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ESTIMATING THE APARTMENT FORECLOSURE DISCOUNT IN KUALA LUMPUR

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ABSTRACT

This paper examines the price differential between properties traded in the auction market and private negotiated market. With the exception of anecdotal information which suggests that auctioned or foreclosed properties in Malaysia tend to be sold at a deep discount, no study has thus far attempted to quantify this foreclosure discount. We uncover this question by examining listing price of apartment properties in Kuala Lumpur during 2009-2014. For each of the auctioned apartment in our sample, we match it with comparable non-auctioned apartment located in the same building block. This matching strategy essential net out the locational and neighbourhood characteristics of the properties, thus, allowing us to attribute the price differential to the "stigma effect" associated with auctioned or foreclosed properties. We document that auctioned apartments are listed at a discount of 34% as compared to apartments listed in the private negotiated market.

Keywords: Auction sales, Auctioned properties, Private negotiated sales, Stigma effect, Foreclosure discount

1.0 INTRODUCTION

A number of papers have examined whether auctioned properties sell at a discount or premium relative to private negotiated sales.[4] Prior research has attempted to uncover this question using a hedonic regression approach where a dummy variable indicating whether the property is sold at auction or private market is regressed against the natural logarithm of property sales price (dependent variable). An important consideration in adopting the hedonic regression approach is to ensure that the quality of the auctioned properties are comparable to those non-auctioned properties such that the auction dummy is indeed capturing the price differential between the two selling methods. Researchers have attempted to mitigate the issue of quality bias by: (a) controlling for property, locational and neighbourhood characteristics that proxy for quality in the regression model; (b) constructing a repeat sales index for sample of auctioned properties to estimate their predicted sales prices (Mayer, 1998), (c) examining the relationship between auction prices and their predicted market value using comparable assessment ratios approach (Allen and Swisher, 2000); and (c) focusing on a sample homogenous property (e.g. Lusht (1996) focuses on single family detached house, Quan (2002) focuses on vacant housing lot).

In addition, in the housing literature, a number of papers have documented the effect of foreclosure status on the property sales prices (see Shilling et al., 1990; Forgery et al., 1994; Hardin and Wolverton, 1996; Carroll et al., 1997; Pennington-Cross, 2006; and Clauretie and Daneshvary, 2009). These strand of studies found that foreclosure properties were sold at a significant discount compare to non-foreclosure ones in the range of 4-24%. These studies offer two possible explanations to foreclosure discount. First, it could due to "stigma effect" associated with the status

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[4] Note that private negotiated sales, private sales and non-auctioned properties are used interchangeably.

of the property as foreclosed. This effect has nothing to do with property characteristics but purely due to buyers' stigma towards foreclosed properties. These buyers expect to purchase foreclosed properties at a deep discount. The "proxy effect" on the other hand is related to the negative characteristics of a foreclosed property such as deteriorated physical conditions and/ or neighbourhood characteristics.

This research aims to marry these two strands of literature by comparing the listing price of auctioned and non-auctioned apartment properties in Kuala Lumpur, Malaysia. All auctioned properties in our sample are foreclosed properties while the opposite is true for non-auctioned properties. Our study is therefore a joint test of the effects of foreclosure status and selling mechanism (auction versus private sales) on property prices. Unlike previous research that is prone to self-selection bias where the decision to participate in either auction or private sales is a choice variable.[5] Auction dummy in our sample is exogenous in nature because auction is predominantly used to dispose a foreclosed property while private or non-distress sales through auction are rare.

We attempt to circumvent the issues of quality bias by comparing the listing price of auctioned and non-auctioned apartment properties located in the same building block. For each auctioned property, we managed to identify another non-auctioned property located in the same building block. This matching approach provides a cleaner test to distinguish between the stigma effect and proxy effect. We argue that controlling for property's qualities, the remainder impact of auction (foreclosure) dummy on property price should be largely attributable to stigma effect associated the auctioned properties.

