hedonic pricing model and a sample of 6,340 distressed and non-distressed hotel transaction prices from 2008 through the first quarter of 2016, the results of this study show that property characteristics and financial distress conditions significantly affect pricing of distressed hotels.

Specifically, financial distress, measured with indicator variables for an auction/distress sale, REO sale, and short sale, shows significant and negative effects on transaction prices. The estimated discount is 30% for a short sale, 33% for an auction/trustee sale, 42% for a foreclosure sale, and 44% for an REO sale, all in comparison with non-distressed normal market sales. Once a hotel falls into financial distress, and irrespective of the extent of the distress, investors can expect a large price discount in excess of 30%. These findings are consistent with the observation that hotels are risky investments and investors will demand greater discounts to compensate them for acquiring distressed hotel properties. If foreclosure is defined as the discount of an REO sale off the non-distressed normal market price, then controlling for hotel quality, the “stigma” effect of foreclosure is an additional 9% to 12%, which is the spread between an REO sale and the other distress conditions.

The empirical evidence of a sizable foreclosure discount that is statistically and economically significant is a major contribution of this study. The magnitude of this discount is substantially higher than all other commercial property types greater than the discount in the existing residential and commercial real estate literature. Although there is no difference in the spread between an auction/distress sale and short sale, both of these distress sale conditions are significantly different from an REO sale. Short sales and auction/distress sales have the lowest discounts and appear to be the most effective disposal methods for distressed hotels.

In terms of property characteristics, the effect of hotel size on pricing is positive and significant, implying that larger hotels trade at higher transaction prices. In contrast, the effect of hotel age on pricing is negative, suggesting that older hotels transact at lower prices. The finding on hotel type is also positive and significant. Full-service, select service, and extended-stay hotels trade at a premium over limited service hotels. Similarly, hotels securitized by CMBS sell at a premium over non-securitized hotels. In contrast, hotels that are slated for permanent closure trade at significantly lower discounts than hotels still in operation.

The supplementary results of this study shed further insight on the important role of property characteristics in the pricing of hotels in various distress conditions. The positive interaction between auction/distress sale and hotel size indicates larger hotels are discounted less at auction but subject to greater discounts when sold as REO. The effect of distress condition and size on pricing favors the sale of larger distressed hotels at auction.

The interaction between distress condition and hotel age is negative and significant for both an auction sale and REO sale, leading to the conclusion that discounts are lower for newer hotels and higher for older hotels when they are sold as REO relative to auction sales. Extended-stay hotels perform better in auctions than all other property types with discounts of 11% followed by full-service hotels at 27%. By location, resorts face the lowest discounts at auctions,

whereas interstate and small metro/town hotels experience significantly greater discounts, when compared with suburban hotels. However, interstate and small metro/town hotels perform worse as REO sales. The results also indicate that luxury hotels enjoy a premium at auctions relative to discounts for independent hotels. If they are sold as REO, luxury hotels face the lowest discounts relative to independent hotels. Moreover, the REO discount for midscale, upper midscale, and upscale hotels are relatively lower than independent hotels. Overall, these results lead to the conclusion that distressed hotels sold at auctions face relatively lower discounts than hotels sold as REOs. These findings favor the use of auctions for the disposal of larger distressed hotels, extended-stay hotels, resort, and luxury hotels. Finally, a paired sales analysis of transactions for the same hotel mitigates concern that the distressed discounts could be high.

Several practical implications emerge from the findings of this study. Since financial distress that results in foreclosure is a lengthy and costly event for all parties involved in the transaction, it may be financially advantageous for a lender to pursue a disposition strategy that will result in a smaller discount to mitigate losses (Clauret & Daneshvary, 2011). Lenders and servicers have several options available to help workout distressed loans and to help borrowers in default. A forbearance agreement with the borrower can delay payments for a short time period. Loan modification strategies can include changes to the loan terms such as interest rate reduction, maturity date extension, and amortization period change, or any combination of these terms (Hambly, 2009). Lenders and servicers could also consider a deed in lieu of foreclosure, note sales to third parties, and discounted loan payoffs as potential loan loss mitigation strategies that can avoid a lengthy foreclosure process, minimize costs, and shorten resolution time (Trebach et al., 2013).

