# Chinese Demand for Sydney Residential Property 2000Q1 to 2011Q2[♦]

Submission to the House of Representatives Standing Committee on Economics on the "Inquiry into Foreign Investment in Residential Real Estate"

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## ABSTRACT


- Anecdotal evidence suggests that Chinese nationals are increasing housing prices globally.
- We investigate the case for Sydney, where strict foreign ownership restrictions apply, using a randomised sample of about 74,000 established home sales with owner information from the years 2000 to 2011.
- We find a significant increase in the proportion of sales to Chinese buyers over time, with 6.51% of sales to Chinese buyers in 2000 increasing to 13.26% of sales in 2010 and being 10.30% in 2011.
- On average, Chinese buyers pay 2.04% or $13,800 less than other buyers, controlling for a host of characteristics such as housing quality, suburb and date of purchase.
- In addition, we find no evidence that Chinese buyers pay more than other buyers when sub-sampling by year or after separating our sample into Chinese versus non-Chinese populated suburbs and prestige versus non-prestige suburbs.
- The implication of our findings is that Chinese buyers, on average, do not seem to overpay for houses as some commentary suggests. On the contrary, we find evidence that Chinese buyers pay less than other buyers for similar quality homes.
- We plan to conduct a more comprehensive study using the full sample of all Sydney home sales from 2000 to 2013. This will provide better insights into the overall size of the discount paid by Chinese buyers.

## 1. Introduction

Anecdotal evidence suggests that wealthy Chinese nationals are increasing housing prices globally. We investigate the case for the Sydney metropolitan area, where strict foreign ownership restrictions apply, using established home sales. We measure whether the price differential between Chinese and non-Chinese buyers (for similar quality properties) has increased from the first quarter of 2000 to the second quarter of 2011.

Using a sample of 74,297 randomly selected housing sales data containing owner information, we differentiate between Chinese buyers and other buyers. Chinese buyers on average buy lower priced homes that are larger, with slightly more bedrooms, bathrooms and parking. We find that the proportion of Chinese buyers has increased over the sample period from 6.5% in 2000 to 13.26% in 2010 and 10.30% in 2011. Our main finding is that Chinese buyers, on average, pay 2.04% or $13,800 less (i.e. *discount*) than other buyers after controlling for a host of other sales characteristics such as housing quality, suburb and date of purchase. We also find this discount to be particularly significant in the sample periods 2001-2002 and 2006-2007. Further, our findings are robust to subsampling by Chinese populated suburbs or high-priced (prestige) suburbs.

Overall, our findings indicate that over the past decade Chinese buyers have paid relatively less than non-Chinese buyers for similar quality homes in the Sydney metropolitan area. The implication is that no buyer premium attaches to the Chinese demand in this region.

## 2. Background

The booming Chinese economy in the 21st century has created a large wealthy middle class. The desire of this group to emigrate and purchase homes in their migrating country has been suggested to have caused rising prices in major cities in Australia and Canada, creating affordability issues for locals.

Such evidence so far has been anecdotal. For example a house in the Sydney suburb of Eastwood sold for AUD$2.385m on the 31st August 2013 with many bidders being Chinese (Craze (2014)). The Australian Property Monitors website, at the time of writing, estimates the price of the Eastwood home to be at most AUD$1.5m based on sales of similar homes in the area. Real estate agents are also taking Chinese to established luxury homes despite foreign buyers being prohibited from purchasing established homes (Van Den Broeke, Sainsbury and Silmalis (2014)). The media has also voiced similar concerns of foreign Chinese buyers increasing housing prices in Auckland (Field (2014)), Hong Kong (Lee (2014)), London (Hall (2013)), Singapore (Koh (2013)) and Vancouver (Ghosh (2013)).

