Restriction on Rights of Ownership and Its Impact on Auction Sales: The Case of Bumiputera Rule in Malaysia

Woei Chyuan WONG* Janice Y.M. LEE**
Pooi Leng NG**Md Nasir DAUD***

* (Corresponding author) Universiti Utara Malaysia, School of Economics, Finance and Banking, 06010 Sintok, Kedah Malaysia. E-mail: wwchyuan@uum.edu.my.

** Universiti Teknologi Malaysia, Department of Real Estate & Centre for Real Estate Studies, 81310, Johor Bahru, Johor Malaysia. E-mail: janicelee@utm.my; chloeng428@gmail.com.

*** University of Malaya, Department of Estate Management, 50603 Kuala Lumpur Malaysia. E-mail: mdnasir@um.edu.my.

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Abstract

Little is known about the economic effects on the value of a property when its ownership is restricted to certain races. This paper provides empirical evidence on the impact of Bumiputera rule on the probability of sale, sale price and sale premium of foreclosed properties sold in the Malaysian auction market. Bumiputera rule restricts the right of non-Bumiputera to buy Bumiputera (Malay and other indigenous peoples) reserved properties. Focusing on foreclosure sales in Kuala Lumpur during 2009-2013, we find that Bumi restriction decreases the properties' probability of sales, sale price and sale premium by 37.3% and 9.1% and 7.1% respectively even after controlling for locational and property attributes. Further analysis reveals the impact flow primarily from Chinese owned properties.

Introduction

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 negotiation market as a viable method to dispose properties. In fact, auctions are the preferred method to sell high end properties (see Lusht, 1997; Hungria-Gunnelin, 2013; Stevenson and Young, 2014). In contrast, auctions in the case US, Malaysia, Japan and to a certain extend Singapore are used primarily to dispose of foreclosure or distress properties (see Allen and Swisher, 2000; Ong et al., 2005; Idee, Iwata and Taguchi, 2011). The stigma associated with foreclosure status cause auctioned properties to trade significantly below market value. Mayer (1998) for instance documents that property auctions in Los Angeles and Dallas were sold at a discount up to 9% and 21% respectively.

Empirical research on auction markets is relatively scarce due to unavailability of detailed auction data. Existing research mainly draw from developed countries where auction markets are developed and transparent. This paper attempts to add to this line of

literature by offering evidence from the Malaysian auction market. 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. We extend prior works by considering the impact of ownership restrictions on auction sales. Bumiputera (hereinafter known as Bumi) rule in Malaysia which restricts the transfer of Bumi owned property to non-Bumi buyers. Bumi literally means "son of the soil" refers to Malay and other indigenous peoples in Malaysia.[1] While anecdotal information suggests that Bumi rule has led to the oversupply of Bumi owned properties in both the primary and resale market, to our knowledge, no studies have formally analysed the impact of Bumi rule on property sales.[2,3]

Our sample of auctioned properties presents the opportunity for a more careful look at the Bumi rule on property sales. Firstly, the sellers' motives in our sample are homogenous where all auctioned properties in our sample are foreclosure sales initiated by financial institutions to recover their loan losses. Secondly, property auction market became an avenue for prospective buyers in Malaysia to source for affordable properties given the escalation of house prices in Malaysia between 2009 and 2013. House prices in Malaysia have escalated by nearly 47% for the national average and 58% for Kuala Lumpur during this period (Malaysia National Property Information Centre, 2013). The strong demand in the auction market would further amplify the impact of Bumi rule on probability of sales and sale prices of the auctioned properties, if any.

Our paper is closely related to studies that examine the impact of housing regulation on house prices by restricting supply. Wong (2013) examined the impact of housing quotas on the resale public house prices in Singapore. The housing quota policy was introduced in 1989 to encourage ethnic desegregation in Singapore. The major ethnic groups in Singapore are similar to Malaysia but different in distribution where 70% are Chinese, 14%

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[1] According to Malaysia 2010 census data, 82.2% of the Bumiputera consists of Malays (Department of Statistics Malaysia, 2011).

