Cultural Distance and Housing Prices: Evidence from the Australian Housing Market*

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Abstract:

We investigate whether cultural distance between a buyer's ethnicity and the neighborhood affects a home's selling price. Utilizing individual home sales of culturally diverse Sydney, Australia, we find a negative relationship between the buyer's cultural distance to the neighborhood and the selling price; consistent with buyer preference for similar cultures and inconsistent with cultural distance being an information friction. Home culture preference is strongest for ethnicities from recent migration waves, particularly East Asia. Our results are robust to endogeneity and selection bias. The findings have implications on the role of cultural demographic shifts on housing prices.

Key words: *culture distance, housing price, information friction, home culture preference*
JEL Classification Code: *R00, O18, P22, R21*

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1. Introduction

We analyze to what extent culture affects the housing transaction prices in Sydney, Australia's largest and most culturally diverse city.[1] Culture has been alluded to as a priced factor in hedonic house pricing although never directly tested. For example the introductory chapter of Pace and LeSage (2009) refers to culture as a latent unobservable influence in hedonic house pricing. We measure culture's effect by characterizing the cultural traits inherited at the individual home buyer's level using ethnicity as a proxy for culture, which can be treated as largely invariant over an individual's life (e.g. Guiso, Sapienza and Zingales (2006)). Specifically, we investigate whether the cultural distance between the home buyer's ethnicity and the ethnicity profile of the property's neighborhood affects the home's selling price.

Whether and how cultural distance affects housing transaction prices is ambiguous ex-ante. There are two competing hypotheses we evaluate. On one hand, the *information friction hypothesis* posits that home buyers who are more culturally distant from the culture of a property's neighborhood are faced with higher search costs and greater information friction to access the local property market. It would be harder for them to arrive at the efficient price in the housing market, and therefore they might be forced to pay a higher price for their homes. On the other hand, the *home culture preference hypothesis* argues that home buyers prefer locations with greater cultural similarity, and are willing to pay more for homes in those locations. People in general prefer to live in a community or neighborhood with similar cultural background (e.g. Saiz (2007)).

Despite culture being a possibly priced factor, the literature is scant on the effect of culture on housing prices. Recent work suggests that buyers prefer and pay more to live with people of the same background or ethnicity. For example Li (2014) finds that neighborhoods in Toronto, Canada with more concentrated minorities have higher housing prices due to buyers valuing social interactions with own ethnicity higher than with others. Wong (2013) finds preferences for own-ethnicity are inverted U-shaped in that after a certain amount of own-ethnicity, a neighborhood will

[1] For example in the 2011 Australian Bureau of Statistics Census, of the 4,028,524 Sydney urban area respondents, 41.9% were born overseas and 63.8% have at least one parent born overseas.

prefer other ethnicities. Culture-related barriers such as language may also act as a friction making immigrants willing to pay more for housing. For example Fischer (2012) finds that non common language immigrants to Switzerland are less price-sensitive to house price changes than common language immigrants. Fischer's finding is consistent with non common language immigrants valuing local immigrant-specific amenities more due to language acting as a friction for integration.

Employing a transaction level residential property dataset of the Sydney metropolitan area from 2006 to 2013, we empirically examine the role of culture distance on housing prices. Home buyer ethnicity is inferred from their surname using a hand collected database of surnames and ethnicity from various internet sources. We apply the cultural framework of Hofstede (2001) to measure the cultural distance between the homebuyer' country of origin and the suburb of the house. We employ four versions of the suburb's ethnicity measure using either ancestry or birthplace of the neighborhood and four or six Hofstede (2001) cultural dimensions . Neighborhood ancestry and birthplace characteristics are from on the Australian Bureau of Statistics Census snapshots on the demographics of a neighborhood.

Our main result is that culture distance has a significantly negative impact on housing price. We show that the greater is the cultural distance between the homebuyer' country of origin and the suburb of the house, the lower is the price in that transaction, ceteris paribus. Specifically, if the cultural distance between a homebuyer with the suburb increases by one point, roughly the difference between the average Australian and Chinese buyer's cultural distance, housing price reduces by 1.1% or AUD$7,509 based on the sample mean sales price of AUD$682,650. The amount is both economically sizeable and statistically significant. This finding suggests that homebuyers are willingly to pay higher prices for homes in neighborhoods which are closer to their culture of origin, which provides strong support for the home culture preference hypothesis. Our regression models control for a long list of housing characteristics, such as area size, property type, location, type of sale, in additional to buyer ethnicity fixed effect, year and month fixed effects,

with robust standard errors clustered at the suburb level. Furthermore the results are robust to endogeneity and selection bias.

Considering that different ethnicity groups may display varying degrees of home culture preference, we also explore the extent to which culture distance affects the housing prices for regions of the world. Some ethnicities may be more recent migrants into Australia, and have strong emotional and cultural bond with their home country, and therefore may display stronger home cultural preferences. We extend our baseline analysis by examining ethnicities by region. Our result show that Asian (East, South-East and South) ethnicities have negative and statistically significant CD whereas other ethnicities (e.g. African, Australian, Middle Eastern and Europeans (East, North, South and West) do show not statistically significant CD. The interpretation of the result is that since people from the European regions came to Australia relatively early compared with Asian immigrants; their ties to their home country are weaker. Also Australian local culture bears a higher degree of resemblance with that of the European area.

Our paper contributes to the literature in several ways. First we are able to infer the ethnicity of the buyer at the sales level and so measure individual buyer's willingness to pay based on their cultural distance to a neighborhood. As such we have a more direct method of measuring buyer preferences than inferring flows from changes in the ethnic mix of residents as in Wong (2013) or using only Census data as in Li (2014). Second we look at preferences of homeowners using cultural distance rather than own ethnicity shares. This allows us to test whether buyers are sensitive to other ethnicities based on how culturally close they are. This differs to Wong (2013) who looks at own ethnicity share though does not consider that some ethnicities are more culturally compatible than others. Furthermore we are able to instrument cultural distance using genetic distance of ethnicities and so address endogeneity using two-stage least squares. Being able to address endogeneity in buyer preferences for housing is a non-trivial issue. For example, Wong (2013) addresses endogeneity of ethnic preferences by looking at ethnic quotas in Singapore housing blocks and seeing how constrained blocks are to ethnic quotas.