Community concerns that foreign buyers, particularly Chinese nationals, are pushing up housing prices has led the Australian and Canadian governments to react. In February 2014 the Canadian government scrapped its investor immigrant visa scheme (Young (2014)), only to announce in March 2014 a new scheme which doubles the investment requirement (Wee (2014)). The scrapped scheme allowed migrants to become Canadian residents if they loaned the government a minimum of C$1.6 million interest free for a period of five years. The Canadian Minister for Citizenship and Immigration admitted that “the flouting of residency rules by mainlanders (i.e. Chinese nationals) was one of the reasons its investor visa scheme was axed.”

Also in March 2014, the Australian government announced an inquiry into foreign investment in residential real estate (O'Dwyer (2014)) (which this report is addressing) due to “concerns raised in the wider community from time to time that foreign investment in Australian real estate is causing a distortion in the market and making housing less accessible and affordable.”

There is however little research into whether increasing housing prices is attributable to buying from a wealthy subset (such as Chinese nationals) despite the growing concerns in Australia and Canada. Ley and Tutchener (2001) show that increasing housing prices in Toronto and Vancouver in the 1990s are associated with the immigration of wealthy individuals from Hong Kong and Taiwan. However, they rely on aggregate house price index data to draw their conclusions. Immigration has been shown to causally increase housing prices and rents, although

the analysis is confined to migrant inflow data and its effects on aggregate prices and rents at the district or city level (e.g. Fischer (2012); Gonzalez and Ortega (2013); Saiz (2003); Saiz (2007)).

In Australia, Chinese nationals may purchase established homes and therefore affect prices in four ways:

1. As an Australian permanent resident (with Chinese citizenship);
2. Through a spouse, solicitor or friend that is a permanent resident (or citizen) or as an Australian citizen transferring money from China to Australia;
3. As a temporary resident, if they buy one established home of up to $300,000 prior to 2010 and with no maximum afterwards (the home must be sold once the temporary resident leaves Australia);
4. As a foreign buyer if they redevelop the property.

Channels 3 and 4 are subject to FIRB approval and are captured in FIRB statistics (though not at the sales level). We expect only small inflows by Chinese nationals from these channels with the other two channels making up the majority.[1]

In this study we use individual house sales transactions to determine whether rising prices in the Sydney housing market in the prior decade is attributable to potential buying pressure of Chinese nationals. Specifically, our report seeks to address whether Chinese buyers pay relatively more than non-Chinese buyers for similar quality homes, and whether this difference varies as a function of suburb demographics and the prestige of a suburb.

## 3. Data

Our property data comes from the Australian Property Monitors (APM). This database contains established housing sales and rental listings for the Sydney metropolitan area.[2] The sales data indicates the sales price and contract date over the sample period from the first quarter of 2000 to the second quarter of 2011. The dataset also contains several house characteristics such as address, sale type (e.g. auction or private treaty), dwelling type (e.g. house or unit), number of bedrooms and bathrooms, the size of the house (in square metres), and availability of car space(s). From the total APM sample of about 500,000 housing sales for the entire Sydney Metropolitan Area, we randomly select 100,000 housing sales. For these 100,000 random sales we then obtain specific owner information by recursively searching the APM property website.[3] After filtering those sales where owner information is missing, our sample contains a total of 74,297 transactions. We also gather information on ancestry of residents at the suburb level from the Australian Bureau of Statistics (ABS) Census 2006 website.

### *3.1. Classification of Chinese Buyers*

In the case of individual owners, the APM website indicates the owner(s)' name and whether the owner is an individual or a company. We use the information on the owners' name to separate Chinese buyers from non-Chinese buyers as described below. Clearly, this method of categorising Chinese buyers could inadvertently misclassify some Australian citizens with Chinese ancestry as Chinese citizens or migrants. We do not think however that this represents an issue for the estimation of the Chinese buyers' *premium* (or *discount*). Indeed, to the extent that these

[1] For example we estimate that foreign and temporary resident Chinese buying of Sydney established residential property in 2012/2013 based on FIRB annual reported numbers to be $369 million. 2012/2013 is also the financial year with the greatest reported foreign established residential buying. While it is not a trivial amount, it is not expected to affect housing prices unless sales are concentrated in a particular suburb.