[2] The Real Estate and Housing Developers' Association (REHDA) of Malaysia in its press release has requested the government to establish a structured mechanism for housing developers to release the unsold Bumi Allocated units to non-Bumi buyers citing the lack of demand and high holding costs (BERNAMA, 2013)

[3] A survey conducted on property developers by REHDA finds unsold Bumi Lots to be the top reason contributing to unsold properties in Malaysia (REHDA, 2012).

are Malays and 8% are Indians (Singapore Department of Statistics, 2006). This policy imposes upper limits on blocks and neighbourhood level ethnic proportion. For instance, a non-Chinese sellers are not allowed to sell to Chinese buyers if the Chinese quotas are binding, i.e. Chinese proportion in the neighbourhood has near its regulated limit. Wong finds that Chinese-constrained units are 5-8% more expensive while Malay and Indian constrained units are 3 to 4% cheaper.

Focusing on age restricted housing in Rancho Bernardo, California, Do and Grudnitshi (1997) find that age restriction placed on these houses decreases their value by 6%. The authors attribute their findings to the oversupply of restricted housing because these properties can be sold only to people age 55 years and older. Munneke et al. (2014) examine the effects of Brigham Young University (BYU)'s student housing policy on prices of condominiums surrounding BYU. The university's housing policy restricts students to live within 0.3-0.8 miles from the campus. Munneke et al. (2014) document significant positive quantity restriction on condominium prices, with quantity restriction reinforcing the student price premium within the boundary as compared to non-student neighbourhoods outside the boundary. In the same vein, Malpezzi (1996)'s find that rents and house prices in the US Metropolitan increased by 17% and 51%, respectively, when one moves from a lightly regulated environment to a heavily regulated environment.

Follow this line of argument, Bumi rule which restricts the supply of properties to non-Bumi buyers while increasing the supply of properties to Bumi buyers (Bumi buyers have access to all properties), all else is equal, will depress the value of Bumi owned properties relative to non-Bumi properties. The null hypothesis that Bumi rule restriction on a given house will have no effect on its sale probability, sale price and sale premium of Bumi properties is tested against the alternatives that Bumi restriction will decrease all three sales matrixes above. Residential auction sales data in Kuala Lumpur during 2009-2013 are used to verify these hypotheses.

The remainder of this article is organized as follows. The next section describes property auction process and Bumi rule in Malaysia. Next are a description of the data and

a discussion of the empirical results. The last section presents further research and conclusions.

Auction Process in Malaysia

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 the court before they can commence the auction process. Reserve price, auction date and auctioneer are ascertained after *Order of Sales* is granted by the court. The 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 and cannot exceed 6 months from the date of the application filed to the court. Non-judicial route is much shorter as lenders could decide on the auction date and appoint the auctioneers without referring to the court. The lenders could also opt to sell the foreclosed properties through private treaty instead of auctions. Non-judicial route is also use by some private owners who want to dispose their property through auction. Nonetheless, this is rarely conducted.

Once the *Proclamation of Sale* which elucidates the terms and conditions of the auction sales are approved by the court, the auctioneer is required place public advertisement of the sale in local major 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 a common practice for the auctioneer to lower the property's reserve price mechanically, by 10% from the reserve price for the subsequent auction.

Information costs faced by potential buyers are high compared to foreclosure sales in the US. Firstly, 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 the interior of the auctioned properties. This contrasts the developed markets where prior property viewing is a norm. Thirdly, there exist syndicates or dummy bidders that distort the auction sales during the auction process. These syndicates either offer to help potential genuine buyers secure a property for fees or threaten serious bidders not to submit their bid when the property prices are at the syndicates favour. See Wong et al. (2014) for an overview of property auction market development in Malaysia.

Bumiputra Property Rule

Bumi owned properties are classified into three major categories based on transferability restrictions imposed on these properties by the authority. The first category is known as Malay reserved property which built on Malay Reservation Land (MRL). *Article 89(6)* of the *Federal Constitution 1957* defines "Malay reservation" as land reserved for alienation to Malays or natives of the state in which it lies.[4] Malaysia Ministry of Land and Mines reported that there are 4.08 million hectares of Malay reserve land in peninsular Malaysia in 2009 which equals to 31% of total land area of all states in Peninsular Malaysia. Malay reserved property has the words "Malay Reserved" appears on its individual title and cannot be transferred to non-Malay buyers.

The second category is properties with Bumi Lots restriction. This rule was formed through the strategies of the New Economic Policy (NEP) with aims to harmonize differences in wealth accumulation between non-Bumi (Chinese and Indians) and Bumi in Malaysia.[5] **Table 1** shows the Malaysian Gross Household Income according to ethnicity.