The paper is related to several strands of the literature. Culture plays an important role in shaping the behavior and decision making of individuals (e.g., Hermalin (2001)). The significance of cultural distance in investment decisions is highlighted in prior works. Specifically, studies have shown that cultural distance provides important explanations for the magnitude of the flow of both debt (Aggarwal, Kearney and Lucey (2012)) and equity (Siegel, Licht and Schwartz (2013)) between countries, loan contract terms (Giannetti and Yafeh (2012)), the extent of investor home bias (Beugelsdijk and Frijns (2010); Anderson, Fedenia, Hirschey and Skiba (2011)), and the degree of cross-border merger and acquisitions activity (Ahern, Daminelli and Fracassi (2012)). While these papers examine the impact of cultural distance on the investment decisions of investors and corporate managers, we apply it to individual home buyers within a city.

2. Background

2.1 Ethnicity and Immigration in Australia

During the enforcement of the White Australia policy from 1901 to 1958, much of Australia's cultural diversity from its Asian neighbors, particularly China and India, was extinguished. This meant that the predominant ethnicities were white Europeans, particularly Anglo-Saxons.

After the relaxation of White Australia policy and concurrent to the end of World War II, there were several waves of migration activities. Appendix 1 provides a guide of when peak migration occurs from other countries from 1954 to 2011.[2] We collect top ten overseas countries of birth by percentage of the Australian population from the Australian Census from 1954 to 2011. The table reports for each top ten birthplace, the census year entry into the top ten and the census year and figure of when the birthplace was at the peak of the total percentage of the Australian population.

[2] Note that population by ethnicity only started being collected from 2006.

Anglo-Saxons (mainly Irish and UK) experienced peak population in 1954. In the 1950's and 60's, the peak population occurs for Eastern and Western Europe namely the Dutch, Germans and Polish. From the 1970's, the Southern Europeans (Greeks, Italians and Maltese) had population peaks. In the 1980's Lebanese migration peaked and in the 1990's it peaked for Yugoslavia. For both the Lebanese and Yugoslavs the peaks follow the outbreak of civil war in their respective countries. In the 2010's Asian countries, China, India, Malaysia, Philippines and Vietnam experience their peak population as well as for neighboring Commonwealth countries New Zealanders and South Africans. Asian countries entered the top ten in the 1990's suggesting Asians are the most recent wave of new migrants. In summary, the most established ethnicity in Australia are the Anglo-Saxons, followed by Western Europeans, Southern Europeans, Middle East, Asia and New Zealand. The sequencing is important as cultural distance sensitivity may be weaker for more established ethnicities than recent migrants.

2.2 Culture and Investment Decision

There is a developing literature on the affect of culture on investment decisions. The papers find consistent that cultural differences along several dimensions between two countries negatively affects investment between the two, controlling for other factors. For example higher cultural distance between two countries is related to lower portfolio investment and direct investment (e.g. Guiso, Sapienza and Zingales (2009)), lower allocation to foreign investments (e.g. Beugelsdijk and Frijns (2010) and Anderson *et al.* (2011)), smaller bank loans with higher interest rates (e.g. Giannetti and Yafeh (2012)) and lower cross-border merger volume (e.g. Ahern *et al.* (2012)). Overall, cultural difference between countries appears to act as a friction between countries in a significant manner affecting the size of investment and value generation between countries.

Our paper while usually a cultural distance variable differs in several aspects to the literature. First we look at the buying behavior of ethnicities in one large city instead of cross-border transactions. As such cross-country differences such as in trade or legal frameworks need not factor

into our analysis. Second we look at cultural differences between buyer and the population-weighted ethnic mix in the neighborhood instead of country pairs. Such analysis differs to the usual cross-country pair analysis of the literature and represents a novel method to apply cultural distance. Third we investigate the relationship of cultural distance to housing prices at the individual housing transaction level whereas other studies focus on the country trade level (e.g. Guiso *et al.* (2006)) or on public company equity (e.g. Beugelsdijk and Frijns (2010)). As such we investigate the relationship of cultural distance at a very granular level. While Wong (2013) considers ethnicity preferences of home buyers to their own ethnicity, we further analyse the preference of home buyers to other ethnicities using the cultural distance measure.

3. Data

The principal data set we use is individual housing transactions in the Sydney metropolitan area from 2006 to 2013 from Australian Property Monitors (APM).[3] The dataset includes the sales price, transaction date, property address, number of bedrooms and bathrooms, whether the parking, area size of block of land, other housing characteristics (garage, balcony, ocean views, etc.) and owner and vendor names. Sales prices and area sizes at the 1st and 99th percentile are winsorized to remove outliers. Hofstede culture dimensions are obtained from its respective websites. [4] Other datasets used include Australian Bureau of Statistics (ABS) Census snapshots on the demographics of a suburb (e.g. ancestry, country of birth) in 2006 and 2011. Further, we use genetic distance between ethnicities from Spolaore and Wacziarg (2009).

Table 1 reports mean summary statistics for our entire sample of 208,878[5] sales and across the top twenty buyer ethnicities by sales.[6] The complete list of ethnicities and regions that we use are in Appendix 2. The average house price is $682,650 with 59% of sales being houses, an average

[3] APM is one of Australia's leading national supplier of online property price information to the banks, financial markets, professional real estate agents and consumers. See more details at www.apm.com.au
[4] http://www.geerthofstede.eu/research--vsm
[5] 210,269 when including Jewish and South African surnames.
[6] The top 20 ethnicities is reported for conciseness.

size of 3900 square feet, 2.93 bedrooms and 1.61 bathrooms. 86% of homes have parking and 16% were sold at an auction. Australians (Anglo-Saxon) buyers make up about 35 percent of our sample consistent with Australians being the majority ethnicity in Sydney. Australians on average paid $770,490 for a home, higher than the overall sample average though housing characteristics were similar to the overall sample average. The second largest buyers are Chinese making up about 19% of the sample, followed by Arabic making up about 10% of the sample. Generally, non-European ethnicities tend to pay less and buy larger homes than the average buyer which suggests that they tend to buy in lower priced and less dense suburbs.

4. Methodology

In this section we first describe how we classify owner ethnicity from buyer surnames. We then show how we calculate cultural distance measures between buyers and neighborhoods. Finally we describe our regression framework linking housing prices to cultural distance and how we address issues of endogeneity and selection bias.