[2] The APM website is the following www.apmpropertydata.com.au. Unfortunately, we could not include in our study also new home developments as the APM database lacks housing characteristic information in this case.

[3] Our original sales dataset obtained from APM does not contain owner information. We harvest this information by developing a web scraping algorithm that uniquely identifies each house sale based on the APM unique identifiers of the transaction, address and event date.

misclassified individuals are willing to pay less (more) than Chinese nationals, the misclassification is more likely to induce us to underestimate the actual Chinese premium (discount).

We classify whether the owner(s) is a Chinese buyer based on the owner surname. We then match these surnames with a comprehensive list of about 600 unique anglicised Chinese surnames. This list should cover most Chinese surnames as it is estimated that the top 100 Chinese surnames cover about 85 percent of China's citizens.[4] By contrast, more than 70,000 surnames cover about 90 percent of Americans (LaFraniere (2009)). From this database, we remove any Chinese surnames that are also: (i) Vietnamese surnames[5], or (ii) in the top 25 Korean surnames.[6] We decided not to apply the full list of Korean surnames because some uncommon Korean surnames are instead very common Chinese surnames (e.g., Wang). Our results remain qualitatively similar when we do not apply these filters based on Korean and Vietnamese surnames. Appendix 1 lists the surnames we use.

*3.2. Summary Statistics*

Table 1 reports the summary statistics for the mean sales price (in AUD$ '000s), dwelling type (house or unit), the area size (in square metres) of the property, and the number of bedrooms, bathrooms and parking space(s). These statistics are reported for the entire sample and for Chinese and non-Chinese buyers, separately. The variable *Chinese minus Non-Chinese* reports the difference in means between Chinese and non-Chinese sales. Two-sided *t*-tests are used to test whether the differences are statistically significant.

**Table 1**
**Summary Statistics**

The table reports the mean sales price (in AUD$ '000s), dwelling type (house or unit), the area size (in square metres) of the property, the number of bedrooms, the number of bathrooms and whether the property has parking space(s). The sample is a randomised sample of 74,297 Sydney metropolitan housing sales from the Australian Property Monitors from 2000Q1 to 2011Q2. A buyer is classified as a Chinese buyer if at least one of the owners of the property has a Chinese surname (please refer to Section 3.1 for more details on this classification). The averages are reported for the entire sample, and for Chinese and non-Chinese buyers. The variable *Chinese minus Non-Chinese* reports the difference in averages between Chinese and non-Chinese buyers. The symbols ***,**,* indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

| | Price ($'000s) | % Houses | House Area Size (sqm) | Number of Bedrooms | Number of Bathrooms | % Has Parking | N |
|---|---|---|---|---|---|---|---|
| All | 676.305 | 0.617 | 365.019 | 2.859 | 1.619 | 0.494 | 74,297 |
| Chinese | 640.788 | 0.612 | 384.175 | 2.997 | 1.702 | 0.599 | 7,375 |
| Non-Chinese | 680.219 | 0.617 | 363.100 | 2.844 | 1.610 | 0.482 | 66,922 |
| Chinese minus Non-Chinese | -39.431** | -0.005 | 21.075*** | 0.154*** | 0.092*** | 0.117*** | |

We find that on average Chinese buyers pay $39,000 less for homes, and buy 21.08 square metre larger homes with slightly more bedrooms, bathrooms and parking, than non-Chinese buyers. The differences are statistically significant at the 1% level. There is also no difference in the preferences for houses rather than units between Chinese and non-Chinese buyers. About 10% of our sample (7,375 sales out of 74,297) consists of Chinese buyers. Note that while it appears that Chinese buy cheaper houses than non-Chinese, we have not controlled for housing quality, suburb or the quarter/year of purchase. In the next section, we will conduct a multivariate analysis of the relationship between Chinese demand and house prices.