Lenders and borrowers also have an incentive to consider a short sale or an auction sale as an alternative prior to filing for foreclosure. The advantage of a short sale to the lender is the shorter resolution time and lower cost from avoiding additional holding and transaction costs, and legal expenses that associated with a foreclosure or REO (Aroul & Hansz, 2014; Clauret & Daneshvary, 2009). The empirical findings indicate that short sales and auction/distress sale discounts are significantly less than an REO sale with a spread that ranges between 9% and 12% points. Hence, lenders should consider short sales and auction/distress sales as effective disposal methods for distressed hotels. Lenders and servicers may favor the auction disposal method over short sales for a number of reasons. First, cash sales at auctions avoid most holding, brokerage, and direct disposition costs in getting the best price (Chinloy et al., 2017). Second, lenders, servicers, brokers, and investors find the auction process more efficient in terms of its transparency, shorter timeline on sale, competitive bids, and access to a different and larger pool of qualified investors. If a distressed property does not sell with a broker, the auction

route can provide a concurrent alternative to extend the marketing reach for a quick disposal. Finally, auction sites such as Ten-X Commercial can provide buyers and sellers with a convenient platform with the exposure and geographical reach for a range of hotel product types, whether distressed or non-distressed (Moccia, 2015). These auction sites have even teamed up with brokers, servicers and lenders, to provide one-stop brokerage, consulting, and auction services to market and sell hotels (Moccia, 2015).

This study has several limitations that future research could address. First, the current study focused on the hotel sector. Expanding the sample to include other commercial real estate sectors would provide a basis for comparison and provide further insights on the transaction pricing of distressed properties. Second, the study employed a hedonic model to investigate the effect of property attributes on prices using a sample of hotels that transacted only once. Hence, the study excluded multiple transactions or repeat sales of the same property. Since hedonic models rely on the availability of detailed property characteristics, their main weakness is the problem of omitted hedonic attributes. Given that financial distress is driven by an inability to service debt, the distressed discounts could be capturing differences in profitability and hotel operating metrics. Future research could address this issue by including controls for NOI, ADR, and occupancy since prior research (O'Neill, 2004) has shown these determinants to be significant predictor of sales price. The discounts documented in this study could also be confounded by the lack of controls for deferred maintenance, buyer/seller motivations, supply of rooms, and local competition. To the extent these relevant variables are omitted from the model, the discount effect in this study could be overstated. To mitigate these problems, future research could employ a repeat sales regression by using pairs of repeated sales transactions for the same property, thus providing better control of the unobserved property characteristics. A comparison between a hedonic and a repeat sales model would yield additional insights into distressed pricing. Finally, the number of short sale transactions in the study is extremely low, which could explain the lack of significant differences between short sales and auction/distress sales.

### **Acknowledgments**

The author gratefully acknowledges Real Capital Analytics (RCA) Inc., CoStar, and the STR Share Center for providing the data used in this study.

### **Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, or publication of this article.

### **Funding**

The author(s) received no financial support for the research, authorship, or publication of this article.



**ORCID iD**

Amrik Singh  <https://orcid.org/0000-0001-5729-3375>

**Note**

1. The discount for the 100-room hotel is 33.3% calculated as  $-0.719 + (0.068 \cdot \ln(100)) = \exp(-0.405) = 0.667 - 1 = -0.333$ . All other interaction variable discounts in Tables 6 and 7 are estimated using a similar approach.