4.1 Buyer Ethnicity Classification

In order to calculate cultural distance measures we require the ethnicity of the owner. We use the owner's surname to identify the ethnicity of the buyer using a hand collected database of surnames and ethnicity from various internet sources. Surnames with more than one ethnicity (e.g. the surname Lee could be Anglo-Saxon, Chinese or Korean) are dropped. The surname database has been hand collected from free internet sources such as Wikipedia and various surname databases.[7] For South African surnames, we use the list in Rosenthal (1965). For names unmatched by our database, we also a name to ethnicity classifier[8] from Ambekar, Ward, Mohammed, Male and Skiena (2009) and as Pool, Stoffman and Yonker (2014) use to match Arabic, British (Australian), French, Indian, Italian or Jewish names when the predicted probability of an ethnicity by the

[7] For example: the internet surname database: www.surnamedb.com
[8] Available from http://www.textmap.com/ethnicity/

algorithm is above 85 percent. We remove buyers with multiple owners of different ethnicities. We remove company owners which make up about 2.5% of the sample. Using these filters we are able to match 54% of sales transaction to an ethnicity.

4.2 Cultural Distance Measures

We calculate the cultural distance based on Hofstede (2001), one of the most widely used cultural frameworks in empirical work. Hofstede (2001) constructs culture scores on the basis of the following six dimensions: power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term orientation and indulgence versus restraint. The cultural distance (CD) here is defined as the weighted Euclidean distance between the culture value of the home buyer's ethnicity and the average person's culture value in the suburb (neighborhood) of the property. Ethnicity of the suburb is based on the suburb's ancestry or birthplace from ABS Census 2006 and 2011 records. For years between 2006 and 2011 where there is no census information we impute demographic information. For 2012 and 2013, we assume the demographic information is the same as for 2011. $CD_{i,s,t}$ measures the cultural distance between buyer *i*'s ethnicity and the culture of suburb *s* in year *t*:

$$CD_{i,s,t} = \sum_{j=1}^{J} w_{j,s,t} * CD_{i,j,s,t} = \sum_{j=1}^{J} w_{j,s,t} * \sqrt{\sum_{k=1}^{N} \left(C_{i,k} - C_{j,k,s}\right)^2 / V_k} \quad (1)$$

where

$\boldsymbol{C_{i,k}}$ is buyer of sale *i*'s ethnicity culture value along the *k*-th culture dimension;

$\boldsymbol{C_{j,k,s}}$ ethnicity group *j*'s value on the *k*-th culture dimension in suburb *s*, *j*=1…J;

$\boldsymbol{V_k}$ is the variance of the culture value of the dimension *k*;

$\boldsymbol{w_{j,s,t}}$ is the percentage of ethnicity group *j*'s population in suburb *s* in year *t*;

There are in total *J* ethnicity groups and *K* culture dimensions.

Based on this formula, we can compute a weighted measure of cultural distance of a buyer to the home's suburb. The higher the score on the cultural distance measure, the greater the cultural

difference between buyer *i*'s culture and the cultural mix of the suburb. For robustness, we also measure the suburb's ethnicity by birthplace instead of ancestry and use all six dimensions or just four dimensions excluding long-term orientation and indulgence versus restraint.

Table 2 reports cultural distance statistics for the entire sample and across the top twenty ethnicities. Over the entire sample, average CD is 1.99. The statistic may be interpreted as the mean buyer's suburb is 1.99 standard deviations away from the buyer's ethnicity cultural dimension score. Australian buyers have the lowest average CD of 1.34 across all ethnicities consistent with most suburbs having a majority Anglo-Saxon demographic. Note that the overall minimum cultural distance is 0.59 for Australians which suggests that all suburbs have a diverse mix of ethnic backgrounds. Arabics, Australians, Chinese and Vietnamese have the highest CD standard deviation consistent with both groups buying into suburbs with a broad range of cultural distance to themselves. Other ethnicity groups have lower standard deviations and ranges (max minus min CD) suggesting that they tend to concentrate buys in fewer suburbs. The wide variability in cultural distance across buyers allows us to test the relationship between buyer prices and cultural distance to the suburb.

4.3 Regression Framework

After measuring cultural distance we then estimate a hedonic housing price models based on the following empirical specification and variable definitions:

$$\ln(P_{ist}) = \alpha_t + \beta_k CD_{ist} + property\ char + \mu_s + \delta_i + \gamma_t + \tau_t + \varepsilon_{it} \quad (2)$$

Where

$\boldsymbol{ln(P_{ist})}$ denotes logarithm of house prices paid by buyer of sale i at suburb s at time t;

$\boldsymbol{property\ char}$ are various property characteristics such as number of bedrooms, number of bathrooms, parking, property type and area size[9];

$\boldsymbol{\mu_s}$ is the suburb location specific fixed effect;

[9] Appendix 3 shows the full list of housing characteristics that we use.

δ_i is buyer's ethnicity fixed effects.

γ_t is year/quarter fixed effect;

τ_t is a monthly time trend;

A positive and statistically significant β_k suggests that buyers tend to pay higher prices with greater cultural distance to the suburb consistent with the *information friction hypothesis*. On the other hand if we find a negative and statistically significant β_k this suggests evidence consistent to the *home culture preference hypothesis*.

There are two inherent problems with the baseline specification estimate using ordinary least squares: selection bias and endogeneity. First there is selection bias where buyers may self-select into suburbs based on cultural distance and therefore the sampling is non-random. For example if buyers tend to purchase in suburbs with a low cultural distance to themselves then we would not observe buyers in high cultural distance which would bias our results. As such our strategy is to use a Heckman two stage selection model. In the first stage we run the following probit model across ethnicities at the suburb/quarter level:

$$\Pr(Buy_{jst} = 1|X) = F(\alpha_0 + \beta_1 CD_{jst} + \beta_2 lagybuy_{jst} + \mu_s + \delta_j + \gamma_t + \varepsilon_{jst}) \quad (3)$$

with the dependent variable being a dummy of 1 if a given ethnicity buys in a suburb in a given quarter and 0 otherwise. Our instrumental variable is $lagybuy_{jst}$, a dummy of 1 if there is any sale by the buyer's ethnicity in the prior twelve months in suburb *s* and 0 otherwise. We obtain the inverse mills ratio from the probit estimate and use it as an additional independent variable in equation 2. The instrumental variable is motivated by the literature on peer group effects. It has been found that peer group effects such as within ethnicity groups strongly influences the behavior and decisions of an individual, controlling for other factors. See for example in car purchases (Grinblatt, Keloharju and Ikäheimo (2008) , employment outcomes (Bayer, Ross and Topa (2008), Patacchini and Zenou (2012)) welfare participation (Bertrand, Luttmer and Mullainathan (2000), Betrand, Luttmer and Mullainathan (2000)) and worker productivity (Mas and Moretti (2009)). Importantly as a valid instrument, this peer effect influences the decision and not the price paid by

the individual. Consistent with this effect, Hvide and Östberg) find stock market decisions of individuals are positively correlated with those of co-workers and this positive correlation is not associated with positive future returns. As such we hypothesize that prior buying by the same ethnicity is a valid instrument as it increases the probability of buying by the ethnicity group however has no effect on the price paid.