[4] See http://en.wikipedia.org/wiki/List_of_common_Chinese_surnames.
[5] See http://en.wikipedia.org/wiki/Category:Vietnamese-language_surnames.
[6] See http://en.wikipedia.org/wiki/Korean_surnames. The top 25 Korean surnames cover about 86% of the South Korean population according to the Korean National Statistical Office 2000 records.

**4. Multivariate Analysis**

We estimate the Chinese buyers' premium using the following hedonic model measured with ordinary least squares regression:

$$\log(h_{it}) = a_{t0}^{h} + a_{Ch}^{h} Chinese_i + \sum_{c=1}^{C} a_{tc}^{h} z_{itc} + \sum_{s=1}^{S} a_{s}^{h} Suburb_{is} + a_{YQ}^{h} YQ_{it} + \epsilon_{it}^{h} \quad (1)$$

where subscript *i* denotes a particular housing sales transaction at date *t*. The variable $\log(h_{it})$ is the natural log of the house price, $Chinese_i$ is the indicator variable that is equal to 1 if the buyer is Chinese, and 0 otherwise. The independent variable $z_{itc}$ controls for *c* housing characteristics. These characteristics include: number of bedrooms, number of bathrooms, and availability of car space(s), dwelling type fixed effects (e.g. house or unit), street type (e.g. street or lane) fixed effects, area size of the house[7], whether the sale was at an auction or private treaty, and whether the property was sold to a company owner. $Suburb_{is}$ are fixed effects for the suburb that the sale belongs to, and $YQ_{it}$ is fixed effects for the year and quarter that the sale was made. The coefficient $a_{Ch}^{h}$ is our measurement of the Chinese premium. A positive and statistically significant $a_{Ch}^{h}$ would suggest that Chinese buyers pay higher prices than other buyers for a similar property.

We also measure $a_{Ch}^{h}$ by: (i) year, (ii) prestige suburbs and (iii) Chinese suburbs. Prestige suburbs are defined as suburbs where the median sales price is in the top quintile in the past year while Chinese suburbs are defined as suburbs where Chinese-ancestry are the first or second largest response groups from the 2006 ABS Census.

**5. Results**

*5.1 Do Chinese Pay More?*

Table 2 reports yearly coefficient estimates of $a_{Ch}^{h}$ for the *Chinese premium* as illustrated in equation 1 both within each year and across all years.[8] Panel A shows estimates for the entire sample, Panel B for Chinese and non-Chinese suburbs and Panel C for prestige and non-prestige suburbs. We also report the percentage of Chinese sales and the adjusted $R^2$ of the regressions.

Our findings show that Chinese buyers pay, on average, lower prices than non-Chinese buyers after controlling for several house characteristics. As we show in Panel A of Table 2, the estimate of the Chinese premium across all years is -0.0204 (i.e., Chinese *discount*), which is statistically significant at the 1% level. This suggests that Chinese buyers pay, on average, 2.04% less for a similar quality property than non-Chinese buyers. Since the average house price in our sample is $676,000 (refer to Table 1), this translates into a $13,800 discount for Chinese buyers. For the yearly analysis, we find these estimates to be significantly negative during the periods 2000 - 2002 and 2006-2007.

When we split the sample between Chinese and non-Chinese suburbs in Panel B of Table 2 we find that Chinese buyers tend to pay less for non-Chinese suburbs. This difference is not statistically significant for Chinese suburbs. This suggests that Chinese buyers are less price-sensitive in Chinese suburbs although we do not find that they pay a premium for Chinese suburbs compared with other buyers. Chinese buyers also make up about a third of sales in Chinese suburbs. On the other hand for non-Chinese suburbs, Chinese buyers pay 2.4% less than non-Chinese buyers, statistically significant at the 1% level.

[7] House area sizes are truncated at the 2nd and 98th percentile due to outliers. Unfortunately we do not have area sizes for units or other non-house dwellings.

[8] Coefficient estimates for other variables of the model are available on request.