[4] This land law was first introduced by the British colonial 1913 to protect and preserve the Malay property rights and interests then from being acquired by non-Malay immigrants (see Ariffin, 2013 for the development and challenges faced by MRL).

[5] New Economic Policy (NEP) was introduced by the Malaysian government in 1971 after the racial riots in 1969. The NEP is a major socio-economic restructuring effort to foster national unity and nation-building through eradicating poverty, irrespective of race and to eliminate identification of race with economic function and geographic location. The wealth disparity is partially attributed to the early segregated

The Chinese have the highest gross monthly income (RM6,366), followed by Indian (RM5,233) and the Bumi (4,457). The wealth inequality between the races persisted although it has reduced significantly from 1.92 times to 1.30 times (non-Bumi gross income/Bumi gross income) from 1976 to 2012 (Department of Statistics, 2013). Under the Bumi Lots rule, housing developers are required to allocate 30-40% of their planned housing units as Bumi Lots at a discount between 5-15% (REHDA, 2014). The Bumi quota and discount for properties in Kuala Lumpur are set at 30% and 5% respectively. Proponents to this policy argue that it minimizes such segregation of races and encourages social integration and unity among the races by fair and balance distribution in housing sectors (Shahabudin and Hasmah, 2008).

Bumi Lots can be released to non-Bumi buyers with the State's approval. The developers have to prove that these properties remained unsold and there was sufficient effort to market them to the Bumi community. Similarly for auction properties, non-Bumi buyers can apply for State's consent but this process may be time-consuming. The risk for buyer is the State's approval must be received by the end of 3 months from the auction date where the balance sum (property auction price net of initial deposit) is due. Moreover, Bumi Lot restriction typically does not appear on property title. It is duty of the prospective buyers to make their own enquiries with the Developer and/or other relevant authorities to ascertain whether the said property is restricted to Bumi buyers only.

The third category is Bumi owned properties without the Malay Reserved and Bumi Lot restrictions. While less restrictive compared to the above two categories, the transferring process is not automatic as Bumi owners still need to apply from the State government the consent to transfer the property to non-Bumi buyers from the state government. Presently, there exist no guidelines or criteria for a successful transfer.

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residential patterns of the main ethnic groups in Malaysia where the Malays live in poorer rural areas, Chinese in more affluent urban areas and Indian in rubber or oil pam estates.

Table 1: Malaysian Income Data by Ethnicity in 2012

	All	Bumi	Chinese	Indian	Others
Gross monthly household income	5,000	4,457	6,366	5,233	3,843
Bottom 40% Gross monthly Household Income	1,847	1,686	2,455	1,937	1,472
Gini Ratio	0.431	0.421	0.422	0.443	0.435

Data Source: Department of Statistics Malaysia 2013)

Data

The data analysed in this paper consists of 1,413 residential properties that were offered for sale through auction between 2009 and 2013. The properties were all located in Kuala Lumpur, the capital city of Malaysia. The data was obtained from *Lelongtips*, an online property auction portal that collects Malaysian property auction data since 2009. We concentrate on data for Kuala Lumpur due to the absence of electronic database for the auction data. All past auction data are hand-collected from *Lelongtips*' portal. The following screening criteria are adopted: First, similar to Ong et al. (2005), we include only the most recent auction attempt, regardless of earlier outcomes. Therefore, our data is a cross-sectional dataset. Second, we dropped auctions that were sold for the second time due to the failure of first winning bidders to secure financing from the banks. In this case, we take only the first sale transaction. Thirdly, we dropped foreign owned properties from the sample. Foreigners in Malaysia are only eligible for high end properties valued more than RM 1 million (RM0.5 million prior to 2014). The average reserve price for the 22 excluded foreign auctions is RM1.81 million (Local auctions: RM0.4 million). Our final sample consists of 937 observations.