Endogeneity is also present in our baseline specification as there may be an omitted variable bias where unobserved characteristics of the buyer, home or neighborhood may be correlated with both prices and cultural distance. To address endogeneity we identify cultural distance with genetic distance following Guiso *et al.* (2009) and Ahern *et al.* (2012). As Ahern *et al.* (2012) describes, genetic distance is 'a measure of the probability that two random alleles (DNA variations) from two populations will be different, based on the dominant population of a country'. Genetic distance is correlated to cultural distance as ethnicities that share common ancestors will tend to inherit both biological and cultural similarities (e.g. Spolaore and Wacziarg (2009)). However as genetic similarities take many generations to eventuate in ethnicity, it is unrelated to house prices. The first stage regression regresses the buyer's cultural distance on all control variables including genetic distance as such:

$$CD_{ist} = \alpha_t + \beta_k GD_{ist} + property\ char + \mu_s + \delta_i + \gamma_t + \tau_t + \varepsilon_{it} \qquad (4)$$

where GD_{ist} is the genetic distance of buyer *i* to the population weighted ethnicities in suburb *s*. We then use the estimated cultural distance $\widehat{CD_{ist}}$ from the first stage regression in the second stage instead of CD_{ist}.

To take account for both self-selection and endogeneity we follow the procedure in section 19.6.2 of Wooldridge (2010). The involves the same two-stage instrumental variable and also including the inverse Mills ratio obtained from running the probit in equation 3 but using GD_{ist} instead of CD_{ist}. We thus report coefficients estimates using OLS, Heckman 2-stage, 2-stage instrumental variables and a combination of Heckman 2-stage and 2-stage instrumental variable regression.

5. Results

5.1 First Stage Probit

Table 3 reports coefficient estimates of our probit model. Across all measures of cultural distance the coefficient is negative and statistically significant which suggests that the larger the cultural distance the lower the probability of an ethnicity group buying into a given suburb. The finding is consistent with buyer's having a preference for similar cultures and also Ahern *et al.* (2012)'s first stage probit results where higher cultural distance between two countries reduces the probability of a merger occuring.

Consistent with a peer effect in home buying, $lagybuy_{jst}$ is positive and statistically significant across all measures of cultural distance which suggests that prior buying in a suburb by an ethnicity increases the chances of the ethnicity buying in the current quarter. As such it appears that our instrument is valid.

5.2 Baseline Regression

Table 4 reports coefficient estimates of cultural distance using various regression methods. Each panel represents the use of a different cultural difference measure. We find the coefficient for cultural distance is negative and statistically significant across cultural distance measures. It is also robust when accounting for endogeneity or selection bias, or both together. The exceptions are for the combined Heckman selection and 2-stage least squares method for cultural distance using birthplace (the last column of Table 4 Panel B and last column of Table 4 Panel D) although the coefficient is negative. This is because standard errors of the CD coefficient tend to be much higher when we apply both Heckman selection and 2-stage least squares.

Generally across CD measures, the coefficient estimates become more negative when adjusting for self-selection or omitted variable bias suggesting that the ordinary least squares estimates are biased downwards. The inverse mills ratio across Heckman specifications is statistically significant that suggesting selection bias is not an issue.

The coefficient estimate across measures and methods ranges from -0.009 (Table 4 Panel B, ordinary least squares) to -0.032 (Table 4 Panel C, two stage least squares). This suggests that a one standard deviation increase in the cultural distance of a buyer with the suburb reduces the buyer's price by between 0.9% to 3.2%. For example for ordinary least squares in Table 4 Panel A, a one standard deviation move in cultural distance reduces housing prices by 1.1% or AUD$7,509 given the mean sales price of AUD$682,650. As a buyer's cultural distance may range from 0.96 to 4.37, this is an economically significant amount. Our results therefore support the effect of home culture preference of buyers.

5.3 Cultural Distance and Ethnicity Interaction

Extending on the baseline results, this section investigates whether the cultural distance coefficient is heterogeneous amongst ethnicities, particularly that the effect is strongest for more recent migrants. There is evidence to believe this is the case such as Fischer (2012) finding immigrant inflows from countries with non-common language country into an area increase housing prices due to valuing immigrant specific amenities and networks. On the other hand, ethnicities that have been in Australia for many generations may not have such a strong home culture preference as they may have a wider amount of amenities to enjoy and their networks may not geographically concentrated.

We extend our baseline regression by interacting cultural distance to a dummy of one if the ethnicity of the buyer is from a region as outlined in Appendix 2 (e.g. East Asia), or otherwise. We interact with regions rather than each ethnicity for conciseness. The groupings also provide a rough guide of immigration arrival. For example, the earliest mass migration were by Anglo-Saxons followed by Western and Northern Europeans. The most recent mass migrations were from Asia.

Table 5 reports results for CD and buyer region interaction coefficient estimates. Similar to our baseline reports we report for each panel the different cultural distance measures and each panel reports the various regression models.

Consistent with more recent migrants being more sensitive to home cultural preference, we find negative and statistically significant coefficients for cultural distance across all CD measures and regression methods for East Asia. The coefficient estimates tend also to be much larger than for CD on the overall sample ranging from -0.014 to -0.050 suggesting that East Asian have a much more negative CD than the average population. South East Asians also show negative and statistically significant CD across CD measures although the results are statistically significant when apply Heckman selection and 2-stage least squares together.

Middle East, South Asia and Southern Europe also show negative and statistically cultural distance measures although the result is not robust particularly to controlling for endogeneity using 2-stage least squares.

Australians, Eastern Europeans, Northern Europeans and Western Europeans show negative and statistically insignificant or weakly significant CD coefficients which suggests that these groups are less affected by cultural distance, consistent with earlier migrants not being sensitive cultural distance.

Taken together our results provide some evidence that home culture preference appears related to the recency of migration of the buyer's ethnicity, with the earliest migrants showing no evidence of home cultural bias.

6. Conclusion

This paper shows that culture distance matters in people’s housing decisions. We develop two competing hypotheses, i.e., the home culture preference hypothesis and the information friction hypothesis. Our empirical evidence demonstrates that homebuyers pay higher prices for houses in suburbs that are closer in culture to their countries of origin, which provides strong support for the home culture preference hypothesis. For example a one standard deviation increase of cultural distance between a homebuyer with the suburb causes a 1.1% decrease in home price. The effect of

culture distance is economically meaningful, given the sample mean sales price of AUD$682,650. The results are robust to different cultural distance measures, endogeneity and selection bias.