**Table 2**
**Chinese Coefficient Estimates**

The table reports estimate of the *Chinese* coefficient in equation 1. Coefficients are estimated by yearly and across all years. The sample is a random sample of 74,297 Sydney metropolitan housing sales from Australian Property Owners from 2000Q1 to 2011Q2. A buyer is classified as a Chinese buyer if at least one of the owners of the property has a Chinese surname (please refer to Section 3.1 for more details on this classification). Panel A reports estimates for the entire sample. Panel B reports estimates for Chinese and non-Chinese suburbs. A Chinese suburb is defined as a suburb where Chinese-ancestry are the first or second largest response groups from the 2006 Australian Bureau of Statistics Census. Panel C reports estimate for prestige and non-prestige suburbs. Prestige suburbs are defined as suburbs where the median sales price is in the top quintile in the past year. We also report the percentage of Chinese sales and adjusted $R^2$ of the models. Clustered standard errors by suburb are used. The symbols ***,**,* indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

**Panel A. Entire Sample**

| Year | Estimate | N | % Chinese Sales | Adjusted $R^2$ |
|---|---|---|---|---|
| 2000 | -0.0285 | 5,574 | 6.51 | 0.75 |
| 2001 | -0.0264 *** | 9,139 | 8.04 | 0.77 |
| 2002 | -0.0204 * | 8,871 | 9.41 | 0.77 |
| 2003 | -0.0087 | 2,827 | 8.77 | 0.79 |
| 2004 | -0.0371 | 2,181 | 6.79 | 0.80 |
| 2005 | -0.0245 | 2,898 | 6.80 | 0.78 |
| 2006 | -0.0493 ** | 3,002 | 7.73 | 0.80 |
| 2007 | -0.0234 *** | 16,618 | 11.28 | 0.82 |
| 2008 | -0.0118 | 15,033 | 11.26 | 0.83 |
| 2009 | -0.0143 | 4,174 | 13.15 | 0.83 |
| 2010 | -0.0025 | 3,077 | 13.26 | 0.83 |
| 2011 | -0.0275 | 903 | 10.30 | 0.84 |
| All | -0.0204 *** | 74,297 | 9.93 | 0.80 |

**Panel B. Chinese and Non-Chinese Suburbs**

| | Chinese Suburbs | | | | Non-Chinese Suburbs | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Estimate | N | % Chinese Sales | Adj. $R^2$ | Estimate | N | % Chinese Sales | Adj. $R^2$ |
| 2000 | -0.0136 | 698 | 17.34 | 0.81 | -0.0346 | 4,876 | 4.96 | 0.74 |
| 2001 | -0.0187 | 1,177 | 20.82 | 0.8 | -0.0273 ** | 7,962 | 6.15 | 0.76 |
| 2002 | 0.0053 | 1,295 | 24.25 | 0.79 | -0.0317 ** | 7,576 | 6.88 | 0.76 |
| 2003 | -0.0333 | 387 | 23.51 | 0.85 | 0.0112 | 2,440 | 6.43 | 0.77 |
| 2004 | -0.0521 * | 253 | 15.42 | 0.84 | -0.0233 | 1,928 | 5.65 | 0.79 |
| 2005 | -0.0208 | 377 | 22.81 | 0.82 | -0.0292 | 2,521 | 4.40 | 0.77 |
| 2006 | -0.0569 * | 371 | 24.80 | 0.81 | -0.0450 * | 2,631 | 5.32 | 0.79 |
| 2007 | 0.0023 | 2,647 | 30.71 | 0.84 | -0.0362 *** | 13,971 | 7.59 | 0.81 |
| 2008 | 0.0000 | 2,609 | 30.20 | 0.84 | -0.0146 | 12,424 | 7.28 | 0.82 |
| 2009 | 0.0283 | 664 | 37.95 | 0.84 | -0.0343 * | 3,510 | 8.46 | 0.83 |
| 2010 | 0.0034 | 435 | 38.16 | 0.81 | -0.0016 | 2,642 | 9.16 | 0.83 |
| 2011 | -0.0423 | 128 | 31.25 | 0.89 | -0.0118 | 775 | 6.84 | 0.83 |
| All | -0.0077 | 11,041 | 27.60 | 0.83 | -0.0240 *** | 63,256 | 6.84 | 0.79 |