Table 2 provides definitions and summary statistics for variables used in the empirical models. Of the 937 properties analysed, 507 were successfully sold at auction representing a successful rate of 70%. The average sale price of RM272,803 is significantly lower than average property prices of RM636,008 in KL as at December 2013 (Malaysia National Property Information Centre, 2014). On average, properties are sold at 22.6% premium above the reservation price. This premium does not necessarily imply that

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auctioned properties are sold above their market value since there could be a significant time lag from the date the property was first appraised and the property's market value at the time of sales. Besides, an auction could have been in the market for more than one time, thus the reserve price will be at least 10% lower than its appraisal value in each subsequent auction. Apartment (40%) auctions are the most common types of auction. Condominium, house and flat are relatively even at 17%, 18% and 25% respectively. On average, auctions in our sample are located at neighbourhood with 3 prior auction transactions. This provides some evidence that auctions tend to cluster in certain neighbourhood. The distribution of auction by sellers' ethnicity are 59%, 27% and 14% for Malay, Chinese and Indian, respectively, are broadly consistent with Malaysia's ethnic distribution.

The average size of the property is 2,310 sq.ft. LACA or non-judicial types of auctions are the dominant (72%) form of auction which is consistent with the majority high rise properties (81.8%) in our sample. Most of these high rise properties carry strata titles which render them to non-judicial route once borrowers defaulted on their mortgages. Past auction attempt (failure) averaged at 1.3 times with 87% of the auctions in our sample comprising first time auction. We take caution of this number since Yahya, Daud and Chan's (2008) study on property auctions in Klang Valley (an area comprising Kuala Lumpur and its suburbs, and adjoining cities and towns in the state of Selangor) find that 36.1% (3.7% for this study) of their sample during 2005 to 2007 comprises properties that remained unsold after more than three auction attempts. This suggests our database could have missed some auctions' previous transactions. This however will not affect our subsequent findings as only more recent auction data are used in the regression models. Moreover, all our results are robust to the exclusion of number of past auction attempts from the regression models. The average house price return for KL is at 11.6% p.a. (2.9%x4) implying a rising housing market during the study period. Note that in the estimation stage, we use a natural logarithmic transformation of all variables, except the dummy variables and KL House return.

Table 2 Variable definition and descriptive statistics

Variables	Definition	Obs	Mean	Std. Dev	Min	Max
Dependent variables						
Outcome	Indicator variable taking the value of one if the property is sold, zero otherwise.	937	70.3%	45.7%	0	1
Sales Price	Auction selling price	507	272,803	579,437	20,000	7,900,000
Sales Price/Reserve Price	Auction selling price/Reserve price	507	22.8%	40.2%	16.0%	627.5%
Explanatory variables						
Condo	Indicator variable taking the value of one if the property is a condominium, zero otherwise.	937	0.159	0.366	0	1
Apartment	Indicator variable taking the value of one if the property is an apartment, zero otherwise.	937	0.408	0.492	0	1
Flat	Indicator variable taking the value of one if the property is a flat, zero otherwise.	937	0.251	0.434	0	1
House	Indicator variable taking the value of one if the property is a house, zero otherwise.	937	0.182	0.386	0	1
Distance	Nearest travelling distance (km) of the subject auction property from KLCC Petronas Twin Tower (a proxy to city centre)	937	10.76	3.80	0.25	23.4
Auction Volume in Vicinity	Past 6 months auction volume in the same residential area.	937	3.74	5.28	0	27
Property Size (sqft.)	Land area of the property measured by square feet.	937	2,310	29,759	334	910,355
Reserve Price	Auction reserve price	937	397,427	1,000,482	25,200	12,200,000
Malay	Indicator variable taking the value of one if the property owner is a Malay, zero otherwise.	937	0.591	0.492	0	1
Chinese	Indicator variable taking the value of one if the property owner is a Chinese, zero otherwise.	937	0.272	0.445	0	1
Indian	Indicator variable taking the value of one if the property owner is Indian, zero otherwise.	937	0.137	0.344	0	1
LACA	Indicator variable taking the value of one if it is a LACA (non-judicial) auction, zero otherwise.	937	0.718	0.450	0	1
High Court	Indicator variable taking the value of one if it is a High Court auction, zero otherwise.	937	0.223	0.417	0	1

Land Office	Indicator variable taking the value of one if it is a Land Office auction, zero otherwise.	937	0.058	0.235	0	1
Auction Attempt	Number of attempt(s) a property has been put up for auction.	937	1.295	0.917	1	12
KL House Return	Past 3 months Kuala Lumpur House Price Index cumulative returns.	937	0.029	0.029	-0.013	0.089

Empirical Analysis

Our empirical analysis focuses on the impact of sellers' ethnicity on auction performance. Univariate analyses are first carried out to examine the relationship between the probability of auction sale (*Outcome*), *Sale Price* and *Sale Premium* and sellers' ethnicity before expanding the analyses to a multivariate framework. In **Table 3** we report the auction performance by splitting the full sample according to Bumi and non-Bumi status. We find that the probability of sales (*Outcome*), *Sale Price* and *Sale Premium* (Sale price/Reserve price) of Bumi owned properties are lower than non-Bumi properties on average. Further decomposition of the non-Bumi data into Chinese and Indian suggest that the differences are mainly driven by Chinese owned properties.