To show that different ethnicity groups display varying degree of home, we perform a battery of subsample analysis for the top ten ethnicity group in our sample. Our findings demonstrate that immigrants particularly from Asia display a greater degree of home culture preference, whereas we find no or weak statistical significance for buyers from Australia or Europe.

Taken together, our paper provides important insights in the area of culture, foreign immigrant homebuyers, and housing price. It contributes to the literature on the role of culture distance in housing market decision making by highlighting the importance of culture aspects in the residential housing market.

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Appendix 1
Top Ten Overseas Country of Birth in Australia from 1954 to 2011

We collect top ten overseas country of birth by percentage of the Australian population from the Australian Census from 1954 (just prior to the relaxation of the White Australia policy in 1958) to 2011. The table reports for each top ten birthplace, the census year entry into the top ten and the census year and figure of when the birthplace was at the peak of the total percentage of the Australian population. The census year entry and peak provides a guide of the most recent immigration way from the birthplace country.

Census Year	Year of Entry	Birthplace	% of Total Population
1954	1954	Ireland	0.50
1954	1954	UK	6.86
1954	1954	Poland	0.63
1961	1954	Germany	1.04
1961	1954	Netherlands	0.97
1971	1954	Greece	1.26
1971	1954	Italy	2.27
1971	1954	Malta	0.42
1981	1981	Lebanon	0.28
1991	1954	Yugoslavia	0.96
2011	1991	China[a]	1.48
2011	2001	India	1.37
2011	2011	Malaysia	0.54
2011	1991	Philippines	0.80
2011	1991	Vietnam	0.86
2011	1954	New Zealand	2.25
2011	2006	South Africa	0.68

[a] excludes Taiwan and Special Administrative Regions

Appendix 2
Region and Ethnicities

The table reports the region and ethnicities that the study uses. The ethnicities match with those used in the Hofstede cultural dimensions. Sydney Population statistics are from the 2006 and 2011 Australian Bureau of Statistics Censuses. Ethnicities marked with an astericks only have four cultural dimensions measured.

Region	Ethnicity	% of Pop. in 2006 Census	% of Pop. in 2011 Census
Africa	Moroccan	0.01	0.01
	South African*	0.41	0.43
Australia	Australian/British	45.16	42.97
East Asia	Chinese	7.84	8.99
	Japanese	0.29	0.30
	Korean	1.04	1.26
	Taiwanese	0.05	0.05
South Asia	Bangladeshi	0.28	0.44
	Indian	2.20	3.10
	Nepalese	0.09	0.41
	Sri Lankan	0.46	0.51
South East Asia	Indonesian	0.25	0.31
	Filipino	1.19	1.38
	Malaysian	0.08	0.09
	Singaporean	0.02	0.02
	Thai	0.23	0.33
	Vietnamese	1.65	1.90
Middle East	Arabic	3.52	3.72
	Israeli/Jewish*	0.08	0.19
	Turkish	0.49	0.51
Eastern Europe	Croatian	0.71	0.68
	Czech	0.11	0.11
	Hungarian	0.31	0.28
	Polish	0.58	0.53
	Romanian	0.08	0.08
	Russian	0.39	0.40
	Serbian	0.63	0.52
	Slovak Republic	0.05	0.06
Northern Europe	Danish	0.07	0.07
	Estonian	0.03	0.03
	Finnish	0.05	0.05
	Latvian	0.06	0.05
	Lithuanian	0.05	0.05
	Norwegian	0.03	0.03
	Swedish	0.06	0.06
Southern Europe	Greek	2.57	2.43
	Italian	3.95	3.82
	Maltese	0.75	0.71
	Portuguese	0.33	0.33
Western Europe	French	0.26	0.28
	Dutch	0.49	0.47
	German	1.41	1.37
	Irish	4.47	4.56
	Swiss	0.07	0.07
Total		82.85	83.96

Appendix 3
List of Housing Characteristic Variables

Variable	Description
Beds	Number of beds
Baths	Number of bathrooms
Multiple Parking	1 if home has two or more parking spots, 0 otherwise
Street type dummies	1 if a certain street type (e.g. avenue, highway, lane, street, road, etc.), 0 otherwise
Housing type dummies	1 if a certain housing type (e.g. apartment (condominium), house, semi, studio, townhouse, villa, etc.), 0 otherwise
Housing type dummy* Area size	Housing type dummy interacted with land area size of home (square metres).
HasAirConditioning	1 if home has air conditioning, 0 otherwise
HasAlarm	1 if home has alarm system, 0 otherwise
HasBalcony	1 if home has balcony, 0 otherwise
HasBarbeque	1 if home has barbeque, 0 otherwise
HasBeenRenovated	1 if home has been renovated, 0 otherwise
HasBilliardRoom	1 if home has billiard room, 0 otherwise
HasCourtyard	1 if home has courtyard, 0 otherwise
HasEnsuite	1 if home has ensuite, 0 otherwise
HasFamilyRoom	1 if home has family room, 0 otherwise
HasFireplace	1 if home has fire place, 0 otherwise
HasGarage	1 if home has garage, 0 otherwise
HasHeating	1 if home has heating, 0 otherwise
HasInternalLaundry	1 if home has internal laundry, 0 otherwise
HasLockUpGarage	1 if home has lock up garage, 0 otherwise
HasPolishedTimberFloor	1 if home has polished timber floors, 0 otherwise
HasPool	1 if home has swimming pool, 0 otherwise
HasRumpusRoom	1 if home has rumpus room, 0 otherwise
HasSauna	1 if home has sauna, 0 otherwise
HasSeparateDining	1 if home has separate dining room, 0 otherwise
HasSpa	1 if home has spa, 0 otherwise
HasStudy	1 if home has study room, 0 otherwise
HasSunroom	1 if home has sunroom, 0 otherwise
HasTennisCourt	1 if home has tennis court, 0 otherwise
HasWalkInWardrobe	1 if home has walk in wardrobe, 0 otherwise
View dummies	1 if home has a certain view (e.g. bush, city, district, harbour, ocean, park, river, etc.), 0 otherwise

Table 1
Summary Statistics of Home Sales

The table reports mean summary statistics for home sales in the Sydney metropolitan area from 2006 to 2013 for the entire sample and for the top 20 buyer ethnicity groups. The data is from Australian Property Monitors. Buyer ethnicity is classified by surname of the buyer. Price is in thousands of Australian dollars. House is a dummy variable equal to one for a house and zero otherwise (e.g. apartment (condominium), house, semi, studio, townhouse, villa, etc), . House area size is in 1,000 square feet. Bed is the number of bedrooms and bath is the number of bathrooms. Parking is a dummy variable equal to one if the home has parking. Auction is a dummy variable equal to one if the home was sold at auction.