**References**

- Aroul, R., & Hansz, A. (2014). The valuation impact of distressed residential transactions: Anatomy of a housing price bubble. *Journal of Real Estate Finance and Economics*, 49(2), 277–302.
- Blal, I., & Graf, N. (2013). The discount effect of non-normative physical characteristics on the price of lodging properties. *International Journal of Hospitality Management*, 34(1), 413–422.
- Carroll, T., Clauretie, T., & Neill, H. (1997). Effect of foreclosure status on residential selling price: Comment. *Journal of Real Estate Research*, 13(1), 95–102.
- Chinloy, P., Hardin, W., & Wu, Z. (2017). Foreclosure, REO, and market sales in residential real estate. *Journal of Real Estate Finance and Economics*, 54(2), 188–215.
- Clauretie, T., & Daneshvary, N. (2009). Estimating the house foreclosure discount corrected for spatial interdependence and endogeneity of marketing time. *Real Estate Economics*, 37(1), 43–67.
- Clauretie, T., & Daneshvary, N. (2011). The optimal choice for lenders facing defaults: Short sales, foreclose, or REO. *Journal of Real Estate Finance and Economics*, 42(4), 504–521.
- Cordell, L., Geng, L., Goodman, L., & Yang, L. (2015). The cost of foreclosure delay. *Real Estate Economics*, 43(4), 916–956.
- Corgel, J. (1997). Property-by-property valuation of publicly traded real estate firms. *Journal of Real Estate Research*, 14(1/2), 77–90.
- Corgel, J. (2007). Technological change as reflected in hotel property prices. *Journal of Real Estate Finance and Economics*, 34(2), 257–279.
- Corgel, J., Liu, C., & White, R. (2015). Determinants of hotel property prices. *Journal of Real Estate Finance and Economics*, 51(3), 415–439.
- Cutts, A., & Merrill, W. (2008). *Interventions in mortgage default: Policies and practices to prevent home loss and lower costs* (Freddie Mac Working Paper #08-01). Freddie Mac.
- Forgey, F., Rutherford, R., & VanBuskirk, M. (1994). Effect of foreclosure status on residential selling price. *Journal of Real Estate Research*, 9(3), 313–318.
- Frame, S. (2010). Estimating the effect of mortgage foreclosures on nearby property values: A critical review of the literature. *Economic Review, Federal Reserve Bank of Atlanta*, 95(3), 1–9.
- Hambly, A. (2009, October 27). Five options for a nonperforming hotel with CMBS debt. *Hotel News Now*. <http://www.hotelnewsnow.com/Articles/4129/Five-options-for-a-nonperforming-hotel-with-CMBS-debt>
- Hardin, W., & Wolverton, M. (1996). The relationship between foreclosure status and apartment price. *Journal of Real Estate Research*, 12(1), 101–109.
- Hodari, D., Balla, P., & Aroul, R. (2017). The matter of encumbrance: How management structure affects hotel value. *Cornell Hospitality Quarterly*, 58(3), 293–311.
- Kroll Bond Ratings. (2016, September 16). *CMBS default and loan study: Defaults grow, losses slow* [U.S. Structured Finance, CMBS Research].
- Liu, C., Nowak, A., & White, R. (2012). Cornell hotel real estate market indices. *Center for Real Estate and Finance Reports Hotel Indices*, 1(1), 1–13.
- Mandelbaum, R. (2017, April 26). *Select-service hotels: Efficient and profitable*. <http://www.cbrehotels.com/EN/Research/Pages/Select-Service-Hotels-Efficient-and-Profitable.aspx>
- Moccia, M. (2015, September). Add hotel to cart: How online auctions are affecting lodging industry change. *Lodging Magazine*, 41(1), 45–51.
- Mortgage Bankers Association. (2008, May, 28). *Lenders' cost of foreclosure* [Policy Paper, Congressional Education Series Briefing].
- O'Neill, J. (2004). An automated valuation model for hotels. *Cornell Hotel and Restaurant Administration Quarterly*, 45(3), 260–268.
- Richardson, H. (2012). *Essays in real estate market issues: Costly divestitures in commercial real estate under detrimental conditions* [Unpublished doctoral dissertation]. University of Alabama, Tuscaloosa.
- Roubi, S., & Litteljohn, D. (2004). What makes hotel values in the UK? A hedonic valuation model. *International Journal of Contemporary Hospitality Management*, 16(3), 175–181.
- Shilling, J., Benjamin, J., & Sirmans, C. (1990). Estimating net realizable value for distressed real estate. *Journal of Real Estate Research*, 5(1), 129–140.
- Singh, A. (2017). The effects of securitization, foreclosure, and hotel characteristics on distressed hotel prices, resolution time, and recovery rate. *Cornell Hospitality Quarterly*, 58(1), 39–52.
- STR Analytics. (2012-2015). *HOST Almanac: U.S. Hotel Operating Statistics for the Year 2011-2014* [Various issues].
- Trebach, K., McGowan, M., & MacNeill, M. (2013, April 30). *U.S. CMBS loss study: 2012. Number of resolutions falls; loss severity ticks higher* [Structured Finance Special Report]. Fitch Ratings.
- Zhou, H., Yuan, Y., Lako, C., Sklarz, M., & McKinney, C. (2015). Foreclosure discount: Definition and dynamic patterns. *Real Estate Economics*, 43(3), 683–718.

**Author Biography**

**Amrik Singh** is an Associate Professor in the Fritz Knoebel School of Hospitality Management in the Daniels College of Business at the University of Denver where he teaches courses in advanced revenue management, cost management, lodging valuation, and feasibility studies.