Table 3: Mean for dependent variables by owners ethnicity

	Outcome (0,1)	Sale price	Sale premium
All	70.3% (937)	RM272,803 (507)	22.8% (507)
Bumi	68.2% (554)	RM216,630 (294)	20.5% (294)
Non-Bumi	73.4% (383)	RM350,340 (213)	26.1% (213)
Chinese	76.1% (255)	RM404,437 (148)	28.1% (148)
Indian	68.0% (128)	RM225,530 (65)	21.5% (65)

Number of auctions is in brackets

We next examine the impact of sellers' ethnicity on auction performance in a multivariate framework. We first conduct a logistic regression analysis where the dependent variable is a binary variable taking value of one if the property was sold and zero otherwise (*Outcome*). The control variables include property specific variables, namely, property reserve price, the distance to KLCC Petronas Twin Tower (*Distance*), and dummies indicating whether the property is an apartment, condominium and house (the base property is flat). Neighbourhood factors are captured by the number of auctioned properties surrounding the auction (*Auction in Vicinity*) during the past 6 months prior to the auction date. A number of studies have documented that proximity to a foreclosure property does result in a price discount ranging from 8.7% (Lin, Rosenblatt and Yao, 2009) to approximately 1% (Immergluck and Smith 2006, Campbell, Giglio and Pathak, 2009).

Auction type dummies are included to capture the impact of judicial auctions (*High Court, Land Office*) with non-judicial auction (*LACA*) as the base case. Number of past auction attempt is included since the auction reserve price is mechanically reduced when a property fails to sell at a prior auction. The housing market conditions are captured by the 3 months Kuala Lumpur House Price Index cumulative returns (*KL House Return*) prior to the auction date.

The estimation results are presented in **Table 4**. Note that all the regression models include year dummies. Model 1 is the base model to measure the relationship between *Non-Bumi* dummy and the auction outcome. In Model 2, we incorporate all the control variables into the model. Model 3 decomposes the *Non-Bumi* dummy into two separate ethnic groups, namely *Chinese* and *Indian* with *Bumi* as the base case. The coefficients for the respective *Non-Bumi* ethnic groups will help distinguish whether all or only selected ethnic group perform differently from the *Bumi* group.

Under the Bumi rule hypothesis, Bumi properties which can only be sold to Bumi buyers will have lower prices and demand due to oversupply of these properties to the market. Consistent with this hypothesis, we do observe a positive and significant *Non-Bumi* coefficient in Model 1. This result is robust to the inclusion of all the control variables as shown in Model 2. The coefficient of *Non-Bumi* implies that a property owned by non-Bumi has more than 37% greater chance of being sold than Bumi property. Model 3 shows that the positive impact of *Non-Bumi* coefficient flows primarily from the *Chinese* dummy while *Indian* dummy is indifferent from zero. This result does not fully support the Bumi rule hypothesis which predicts both *Chinese* and *Indian* to be more sellable than the Bumi properties.

Most of the control variables carry the expected signs. Consistent with Stevenson and Young (2014), *Reserve Price* has a significant negative coefficient with respect to the probability of sales supporting McAfee and Vincent (1992)'s model which theorize that pricier properties are more difficult to sell. As expected, proximity to KLCC Twin Tower (*Distance*) increases the probability of sales. The variable *Auctions in Vicinity* is negative and significant implying properties located in neighbourhoods with more auctioned

properties have a lower probability of being sold. This could be due to the negative externalities associated with areas with higher concentration of auctioned properties which affects the performance of an auctioned property that belong to the same neighbourhood. *Apartment, Condo and House* have a higher probability of sales compared to *Flat*. This could due to deteriorated physical condition and/or neighbourhood characteristics that affect a flat's probability of sales negatively. Interestingly, the probability of sale for properties auctioned by *High Court* is higher than non-judicial auctions (*LACA*, the base case). This finding is counterintuitive since judicial auctions are known to be less efficient and time consuming compared to non-judicial auctions. The coefficient of *Attempt* is positive and statistically significant implying that the probability of sales increases when the number of previous auction attempt increases. This could due to the mechanical 10% reduction in reserve price after each failed auctions which makes the property cheaper and more attractive, thus easier to dispose. Unlike Ong et al. (2005) who find that depressed property market conditions do dampen the demand for auctioned properties. We do not observe a significant relationship between past house price return in Kuala Lumpur and the probability of sales.