Ethnicity	Price ($'000)	House	House Area Size (1,000 sq ft)	Bed	Bath	Parking	Auction	N
Australian	770.49	0.59	3.95	2.91	1.62	0.83	0.16	73,114
Chinese	674.48	0.47	3.20	2.89	1.70	0.89	0.15	39,223
Arabic	546.04	0.72	4.84	3.05	1.51	0.88	0.19	20,145
Indian	551.03	0.59	3.92	2.95	1.59	0.89	0.13	17,945
Irish	765.70	0.58	3.78	2.88	1.60	0.83	0.17	14,476
Italian	673.05	0.64	4.17	2.94	1.58	0.87	0.18	12,056
Vietnamese	486.87	0.71	4.50	3.05	1.48	0.86	0.15	8,130
Greek	725.00	0.65	4.01	2.93	1.55	0.85	0.24	5,220
German	790.29	0.57	3.80	2.90	1.64	0.82	0.18	2,656
French	705.10	0.61	4.03	2.92	1.61	0.83	0.17	2,155
Korean	661.89	0.56	4.07	3.00	1.73	0.91	0.15	1,807
Spanish	522.70	0.55	3.44	2.86	1.52	0.86	0.11	1,767
Slovakian	547.66	0.58	3.67	2.89	1.51	0.88	0.14	1,405
Portuguese	577.93	0.56	3.43	2.83	1.54	0.88	0.13	1,352
Polish	638.39	0.52	3.47	2.80	1.54	0.85	0.14	1,171
Maltese	548.95	0.70	5.01	3.04	1.52	0.88	0.11	832
Indonesian	594.11	0.49	2.93	2.77	1.64	0.88	0.13	831
Dutch	777.57	0.56	3.86	2.86	1.63	0.84	0.13	669
Sri Lanka	602.14	0.63	4.45	2.97	1.60	0.89	0.12	539
Japanese	678.74	0.50	3.17	2.62	1.53	0.84	0.11	537
All	682.65	0.59	3.90	2.93	1.61	0.86	0.16	208,878

Table 2
Summary Statistics of Cultural Distance between Buyer and Home's Suburb

The table reports summary statistics for the cultural distance of the buyer to the home's suburb across sales in the Sydney metropolitan area from 2006 to 2013 for the entire sample and the top twenty buyer ethnicity groups. Buyer ethnicity is classified by surname of the buyer. Suburb demographic information is from the Australian Bureau of Statistics Census in 2006 and 2011. Cultural distance is measured as the Euclidean distance between the Hofstede cultural dimensions of the buyer's ethnicity to the population weighted ethnicity cultural dimensions in the home's suburb. The cultural dimensions are power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term orientation and indulgence versus restraint.

Ethnicity	Mean	Std Dev	Q1	Median	Q3	Min	Max	N
Australian	1.34	0.47	1.00	1.25	1.56	0.59	3.30	73,114
Chinese	2.49	0.55	2.09	2.51	2.94	1.19	3.60	39,223
Arabic	2.28	0.48	1.93	2.28	2.68	1.35	3.25	20,145
Indian	2.14	0.33	1.95	2.18	2.40	0.81	2.71	17,945
Irish	1.62	0.40	1.31	1.52	1.80	0.87	3.03	14,476
Italian	2.03	0.25	1.87	1.98	2.15	1.17	3.14	12,056
Vietnamese	2.42	0.54	2.09	2.41	2.84	1.35	3.57	8,130
Greek	2.91	0.37	2.63	2.95	3.22	1.91	3.61	5,220
German	1.79	0.27	1.59	1.70	1.91	1.42	3.00	2,656
French	2.70	0.14	2.64	2.74	2.81	2.24	3.17	2,155
Korean	3.05	0.39	2.73	3.08	3.36	2.27	3.86	1,807
Spanish	2.60	0.20	2.45	2.65	2.76	2.05	2.94	1,767
Slovakian	3.67	0.18	3.54	3.68	3.82	3.16	4.10	1,405
Portuguese	3.46	0.37	3.19	3.49	3.76	2.59	4.17	1,352
Polish	2.73	0.17	2.63	2.77	2.86	2.20	3.12	1,171
Maltese	2.75	0.16	2.70	2.79	2.87	2.20	3.12	832
Indonesian	2.76	0.47	2.45	2.77	3.14	1.64	3.80	831
Dutch	3.08	0.19	2.94	3.04	3.18	2.80	3.74	669
Sri Lanka	2.76	0.38	2.52	2.83	3.06	1.81	3.42	539
Japanese	3.29	0.10	3.26	3.32	3.35	2.88	3.72	537
All	1.99	0.73	1.37	1.98	2.53	0.59	4.37	208,878

Table 3
First Stage Probit Regression

The table reports coefficient estimates of the probit model in equation 3. The data is home sales from 2006 to 2013 for the Sydney metropolitan area from 2006 to 2013. Buyer ethnicity is classified by surname of the buyer. Cultural distance is measured as the euclidean distance between the Hofstede cultural dimensions of the buyer's ethnicity to the population weighted ethnicity cultural dimensions in the home's suburb. The cultural dimensions are power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term orientation and indulgence versus restraint. The ancestry measures use the ancestry of the suburb while the birthplace measures use the birthplace of the suburb to create cultural distance of buyer to suburb's demographics. Cultural distance measured using 4 dimensions excludes long-term orientation and indulgence versus restraint. *p*-values are in square brackets. ***, **, * signifies statistical significance at the 1, 5 and 10 percent level.

	CD (Ancestry 6 Dimensions)	CD (Birthplace 6 Dimensions)	CD (Ancestry 4 Dimensions)	CD (Birthplace 4 Dimensions)
Intercept	2.677***	1.536***	2.114***	1.444***
	[<0.001]	[<0.001]	[<0.001]	[<0.001]
CD	-0.845***	-0.832***	-0.832***	-0.912***
	[<0.001]	[<0.001]	[<0.001]	[<0.001]
lagybuy	0.278***	0.342***	0.300***	0.351***
	[<0.001]	[<0.001]	[<0.001]	[<0.001]
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Cox-Snell R-square	0.2777	0.2737	0.2699	0.2667
Number of Observations	771,420	771,420	807,300	807,300

Table 4
Baseline Regressions

The table reports coefficient estimates regressing log sales price on the cultural distance of buyer to a suburb with control variables. The data is home sales from 2006 to 2013 for the Sydney metropolitan area from 2006 to 2013. Buyer ethnicity is classified by surname of the buyer. Cultural distance is measured as the euclidean distance between the Hofstede cultural dimensions of the buyer's ethnicity to the population weighted ethnicity cultural dimensions in the home's suburb. The cultural dimensions are power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term orientation and indulgence versus restraint. Standard errors are in parenthesis. ***, **, * signifies statistical significance at the 1, 5 and 10 percent level.