**Panel C. Prestige and Non-Prestige Suburbs**

| | Prestige Suburbs | | | | Non-Prestige Suburbs | | | |
|---|---|---|---|---|---|---|---|---|
| Year | Estimate | N | % Chinese Sales | Adj. $R^2$ | Estimate | N | % Chinese Sales | Adj. $R^2$ |
| 2001 | -0.0254 | 2,358 | 5.98 | 0.66 | -0.0267 ** | 6,781 | 8.76 | 0.74 |
| 2002 | -0.0458 | 2,215 | 7.72 | 0.67 | -0.0140 | 6,656 | 9.98 | 0.74 |
| 2003 | 0.0200 | 635 | 8.19 | 0.73 | -0.0146 | 2,192 | 8.94 | 0.74 |
| 2004 | 0.0312 | 500 | 9.20 | 0.72 | -0.0620 ** | 1,681 | 6.07 | 0.77 |
| 2005 | 0.0072 | 530 | 5.47 | 0.71 | -0.0324 | 2,368 | 7.09 | 0.74 |
| 2006 | 0.0015 | 608 | 6.25 | 0.66 | -0.0599 *** | 2,394 | 8.10 | 0.78 |
| 2007 | -0.0377 | 2,300 | 5.96 | 0.72 | -0.0212 *** | 14,318 | 12.13 | 0.80 |
| 2008 | -0.0437 | 1,705 | 9.79 | 0.66 | -0.0086 | 13,328 | 11.45 | 0.81 |
| 2009 | -0.0390 | 677 | 8.86 | 0.70 | -0.0119 | 3,497 | 13.98 | 0.82 |
| 2010 | 0.0111 | 524 | 8.78 | 0.72 | -0.0032 | 2,553 | 14.18 | 0.81 |
| 2011 | -0.2246 * | 147 | 6.12 | 0.71 | -0.0088 | 756 | 11.11 | 0.83 |
| All | -0.0251 ** | 12,199 | 7.34 | 0.70 | -0.0188 *** | 56,524 | 10.82 | 0.78 |

We report the findings for prestige suburbs in Panel C of Table 2. Specifically, we find that Chinese buyers pay 2.51% less for prestige suburbs and 1.88% less for non-prestige suburbs, statistically significant at the 5% and 1% levels, respectively. The median price for a prestige sale in our sample is $1.08 million and non-prestige is $597,000. This implies that Chinese buyers pay, on average, $27,108 and $11,224 less for prestige and non-prestige suburbs, respectively. For the yearly analysis, we find coefficient estimates that are negative and statistically significant or not statistically significant. Our findings suggests that Chinese buyers overall pay less regardless of suburb prestige.

*5.2 Does More Chinese Buying Increase House Prices?*

Our prior results suggest that individual Chinese buyers on average pay lower prices than others. However, this analysis does not take into account the effect of more Chinese buyers (relative to other buyers) entering a suburb, which may cause house prices to rise even if Chinese individually pay less. In order to test this effect we include the variable *Chinese_Percent* in the regression indicated in Equation 1. *Chinese_Percent* is the dollar value of housing bought by all Chinese buyers divided by the dollar value of housing bought by all buyers in a suburb for a given year and quarter. We should expect the coefficient for *Chinese_Percent* to be positive and statistically significant if greater Chinese demand (relative to others) is associated with higher house prices.

Table 3 reports the findings of various models. Model 1 shows that *Chinese_Percent* is negative and statistically significant (-0.019). This suggests that if a suburb has all Chinese buyers in a particular quarter (i.e. *Chinese_Percent*=1) then house prices would be -1.9% less. Model 2 uses an additional variable *ChineseSuburb* to control for the pricing in Chinese suburbs (as defined previously), and finds the same effect.