The remainder of this research is organized as follows. The next section highlights the institutional background and reviews the extant literature. This section also develops hypothesis for our empirical study. In Section 3 we discuss the data and methodology used in this research. Section 4 presents empirical results. Section 5 discusses the implication of the results and the last section draws the conclusions.

2.0 INSTITUTIONAL BACKGROUND & LITERATURE REVIEW

2.1 Auction Process in Malaysia

Property auctions have been used in Malaysia almost exclusively for disposal of property involved in foreclosure or bankruptcy. Private or non-distress sales through auction are rare.[6] Property auctions in Malaysia are broadly divided into judicial and non-judicial auctions. Judicial auctions apply to property with individual land title while non-judicial auctions involve properties without an individual title, typically high rise building with strata title. The auction procedure is long and tedious for judicial route as lenders need to obtain Order of Sales from a court of law before they can commence the auction process. Reserve price, auction date and auctioneer are ascertained after Order of Sales is granted by the court. Auction must be conducted within 3 months from the date of Order of Sales. A reserve price is set based on the property's appraised value on a date that cannot exceed 6 months from the date of application to court. Non-judicial route is much shorter as lenders could decide on auction date and appoint auctioneers without referring to the court. The lenders could also opt to sell the foreclosed properties through private sales instead of auctions. Non-judicial route is also used by some private owners who want to dispose of their property through auction. Nonetheless, this is rarely conducted.

Once a Proclamation of Sale which elucidates the terms and conditions of the auction sales is approved by the court, the auctioneer is required to place public advertisement of the sale in major local newspapers at least 7 days before the auction date. Potential buyers could examine documents containing the details of property such as size, location, names of the property owners as well as the appraisal report. Each bidder must pay a deposit equivalent to 10% of the reserve price. English ascending bid auction format is used with bid prices higher than the reserve price. If a property fails to be auctioned off, it is common practice for the auctioneer to lower the property's reserve price mechanistically, by 10% from the reserve price for the subsequent auction.

[5] To control for the possibility of sample selection bias, prior studies used a two-stage Heckman selection procedure. The first stage involves the estimation of a probit model on the sellers' choice of selling method (auction versus private sales). The second stage introduces an additional selection variable, the inverse Mills ratio, as an explanatory variable to the sale price estimation equation (see Lusht, 1996; Dotzour et al. 1998).

[6] Wong et al. (2014) provide a review of the development of property auction market in Malaysia.

2.2 Literature Review

There exist two distinctive and opposing sentiments towards property auctions. In countries such as Australia, New Zealand, Ireland and Sweden, the auction markets work in parallel with the private negotiated market as a viable method to dispose properties. In fact, auctions are the preferred method to sell high end properties (see Lusht, 1996; Hungria-Gunnelin, 2013; Stevenson and Young, 2014). In contrast, auctions in the US, Malaysia, Japan and, to a certain extent, Singapore are used primarily to dispose of foreclosed or distressed properties (see Allen and Swisher, 2000; Ong et al., 2005; Idee, Iwata and Taguchi, 2011).

In countries that are receptive to auctions, properties sold via auction market often resulted in higher prices as compared to private sales. Lusht (1996) for instance documents that auctioned properties in Melbourne, Australia are sold at an 8% premium over listed and sold privately. The author attempts to control for quality by including property size, property structure dummy (brick construction) and four locational dummies in hedonic regression. Dotzour et al. (1998) also observe a premium ranged from 5.9% to 9.5% for auctioned properties located in the two highest priced areas in Christchurch, New Zealand. The quality proxies used in their regression models are property size, property age, building structure (wall types) and an indicator variable of whether the property is a quality property as classified by a local real estate appraisal company.

In the US, the stigma associated with auctions causes auctioned properties to trade at significantly below market value. Mayer (1998) for instance documents that property auctions in Los Angeles and Dallas were sold at a discount in the range of 0%-9% and 9%-21% respectively.[7] To overcome the quality bias associated with the hedonic regression, Mayer constructs a resale price index that tracks the price performance of houses sold more than once in the sample period. The change in resale price index is used as the dependent variable with auction dummy as the key variable of interest. This approach essentially nets out the individual effects from each house since housing attributes tend to be constant over time.