Panel A. Cultural Distance (Ancestry 6 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.295***	7.29***	13.216***	13.203***
	(0.922)	(0.922)	(0.022)	(0.023)
CD	-0.011***	-0.015***	-0.027***	-0.019**
	(0.003)	(0.004)	(0.004)	(0.008)
New Development	0.145***	0.145***	0.146***	0.146***
	(0.008)	(0.008)	(0.008)	(0.008)
Auction	0.057***	0.057***	0.057***	0.057***
	(0.003)	(0.003)	(0.003)	(0.003)
Number of Bedrooms	0.12***	0.12***	0.12***	0.12***
	(0.004)	(0.004)	(0.004)	(0.004)
Number of Bathrooms	0.128***	0.128***	0.129***	0.129***
	(0.003)	(0.003)	(0.003)	(0.003)
Has Parking	0.084***	0.084***	0.086***	0.086***
	(0.007)	(0.007)	(0.007)	(0.007)
Inverse Mills Ratio		0.009		-0.010
		(0.006)		(0.009)
Housing Characteristics	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8597	0.8597	0.8584	0.8587
Number of Observations	208,878	208,878	208,878	208,878

Panel B. Cultural Distance (Birthplace 6 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.273***	7.265***	13.315***	13.179***
	(0.922)	(0.922)	(0.016)	(0.022)
CD	-0.009*	-0.012**	-0.014***	-0.010
	(0.005)	(0.005)	(0.003)	(0.007)
New Development	0.145***	0.145***	0.145***	0.146***
	(0.008)	(0.008)	(0.008)	(0.008)
Auction	0.057***	0.057***	0.057***	0.057***
	(0.003)	(0.003)	(0.003)	(0.003)
Number of Bedrooms	0.12***	0.12***	0.12***	0.12***
	(0.004)	(0.004)	(0.004)	(0.004)
Number of Bathrooms	0.128***	0.128***	0.129***	0.129***
	(0.003)	(0.003)	(0.003)	(0.003)
Has Parking	0.084***	0.084***	0.086***	0.086***
	(0.007)	(0.007)	(0.007)	(0.007)
Inverse Mills Ratio		0.008		-0.010
		(0.006)		(0.012)
Housing Characteristics	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8597	0.8597	0.8584	0.8587
Number of Observations	208,878	208,878	208,878	208,878

Panel C. Cultural Distance (Ancestry 4 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.29***	7.286***	13.213***	13.2***
	(0.924)	(0.924)	(0.022)	(0.022)
CD	-0.014***	-0.017***	-0.032***	-0.021**
	(0.003)	(0.005)	(0.004)	(0.009)
New Development	0.145***	0.145***	0.145***	0.145***
	(0.008)	(0.008)	(0.008)	(0.008)
Auction	0.056***	0.056***	0.057***	0.057***
	(0.003)	(0.003)	(0.003)	(0.003)
Number of Bedrooms	0.12***	0.12***	0.12***	0.12***
	(0.004)	(0.004)	(0.004)	(0.004)
Number of Bathrooms	0.128***	0.128***	0.129***	0.129***
	(0.003)	(0.003)	(0.003)	(0.003)
Has Parking	0.084***	0.084***	0.086***	0.086***
	(0.007)	(0.007)	(0.007)	(0.007)
Inverse Mills Ratio		0.007		-0.011
		(0.006)		(0.01)
Housing Characteristics	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8599	0.8599	0.8582	0.8588
Number of Observations	210,269	210,269	210,269	210,269

Panel D. Cultural Distance (Birthplace 4 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.274***	7.27***	13.319***	13.183***
	(0.925)	(0.925)	(0.016)	(0.022)
CD	-0.013**	-0.015**	-0.02***	-0.013
	(0.006)	(0.007)	(0.003)	(0.008)
New Development	0.145***	0.145***	0.145***	0.145***
	(0.008)	(0.008)	(0.008)	(0.008)
Auction	0.057***	0.057***	0.057***	0.057***
	(0.003)	(0.003)	(0.003)	(0.003)
Number of Bedrooms	0.12***	0.12***	0.12***	0.12***
	(0.004)	(0.004)	(0.004)	(0.004)
Number of Bathrooms	0.129***	0.129***	0.129***	0.129***
	(0.003)	(0.003)	(0.003)	(0.003)
Has Parking	0.084***	0.084***	0.086***	0.086***
	(0.007)	(0.007)	(0.007)	(0.007)
Inverse Mills Ratio		0.005		-0.011
		(0.006)		(0.013)
Housing Characteristics	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8598	0.8598	0.8584	0.8588
Number of Observations	210,269	210,269	210,269	210,269

Table 5
Cultural Distance and Ethnicity Region Interaction

The table reports coefficient estimates regression log sales price with cultural distance interacted with buyer's ethnicity region to suburb with control variables. The data is home sales from 2006 to 2013 for the Sydney metropolitan area from 2006 to 2013. Buyer ethnicity is classified by surname of the buyer. Cultural distance is measured as the euclidean distance between the Hofstede cultural dimensions of the buyer's ethnicity to the population weighted ethnicity cultural dimensions in the home's suburb. The cultural dimensions are power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, long-term orientation and indulgence versus restraint. Standard errors are in parenthesis. ***, **, * signifies statistical significance at the 1, 5 and 10 percent level.