Table 4: Logistics Models Examining the Probability of Sales

	Model 1	Model 2	Model 3
Intercept	0.190	9.334***	9.901***
	(1.26)	(6.15)	(6.27)
Non-Bumi	0.322**	0.373**	
	(2.16)	(2.23)	
Chinese			0.677***
			(3.47)
Indian			-0.124
			(-0.51)
Reserve Price		-0.715***	-0.757***
		(-6.20)	(-6.30)
Distance		-0.474**	-0.490**
		(-2.35)	(-2.38)
Auctions in Vicinity		-0.186**	-0.190**
		(-2.09)	(-2.11)
Apartment		0.566***	0.531**
		(2.59)	(2.43)
Condo		0.776**	0.692**
		(2.43)	(2.12)
House		1.148***	1.175***
		(2.82)	(2.81)
High Court		0.509**	0.544**
		(2.24)	(2.39)
Land Office		0.534	0.496
		(1.53)	(1.45)
Auction Attempt		5.395***	5.393***
		(4.03)	(4.03)
KL House Return		-2.672	-2.827
		(-0.94)	(-0.99)
Year Dummies	Yes	Yes	Yes
No of Obs	937	937	937
Pseudo R^2	0.03	0.17	0.18

Notes: Logistic models are estimated where the dependent variable in a binary variable. It takes the value of unity if the property sold at auction and zero otherwise. * indicates significance at 10%, ** at 5% and *** at 1%.

Table 5 reports the estimation results of a hedonic pricing model with the dependent variable modeled as the log of the *Sale Price*, for those properties successfully sold at auction. We use the same set of explanatory variables as in Table 4. The only exception is *Reserve Price* which has been replaced with *Property Size* since the *Reserve Price* is highly correlated with *Sale Price* (0.96). As shown in Models 1 and 2, *Non-Bumi* is positive and significantly related to *Sale Price* implying that *Non-Bumi* properties obtain a higher sale price in the auction market even after we control for property, locational and neighborhood factors. A *Non-Bumi* coefficient of 0.09 implies a premium of approximately 9% in the selling price of a non-Bumi owned property. This equates to a premium of RM24,552 based on the average sale price in our sample. Similar to auction outcome results, the positive impact of *Non-Bumi* is driven by Chinese properties while Indian properties are indifferent from Bumi properties.

Turning to the control variables, except for *Auction in Vicinity* and *High Court*, most of the controls that increase (decrease) the probability of sale also lead to higher (lower) sale price. Properties that are larger in size (*Property Size*), nearer to KLCC Twin Tower (*Distance*), and carry lower failed auction attempts (*Auction Attempt*) are found to fetch a higher selling price. As expected, *Condo, Apartment and House* obtain a higher sale price than *Flat*. The past housing market conditions do not exert any impact on the selling price.

Table 5: Hedonic Model of Sale Price

	Model 1	Model 2	Model 3
Intercept	11.992***	4.683***	4.740***
	(98.31)	(9.38)	(9.42)
Non-Bumi	0.374***	0.091**	
	(4.32)	(1.96)	
Chinese			0.145***
			(2.61)
Indian			-0.019
			(-0.37)
Property Size		1.164***	1.155***
		(15.27)	(15.08)
Distance		-0.345***	-0.340***
		(-5.10)	(-5.12)
Auctions in Vicinity		-0.012	-0.012
		(-0.50)	(-0.51)
Apartment		0.171***	0.156***
		(3.64)	(3.38)
Condo		0.503***	0.477***
		(5.90)	(5.55)
House		0.545***	0.534***
		(4.30)	(4.27)
High Court		-0.058	-0.043
		(-0.86)	(-0.66)
Land Office		0.029	0.034
		(0.27)	(0.32)
Auction Attempt		-0.266***	-0.263***
		(-5.18)	(-5.04)
KL House Index Return		-0.204	-0.289
		(-0.26)	(-0.37)
Year Dummies	Yes	Yes	Yes
No of Obs	507	507	507
R^2	0.06	0.77	0.77

Notes: Hedonic models are estimated with the dependent variable being the log of the sale price achieved. The observations included in this specification are solely those properties that were successfully sold at auction. * indicates significance at 10%, ** at 5% and *** at 1%.