Allen and Swisher (2000) find in their sample of auctioned properties located in south Florida, US are selling at 17.45%, less than their predicted market value, on average. The predicted market values of the auctioned properties are computed using mean assessment ratios for the regions in which the properties are located. Quan (2002) develops a model of mechanism choice in the disposition of real estate assets, i.e. auction versus private negotiated markets. His model predicts that buyers with high search costs will opt for auctions over private sales because auctions offer them higher payoff (less search costs). Since auctions tend to attract this group of high cost buyers, prices will be higher, on average, for properties sold at auction. Quan empirically verify this prediction by estimating a hedonic regression with vacant lot sales data in the Austin, Texas metropolitan area. Accounting for the self-selection choice of auctions over private sales, he find that his sample of vacant lots are sold for approximately 30% more at auction than private sales. This finding is in contrast to Mayers (1998) and Allen and Swisher (2000).

More recently, Chow, Hafalir and Yavas (2014) theorize that compare to negotiated sales, auctions tend to generate a higher sales price when the demand for the asset is strong, when the asset is more homogeneous, and when the asset attracts buyers with higher valuations. The authors provide empirical support for these predictions using data on residential properties that were put up for auction in Singapore between 1995Q3 and 2006Q4.

Apart from literature on price differential between auctions and negotiated sales, our study also related to foreclosure discount literature. Prior empirical results consistently show that foreclosed properties are transacted in the range of 4-24% discount as compared to non-foreclosed properties. A more recent research by Clauretie and Daneshvary (2009) attempt to disentangle the effect of stigma from the effects of proxy mentioned earlier. In order to isolate these two effects, the authors take consideration of these additional controls that are ignored in prior literature: (a) control for variables that capture the proxy effect or the negative building or neighbourhood characteristics of foreclosed properties, i.e. property condition, transaction type (cash vs financing sale) and vacancy status of the foreclosed properties; (b) account for the endogeneity of the time that the properties stayed on the market (TOM) in the property price equation using two-stage least squares (2SLS) instrumental variable (IV) approach; and (c) correcting for spatial interdependence among cross-sectional housing units of observations using generalized spatial two-stage least

[7] Mayer relates his findings to market conditions in the two markets where Los Angeles data in the late 1980s was coincided with the residential property boom in southern California while the Dallas data during the same period was experiencing a severe downturn due to oil bust crisis. This is consistent with his earlier works (Mayer, 1995) which theorize that the discount for auction properties rises during downturns.

squares (GS2SLS) approach.[8] Accounting for the above controls, the authors show that estimates of foreclosure discount drops to 7.9% which is about one-third lower than those reported by previous studies. The foregoing literature review leads to the following hypothesis.

Hypothesis: The listing prices of auctioned properties are lower than non-auctioned properties.

In other words, the hypothesis is that auctioned properties carry a lower listing price and, hence, we expect to see a significant negative regression coefficient for the auction dummy. The negative impact of auction sales could either due to stigma or negative property or/ and neighbourhood characteristics of the auctioned properties. However, if the property or auction market is efficient, competition among buyers would mitigate the opportunities for excess return, then auction sales will not affect listing prices and, hence, we do not expect to see a significant regression coefficient for auction dummy. One concern to this empirical framework is that listing price for the auctioned properties is refers to reserve price while it is refers to asking price for non-auctioned properties. The two may not be comparable since reserve price is the minimum price set according to property's appraisal value (for first time auction) while asking price is set by the sellers and is usually negotiable. Sellers may sell for the asking price or above (below) the asking price when the demand is high (low). Ideally, we should have comparing the selling prices between auction and non-auctioned properties. Unfortunately, we do not have this data.

3.0 DATA

The data analysed in this chapter consists of 722 apartment properties posted on i-property.com during 2009-2014. i-property.com is a real estate website that lists both auction and non-auctioned properties in a multiple listing style (MLS) format as in those in the US and Canada. We focus on apartment properties, as opposed to all houses to minimize the possibility of omitting important property attributes. For each of the auctioned property in our sample, we match it with a non-auctioned property located in the same building block. This sampling strategy essentially nets out the unobserved neighbourhood and locational characteristics between auctioned and non-auctioned properties.