Panel A. Cultural Distance (Ancestry 6 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.26***	7.246***	13.165***	13.162***
	(0.923)	(0.923)	(0.031)	(0.031)
CD*Africa	0.062	0.037	0.001	0.004
	(0.068)	(0.069)	(0.055)	(0.054)
CD*Australia	-0.004	-0.007	-0.007	-0.005
	(0.005)	(0.005)	(0.012)	(0.014)
CD*East Asia	-0.021***	-0.027***	-0.020***	-0.018**
	(0.005)	(0.006)	(0.007)	(0.009)
CD*South Asia	-0.024***	-0.032***	-0.013	-0.011
	(0.006)	(0.008)	(0.010)	(0.011)
CD*South East Asia	-0.033***	-0.044***	-0.015**	-0.013
	(0.006)	(0.008)	(0.007)	(0.010)
CD*Middle East	-0.001	-0.01	-0.01	-0.007
	(0.006)	(0.007)	(0.009)	(0.013)
CD*Eastern Europe	-0.011	-0.014	-0.004	-0.003
	(0.012)	(0.012)	(0.014)	(0.015)
CD*Northern Europe	-0.023	-0.026	-0.022	-0.02
	(0.029)	(0.029)	(0.025)	(0.025)
CD*Southern Europe	-0.017**	-0.027***	-0.007	-0.005
	(0.007)	(0.008)	(0.009)	(0.011)
CD*Western Europe	-0.007	-0.013*	-0.007	-0.005
	(0.006)	(0.007)	(0.012)	(0.014)
Inverse Mills Ratio		0.014**		-0.004
		(0.006)		(0.008)
Housing Characteristics	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8598	0.8598	0.859	0.859
Number of Observations	208,878	208,878	208,878	208,878

Panel B. Cultural Distance (Birthplace 6 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.259***	7.245***	13.296***	13.158***
	(0.923)	(0.922)	(0.018)	(0.023)
CD*Africa	0.690	0.685	0.002	0.004
	(0.442)	(0.44)	(0.055)	(0.050)
CD*Australia	0.007	0.006	-0.009	-0.006
	(0.007)	(0.007)	(0.01)	(0.013)
CD*East Asia	-0.030***	-0.034***	-0.015**	-0.014*
	(0.006)	(0.007)	(0.006)	(0.008)
CD*South Asia	-0.032***	-0.039***	-0.01	-0.009
	(0.008)	(0.009)	(0.009)	(0.009)
CD*South East Asia	-0.034***	-0.042***	-0.011***	-0.010
	(0.006)	(0.008)	(0.004)	(0.007)
CD*Middle East	-0.033*	-0.043**	-0.007	-0.005
	(0.019)	(0.019)	(0.005)	(0.01)
CD*Eastern Europe	-0.018	-0.020	-0.002	-0.001
	(0.018)	(0.018)	(0.009)	(0.01)
CD*Northern Europe	-0.018	-0.019	-0.021	-0.02
	(0.041)	(0.041)	(0.017)	(0.018)
CD*Southern Europe	-0.016	-0.028*	-0.005	-0.004
	(0.015)	(0.016)	(0.006)	(0.008)
CD*Western Europe	0.007	0.003	-0.005	-0.004
	(0.012)	(0.012)	(0.008)	(0.011)
Inverse Mills Ratio		0.009*		-0.004
		(0.006)		(0.011)
Housing Characteristics	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8597	0.8597	0.859	0.859
Number of Observations	208,878	208,878	208,878	208,878

Panel C. Cultural Distance (Ancestry 4 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.26***	7.251***	13.164***	13.161***
	(0.925)	(0.924)	(0.028)	(0.028)
CD*Africa	0.066	0.047	-0.192***	-0.181**
	(0.106)	(0.108)	(0.07)	(0.071)
CD*Australia	-0.003	-0.007	-0.008	-0.004
	(0.005)	(0.006)	(0.013)	(0.017)
CD*East Asia	-0.029***	-0.033***	-0.025***	-0.022**
	(0.006)	(0.007)	(0.007)	(0.010)
CD*South Asia	-0.031***	-0.037***	-0.015	-0.012
	(0.008)	(0.008)	(0.012)	(0.013)
CD*South East Asia	-0.034***	-0.042***	-0.016**	-0.012
	(0.006)	(0.007)	(0.007)	(0.011)
CD*Middle East	-0.008	-0.013**	-0.011	-0.007
	(0.006)	(0.006)	(0.009)	(0.015)
CD*Eastern Europe	-0.012	-0.014	-0.004	-0.002
	(0.015)	(0.015)	(0.015)	(0.017)
CD*Northern Europe	-0.074*	-0.079*	-0.025	-0.023
	(0.045)	(0.045)	(0.026)	(0.027)
CD*Southern Europe	-0.015***	-0.020***	-0.007	-0.005
	(0.006)	(0.006)	(0.009)	(0.013)
CD*Western Europe	-0.008	-0.013*	-0.008	-0.005
	(0.007)	(0.008)	(0.013)	(0.016)
Inverse Mills Ratio		0.011*		-0.005
		(0.006)		(0.01)
Housing Characteristics	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8599	0.8599	0.8591	0.8591
Number of Observations	210,269	210,269	210,269	210,269

Panel D. Cultural Distance (Birthplace 4 Dimensions)

Dependent variable: ln(price)	Ordinary Least Squares	Heckman	2-stage Least Squares	Heckman and 2-Stage Least Squares
Intercept	7.263***	7.257***	13.297***	13.16***
	(0.926)	(0.925)	(0.018)	(0.023)
CD*Africa	0.077	0.070	-0.203***	-0.196***
	(0.157)	(0.158)	(0.056)	(0.053)
CD*Australia	0.014	0.012	-0.010	-0.006
	(0.009)	(0.010)	(0.012)	(0.016)
CD*East Asia	-0.048***	-0.050***	-0.020***	-0.019**
	(0.008)	(0.009)	(0.007)	(0.009)
CD*South Asia	-0.052***	-0.055***	-0.012	-0.010
	(0.011)	(0.012)	(0.011)	(0.011)
CD*South East Asia	-0.043***	-0.046***	-0.013***	-0.010
	(0.007)	(0.008)	(0.004)	(0.009)
CD*Middle East	-0.048***	-0.05***	-0.008	-0.006
	(0.014)	(0.014)	(0.007)	(0.012)
CD*Eastern Europe	-0.001	-0.002	-0.003	-0.001
	(0.025)	(0.025)	(0.010)	(0.012)
CD*Northern Europe	-0.069	-0.071	-0.026	-0.024
	(0.059)	(0.059)	(0.020)	(0.021)
CD*Southern Europe	0.002	-0.001	-0.006	-0.004
	(0.009)	(0.01)	(0.007)	(0.010)
CD*Western Europe	0.016	0.013	-0.006	-0.005
	(0.015)	(0.017)	(0.010)	(0.014)
Inverse Mills Ratio		0.005		-0.005
		(0.006)		(0.012)
Housing Characteristics	Yes	Yes	Yes	Yes
Buyer Ethnicity Fixed Effects	Yes	Yes	Yes	Yes
Suburb Fixed Effects	Yes	Yes	Yes	Yes
Year/Quarter Fixed Effects	Yes	Yes	Yes	Yes
Monthly Time Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors By ...	Suburb	Suburb	Suburb	Suburb
Adjusted R-square	0.8599	0.8599	0.8591	0.8591
Number of Observations	210,269	210,269	210,269	210,269