The final empirical analysis in **Table 6** considers an analysis of the *Sale Premium* measured as the ratio of sale price relative to reserve price. As discussed previously, given the nature of reserve price is determined (pegged to appraisal value for firs time auction and 10% reduction for each subsequent auction attempts) and the fact that we may not be accurately capture the numbers of past auction attempts, our results do not necessary imply that non-Bumi properties are selling at a higher premium against market or appraisal value compared to Bumi properties. The empirical specifications are similar to those in Table 5. Our key variable of interest, i.e. *Non-Bumi* exhibits a similar pattern as in the sale *Outcome* and *Sale Price* regressions. In this case, *Non-Bumi* properties sale premium is 7.1% higher than Bumi properties. Turning to the control variables, most have lost their significance in sale premium regressions. The only two variables that retain their sign and significance are *Apartment* and *Auction Attempt*.

As a whole, our results suggest that non-Bumi properties are more popular, pricier and sold at a higher premium over the reserve price as compared to Bumi owned properties. All our empirical analyses show that the positive results of *Non-Bumi* coefficients are driven by *Chinese* owned properties. Not reported here, our all regressions results are robust to the control of auctioneers and auctioning bank identity and the exclusion of property valued more than RM1 million (83 observations). The latter robustness test is to ensure that our results are not driven by expensive properties owned mainly by non-Bumi.

Table 6: Sale Premium (Sale price/Reserve price) on Properties Sold at Auction

	Model 1	Model 2	Model 3
Intercept	1.196***	1.538***	1.563***
	(38.63)	(6.88)	(7.00)
Non-Bumi	0.058*	0.071**	
	(1.74)	(2.44)	
Chinese			0.094***
			(2.87)
Indian			0.023
			(0.60)
Property Size		-0.046	-0.050
		(-1.52)	(-1.63)
Distance		0.009	0.011
		(0.29)	(0.36)
Auctions in Vicinity		-0.010	-0.010
		(-0.43)	(-0.43)
Apartment		-0.101*	-0.107*
		(-1.79)	(-1.88)
Condo		0.006	-0.005
		(0.08)	(-0.07)
House		-0.036	-0.041
		(-0.49)	(-0.56)
High Court		-0.013	-0.007
		(-0.30)	(-0.16)
Land Office		-0.005	-0.003
		(-0.09)	(-0.05)
Auction Attempt		-0.082***	-0.081***
		(-2.98)	(-2.93)
KL House Index Return		0.563	0.526
		(0.76)	(0.71)
Year Dummies	Yes	Yes	Yes
No of Obs	507	507	507
R^2	0.01	0.04	0.04

Notes: OLS models are estimated with the dependent variable being the percentage change of the sale price over reserve price. * indicates significance at 10%, ** at 5% and *** at 1%.

Discussion of results

There are two plausible reasons why Chinese properties are more popular and expensive than their Bumi counterparts. First, *Chinese* dummy in our models could have captured the unobserved property or neighbourhood characteristics not included in our regression models. It should be noted that our dataset does not include controls for the quality of buildings such as the age of the building and the level of maintenance and refurbishment of the properties.[6] Malaysian Chinese who, on average, are wealthier than Bumi are likely to afford expensive properties than Bumi. This view is supported by Indian dummies which are indifferent from zero. Malaysian Indians' average income is not significantly higher than Bumi. In short, what we observe is a manifestation of building quality working through sellers' income status.