Table 4.1 contains summary statistics for all variables used in our empirical analysis. The first two columns contain means and standard deviations for our sample of 361 auctioned properties. Columns three and four contain the corresponding statistics for our 361 non-auctioned properties. The final column contains T-stat for mean equality tests. The resulting mean listing price in our auctioned sample is RM143,566. The corresponding listing price for our non-auctioned sample is RM177,799. The difference in mean listing price between the two subsamples is significant at the 1% level. This univariate test provides preliminary support to our hypothesis that auctioned properties carry a lower listing price as compared to non-auctioned properties. The mean for all other building, locational, amenities variables does not display significant variation across the two subsamples suggesting that our samples of auctioned properties are of the same quality as their non-auctioned counterparts. This offers a unique opportunity to explore the impact of stigma effects given that the proxy effects are broadly the same between the two subsamples.

[8] As noted by Clauterie and Daneshvary (2009), there are two forms of spatial interdependence, i.e. dependence that arises when the selling price of a house is affected by a weighted average of the selling prices of neighborhood units and a spatially corrected disturbance term among the observations.

Table 1: Regression Summary Statistics and Difference in Mean Tests

	Definitions	Auction sales		Private sales		T-test
		Mean	Std.Dev	Mean	Std.Dev	
Listing Price	Property listing price.	143,566	6,358	177,799	6,864	3.659***
Property Size	Land area of the property measured by square feet.	803.08	10.29	801.62	9.60	-0.103
Distance	Nearest travelling distance (KM) of the subject property from KLCC Petronas Twin Tower (a proxy to city centre).	12.439	0.252	12.439	0.252	0.000
Tenure	Indicator variable taking value of one if the property is freehold, zero otherwise.	0.416	0.026	0.416	0.026	0.000
Cafeteria	Indicator variable taking the value of one if cafeteria is available in the apartment, zero otherwise.	0.504	0.026	0.504	0.026	0.000
Parking	Indicator variable taking the value of one if covered parking is available in the apartment, zero otherwise.	0.846	0.018	0.846	0.018	0.000
Mini Market	Indicator variable taking the value of one if mini market is available in the apartment, zero otherwise.	0.529	0.026	0.529	0.026	0.000
Playground	Indicator variable taking the value of one if playground is available in the apartment, zero otherwise.	0.845	0.019	0.845	0.019	0.000
Tennis Court	Indicator variable taking the value of one if tennis court is available in the apartment, zero otherwise.	0.017	0.007	0.017	0.007	0.000
24hr Security	Indicator variable taking the value of one if 24- hour security is available in the apartment, zero otherwise.	0.817	0.020	0.817	0.020	0.000
Jogging Track	Indicator variable taking the value of one if jogging track is available in the apartment, zero otherwise.	0.343	0.025	0.343	0.025	0.000
Swimming pool	Indicator variable taking the value of one if swimming pool is available in the apartment, zero otherwise.	0.078	0.014	0.078	0.014	0.000

Gymnasium	Indicator variable taking the value of one if gymnasium is available in the apartment, zero otherwise.	0.047	0.011	0.047	0.011	0.000
Sauna	Indicator variable taking the value of one if sauna is available in the apartment, zero otherwise.	0.006	0.004	0.006	0.004	0.000
Barbecue Area	Indicator variable taking the value of one if barbeque is available in the apartment, zero otherwise.	0.055	0.012	0.055	0.012	0.000
Squash Court	Indicator variable taking the value of one if squash court is available in the apartment, zero otherwise.	0.008	0.005	0.008	0.005	0.000
Wading Pool	Indicator variable taking the value of one if wading pool is available in the apartment, zero otherwise.	0.033	0.009	0.033	0.009	0.000
Salon	Indicator variable taking the value of one if salon is available in the apartment, zero otherwise.	0.044	0.011	0.044	0.011	0.000
Business Centre	Indicator variable taking the value of one if business centre is available in the apartment, zero otherwise.	0.512	0.026	0.512	0.026	0.000
Bus	Indicator variable taking the value of one if auctioned property is located within 5KM from the bus station, zero otherwise	0.837	0.019	0.837	0.019	0.000
Monorail	Indicator variable taking the value of one if auctioned property is located within 5KM from the monorail station, zero otherwise	0.125	0.017	0.125	0.017	0.000
LRT	Indicator variable taking the value of one if auctioned property is located within 5KM from the LRT station, zero otherwise	0.014	0.006	0.014	0.006	0.000
ERL	Indicator variable taking the value of one if auctioned property is located within 5KM from the ERL station, zero otherwise	0.072	0.014	0.072	0.014	0.000
KTM	Indicator variable taking the value of one if auctioned property is located within 5KM from the KTM station, zero otherwise	0.681	0.025	0.681	0.025	0.000