**Table 3**
***Chinese_Percent* Estimates**

The table reports coefficient estimates various modifications of the model in equation 1 including the variable *Chinese_Percent* using ordinary least squares regression. *Chinese_Percent* is the dollar value of housing bought by Chinese buyers divided by the dollar value of housing bought by all buyers in a suburb for a given year and quarter. The sample is a random sample of 74,297 Sydney metropolitan housing sales from Australian Property Owners from 2000Q1 to 2011Q2. *ChineseSuburb* is an indicator variable equal to 1 if the suburb's Chinese-ancestry are the first or second largest response groups from the 2006 Australian Bureau of Statistics Census. *Chinese* is an indicator variable equal to 1 if at least one of the buyers of the property has a Chinese surname (refer to Section 3.1 for more details on this classification). *Company* is 1 if it is a company owner. *Auction* is 1 if the sale was sold at an auction. *t*-statistics are in parenthesis. The symbols ***,**,* indicate statistical significance at the 1, 5 and 10 percent levels, respectively.

| | Independent Variable: Ln(price) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Explanatory Variables | **Model 1** | | | **Model 2** | | | **Model 3** | | |
| *Chinese_Percent* | -0.0188 | ** | (-2.03) | -0.0188 | ** | (-2.03) | -0.0027 | | (-0.29) |
| *ChineseSuburb* | | | | 0.0343 | ** | (2.09) | 0.0341 | ** | (2.08) |
| *Chinese* | | | | | | | -0.0199 | *** | (-4.57) |
| *Company* | 0.0049 | | (1.24) | 0.0049 | | (1.24) | 0.0110 | ** | (2.49) |
| *Auction* | 0.0117 | | (1.05) | 0.0117 | | (1.05) | 0.0116 | | (1.03) |
| Number of Bedroomss | 0.1358 | *** | (24.45) | 0.1358 | *** | (24.45) | 0.1360 | *** | (24.44) |
| Number Bathrooms | 0.147 | *** | (33.02) | 0.147 | *** | (33.02) | 0.1471 | *** | (33.03) |
| HasParking | 0.0808 | *** | (9.45) | 0.0808 | *** | (9.45) | 0.0811 | *** | (9.48) |
| House*AreaSize | 0.0003 | *** | (13.36) | 0.0003 | *** | (13.36) | 0.0003 | *** | (13.33) |
| Intercept | -0.6761 | | (-0.39) | -0.7103 | | (-0.41) | -0.7305 | | (-0.42) |
| Dwelling Type Fixed effects | Yes | | | Yes | | | Yes | | |
| Suburb Fixed Effects | Yes | | | Yes | | | Yes | | |
| Year/Quarter Fixed Effects | Yes | | | Yes | | | Yes | | |
| Monthly Time Trend | Yes | | | Yes | | | Yes | | |
| Standard Errors Clustered by Suburb? | Yes | | | Yes | | | Yes | | |
| Number of Observations | 74,297 | | | 74,297 | | | 74,297 | | |
| Adjusted R-squared | 0.80 | | | 0.80 | | | 0.80 | | |

In Model 3 we include the variable *Chinese* to account for the Chinese discount/premium. In this model, the control variable *Chinese_percent* now becomes statistically insignificant suggesting that lower prices are mainly due to Chinese buyers individually paying less than others. Overall, we do not find that a higher percentage of Chinese buyers in a suburb for a given year and quarter is associated with higher prices.

## 6. Conclusion

Recent media coverage has suggested that Chinese demand for property is driving up house prices globally, creating affordability issues. In this study we investigate whether Chinese buyers increased house prices in Sydney from 2000 to 2011, using housing sales data with owner information. While we find that Chinese buyers, as a proportion of total sales, have increased over time, they do not seem to pay higher prices than other buyers for properties of similar characteristics. In fact, we find that Chinese buyers, on average, pay significantly less than other buyers. We plan to conduct a more extensive analysis of these findings by expanding our sample to the entire house sale transactions completed over the longer period from 2000 to 2013 in the Sydney metropolitan area. The aim is to provide better insights into the size and persistence of the actual discount paid by Chinese buyers.

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