A second plausible reason is related to restricted supply of non-Bumi properties working through Bumi rule and the existence of racial residential segregation phenomenon in Malaysia. The hypothesis is that the demand for Chinese owned auctions are high due to restricted supply imposed by Bumi rule and self-segregation of bidders in Malaysia where they tend to bid for properties owned by sellers of their own races. Racial residential segregation is defined as the separation of racial groups in urban space (Boustan, 2013). This phenomenon is not unique to Malaysia. In the US metropolitan areas, whites and blacks tend to live in different jurisdictions and in different neighbourhoods within jurisdictions (Boustan, 2013). Cutler, Glaeser, and Vigdor (1999) argue that blacks in the US tend to live near to other blacks because they enjoy the company of black friends or because the share the common preferences for local amenities. This observation is likely to be relevant in Malaysian context. In other words, a Non-Bumi's choices are constrained by the Bumi regulation and their tendency to stay in a homogenous neighbourhood of their own races.

Table 7 provides aggregate data to support this possibility. We compute a gross measure of number of potential bidders for each of the race groups on the basis that each

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[6] A consolation to this shortcoming is the inclusion of reserve price or property size in all our models as one may argued that reserve price is related to the quality of the building.

race group tend to bid for properties owned by sellers of their own race. This variable provides a measure of how a strong a property is being demanded by bidders of the same races. Table 7 shows that Chinese properties have the highest number of potential bidders at 2,549 for each auctioned property, which is double that of Bumi (1,282) while Indian (1,328) potential bidders do not vary much from the Bumi. These results when related to the previous regression results suggest a demand and supply story where Chinese auctions are highly demanded in Kuala Lumpur due to Bumi rule restriction and racial segregation phenomenon in Malaysia. Wong (2013) also finds the opposing sale price effects of Chinese and non-Chinese constrained units in Singapore. The author relates the positive price effects of Chinese units to Chinese buyers' preference to live in Chinese neighbourhood more than non-Chinese and thin markets for Chinese buyers since the attributes preferred by the Chinese are sparse. Ideally, we should control for the number of bidders during the auction process as in Ong et al. (2005), Idee et al. (2011) and Stevenson and Young (2014). Unfortunately, this information is not available in this research.

Table 7: Total number of auctions and population size by ethnicity

	Total	Bumi	Chinese	Indian	Others
Population in Malaysia (in million) 2010	26.78 (100%)	17.95 (67.0%)	6.52 (24.3%)	1.97 (7.4%)	0.35 (1.3%)
Population in KL (in million) 2010	1.55 (100%)	0.71 (45.8%)	0.65 (41.9%)	0.17 (11.0%)	0.02 (1.3%)
Total auctions in KL	937 (100%)	554 (59.1%)	255 (27.2%)	128 (13.7%)	0
Population in KL/Total Auction in KL	1,654	1,282	2,549	1,328	N.A.

Data Source: Department of Statistics (2011) and Lelongtips

Conclusions and Further research

This paper is still at its preliminary stage. While we empirically show that compared to Bumi owned properties Chinese properties are more sellable and pricier, it is still unclear what factors drive this differences. We offered two potential explanations. First, omitted variables bias, i.e. the aesthetic variables such as quality of the building not captured in our model. We attempt to overcome this limitation by merging data with our additional property attributes (tenure, number of bedroom, the existence of Bumi lot restrictions) to be extracted from *Proclamation of Sales* (POS) document. POS is prepared by auctioneers detailing auctioned property characteristics and the conditions of sales.

The second explanation is related to the high demand of for Chinese properties due to Bumi rule restrictions and residential racial segregation phenomenon, thus making Chinese owned properties more sellable and expensive as compared to Bumi owned properties. Our next strategy is to conduct additional tests to disentangle the impacts of Bumi rule and residential racial segregation on auction performance. Capitalized on POS data which indicates whether a Bumi-owned property carries Bumi Reserved restrictions, we will explore whether there are differences between Bumi owned properties with and without Bumi Reserved restrictions with respect to sale performance. If Bumi rule are valid, we will expect Bumi Reserved restrictions to exhibit inferior performance as compared to those without these restrictions.

Next, we will determine whether an auction is located in a homogenous racial neighbourhood using Malaysia residential phonebook by matching names to ethnicities and by asking local real estate experts. Interaction variables will be created to distinguish the impact of Bumi rule restrictions from racial segregation phenomenon. For instance, for Bumi rule restrictions to be valid, we will expect *Chinese*Bumi Neighbourhood* (a Chinese property located in Bumi neighbourhood) to associate positively with auction sales performance while negative for *Bumi*Chinese Neighbourhood* (a Bumi propery located in Chinese neighbourhood). Racial segregation hypothesis on the other hand will predict the coefficients to be negative and positive respectively.

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