Primary	Indicator variable taking the value of one if auctioned property is located within 5KM from the primary school, zero otherwise	0.953	0.112	0.953	0.112	0.000
Secondary	Indicator variable taking the value of one if auctioned property is located within 5KM from the secondary school, zero otherwise	0.715	0.024	0.715	0.024	0.000
Tertiary	Indicator variable taking the value of one if auctioned property is located within 5KM from the university, zero otherwise	0.188	0.021	0.188	0.021	0.000

4.0 EMPIRICAL ANALYSIS

To further investigate impact of foreclosure status on property listing prices, we estimate a hedonic regression for properties listed in the auction market and properties listed in the private negotiated market. Property listing prices are regressed on the *Auction* dummy taking value of one if the property was listed on the auction market and zero otherwise. This is our key variable of interest that account for the method of sale. The control variables for the base model include property and locational attributes such as Property Size, the tenure of the property (Tenure) distance to KLCC Twin Tower (Distance). We also include 23 amenities variables in the expanded regression model to control for quality differences of the properties. The timing of the property listing is controlled by year dummies from 2009 to 2014.

The estimation results are presented in **Table 2**. Model 1 is the base model to measure the relationship with property selling method (*Auction*) and property listing price controlling for property and locational attributes. Model 2 incorporates 23 amenities variables such as facilities in the apartment building and the existence of school or train stations within 5km from the apartment building. Both models achieve a reasonable fit, explaining 61% and 66% of the variation in the natural logarithm of listing price.

Consistent with mean test results, *Auction* is negative and significant at the 1% level in Model 1. The coefficient of *Auction* implies a discount of approximately 34.2% for auctioned properties as compared to non-auctioned properties. This equates to a discount of RM54,953 based on the average listing price in our sample. All controls in Model 1 are statistically significant at the 1% level with the expected signs. Properties that are larger in size (*Property Size*), nearer to KLCC Twin Tower (*Distance*) and with freehold status (*Tenure*) are found to carry a higher listing price. Turning to Model 2, our key results are robust to the inclusion of battery of amenity variables. Under this specification, auctioned properties are listed at 34.4% discount as compared to properties in the private negotiated market. Of the 23 amenity variables, only 9 are significant. Amenities such as *Mini Market, Swimming Pool* and *Gymnasium, Squash Court* and *Monorail* are positive and significantly related to listing price. Contrary to our expectation, *24hr Security, Salon* and *Business Centre* tend to reduce the property listing price.

Table 2: The Impact of Foreclosure Status on Property Prices
OLS models are estimated where the dependent variable is the natural logarithm of listing price. * indicates significance at 10%, ** at 5% and *** at 1%.

	Model 1		Model 2	
	Coefficient	T-statistic	Coefficient	T-statistic
Intercept	10.079***	60.604	10.185***	51.045
Auction	-0.342***	-10.563	-0.344***	-11.021
Property Size	0.002***	24.014	0.002***	23.362
Distance	-0.035***	-10.503	-0.036***	-9.729
Tenure	0.184***	6.075	0.201***	6.021
Cafeteria			-0.087	-0.803
Parking			0.070	0.721
Mini Market			0.423***	3.312
Playground			0.136	1.512
Tennis Court			-0.345*	-1.963
24hr Security			-0.254***	-2.988
Jogging Track			-0.005	-0.056
Swimming pool			0.176**	2.356
Gymnasium			0.635***	3.861
Sauna			-0.563	-1.176
Barbecue Area			0.093	0.668
Squash Court			0.505*	1.783
Wading Pool			-0.209	-0.788
Salon			-0.265*	-1.772
Business Centre			-0.306***	-3.499
Bus			0.016	0.309
Monorail			0.202***	3.759
LRT			0.022	0.174
ERL			0.080	1.314
Ktm			0.027	0.687
Primary			-0.046	-0.623
Secondary			-0.063	-1.636
Tertiary			0.049	1.061
Year Dummies	Yes		Yes	
No of Obs	722		722	
R^2	0.61		0.66	

5.0 DISCUSSION OF RESULTS

As mentioned earlier, an important concern in this research is that reserve price for auctioned properties may not be comparable to non-auction properties' asking price. This is because the reserve price (based on property's appraisal value) of an auctioned properties are likely to be lower than the market value as appraisers will have to adjust for lenders' short marketing time period (Shilling et al. 1990). This is evidenced by Wong et al (2014b) who find residential auctioned properties in KL to sell at 22.8% above the reserve price. Asking price on the other hand tends to be set above or equal to the market value and is adjusted downward during the negotiation process. The 34% discount we obtained could actually capture this difference since asking price tends to be higher than reserve price. We try to mitigate this concern by deducting the 34.4% discount we obtained from Model 2 of Table 2 with the average premium of sales price over reserve price of 18.4% for auctioned apartment properties in KL as documented by Wong et al. (2014b) The difference of 16% (34.4%-18.4%) suggesting that auctioned properties in our sample may still be sold at a 16% discount even after adjusting for premium over the reserve price.

Clauritie and Daneshvary (2009) are suspicious over the huge discount obtained in one selling method over the other. The authors argue that real estate market in the US is unlikely to be so inefficient as to allow for such excess return. This argument may not be valid in Malaysia since information costs faced by auction bidders are clearly higher than bidders in the US due to the following reasons. First, auctions in Malaysia do not carry a clean title where is there is no guarantee of vacant possession. Thus, the new owner must evict occupants, if any, at his or her own costs. This is unlike foreclosure sales in the US where buyers are assured of a clean title (Allen and Swisher, 2000). Secondly, bidders typically have no opportunity to view or inspect the interior of the auctioned properties. This contrasts the developed markets where prior property viewing is a norm. Therefore, the discount suffered by sellers who disposed via auction is likely serve to compensate winning bidders for uncertainty during the auction process.

We argue early in this chapter that our sample provides to cleaner test to distinguish between "proxy effect" and "stigma effect". While our regression models have controlled for most of the building and locational qualities (proxy effect), we are still not able to control for the properties' physical condition due to data constraints. Clauretie and Daneshvary (2009) are able to control for property conditions based on assessment given by listing agent/broker at the time of listing. Foreclosed properties may have not been properly maintained as owners who anticipate foreclosure have perverse incentive in maintaining the properties prior to the foreclosure process. Therefore, we still cannot totally rule out the argument that the discount we obtained is due to negative property characteristics associated with auctioned or foreclosed properties.

6.0 CONCLUSION

This study examined the impact of sale methods (auction sales versus private sales) on properties' listing price. Since all auctioned (non-auctioned) properties in our sample are foreclosure (private) sales, this study also is a test to examine the impact of foreclosure status on property prices. The results show that auctioned properties are listed at a 34.2% discount as compared to non-auctioned properties located in the same building block. Adjusting for the reserve premium, the discount is still substantial at 16%. While we cannot totally rule out the "proxy effect", i.e. negative property or neighbourhood conditions associated with auction as a contributing factor to this price discount, we tend to believe that this effect tend to be minimal since we are comparing apartments located in the same building block which carry the same neighbourhood and locational attributes. We argue that "stigma effect" is likely to be the factor explaining the price differential due to the uncertainty surrounding the auction process.

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